IIC 2021

TRANSITION OR TRANSFORMATION OF LIBRARIES DUE TO COVID PANDEMIC: LESSONS TO LEARN

(Proceedings of the 4th I-LISS International Conference - IIC 2021)

Editors in Chief

Prof Dong-Geun Oh

Prof B Ramesh Babu

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Dr S K Asok Kumar

Dr P Rajendran

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Dr A Bagavathi

Mr P J Y Joysingh

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The Tamil Nadu Dr Ambedkar Law University, Chennai

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Proceedings of the 4th I-LISS International Conference on Transition or Transformation of Libraries Due to COVID Pandemic: Lessons to Learn (IIC 2021)

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Prof. N Santhosh Kumar
Vice Chancellor

Message

It is a pleasure to write the felicitation message for the 4th I-LISS International Conference - IIC 2021 on "Transition or Transformation of Libraries due to COVID Pandemic: Lessons to Learn" being organised by the University Library in association with I-LISS and other organisations during 7-8 October 2021.

The topic of the conference is most relevant in the present day context and I hope the contributors of the papers would discuss the issues, challenges and the lessons learnt in the provision of library services in the context of COVID Pandemic. It is true that the libraries have been transformed due to the impact of ICT and especially due to Covid pandemic across the globe.

I understand that the organisers are bringing out pre-conference proceedings in print form although the conference is planned on virtual mode. A number of research papers have been received from different nations across the world and it is truly international in scope and content. There are invited presentations in addition to the contributed papers by the renowned scholars in Library and Information Science.

I congratulate our University Librarian Dr S K Asok Kumar, and his team the President of I-LISS Prof. Dr. Dong-Geun Oh of Keimyung University, South Korea, and other organisers for making efforts for the smooth conduct of this mega event on virtual mode. I also felicitate the Editors of the proceedings for their intellectual inputs in bringing out the volume

I wish the two day international conference a grand success.

Vice Chancellor

FOREWORD

Prof. Dong Geun Oh

The year 2019 marked the COVID pandemic environment throughout the globe and put forth many challenges before mankind in all walks of life. In this challenging times prevailing COVID environment and subsequent lockdown has influenced many sectors and education sector is not an exception to this. The only option/alternative before the academic community is through online teaching and learning. As a result the webinars has gained importance and become via media for the conduct of conferences/seminars etc., Accordingly, the Tamil Nadu Dr.Ambedkar Law University, Chennai has planned to conduct 4th I-LISS International conference on "Transition/Transformation of Libraries due to COVID pandemic: Lessons to learn" by virtual mode. However, the organisers have taken efforts to bring out the pre-conference proceedings (in print form).

The organisers requested me to write FOREWORD for this volume, for which I gladly agreed. On looking at the theme of the conference and the Table of Contents, the theme is very apt and the papers represent the reactions of the LIS community in providing the library services and managing the respective libraries during COVID pandemic. The LIS scenario has been changing in these times of pandemic and has been functioning through virtual presence and consequently the conduct of this International conference via online mode is justifiable. This situation has taught many lessons both to the LIS professionals, as well as users and administrators of library. Ongoing through the Table of Contents, it is observed that, the dimensions or metamorphosis of Libraries and Librarianship due to COVID pandemic has been discussed by the contributors of the articles. There are about 64 papers from across the globe including United States of America, Germany, Australia, Nigeria, Thailand, Japan, South Korea, Sri Lanka, Iran, Indonesia, etc., in addition to India.

The subthemes of this conference focus on the aspects of transition/transformation of Libraries/Librarianship due to COVID. These represent various facets such as Redefining Libraries and Librarianship; Library services during COVID-19, Smart Learning environment, Use of social media and social networks, Use of OER & MOOCs; COVID-19 implications for Library management; LIS professionals' skills and competences; User study and Information Literacy, LIS Education, Research and Metric studies and Information seeking behaviour.

I congratulate Dr. B. Ramesh Babu, Dr. S. K. Asok Kumar and Dr. P. Rajendran and other organisers of this conference for their continued efforts towards the better and smooth conduct of this mega event. I also thank the organisers of the conference for inviting me to contribute FOREWORD to this pre-conference volume. At the same time I thank these contributors of the papers for sharing their intellectual thoughts and rich experiences.

I wish this virtual conference a great success.

Prof. Dong Geun Oh
President, I – LISS
Professor, Keimyung University
South Korea

PREFACE

Library and Information Services are facing many changes and challenges due to the massive developments of ICT. Today's environmental pressures are forcing libraries to focus on accelerating technology, innovation, technical complexities, social and legal issues, cost, risk, competence, skills of staff and technology itself. Since the dawn of 21st Century, libraries are facing serious transition. The function of libraries is changing dramatically due to changes and developments in ICT and COVID -19 pandemic environment. In accordance with this emerging scenario, the library and information professionals' role are also subjected to dramatic changes. To meet the current requirements, library professionals must be able to perform various tasks coping up with the changes in technological environment.The widespread COVID-19 outbreak imposed sudden library closures and brought about the need for the library sectors to find suitable environment during times where the new norm was the confinement of patrons and staff alike, combined with rigorous social distancing measures in the libraries. Keeping those in mind the 4thI-LISS International Conference (IIC) 2021 on "Transition of Libraries due to COVID Pandemic: Lessons to Learn" (Virtual Mode) has been planned by I-LISS In association with The Tamil Nadu Dr Ambedkar Law University, Chennai, India , JISTaP & Keimyung University, South Korea during 7 - 8 October 2021.

A total of 58 papers have been received from across the globe and grouped under the following Sections:

Section I	Redefining Libraries and Librarianship
Section II	Library Services during COVID 19
Section III	Smart Learning Environment: Role of Libraries
Section IV	Use of Social Media & Social Networks
Section V	Use of OER & MOOCs
Section VI	COVID 19 Implications for Library Management
Section VII	Libraries Professionals Skills and Competencies
Section VIII	User Studies & Information Literacy
Section IX	LIS Education, Research and Metric Studies
Section X	Information Seeking Behavior

There are Invited talks and also contributed papers from different nations such as United States of America, Australia, South Korea, Germany, Japan, Thailand, Indonesia, Sri Lanka, Nigeria, Iran in addition to India.

This conference provides a platform to all stakeholders in the field of libraries and information professions with the objective to promote innovation, augmentation, and utilization of ICT technologies to provide right information to the right user at the right time in a right way during the COVID and post COVID. The conference will be held through Online Mode of the Central Library, The Tamil Nadu Dr Ambedkar Law University, Chennai, Tamil Nadu, India, during 7 – 8 October 2021.

The Editors hope this pre-conference volume can be an example to integrate the theory and the practical applications to the libraries in general and Law libraries in particular in the context of COVID -19 pandemic situation. The Editors thank the Organizers for entrusting the work of editing the proceedings. It is a valuable source for practicing Librarians, LIS and Law

professionals Teachers, researchers and students. The Editors are confident that this volumes would be a valuable addition to the LIS literature.

Contributors to this pre-conference volume are by renowned faculty and practicing LIS and Law professionals. Views expressed in these contributions are of the respective authors only. The Editors are no way responsible for the thought content of the articles. The Editors wish to congratulate the authors for their spontaneous response made by the Organisers of the Conference.

The encouraging support from the Tamilnadu Dr Ambedkar Law University authorities and response from the Co-organizers, LIS and Legal professionals, contributors and others is greatly acknowledged.

The Editors record their deep sense of gratitude and thanks to **Prof. Dong-Geun Oh**, **Professor and Chairman, Keimyung University South Korea, and President of I-LISS** for his continuous support both academically, professionally and also financial support, for writing the **FOREWORD** to this volume and making this mega event more remarkable in the annals of Librarianship in general and Law Librarianship in particular.

The Editors and organisers also thank **Prof. Kathleen Burnett, Professor, Florida State University USA** for delivering the Keynote address.

Finally, the printer M/s.Sree Sankara Associates, Chennai deserves special thanks for undertaking the job systematically and completing in time.

Chennai
27 September 2021 **Editors**

CONTENTS

	Message	v
	Foreword	vii
	Preface	ix
	Section I Redefining Libraries and Librarianship	
1	Information Domains and the Analysis of Distributed Morality in "Always Onlife" Information Societies, **(Keynote address)** *Kathleen Burnett & Gary Burnett*	1
2	Transformation of Libraries / Librarianship due to COVID Pandemic: Lessons to Learn **(Theme Paper)** *Prof. B. Ramesh Babu*	11
3	The response of public libraries in Australia to the COVID-19 pandemic **(Invited paper)** *Prof. Hamid R. Jamali (Speaker), Jane Garner, Simon Wakeling, Philip Hider, Yazdan Mansourian, Holly Randell-Moon & Jessie Lymn*	21
4	Managing Distance Learning in Information Science during the COVID -19 pandemic: A Case of Sukhothai Thammathirat Open University, Thailand **(Invited Paper)** *Prof. Chutima Sacchanand*	25
5	Awareness and Perception Regarding Green Libraries among LIS Professionals at Babasaheb Bhimrao Ambedkar University, Lucknow: A Study *Shraddha Dixit & Prof. M. P. Singh*	37
6	Redefining the Libraries and Librarianship during and after COVID Academic: A way to Education 4.0 *Isha Arya & Mahender Pratap Singh*	41
	Section II Library Services during COVID 19	
7	Some Lessons Learned from Experiences of School Libraries, Including Librarians, in Japan during the Challenging Times of COVID-19. **(Invited paper)** *Zensei Oshiro*	51
8	A Study of Public Services of Public Libraries in Japan during the Challenging Times of COVID-19 - Cases of Osaka City Library, Kobe City Library and Kyoto City Library *Miyuki Yamada, Tsutomu Shihota, Kazuko Maekawa & Zensei Oshiro*	67

9	Library Services and support during COVID-19 Pandemic: A website analysis of IIM Libraries *Nagajyothi H.K. & Ganesan P.*	71
10	Library and Information Services Provision during COVID 19: Ernest Cook Ultrasound Research and Education Institute Library-Mengo Hospital, Uganda's Perspective *Kutyamukama Gitta Alice, Sarah Kaddu PhD & Abubakar Mohammed*	79
11	Transformation of National Institute of Technology-Warangal Library during COVID-19 pandemic *K. Veeranjaneyulu*	85
12	Re-envisioning Libraries and Library Services during the time of crisis: A Lesson to take from the global pandemic *Prathama Borthakur*	95
13	The Transformation of Academic Functioning due to the Impact of COVID-19 Outbreak *A. Bagavathi*	99
14	Impact of Virtual Technology Tools on the Scholarly Communication among Research Scholars of Alagappa University during COVID19: An Analytical Study *M. Sivagami & R. Jeyshankar*	115
	Section III Smart Learning Environments: Role of Libraries	
15	The Roles of Libraries: Supporting Sustainable Development and Closing Smart Divide **(Invited paper)** *Prof. Seungmin Lee*	127
16	The roles of Librarian and Archivist in AI and Bigdata era: Focused on Data quality Management *Jeong Ho Na, Jin Sol Lim & Hyo-Jung Oh*	135
17	Usage of Mobile Technology Applications in Smart Libraries *P. Ganesh N. Siva & S. Vivekanandan*	143
18	A Study on Utilization of Adaptive Technologies and Assistive Devices among Differently abled Students in Arts and Science College Libraries in Tamil Nadu *Ms. Tajun Sabina & R. Jeyshankar*	147
19	Role of LIS professionals for making themselves adapt to smart learning environments during COVID Pandemic Period *Sridevi Baskar, C. Baskaran & Y.Lakshmi*	157
20	Online Learning a Boon to Urban Students and Encumbrance to Rural Students *R. Deepalakshmi*	165

21	An Empirical Study on the Effectiveness of Webinar on the Students of the Government Law Colleges in Tamil Nadu *Hepzibah Beulah*	169
22	Laws Related to Digital Legal Library *Lily Srivastava & Shreyashi Srivastava*	175
	Section IV Use of Social Media & Social Networks	
23	Rethinking the Potentials of Adopting Digital Platforms/Social Networks for Information Service Delivery to Legislators to Curtail the Effect of COVID-19 Pandemic in Nigeria *Shamsuddeen Aliyu Sada & Abubakar Ladan*	185
24	Impact of Social Media Networking Tools in Libraries *S.Vivekanandan, N.Siva & P. Ganesh*	189
25	Impact of Social Media Tools on the Information Gathering and Knowledge Sharing Practices of Research Scholars of Alagappa University during Covid19: An Analytical Study *M. Sivagami & R. Jeyshankar*	195
26	Uses of Social Networking sites (SNSs) in Libraries *Hemavathy & C.Adhilakshmi, C.*	203
27	Academic Social Networking Sites (ASNS) for Collaborative Learning in the Virtual Environmen *Mangai G & Ganesan P.*	207
	Section V Use of OER & MOOCs	
28	Exploring the Growth and Status of Massive Open Online Course (MOOC) Providers and Learners Globally; an Exploratory Analysis *N. Siva, P. Rajendran & S. Vivekanandan*	215
29	Initiatives for Online Learning During COVID-19 Pandemic in SRMIST *P.Rajendran, N.Siva & S.Vivekanandan*	223
30	A Study on Impact of using Electronic Information Resources among the Research Scholars and Students of Madurai Kamaraj University, Madurai *G. Shantha & P. Chellappandi*	229
31	An insight into Open Education Resources initiatives: European Scenario *Madhu Midha*	235
32	Awareness and use of open educational resources in college students in the Sivaganga District, Tamilnadu, India *M. Nagaiah, S. Thanuskodi & A. Alagu*	241

Section VI COVID Implications for Library Management

33 Disaster Managements Strategy for Functional Continuity of Archives against the Pandemic 249
Kippeum Choi, Yoona Kang and Hyo-Jung Oh

34 Human Resource Development in University Libraries: An Analysis of Problems and Prospective Changes 255
A. Senthilkumar

35 COVID Pandemic Implications for Library Management: A Case study of Madras School of Economics (MSE), Chennai (India) 263
K Baskar

36 A Comparative Analysis of Global Intellectual Property Regime, Patent, and Copyright with Indian Intellectual Property Regime, Patent, and Copyright 271
V Ramya

37 Service Quality of Measuring in Libraries, 277
R. Saravanan & B. Sivakumar

Section VII Libraries Professionals Skill and Competencies

38 The COVID Pandemic as Crisis and Catalyst: Future Roles, Skills and Tasks of Information Professionals **(Invited paper)** 283
Prof. Thomas Mandl

39 A study of school librarian's attributes at Primary School Libraries in Thailand under the COVID-19 pandemic 295
Kanyarat Kwiecien, Sutthinan Chuenchom, Jaturong Chitiyaphol, and Suwannee Hoaihongthong

40 Skills for Information Professionals during the COVID-19 Era: A Review of the Literature 299
Jutatip Chanlun

41 Life History Studies on Librarian Role as the Change Agent 305
Gani Nur Pramudyo and Laksmi

42 Digital Literacy Skills and Competencies among the Library and Information Science Students and Research Scholars, University of Delhi during the COVID Pandemic time: A Study 311
Nidhi and Margam Madhusudhan

Section VIII User Studies & Information Literacy

43 Awareness and Perceptions towards Plagiarism among faculty members in Arya P.G. College Panipat (Haryana): A study 325
Sunil & Anil Kumar

44	Attitude towards MOOCs among College Students in Tamil Nadu *Ragitha Radhakrishnan & Kumar Rajendran*	331
45	Mapping patro6n's attitude towards Information technology application in university libraries: An analytical study of two University Libraries of North-India Region *Tarvinder Singh and Prof. Jagtar Singh*	339
46	Second Foreign Language Learners and the importance of Digital Literacy inclusion: Guru Experiences *C. Mallawaarachchi*	351
	Section IX LIS Education Research & Methods of Studies	
47	Cases of Information Science Education Transformation in Thailand in Response to the Digital Disruption *Kanyarat Kwiecien, Siwanath Nanthapichai & Kulthida Tuamsu*	359
48	Comparing JISTaP to Similar LIS Journals Published in Asia: Authorship and Topics *Eungi Kim, Prof. Dong-Geun Oh & Jisuk Yeo*	365
49	Library Herald: A Bibliometric Study (2005-2020) *Juli Devi & K.P. Singh*	373
50	Reflections to Research Productivity of Kurkshetra University Kurukshetra, Haryana (India) From 2011-2020: A Bibliometric Analysis *Seema Parmar; Prof. Balwan Singh & Dinesh Kumari*	381
51	A Study on Scientometric Profiles of Tamil Nadu Agricultural University *S. Louies & K Kaliyaperumal*	387
52	Research Productivity of Maharshi Dayanand University (MDU): A Quantitative Approach *Dinesh Kumari, Neelam Malik & Seema Parmar*	395
53	Websites of Law Colleges in Tamilnadu: A Webometric Analysis *M. Muniyasamy T. Sumathi & R. Jeyshankar*	401
54	Mapping of Research Productivity on Green Building: A Bibliometric Study *Pratibha Prajapati & Mahender Pratap Singh*	409
55	Supreme Court Judgments on Medical Negligence: A Jurimetrics Analysis *N. Suresh & R.Rajyavardhanan*	417
	Section X Information Skills Behavior	
56	Information Seeking Behavior of Law Students: A Study of Law Universities Based in Delhi *Aman Verma*	425

57	Information use behavior in Special Libraries *Rashmi Parekh*	433
58	Information-Seeking Behaviour Online Motorbike Taxi Drivers (Go-Jek) In Bandar Lampung *Katrin Setio & Devi Laksmi*	443
59	Information-Seeking Behaviour Online Motorbike Taxi Drivers (Go-Jek) In Bandar Lampung, *Katrin Setio, Devi Laksmi*	451
60	Redefining the Role of Libraries and ICT: A Study on the Requirements of Law Students *P Sakthivel*	457
61	Importance of Cyber Security in Information Transfer *N. Kala Baskar*	463
62	User satisfaction towards resources and services of Gautam Buddha Central Library at Babasaheb Bhimrao Ambedkar University Lucknow during pandemic: A survey *Komal Kirad & Mahender Pratap Singh*	479
63	Status of Research Data Management Services at Academic Libraries in India: An over view *Nazia Saluddin*	487
64	Information need and information seeking behavior a review of the literature *Purvisha J Patel & Nimesh D Oza*	501
	Author Index	509

Keynote Address

Information Domains and the Analysis of Distributed Morality in "Always On*life*" Information Societies

Kathleen Burnett[1] and Gary Burnett[2]

Introduction

This paper analyzes a recent case in which the use of artificial intelligence in moral decision-making created unintended consequences. The analytic tool employed is the Information Domains framework. The results of this analysis contribute to understanding how artificial agents function in moral decision-making, and provide insights into the complexities of moral agency in our "always onlife" society. In prior work, we have applied the framework successfully to explore the ethics of cyberbullying and immigration control, where the digital creates new affordances that influence individual and social behavior through the acceptance and adoption of new forms of signification. The potential effects of the participation of artificial agents and intelligences in "always onlife" information societies was not considered in this earlier application, and is the subject of this paper.

Background

This paper begins with an explication of the Information Domains framework. It then employs the framework to examine how the inclusion of artificial agents in decision-making affects the moral climate. Two concepts, both derived from Luciano Floridi, are important to this discussion: always onlife, and distributed morality.

"Onlife" is a neologism coined by the European Commission in 2012 to answer the question "What is the impact of information and communication technologies (ICTs) on the human condition." *The Onlife Initiative* explored how ICTs impacted the human condition in a volume published in 2015 [3]. At least four major transformations were identified: "the blurring of the distinction between reality and virtuality; the blurring of the distinction between human, machine and nature; the reversal from information scarcity to information abundance; and the shift from the primacy of entities to the primacy of interactions" [3, p. 7]

Floridi [4] describes distributed morality (DM) as the moral consequences of increasingly intensive interaction between human and artificial moral agents. According to Floridi, the introduction of artificial intelligence among the affordances of ICTs has fundamentally altered moral agency in the 21st century. Traditionally ethicists have taken either one of two positions: either moral responsibility is individually determined, and therefore individual accountability is appropriate; or moral responsibility is socially constructed, and therefore accountability rests with the community. DM problematizes both positions, since the introduction of artificial agents raises new questions. Are artificial agents analogous to individuals? What if different agents share a single program? What would it mean to hold a particular agent responsible? How does shared programming compare with socially constructed morality? Or, should we hold human

1 *Florida State University*
2 *Florida State University*

programmers responsible for every moral decision made by any artificial agent using some piece of the code they constructed?

The third domain of the Information Domains framework—the domain of signification—is a useful resource for examining the interconnectedness and interdependence of the individual and social in human moral decision-making, and may be useful in the analysis of moral responsibility in DM contexts, and of the potential consequences of DM.

Information Domains

Information Domains is proposed as a framework for understanding how distributed morality changes our understanding of agency and responsibility, particularly in the context of hyperconnected information societies, where both human and artificial agents may contribute to the moral decision-making.

Information domains, first outlined in Burnett, G. [5], draws upon previous work in theory, e.g. [6-8] as well as cultural and philosophical hermeneutics, e.g. [9-12]. It includes three "domains," outlined below. While these three *domains* – individual, social, and signification – look back to the history of LIS literature, they also, we argue, have the potential to illuminate current issues in information behavior and information ethics.

Domain of the Individual

Within the domain of the individual, three factors play predominant roles: First, each individual perceives the world – as well as their own particular information needs – through their own unique cognitive characteristics, often defined, as in Belkin [13] and Dervin [14] as an anomalous state of knowledge or an information gap; individuals seek information to bridge this gap. Second, individuals experience information needs and the process of information seeking through the filter of their own emotions (see, e.g. Kulthau [15]. And, finally, individuals interact with the world through their own particular physical characteristics, ranging from simple things such as height to more complex characteristics often defined as *disabilities*; for example, specific personal characteristics such as blindness or confinement to a wheelchair have direct implications for an individual's ability to search for, find, and use information.

Domain of the Social

The work of Chatman (e.g. [16-19] and her co-authors [6] turns away from a conceptualization of the individual as the center of information-related phenomena, emphasizing social factors as the shapers of information behavior within what she called *small worlds*. However, Chatman relies on an extremely constrained notion of the boundaries around those worlds, arguing that, while individual behaviors are meaningful only within their localized social worlds, such worlds are, themselves, isolated entities allowing few, if any influences from external forces into their settings [6].

Melding Chatman's work with Habermas' notion of the *lifeworld* – a culture-wide sum of all available information resources and channels within which both individuals and smaller social worlds are situated – the theory of information worlds [20] proposes that, while individual characteristics play important roles in information behaviors, all information-related activities are *also* inextricably socially situated; the theory further proposes that worlds are not all *small*, but exist at a wide variety of scales and sizes, from the absolutely localized (e.g. small families) to the global, and that these many "information worlds" interact with and influence each other

in a variety of ways across different types of *boundaries*. Through social interaction, particular information worlds maintain their own *social norms* (commonly agreed-upon standards governing acceptable forms of observable behavior) and *information value* (agreed-upon scales for assessing the relative importance of different kinds of information and the ways in which such information may be valued).

Domain of Signification

Human users of information, whether conceptualized as individuals or as social groups, do not interact with information as an abstraction, but always as something encoded and communicated in some way via a material system of representation, whether writing, visualization, or some other medium for recording and storing – in a very literal sense, Buckland's *Information as Thing* [21]. Information cannot be usefully conceptualized, sought, retrieved, or used without the mediation of representational practices.

Entwined Domains

These three domains – the individual, the social, and signification – are inextricably intertwined with one another. Individuals occupy social worlds and interact with one another through the mediation of signification. Conversely, the domain of the social is the context within which individuals live, exchange information, and engage with each other through signification and representational practices.

One implication of this is that information itself is neither static nor disengaged, but is, rather, one component of a complex process of interaction, mediation, and creation of meaning involving all three domains. In particular, information ethics, to which we now turn our attention, is a locus of interaction between individuals and other individuals, between individuals and social collectives, and across different social groupings; signification practices hold the entire process together and make it work. In what follows, we examine issues related to information ethics, informed by the three information domains.

Information Ethics and Distributed Morality

Information Ethics

Information ethics explores the relationship between the creation, organization, dissemination, and use of information, and the ethical standards and moral codes governing human conduct. In the past we have used technologies to facilitate and empower our individual information behaviors, operating from the assumption that technology is ethically neutral, and is always human-directed. Recent experience suggests that this assumption is no longer viable. In our prior exploration of cyber bullying [22], we noted that it is often more difficult to detect a bully and assign responsibility in cyber bullying contexts than in traditional bullying. In early instances of cyber bullying, this was primarily explained by the fact that most cyber bullies operate under a cloak of anonymity, whereas traditional bullying usually (but not always) involves the co-presence of the bully and the victim. In more recent cases, cyber bullying has increasingly been conducted through the use of bots, which may be deployed randomly, so that the bully may have no specific knowledge of the victim or the outcome of the bullying. Who is responsible in such a situation when a trolling bot bullies a vulnerable individual? What recourse does the vulnerable individual have against this virtually-instantiated terrorization? In the context of a social media platform, how do we distinguish the actions of an artificial intelligence from those of a human participant? Is this even possible, and ultimately, does it even matter? A human is terrorized either

way.

Distributed Morality (DM)

As Floridi [4] observes, one of the unexpected consequences of living "always onlife" is that morality is inevitably and unavoidably distributed across human and artificial agents. "ICTs are a most influential empowering factor behind the emergence of DM, working as powerful moral enablers …" [4, p. 270]. Traditional ethics theories assign moral responsibility to human individuals or groups. Lay ethics sometimes assigns responsibility to animals, but rarely to objects.

What happens when objects are repurposed to represent (or signify) agents from the individual and social domains, and are imbued with intelligence? These objects, or artificial agents, act within these domains. Even if we assume that they are incapable of moral decision-making, their actions have moral consequences.

The Amazon Case

Background

In October 2018, Reuter's Business News [23] reported that Amazon had discontinued a secret experiment to develop a hiring tool that would use AI to screen resumes. The experiment was reported to have started four years earlier at the Amazon Edinboro facility, and to have engaged up to 12 scientists at its height. Five unnamed people familiar with the project appear to be the only sources for this general interest news story, which provides very little detail about the nature of the project or the reasons for its demise. Several reports appeared in reputable news organs (e.g., the BBC, The Guardian, and Slate) over the week following the Reuter's story, all suggesting that a discovery that the AI had taught itself sexual bias had led Amazon to abandon the experiment. A feature story on interestingengineering.com included commentary on the potential for racist and sexual bias in machine learning by the chief AI engineer at Ziff Ben Taylor, but no additional primary sources were mentioned in any of the articles, and it appears no further investigation was conducted.

What little information there is on the goal of the experiment indicates that it was initially designed to speed up the hiring process. "Everyone wanted this holy grail. They literally wanted it to be an engine where I'm going to give you 100 resumes, it will spit out the top five, and we'll hire those," according to one Reuter's source [23]. The plan was to have an AI use a rating system similar to the one used by Amazon shoppers to rate products. Within a year, they realized that the AI's ratings were far from gender-neutral; in fact, the AI was penalizing candidates who had attended women's colleges or participated in women's clubs or sports. In other words, it discerned differences between the candidates' resumes and those contained in the training database, and interpreted these differences as signifying negative values. The engineers thereafter "edited the programs to make them neutral to these particular terms" [23]. At least one report indicates that they were satisfied that this problem had been addressed successfully prior to the project being scrapped [23]. So why did Amazon scrap the project three years later? According to the Reuter's report sources indicated that the fact that one type of bias had been identified and corrected "was no guarantee that the machines would not devise other ways of sorting candidates that could prove discriminatory" [24]

Domain of Signification

Artificial intelligence is an important new form of signification. Although its roots can

be traced back to World War II, it is only with the development of end-user technologies such as Amazon's Alexa and Google's Home that AI has moved from speculative science fiction to public life in advanced information societies. In the Amazon case, the importance of considering the domain of signification is clearly evident. Reuter's and subsequent reports trace the source for the AI's bias against female job candidates to the data set used to train the AI. This data set signifies (or represents) the successful applicants for technical positions over the previous decade. The data set excludes applicants who were not successful, regardless of whether they were qualified or not, thereby excluding qualified applicants (including women) who were not selected [23]. It also excludes qualified candidates who did not apply for the position. These may well have included individuals – including women – who didn't apply because they anticipated hiring bias, or because they perceived that the work practices and/or conditions at Amazon were not favorable to, or supportive of, women. It should have come as no surprise to the programming team that the AI trained with this data set would perpetuate bias in its hiring recommendations. The evidence reported in the media was readily discernible; the AI rejected resumes that included degrees earned at two women's colleges, as well as those that included participation on women's sports teams or clubs. Identifying and correcting for such obvious issues in signification should not have been difficult. The media reports make no mention of more deeply hidden or subtler biases that would be harder to identify, and perhaps impossible to rectify; it is likely that it was the potential for their existence that led to scrapping the project a few years later. Recent reports mention that Amazon is once again experimenting with incorporating AI in its hiring process; it is reasonable to assume that the purpose has been re-examined, the training data set diversified, and that lessons have been learned that will lead to greater attention to signification in the process.

Domain of the Individual

Among the consequences of implementation of an AI trained from a data set with the signification issues such as those present in this experiment, are rejection of resumes prior to human review of some of the most qualified candidates for the positions, which would have in turn excluded many qualified female candidates from the hiring process and from the opportunity to earn incomes and fulfill their individual potentials in the industry. Some of these may have been diverted to jobs in different economic sectors. Others may have been excluded from participating in the development of products that could have helped other women to succeed, and therefore, have been denied a sense of fulfilment that they might otherwise achieved. In other words, decisions rooted in automating a process in the interest of efficiency could have had real and significant impact on many individual's lives,

Domain of the Social

According to all reports, Amazon began this process with the intent to speed up the hiring process within the firm. The project was redirected following the identification of machine-learnt gender bias, and scrapped a few years later. Analyzing this situation from the perspective of the social domain, it is clear that Amazon's original motive was to improve its competitive edge by making the hiring process more efficient. Focused on the technical problem of training the AI melded with an underdeveloped business objective, Amazon failed to consider the social inequities present in its own hiring practices, and the social milieu within which Amazon operates. Amazon adopted the common assumptions that data and technology are both neutral, and therefore unbiased and amoral. The data set they selected was an artifact of an organizational process that the company knew resulted in gender bias. An artifact of a biased process embeds that bias. Even if the programmers had scrubbed the data first, the subpopulation it represented would

never have reflected the total potential population of qualified individuals.

One important question to examine from the perspective of the social domain is whether undetected machine-learnt bias could remain obscured well past the point where it has done irreparable social harm, In the Amazon case, the AI learned and implemented human bias very quickly, but it is unclear whether the reported instances were representative of all the types of bias in the data, identified or potential. It is equally unclear from the reports what the programmers did to correct for the problem, and therefore difficult to determine whether the AI could be trained to identify and correct for other biases as they were uncovered in the future. Certainly, the early learned bias that was reported by the media was not well obscured, or it would not have been detected so readily. However, the engineers thought they had resolved this bias well before Amazon scrapped the project, which makes it reasonable to speculate that perhaps other, less-readily identifiable, biases might have been uncovered further along in the project's lifecycle, and the fact that recent reports have indicated that Amazon may be conducting a new experiment (presumably with a different data set for training) adds credence to that speculation. If the AI trained on the initial data set been implemented to "spit out the top five, and … hire those" [23] as the reports indicate was the initial intent, Amazon would have faced a moral and legal dilemma of epic proportions. Gender equity at Amazon would have remained an unattainable goal, but, more broadly, the underrepresentation of women in IT in the U.S. would have increased inexplicably. The lack of participation by women in the company and the industry as a whole is known to affect gender equity in product availability as well as employment. This reinforces existing barriers to women's participation in IT and in always onlife societies more broadly; AI, as a tool of signification, would have significant impact not only on the lives of individuals, but on the discourse about information ethics, and the fabric of society as a whole.

Conclusion

Employing the information domains framework to the examination of a single example of the issues surrounding the unexamined participation of artificial intelligence in always onlife information worlds raises more questions than it answers, but this is entirely appropriate in an exploratory study like this one designed to contribute to the understanding of how artificial agents function in moral decision-making, and provide insights into the complexities of moral agency in our always onlife social world. The framework points to key research questions such as: how is signification altered as we move toward a society in which distributed morality is an inevitable reality; what legal remedies do we need to put in place now so that the rights of human individuals to life, liberty, and the pursuit of happiness are protected in the future; and how do we theorize a socially-accepted information ethics to cope with the social world our children will inherit?

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SECTION I

REDEFINING LIBRARIES AND LIBRARIANSHIP

Theme Paper

TRANSFORMATION OF LIBRARIES/ LIBRARIANSHIP DUE TO COVID PANDEMIC: LESSONS TO LEARN

Prof. Dr. B. Ramesh Babu[1]

Introduction

> *"Without the library, you have no civilization". "Without libraries what have we? We have no past, no future". -- Ray Bradbury*
>
> *"Libraries store the energy that fuels the imagination. They open up windows to the world and inspire us to explore and achieve, and contribute to improving our quality of life."*
> *-Sidney Sheldon (1917-2007. American writer and producer)*
>
> *The origin of librarianship lies in the creation of libraries: the profession was created to serve the needs of the institution" - - O'Connor, 2009, p. 274*

Library and Information Services are facing many changes and challenges due to the massive development of ICT in general and Covid pandemic in recent months, in particular. Today's environmental pressures are forcing libraries to focus on accelerating technology, innovation, technical complexities, social and legal issues, cost, risk, competence, skills of staff and technology itself. Since the dawn of 21st Century, libraries are facing serious transition and transformation and more particularly due to the present Covid pandemic environment. Accordingly, functioning of libraries is changing dramatically. The widespread COVID-19 outbreak imposed sudden library closures and brought about the need for the library sectors to find suitable environment during times where the new norm was the confinement of patrons and staff alike, combined with rigorous social distancing measures in the libraries. A library being a third-place became a nostalgic memory. Under the new circumstances, the libraries' role had to be reshaped in a completely digital operation space which is very different from providing a set of digital services; in fact, this requires redesigning the services in a process called digital transformation.

Transformation of Libraries from Traditional to Hybrid: Crisis or Transformation?

The advances in digital technologies continue to play a critical role in shaping the future of libraries. The digital revolutions in broadband, mobile devices, social networking and cloud computing have led to a fundamental transformation of physical libraries into the digital domain (Fig.1) . Conventionally library resources and services were delivered in a physical building. Now most libraries have maintained their virtual presence in addition to their physical asset. The

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library and information scenario are changing at a dynamic speed and there is a paradigm shift in the information storage media, shift from ownership of documents to access to information; intermediary to end user model of services and location of specific libraries to digital/virtual/ hybrid libraries. Librarianship is a relevant and thriving profession, although faced with challenges as a result of the electronic transformation of professional life and the present Covid pandemic environment. The profession of librarianship is in crisis **(Hillenbrand, 2005)** due to many factors and the Covid pandemic is one among the factors. Many public service professions exist in a state of crisis, resulting from various factors that bring into question the knowledge, skills, education, and responsibilities of the fields' members **(McGuigan, 2011).** The field of librarianship is not an exception. Many libraries, archives, and knowledge-management centers are now facing existential threats due to budget cuts and the recent Covid pandemic. The libraries and other information institutions are often among the first to have their budgets cut during hard times and that this is because their administrators have, in many cases, repeatedly failed to communicate the case for both the value of their institutions and the professionalism of their staffs.

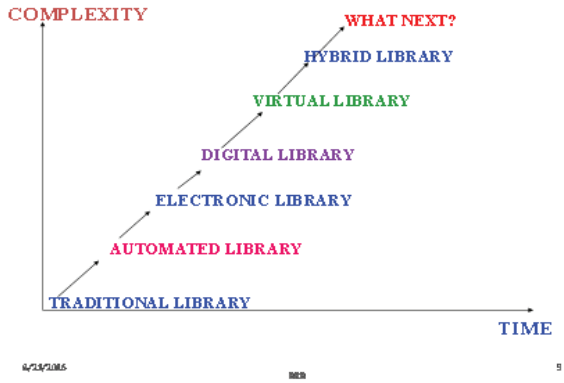

Fig: 1 Future Dimensions of Libraries

Librarianship in the Post Covid pandemic: Is Stereotype or Dynamism?

Librarianship developed as a service-oriented, client-Centered profession, one in which meeting the client's needs as of more importance than the expertise of the professional. This perspective has differentiated librarianship from other professions, such as law or medicine **(Danner, 1998).** The ethical dimension of librarianship is of critical importance in characterizing the identity of the profession. The profession shall not be stereotype in the present pandemic environment but shall exhibit the element of dynamism with necessary changes to meet the information needs of the users in the current pandemic situation. In accordance with this emerging scenario, the library and information professionals' role are also subjected to the changes. To meet the current requirements, library professionals must be able to perform various tasks coping up with the changes in technological environment.

Electronic information explosion, rapid changes in development of ICT technologies, growing demand of high-quality products and services have direct impact on libraries as active parts of the education process. Libraries are at the crossroads and have to rethink their workflows, handle properly electronic information, access and use electronic information for teaching and learning, restructure public services and their role within the society. In order to reinforce and to bring dynamism in the profession, the human element of librarianship must be promoted through an enhanced emphasis on the educational mission of librarians within the ethical framework of the profession.

Major Changes for Libraries in the Covid Environment

Libraries in India are facing a piquant situation and unforeseen changes in Covid pandemic. Dramatic changes are in the offing for libraries as the result of Covid pandemic, such as: Changes in the form of the library; Changes in the relationship between an institution's library, its users and its information technology division; Changes in the way collections are acquired, organized, stored, and delivered; and Changes in the delivery of library services and facilities**.** Similarly, there is a change in the needs and interests of the readers. They struggle to predict the learning styles of the Next Generation users in future. They are reeling under pressure to fulfill their obligation of meeting the diverse information needs of clientele. ICT has brought in sweeping changes in the traditional way libraries are functioning. The rapid growth of digital technology challenges libraries both in positive and negative ways. LIS professionals have always been the early adopters of these new technologies to enhance services and digital technologies are not an exception. However, they need to evaluate, measure the impact of information technology on them. This will equip them with the knowledge of turning this information Technology into a boon for improving their services. In order to work efficiently and effectively in the fast-changing digital age, a new generation of LIS professionals should have the qualifications in providing information as well as dynamically exercising capacity building skills, personal skills, generic skills and discipline-specific knowledge. Today, with the advent of both information and communication technologies and global competition, the scenario for libraries in India is changing fast.

Challenges for Libraries in the Covid Environment

Davis and Lundstrom (2011) stated that, *"libraries face a host of new challenges, among them finding ways to stay relevant in the Information Age. Libraries are required to do more with less, and the skills library professionals need continue to evolve".* Poor infrastructure facilities, outdated mindsets and lack of exposure among professionals to the latest developments have been bottlenecks against progress in Indian libraries for a long time. Libraries are struggling in building digital collection and disseminating digital information, due to the following factors such as: lack of ICT infrastructure; lack of ICT trained manpower; lack of awareness of the digital resources; lack of user demand; lack of financial support; lack of access like computer facilities; lack of knowledge about the digital preservation methods; and lack of training for the digital access. In a fast-changing, expanding diverse global digital information environment, libraries are facing a variety of complex challenges from multiple sectors of knowledge society during the Covid Pandemic.

The major challenges are:

- Information explosion in a variety of channels and formats.
- Developments in Information and Communication Technology (ICT).
- Growth and usage of web resources/ digital resources.

- Changing dimensions of User's expectations and information use behaviour.
- Emergence and adoption of Virtual learning environment.
- Functioning of Virtual educational institutions
- Development of digital, virtual, and hybrid libraries.
- Emergence of Online bookshops and information services.

These challenges have called for orientation, reengineering, transformation, and great changes in the information environment, library functions, and the roles of LIS professionals with better personal, professional and technological competencies. Application of new ICT in to the libraries immediately requires improvement of different kinds of skills and knowledge in library information science professionals. Continuous staff training on emerging technologies is essential to learn, improve and develop various kinds of professional skills, knowledge and competencies. Planning for reopening of libraries is particularly challenging amid the unknowns of the continuing pandemic. Therefore, the library professionals have to act in a proactive manner to support the changes due to Covid pandemic.

Reengineering of Libraries

With the growing emphasis on quality improvements, libraries adopting re-engineering management techniques to give their best in the form of information products and services to the users. The reengineering is the application of technology and management science to the modification of existing systems, organizations, process, products, in order to make them more effective, efficient and responsive. The re-engineering of libraries is needed:

- To propose a step by step method for innovative library and information services in the post Covid pandemic environment
- To save the time of users as well as librarians and to provide pinpoint information with seamless accessing
- To achieve improvement in the performance
- To cope up with the challenges posed by Covid pandemic
- To fulfill multidimensional information needs of library users

Redefining the Libraries during and after Covid Pandemic

In the past a library's collection was what it physically owned and housed and resources would be listed in the library's catalogue. Today libraries provide access to a vast array of information resources some of which it owns, its physical collection, but much of it licensed access to remote electronic collections - databases, electronic journals or e-books, digital images and a wide variety of links to free web sites. In many libraries, not all resources are accessible through the catalogue and users must often navigate various parts of a library's web site in a quest for resources to effectively meet their information needs. Many users may never fully explore the vast range of resources available to them due to the challenges posed by resource discovery.

Can libraries survive and thrive in the future? Of course, they can, provided if they are willing to make tough choices to let go of the past, seriously review build partnerships that are needed to cement the role of the library as more than the symbol of the heart of the society. Libraries in future increasingly find themselves dividing their precious work time between their normal assigned duties and the unwelcomed role of 'traffic cop' , having to adjudicate and referee disputes among users signing up for time on public Internet terminals **(Shuman, 2001, p.41).**

The library of the future will be challenged by the need to balance traditional collection and service models with resource needs for new initiatives. Primary users of the library in the future will continue to be students, faculty, policy and decision makers, administrators and staff of the library. However, characteristics of these groups are changing, as is the nature of their use of library services. Demographics show that users are increasingly diverse, often older, more independent and frequently part-time. Technology will continue to expand opportunities and provide new challenges for libraries to serve remote users, distant learners and faculty members too. Teachers and librarians will seek new approaches to learning, including just-in-time learning, life-long learning and distance learning.

Need of the Hour: Preparing new era of Skills and Competencies for the LIS professionals in post Covid environment

The future of librarianship in India faces many challenges. Today's challenges create a dynamic environment in which librarians must perform unique and essential roles in shaping culture and developing citizens with democratic ideals. The knowledge needs of the twenty-first century will demand leadership that can articulate vision clearly and forcefully (**Alire and Evans, 2013, p.342).** For libraries, the management concerns are becoming as crucial as technical processes technology adoption and assimilation issues. The management of change is itself is a great challenge. There is a need for special management to ensure greater flow of information, requirement for fund allocation, more staff recruitment and support for technological up gradation.

The dramatic changes resulted due to Covid pandemic have influenced significantly on the knowledge and skills requirements for LIS professionals practicing in the changing environment. Current developments are directly affecting the knowledge, competencies and skill requirements of the information professionals to do their job effectively. These changes are occurring at such a fast pace that each day new skills and approaches are required to handle the information and unfurl the new ideas. Basic competencies for every librarian include knowing what the internet is and is not; evaluating and using hardware, software and networks; and understanding basic computer and information science concepts. **Farkas (2006),** identifies the basic competencies of the LIS professionals which includes,

- Ability to embrace change
- Comfort in the online medium
- Ability to troubleshoot new technologies
- Ability to easily learn new technologies; and
- Ability to keep up with the new ideas in technology and librarianship

In addition to the above, the core competencies include the following:

- Demonstrates a strong commitment to excellent customer service.
- Recognizes and addresses the diverse nature of the library's patrons and community.
- Understands and supports the culture and context of the library and, if applicable, its parent institution.
- Demonstrates knowledge of the library system and the library profession
- Understands the social, political, and economic context in which the library exists
- Demonstrates knowledge of library and information science theory, information creation, organization, and delivery.

- Adheres to the Code of Ethics.
- Exhibits leadership skills including critical thinking, risk taking, and creativity, regardless of position within the management structure.
- Demonstrates commitment to working with others to achieve common goals.
- Acts within the organization to implement the principles of knowledge management.
- Exhibits an understanding of the importance of a multidisciplinary and cross-functional approach to programs and projects within the organization.
- Monitors and implements changes in technology and information systems.
- Shares knowledge and expertise with users and colleagues.
- Displays excellent communication skills and is able to promote the library and advocate for its needs.
- Communicates effectively with publishers and other information providers to advance the interests of the library.
- Recognizes the value of professional networking and actively participates in professional associations. ***(Source: http://aallnet.org/prodev/competencies.asp accessed on 15th August 2021).***

Professional Competencies of new era LIS professionals are as follows:

- Possess expert knowledge of the content of information resources, including the ability to critically evaluate and filter them
- Need specialized subject knowledge appropriate to the business of the organization or client
- Develops and manages convenient, accessible and cost-effective information services that are aligned with the strategic directions of the organization
- Provides excellent instruction and support for library and information service users• assesses information needs and designs and markets value-added information services and products to meet identified needs
- Uses appropriate information technology to acquire, organize and disseminate information
- Uses appropriate business and management approaches to communicate the importance of information services to senior management
- Develops specialized information products for use inside or outside the organization or by individual clients
- Evaluates the outcomes of information use and conducts research related to the solution of information management problems
- Continually improves information services in response to the changing needs
- Is an effective member of the senior management team and a consultant to the organization on information issues **(Hashim and Mokhtar, 2012)**

The other competencies include the following:

- Actively pursues personal and professional growth through continuing education.
- How to develop and build Skills?
- Improving your skills can only benefit your career and help your organization.
- Exposure to work situations is extremely important in developing skills or self-management and self-regulation strategies **(Ramesh Babu, and Ramesha 2007).**

9Cs Vs. Role of Libraries in Covid Pandemic Environment

Libraries in the future need to follow the 9Cs as driving forces (Fig. 2) and these will be the guiding force for the LIS professionals to survive in any situation whether it is pre-covid or post-covid or any environment. Libraries will need to find ways to work more closely with the clientele and need to find more interesting ways to teach information finding skills. They in future need to reorient their collections, services and facilities to keep pace with the advancements in ICT and their application.

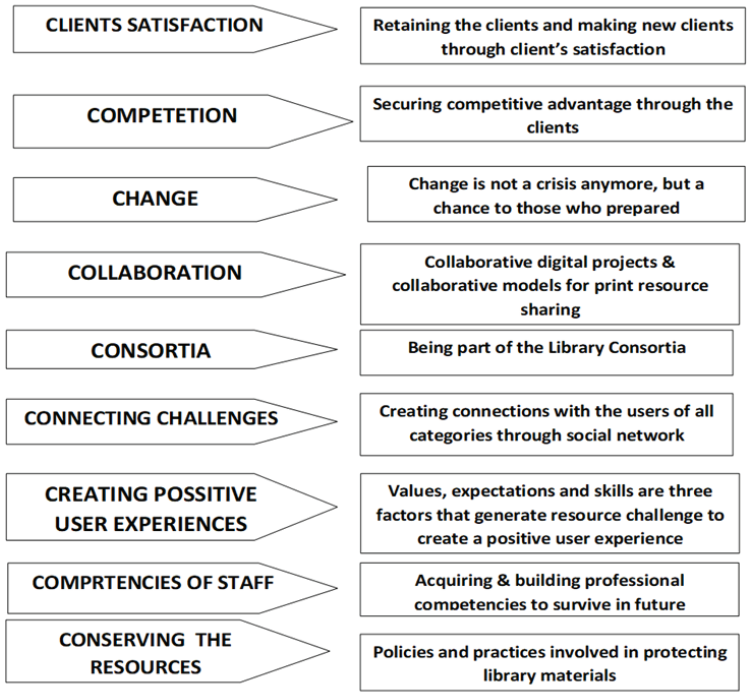

Fig. 2. Nine Cs Vs Role of Libraries in the Covid Pandemic
(Adopted from Oh, 2007 and Ramesh Babu, 2019)

As a result, the implications for libraries entail certain challenges such as Ensuring quality, integrity and curation of digital information; Sustaining today's evolving digital service environments; Bridging and connecting different worlds, disciplines and paradigms for knowing and understanding; and Archiving research data in the digital world. The role of the librarian has traditionally revolved around managing and developing collections to support teaching, learning, and research, in addition to providing programs that support the development of information literacy skills in clientele. In a digitally connected world where the library is no longer the de facto information resource, librarians have grappled with a growing ambiguity and uncertainty around the future of the profession and their role in higher education as a consequence of Covid pandemic. They shall provide instruction to students and teaching staff on managing their own professional identity, by incorporating workshops on setting up a researcher profile using tools such as Google Scholar, ResearchGate, and ORCID.

The libraries of the educational institutions shall formulate and implement methodology for the identification of information needs as :

- Continuous refinement and updating of their information needs;
- Study of Faculty and students and their specific environment;
- Study of the academic/research activities in the institution; andConducting of formal/ informal interviews with the faculty and selective students groups

The expected role of librarians in the academic world includes the following:

- To help establish teaching models that are not teacher- and classroom-centered and that are accessible at all times of the day and night, with video, sound, pictures, and text all playing an important part;
- To provide professional help in creating home pages for faculty; in designing appropriate information-resources based curricula; in placing course lectures, graphics, other media, and bibliographies in the Web, where students can access them from wherever they may be at any time; and
- To help in devising assignments that can be completed electronically **(Rapple 1997)**

Some statements from the libraries in Covid environment are:

- Mobile phones used to be banned in libraries. Now they are the libraries. — David Nicholas, Founder Director of Cyber Research UK
- Libraries will be affected by the growth in academic open access publications. This is a both opportunity and threat.
- David Lankes in his book *The Atlas of New Librarianship* states that 'future libraries will be valued more for services than for book collections'.
- It is our clients who will play a strong role in shaping libraries of the future.- Griffith University
- In the future, libraries will serve more culturally diverse and physically dense communities under the pressure of limited resources.

Conclusion

Librarianship as a profession faces a crisis of identity as a result of the changing nature of technology, including the access to electronic resources, the altering scholarly publishing paradigm, and the abundance of free, although often unfiltered, information via the world wide web. **(McGuigan, 2011, p.562).** Added to this the present Covid pandemic environment also contribute to this crisis. Librarianship needs to look to public administration to enhance its ethical code to promote professionalism **(McGuigan, 2011, p.572).** In the domain of information seeking, LIS professionals have to perform ***four major roles*** namely; firstly, as ***filters,*** making selections from a large array of knowledge resources, secondly as ***navigators*****,** guiding the users, thirdly as ***educators,*** teaching users the core skills of information literacy and fourthly ***as information disseminators***, assertively linking the users to resources. It is apparent that the information environment is completely transformed today and will be further changed in future

also. Therefore, the future librarians in the third millennium have to revamp accordingly with new skills and competencies to equip themselves to assume new roles fitting to 21st century library world. It is the only way to thrive and survive in the future library world.

To conclude with the words of **Cohen (1997),** who said, "*We are not quite sure what adventures we will have or what we will find, but there will undoubtedly be times of frustration as well as of great excitement"*. The future of libraries and librarianship thus hinges on what happens to the perpetually changing work of the profession in its three contexts: the context of larger social and cultural forces, the context of other competing occupations, and the context of competing organisations and commodities **(Abbott, 1998, p 3).** The librarian's role in the post covid pandemic times will continue to include selection of suitable resources, providing access to such resources, offering instruction and assistance to patrons in interpreting resources, and preserving both the medium and the information contained therein. Librarians will also continue their role in the broader arena of society in representing issues of access to information to governments and other decision-making bodies.

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Invited Paper

THE RESPONSE OF PUBLIC LIBRARIES IN AUSTRALIA TO THE COVID-19 PANDEMIC

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Introduction

The COVID-19 pandemic pushed many organisations to their limits and tested their resilience, flexibility, and ability to adapt. Public libraries were no exception. The impact of the pandemic on libraries including public libraries and how they have responded to the pandemic have been already studied in several countries, and they mostly illustrate a story of resilience and innovation. Here I report some of the key findings of a multi-stage mixed-method study conducted in Australia in 2020 (See Garner et al, 2021, Wakeling et al., 2021).

The aim of our study was to inform the development of public library policy and practices by exploring and understanding the role and performance of Australian public libraries in the lives of their users during times of community crisis. To achieve this the study sought to identify how public libraries responded to the COVID-19 pandemic in terms of services and resources offered, to identify challenges and gaps in services and resources, to understand how staff saw their role in serving their communities and to understand users' interaction with libraries.

Australia is a vast country (2.4 times bigger than India) with a small population (about 25m, small relative to most Asian countries). It has 1,407 public library branches with a total library services' expenditure of $1,286.9m in the 2019-2020 financial year (Queensland State Library, 2021). On 24th March 2020, the Australian government declared the immediate closure of libraries as part of the national attempt to control the spread of COVID-19.

Study design

The study, which was completed with a grant from the Charles Sturt University and in partnership with The Australian Public Library Alliance (APLA) the Australian Library and Information Association (ALIA), included two phases. The first phase was a national survey of public library managers across Australia to explore issues related to supporting communities, maintaining services, making decisions, staffing and challenges faced by libraries. In total, 212 public library authority managers completed an online questionnaire survey in August 2020 representing 695 public library branch locations. The second phase included three case studies, one remote, one regional, and one metropolitan library were studied as cases. In-depth online interviews were conducted with fifteen library staff to understand how their role responded to the crisis. A survey (both online and print) of users of these three libraries was conducted to understand their engagement with library services and resources. More than 550 users participated in the survey. And finally, where available, usage data of the libraries' resources and services before and after the pandemic were analysed to understand users' behaviour during the crisis.

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Findings

The survey of managers in the first phase revealed that the libraries faced immediate challenges after the closure of their physical sites, especially concerning human resources. However, they responded with speed and agility, establishing new services and expanding some of the existing ones. Libraries showed adaptability in their services and used information technology effectively. Staffing was the main challenge with the loss of volunteers and casual staff hours, relocation of some of the permanent staff (e.g., to help the city council) and remote work arrangements.

The case studies in the second phase of the study allowed a closer examination of how libraries responded to the COVID-19 pandemic. While there were differences between the three libraries, some overall trends emerged. The analysis of the usage data indicated a considerable increase in the use of online collections during the period of physical closure, perhaps not a surprising finding. Some of the online events such as story time also proved popular. Users made the most of the short opportunity for borrowing items right before lockdown and this showed itself as a spike in the lending data.

The survey of the users revealed that borrowing books from the sites of the libraries was the most used and valued service before the crisis. This value of print books continued into the crisis period as the most valued service during the physical closure, at least for those who used the services, was Click & Collect, which was a service for borrowing books. Another trend concerning the value of services was that generally service users associated more value to the services, in most cases, during the crisis compared to before the crisis. Email from the library and library websites appeared to be the most common way of learning about library services during the crisis. When it came to the role of libraries in providing access to health-related information, there wasn't a clear role or expectation. While about half of respondents thought it was the role of the library to provide such access, more than half of the respondents didn't know about such service in their libraries.

The interviews captured many interesting details about the operations of the three case study libraries during the crisis. The existing strategies and operational plans of libraries were not quite suitable for the COVID situation and as a result, library managers had to face the difficulty of planning and adjusting their plans as the crisis unfolded. Libraries showed innovative collaborations, both amongst themselves but also with other relevant organisations. The coordination, communication and occasionally negotiation with parent organisations (i.e., councils) showed how a challenging situation was also gradually used, in some cases, as an opportunity. Libraries generally appeared to have done a good job in conveying the value of their library for the community to their parent bodies, and councils generally were supportive of libraries and their operations.

Conclusion

Overall, the study showed how public libraries in Australia played an important role in the lives of their users. While libraries faced several challenges, which varied depending on the type of libraries, including challenges related to staffing, remote working, technical capacity, coordination with parent bodies, and wellbeing of staff, the overall picture of libraries' response was positive. Libraries learned and improved during the crisis, planning for instance got better as the crisis continued. There were lessons to be learned for improvement for the future in relation to

decision making processes, communication, sharing of resources amongst libraries, preparation and planning for similar situations, and support for library staff.

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Invited Paper

MANAGING DISTANCE LEARNING IN INFORMATION SCIENCE DURING THE COVID -19 PANDEMIC: A CASE OF SUKHOTHAI THAMMATHIRAT OPEN UNIVERSITY, THAILAND

Prof. Chutima Sacchanand[1]

Introduction

Covid-19 as a global threat to humanity has forced social distancing, physical closure of educational institutions and global shutdown of educational activities. Higher education institutions need to sudden shift from face to face teaching and learning and traditional distance learning to entire online learning courses and programs whereby teaching and learning is undertaken remotely on digital platform and in an online environment. Emergency online teaching (EOT) offered in response to a crisis such as COVID-19 is not the same as well-planned online learning experiences (Hodges, Moore, Lockee, Trust, & Bond, 2020 ; Lorenza & Carter, 2021, p.1). COVID 19 crisis serves as a wake up call for a transformation of the entire higher education landscape and creates new insight in distance learning during the pandemic and the new normal .

Challenges of distance learning in higher education in Thailand during the COVID 19 pandemic

Distance learning or distance education has a relatively long history that spans almost two centuries (Spector, Merrill, Merrienboer & Driscoll,2008). Its growth has been aided by social, economic and technological advances that have re-positioned its role within higher education from the periphery to center stage. (Courtney & Wilhoite-Mathews, 2015, p.262). Distance learning which was long established in many countries including Thailand, has been recognized throughout the world as an accepted modality for providing lifelong education, a viable alternative to campus-based education , and an independent and interactive educational access at all levels. It used a wide range of technologies to deliver courses and educational services to distance learners.

The COVID 19 pandemic has challenged the education system across the world and forced educators to shift to an emergency online mode of teaching and learning. Many higher institutions and teaching faculty that were earlier reluctant to change their traditional pedagogical approach had to shift to entire online teaching. The traditional distance learning was forced to move from correspondence or print based distance learning and blended learning to entire online learning. It is well recognized that online learning is no more a supplement or an option but a necessity, a promise, a bone and a new normal. In Thailand, even though all open universities that offer distance learning programs as well as most higher education institutions especially universities under the Ministry of Higher Education, Science, Research and Innovation have already experienced online learning, the degree of readiness for the rapid transition to an entire online environment was unequal across all higher institutions in the country and they varied greatly from one university to another according to the affiliated

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ministries, type and size of the universities. As mentioned by Lorenza & Carter (2021), emergency online teaching (EOT) due to COVID19 is different to well-planned online learning. The unplanned, rapid and uncertain duration of what happened presented challenges to higher institutions worldwide to overcome with this transition. Some major challenges in managing the distance learning in the online environment during this crisis can be summarized as following:

Students: The transition from classroom learning to online classes has left many students behind especially those with socio-economic problems. Some students without devices and reliable internet access and technology at home struggle to participate in digital learning. Some other students' difficulties include lack of motivation to learn, lack of encouragement and engagement , isolation, emotional, mental and physical health, increased academic workload , as well as inadequate digital literacy skill and learning skills to engage with quality online learning experience.

Graduates: The lack of internships in the real situation may cause the lack of needed competencies and the risk of job lost in a constrained labor market due to the poorly performing economy that has been aggravated by the pandemic.

Faculty / academicians: Resistance, academic workload, substantial burden of work, no incentives, limited expertise with online technologies and online teaching and learning are some faculty problems that have been found.

Technology and connectivity : IT infrastructure, internet access and connectivity, reliable hardware and software, digital divide, as well as delivery mode of online learning and technical and quality issues are important issues to be considered.

Student support services: Online higher education continues to grow, yet its high dropout rates remain a pressing and complex problem. Risk factors, the most important ones were course and program factors (student support), student factors (motivation, time management skills, and satisfaction), and environmental factors (time- and financial-related issues) (Xavier & Meneses, 2020, p.3). In this regard, students support services as well as online library resources and services that can be accessed through the university platform to support online learning are crucial to help students cope with the risk factors and manage their studies successfully.

Online learning situations in Thai higher education

Online learning or e-learning is not a new phenomenon in Thai higher education. It has been widely used in Thai universities both the traditional and open universities for more than twenty years . The online or e-learning situation of the universities in Thailand as found in research conducted by Boondao, Komlayut & Poonnawat (2004) showed that the traditional and open universities had similarities and differences regarding of e-learning courses. Both used online learning as a supplement to existing courses, and used synchronous and asynchronous interaction and offline techniques for the interaction between lecturers and students. Most students were satisfied with the online courses.

A survey of situation and trends conducted by Rueangprathum, A.; Philuek, W. & Fung, C.C. (2008) showed that the development of e-Learning systems in Thailand are supported by the Thai government under the National ICT Plan and Education Policy. It builds upon the existing strengths and addresses existing weaknesses of domestic ICT with an objective to encourage online learning among the academic organizations. In terms of ICT readiness based

on e-readiness, network readiness, technology infrastructure readiness, and e-learning readiness, Thailand is ranked in the moderate level. Thailand is also ready to use ICT to develop e-Learning for enhancing teaching and learning skills in order to improve the quality of the current status of education in the country. Moreover, the information from various surveys has shown that many e-Learning sites are implemented by universities and academic organizations. On the technical aspect, free open source software is more popular especially Moodle. The trend of Thai online system is growing and it is expected that the continual development will benefit for all in the long term.

There has been a rapid growth of online learning and in the number of online courses in Thai universities. The advantages of online education (i.e., greater access, increased flexibility, and decreased costs) have rapidly impacted higher education policies and practices. The main driving forces in the implementation of the online learning in Thai higher education were the policies of the Higher Education Commission, Ministry of Higher Education, Science, Research and Innovation. (Formerly affiliated with the Ministry of Education). The Higher Education Commission has laid a stable foundation for online learning in higher education in Thailand for more than 20 years ago. Some of these include: *Inter-University Network : UniNet* found in 1996 aiming at managing and sharing ICT to support the teaching and learning and research ; *Thailand Cyber University or TCU* found in 2005 as one strategy for responding to the educational reform and extend educational opportunities by cooperating with all existing universities for providing online distance education in quality ways (Sombuntham & Theeraroungchaisri, 2006, p. 155), and *Thai MOOC*, a Massive Open Online Course with a focus on life-long education lessons; and *Thailand Library Integrated System: ThaiLIS* (e.g. Thai digital collection database) found in 2009 to provide access to electronic format of dissertations, theses, journal articles and rare books from ThaiLIS members.

Others are *Guidelines for degrees program offered through distance education system* issued by the Ministry of Education in 2005 which called for an increasing interest in online learning and more strong commitment and support from the administrators at the policy level both traditional and distance universities as online was seen as important technology to improve the quality of teaching and learning and enhance the image and academic profile of the institutions; and the *Digital Competencies for Undergraduate Degree* issued in 2018 as part of the National Qualifications Framework (TQF) for Higher Education in Thailand.

COVID-19 is thus an opportunity for higher education institutions to develop online education further, to embrace online learning , not as an alternative but as multiple delivery modes to expand access and strengthen excellence in teaching and learning, to create new learning environment and increase opportunities for learning. The pandemic can serve as a springboard for re-thinking and reimaging the future of higher education and distance learning patterns of flexibility for the individual learners to response to the challenges faced by COVID 19.

Situation of distance learning in information science at STOU

Sukhothai Thammathirat Open University (STOU) is the eleventh public university established in 1978. It is the first true distance teaching university in Thailand and in Southeast Asia. STOU distance learning system expanded the role of higher education in Thailand by engaging learners who previously had no opportunity to further their education. Since its establishment, STOU has enabled the development of individuals and communities throughout Thailand and beyond. STOU has received many national and international awards and recognitions for its

accomplishments**.**

STOU distance education system took its earliest the form of correspondence teaching. Instruction was given through instructional media which are mainly print-based material, programmed textbooks and workbooks. Other support media include educational radio and television programs, cassette tapes, videotapes, computer-assisted instruction (CAI), and face-to-face tutoring. STOU implemented new media and online learning since 1985. The variety of educational media made STOU's distance education programs accessible to students not only in the Thailand but also students abroad. In 2021 during the pandemic, STOU launched the application "STOU SISA app" (Student Info Service Application) to provide information about teaching and learning, examination and other useful and reliable information available for IOS and Android. STOU distant students can access and check the information conveniently and quickly by themselves through the application.(STOU,2021). STOU distance learning system has made quality higher education accessible to all. STOU, through its School of Liberal Arts, has offered the information science programs using distance education system at the bachelor, master and doctoral levels using distance education system since the year 1989, 2002 and 2010 respectively. Distance learning in library and information science has made a major contribution to Thai librarianship and library and information science education in Thailand and in the Asia-Pacific region. STOU through the Information Science Programs of the School of Liberal Arts met the COVID 19 challenges of distance learning , with the management strategies and movement to lead the new normal .

The situation of online learning in library and information science in ASEAN countries before the COVID 19 pandemic, as reviewed by Sacchanand (2014) showed that library and information schools in the ASEAN countries are keeping up with changes through the influence of the information and communication technologies. Online learning has been increasingly used widely in library and information schools in ASEAN countries in both the traditional and distance institutions. Online learning has been seen as important technology, to improve the quality of teaching and learning in a technology- driven system of teaching and learning, and to enhance the image and academic profile of the profession, institutions, countries and regions. The rapid growth in the number of LIS online learning programs/ courses worldwide present significant challenges to LIS educators in ASEAN countries. Online learning presents immense opportunities for the promotion of an effective educational environment in the digital age and calls for new competencies and strong motivation of faculty and learners that best suit to the nature of library and information science particularly to the ASEAN context through collaborative effort among ASEAN LIS educators, professionals and institutions as well as strong support at the national and regional level.

This laid the opportunities for STOU and the information science programs to adopt the management strategies for further development of the online learning environment, and close the gaps in technology infrastructure , inadequate accessibility to library and information resources , digital divide, resistance, lack of motivation to learn, or digital literacy skills and others to cope with challenges during the COVID 19 pandemic. As crisis always bring challenges and great opportunities, from now on, online learning will be the norm and a major tool for STOU and the information science programs in leading the new normal and moving towards online university . The impact the COVID crisis undoubtedly force us to rethink and redesign the management of quality distance learning in the online environment.

Managing challenges and leading the new normal of STOU distance learning in information science

STOU manages challenges of distance learning in information science using the key strategies focusing on policy, digital infrastructure and connectivity and faculty and staff development leading towards the new normal through learner-centered online learning, online examination, online experiential and professional training experience as following:

Management strategies

Policy

Timely and effective policy responses are necessary to deal with the economic and social impact of the COVID-19 pandemic. (OCED,2020, p.97). Research findings conducted by Boondao , Komlayut & Punnakan (2009) showed that one key factor for the successful online learning is clear university policy and planning with strong and continuous support from the administrators. The essential guidelines for the university's development and implementation should also be formed. STOU formulated many policies and guidelines related to the online teaching and learning for administrators, teaching faculty and the teams in the management of online learning programs and courses. STOU teaching and learning model has been more fostered to be a collaborative partnership between teaching faculty and instructional designers, educational technologists , online developers , educational measurement specialist, librarians as well as invited key persons outside the university both in Thailand and abroad. Collaborative partnership or networking has been an integral part of the success of STOU since its founding.

Digital infrastructure and connectivity

STOU has invested in efficient IT infrastructure, networks, applications , new tools , new technologies and new media in order to support or compliment the management of the online learning programs and a range of related activities especially the production of STOU instructional media which are digital media, and the online examination which has been first taken in the year 2020 during the COVID 19 pandemic , to enable the university to respond to these challenges. The online learning has raised greater demand for fast and reliable digital connectivity , the readiness of digital infrastructure, digital connectivity as well as digital learning materials for educational continuity in times of crisis COVID-19.

Faculty and staff development

It has been well recognized that although the technology of distance learning gets most of the attention, it is really teaching strategies and style which have the most impact on the quality of learning in distance programs. (Kimball,2002). Improving quality in online teaching and learning requires that both teaching and non-teaching staff are equipped with knowledge and competencies needed to support online students for online teaching and learning. In terms of STOU faculty, especially the information science teaching faculty , they are familiar and well trained with online technologies, online teaching and learning techniques and the management of online courses and online classes as the usual practice. This is different from traditional universities where there are problems of resistance to online teaching and learning and limited expertise with online teaching and technologies. Anyway, as teaching faculty in

information science, STOU information science faculty need to continuously update their knowledge and competencies to keep current with the fast changing technologies and the technology –oriented information science discipline. Faculty and staff development is one STOU key strategy in the crisis management. STOU organized ongoing intensive online training, workshop and seminars on new technologies, online teaching and learning techniques and related issues.

Leading the New Normal

The COVID 19 pandemic has brought important lessons and opportunities to manage challenges and lead the new normal of distance learning in information science. Key activities include the learner-centered online learning, online examination, and online experiential and professional experience

Learner-centered online learning

Before the COVID 19 situation, STOU information science programs used blended learning . Online learning was mainly used for graduate students , as a supplement to existing courses, with the synchronous and asynchronous interaction and offline techniques for the interaction between lecturers and students. Due to the social distancing measures, all face to face learning activities , e.g. tutorial sessions, practical workshops , intensive seminars and professional experience training have been moved to learner-centered online learning. Today's distance students can lively communicate, chat and interact with faculty and fellow course-mates in the online classrooms using online communication techniques. They can download a wide range of reading materials and other resources in addition to print textbooks. This is a flexibly customized and promising mode of delivery that geared more towards learner-centered orientation. Students' acceptance , readiness and engagement of online learning should be more encouraged as they are more likely to succeed when they feel connected to a supportive and friendly online learning environment. Covid-19 challenges also need online learning to bridge the digital divide and improving students' learning and professional experiences as well as twenty first century skills and online ethics and etiquette and professional behaviour to meet the needs of the learners and the global community.

Online examination

Online examination is a big first step for STOU's transformation to be an online university. STOU examination was usually administered in every province around the country for the convenience of students who scattered around the country. Due to the pandemic, STOU has moved to online examination operated with Moodle and WebEx since July 2000 during the COVID situation. Students can use a PC computer, notebook computer, tablet, or smartphone at their convenience. The system requires the internet speed at 4 Mbps (Megabyte) for computers and at least 3G (Gigabyte) for mobile devices. Students' identity verification and proctoring was done through live video and audio monitoring. (STOU, 2020).

The shift to online examination provides an opportunity to reconsider STOU evaluation system which at undergraduate levels usually consists of semester examinations and reexaminations , assigned work (optional), experiential training and practicum (if any) . For master's and doctoral degree consist of course works , assigned works, semester examinations, thesis examination for Plan A or comprehensive and independent study examinations for Plan B as well as graduate professional experience. Students' evaluation is important not only to

improve students' learning outcomes in higher education but also to maintain educational standards and strengthen the credibility of the Information Science programs and the university degrees. As evaluation is important driver of learning , further discussion should be made in the design of different assessment formats of examination and evaluation to measure students' knowledge and competencies, and ability to apply their knowledge and solve problems in the real situation.

Figure 1-3 STOU - PUPOUS Joint Online Multidisciplinary Research Colloquium

Online experiential and professional experience

Experiential and professional experiences at STOU require a face-to-face meeting. All these sessions move to online. The Information Science programs come up with alternative projects, or programs that can meet the minimum standards. Home- or offsite-based reports / projects overseen by faculty and/or academic advisors, and similar types of learning experiences that are closely tied to student's academic programs. One collaborative project of great interest is STOU - PUPOUS Joint Multidisciplinary Research Colloquium, a collaborative project between the Ph.D. information Science program , STOU and the Polytechnic University of the Philippines , Open University System (PUP OUS) which has been jointly organized consecutively under the MOU between the two institutions since 2018. The face to face colloquium has been moved to successful online colloquium since 2020. This colloquium strengthen the good network and partnership between STOU and PUP OUS. The activities have successfully created a research atmosphere in open learning and distance learning. The assessment showed that the participants were very satisfied with all the sessions carried out. (STOU,2021)

Summary

The COVID-19 pandemic has resulted in dramatic changes in the global educational landscape, both face to face and distance learning, with the distinctive rise of distance learning on digital platforms or online learning. The online learning has been implemented in every field and challenged educators in the field of library and information science worldwide. The lockdown has less impact on STOU information science graduate program where online learning are used on a regular basis. In addition, STOU continuously adapted to the technological change and developed its STOU distance learning system and STOU Plan. The impact of the Covid-19 pandemic disruption on distance learning, STOU and the Information Science program is going on Faculty, academicians , educators and professionals in the field need to quickly adapt and better prepare to reimagine and refocus the presence of distance learning and the information science education, profession and professionals in the new normal .

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AWARENESS AND PERCEPTION REGARDING GREEN LIBRARIES AMONG LIS PROFESSIONALS AT BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY, LUCKNOW: A STUDY

Shraddha Dixit[1] **Prof. M. P. Singh[2]**

Introduction

Sustainable development has become a big challenge for the whole world today, which has been targeted to be achieved by 2030, India has also accepted these goals and they are trying to achieve these goals in every way. Education is also a goal in, which is the best medium; it is the best way to make people aware of sustainable development, in which libraries are also taking their step. The Green Library Movement started in the 1990s in Library and Information Science, which today gained momentum in the 21st century. The conversion of the library into a green library is an important effort of the library to save the environment and library professionals are trying in every possible way to reduce the consumption of electricity in the library, and that energy. If the library does its work keeping all these in mind, then it can also contribute towards sustainable development, which will be a good initiative in development of sustainability.

Objectives of the study

- To analyze the awareness level
- To identify electricity sources in library
- To identify green initiatives taken by the library

Research Methodology

Survey method has been used in this study, with the help of questionnaire tool, Interview, Personal observation and literature review has been used to collect data who has fulfill the purpose the study.

Data Interpretation

Table 1 Library building type

S.No.	Building type	Response
1.	Stone building	
2.	RCC (cement) building	9
3.	Heritage building	
4.	Other	

Table.1 shows that all library professionals have told that their building is made of RCC.

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Table. 2 Green Initiatives in library

S.No.	Building type	Response
1.	Natural light	5
2.	Natural ventilation	1
3.	Use of Non-Chemical paint	
4.	Water Conservation	3
5.	Eco-friendly office	4
6.	Sustainable energy generation and use	1

Table.2 explained that Most of LIS professionals say that, the library is taking green initiatives, out of which more importance has been given to natural light, eco-friendly office, water conservation, while sustainable energy production and natural ventilation are given very little.

Plastic allowed in library

Table 3 revealed that 90% of LIS professionals are saying that plastic is not allowed in the library while 10% are giving their answer yes. Plastic is a very harmful product that harms the environment, so the use of plastic in the library should be minimized so that we can save our motherland.

Table.3 Use of RFID Technology	
Yes	No
9	0

In table.4 it is noticed that Library professionals have reported that 100% RFID is being used in the library by which users can easily take and Return the book and also saves time.

Water harvesting system in library

Table.3 Use of RFID Technology	
Yes	No
3	6

This table.5 shows that 66% LIS professionals say water harvesting system are not in there Place whereas 33% are saying yes.

Use of artificial lighting during the day time in your library

Table.6 Use of artificial lighting	
Use of artificial Lighting Percentage (%)	**Response**
20	
40	4
60	
80	5
100	

In table 6, in the context of artificial lighting, 55% of LIS professionals have reported that 80% of artificial lighting is being used in the library during day time while 44% of professionals have reported its use only 40%.

Type of resources library prioritize

Table.7 Type of resources library prioritize	
Type of resources	**Response**
Print resources	
e-resources	
Both	9

Table. 7 explained that use of resources in library and we find that 100% of library professionals have given their consent to the use of both electronic resources and print resources, so both resources are being recognized in the library.

Electric lighting used in library

Table.8 Electric lighting used in library	
Electronic appliances	**Response**
Incandescent bulbs	
Halogen bulbs	
Fluorescent bulbs (CFL)	1
LED bulbs	9

Table.8 reveals that the library uses 100% LED bulbs to save electrical energy. This is a step towards sustainable development in which LED bulbs are being used for saving electricity.

Source of electricity for library

Table.9 Electricity Source used for library	
Type of sources	**Response**
Electric company supply	4
In-house generation (Solar power)	7
In- house generation (wind power)	0

Table.9 explained that library concluded that the library is using more solar energy rather than the government electric supply

Cleaner used by cleaning and maintenance

Table.10 Cleaner used by cleaning and maintenance	
Cleaning product	**Response**
Chemical cleaner	6
Plant based cleaner	3

This table.10 examined that 66% of LIS Professionals have answered that chemical products are being used for cleaning while 33% professionals have talked about natural cleaning products which is used in cleaning of library.

Conclusion

In view of today's time, librarians should further support the Green Library Movement. It is also necessary to pay attention to how the library contributes to global warming, which is the biggest problem in the country today, so we LIS professionals who are associated with libraries should make every effort to save the environment. Through this study I have found that the Green Initiative has been adopted by the Gautam Buddha Library, Babasaheb Bhimrao Ambedkar University and the Library is making every effort to get it and save the environment.

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REDEFINING THE LIBRARIES AND LIBRARIANSHIP DURING AND AFTER COVID PANDEMIC: A WAY TO EDUCATION 4.0

Isha Arya[1] **Dr. Mahender Pratap Singh**[2]

Introduction

The sudden outbreak of novel corona virus has affected the lives of many in different ways and it took some time for everyone to adopt the new normal. The complete shut down in the nationwide have impacted world's student population and higher education, among others. It has totally changed the teaching and learning process, shifted traditional classroom learning to online learning and made it more challenging for librarians to provide online access to library resources. Initially libraries provided closed access to their users and could not able to fulfil the demands of their clientele but slowly libraries improved their role in providing right information to users at right time and began to utilise different information communication technologies for enhancing their services and providing web based online resources remotely. There is a change in user's demand with the advancement in technology as they want personalized access to online resources anytime anywhere in a single click. The present scenario has created opportunities while posing challenges before the Indian libraries, publishing industries and library administrators to cope up with the current situation brought by Covid 19.

Libraries during COVID-19 Pandemic

There was a complete lockdown in nationwide, libraries were also shut down and this sudden transition has forced educational institutions to shift to distance and online learning which in return changed the role of traditional libraries. Resources were very much required for lectures/presentations, seminars/discussions, research related/scholarly activities, and, after all and most importantly, for online teaching and learning process which was the key at this point of time. Libraries tried to fulfil the needs of various stakeholders so as to make online teaching and learning a smooth process. This presented a great challenge to libraries to provide online resources to the users as their behaviour shifts towards authenticated peer-reviewed reading materials as google being not a reliable source of information and cannot replace the role of libraries and librarians. Libraries were already using various services and technologies such as web scale discovery services, promoting open access to the resources and remote access technologies to make resources available anytime anywhere.

Libraries were forced and coerced to adapt new changes in the pandemic to satisfy their users and ensured continued learning. Academic libraries responded positively towards the current covid situation and adopted the new normal within a short period of time, critically reflecting on the obstacles and finding solutions for making academic libraries efficient by keeping in mind the present scenario and information needs of the users. Libraries were already using various services and technologies but pandemic further boosted the use. Here are some services and technologies

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which academic libraries implemented to redefine the libraries during this COVID-19 pandemic to stay connected with their users and provide them what they need:

1. **More use of e-resources than print**
   The value of print resources diminished during the pandemic. The demand for e-resources increased immediately, although it had been used for years but spread of virus accelerated the use of online resources. Libraries will now have to acquire more online resources rather than print.
2. **Remote access technologies**
   Libraries are using various remote access technologies to fulfil the needs of the users by providing online access to the resources remotely. Through the use of this technology, libraries provide anytime anywhere access to their resources.
3. **Discovery tools**
   During this pandemic there is shift in teaching and learning process. Online learning became the part of the education system. Libraries have to adopt discovery services to satisfy the needs of the online users. Library website is the best online discovery tool to connect online with the large community.
4. **Promote open access**
   Libraries and many publishers promoted open access to resources during this pandemic. Almost all libraries are providing open educational resources to the users online and makes content online for free to cater the needs of the user.

Libraries after Covid-19 Pandemic: Redefining Libraries for Future

Calamities do not come by telling us and Covid-19 is the novel example of this. This great pandemic situation brings uncontrollable disruption to the world. It affected the life of many and completely changed the lifestyle. It taught us to be prepared for a disaster like situation and to be ready to accept the challenges in a deft manner. Libraries prepared themselves to cope up with the COVID and accept the new normal in a short while. A post COVID world demands growth beyond survival. This pandemic has taught us to think out of the box and revisualize the concept of libraries altogether. Post COVID demands libraries to redefine its resources and services to meet the needs of the future generations. Sukula et al. (2020) in the paper jots down how libraries would redefine and constantly update themselves for the future generations:

1. **Redesigning Digital Landscape**

   Higher education adopted e-learning during this current health emergency. Digital resources became need of the hour and have provided the digital landscape to libraries. Academic libraries must fulfil the aims of the parent organization and enhance the delivery of services by gaining visibility because visibility increases the demand. Libraries will have to focus on improving digital outreach. Website is one of the ways to connect to the audience digitally. To better understand the information needs and access platform, academic libraries must engage with the students. Libraries will have to develop maker's space to facilitate learning and new innovations.

2. Blended librarianship

Librarians inadvertently adopted the blended librarianship model during this pandemic. Bell and Shank (2004) defined Blended Librarianship as "an academic librarian who combines the traditional skill set of librarianship with the information technologist's hardware/software skills, and the instructional or educational designer's ability to apply technology appropriately in the teaching-learning process". In the online teaching-learning process, this concept promotes direct intervention of librarians and library resources.

3. Raising Service Quality

Librarians are the service provider. They satisfy with job by providing resources and services which user's want. User satisfaction plays an important role in the library for its efficient utilization of the resources and services. Kiran (2010) stated that "service quality provides a superior indicator of user satisfaction and indicates that service quality can influence user satisfaction. Over time, repeated satisfaction with the service encounters results in a perception of service quality".

4. Enhancing Research Support Services

The advancement in the ICT and increase in the demand of the researchers has compelled academic libraries to enhance and innovate their research support services to help researchers throughout their research process. Libraries are required to provide various research support services like language learning tools, Plagiarism detection tools, give training on reference management tools, Research Data Management, Data Management Plans (DMP).

5. Developing Library faculty Collaboration

The collaboration between library staff and faculty increases the chances of academic success and therefore promotes better learning. Collaboration holds a pivotal role in selecting diverse resources, document delivery and aids to develop information literacy programs for the university community at a whole. Collaboration helps to discover the needs of the library user and which in return, helps academic libraries to develop and design services to cater the teaching demands.

6. Emphasizing on Information Literacy

Information literacy is the best way to educate students about the various library services and activities. The integration of library instruction led to the following outcomes such as hands-on trainings, increased collaborations, open access, etc. Libraries must go beyond orientation programs, and also revamp their information literacy programs in such a way that promotes digital literacy, research literacy, critical thinking and much more.

Future of Education 4.0

In order to prepare the future of upcoming generations, higher education must align their teaching and learning processes with technological advancements. Education system is considered as a backbone of the country. Society has observed industrial revolution in different phases which changed the overall lifestyle of the people and society had to adopt the new reforms for their survival. The first industrial revolution remarks with the invention of steam power; in the second revolution humans utilized the new energies of petro carbons and electrical energy; the rise in the use of information technology was marked the third revolution (Halili, 2019). We have already stepped down in fourth industrial revolution where machines are interacting with each other at enormous speed. Mobile computing, artificial intelligence, augmented reality and machine learning has become a need of the day (Hussain, 2020).

Education was no longer centered between students and teachers but now it is more networked approach where students having direct connection to a variety of information sources. This has opened the new frame of personalized learning where learner has complete flexibility and independence. This new approach to learning has emerged in line with the fourth industrial revolution. Education has undergone through many transformations due to the rise of digital computing and the internet. It has shifted from the Education 1.0 where method of imparting instructions was informal and in close contact with the teacher to the Education 3.0 which is the present-day education in the age of internet and information technology. Now we are entering to Education 4.0 and this is the future of the education where learners will be given importance and also given freedom to choose the mode of education to structuring an individual path.

What is Education 4.0?

Fisk (2017) defined Education 4.0 in his keynote entitled "Changing the Game of Education" as "learning that can take place anywhere, anytime. It had wide ranging characteristics that encouraged personal and flexible delivery, involving peers and mentors, while changing the discourse to the why/where, not the what/how, and it encouraged practical application, modular and project-based learning, student ownership and evaluated rather examined instructional performance".

Education 4.0 basically a digital integration in our day to day lives where humans and machines are aligned to solve problems and discover new theory of innovation. The effectiveness of teaching and learning process can be raised by incorporating the latest technologies. This would gain the attention of the student or learner towards learning. 3D printing, augmented reality, virtual reality, cloud computing, biometrics, paper-thin smartphones, multi-touch LCD screen, Internet of Things, artificial intelligence, big data, QR code are the examples of latest technological advancements in education 4.0.

Characteristics of Education 4.0

Peter Fisk pin down the following characteristics of Education 4.0:

1. **Diverse time and place**: students will learn anytime, from anywhere through e-learning and it would become part of the system.
2. **Personalized learning**: education 4.0 offers personalised learning which enables students to learn at their own pace.
3. **Free choice**: students have the freedom to choose the mode of education as well as free to choose their own combination of learning methodology and tools.

4. **Project based**: learning will no longer be theoretical. It should be project based where students can apply their acquired skills.
5. **Field experience**: education 4.0 involve more field experience through internships and more.
6. **Data interpretation**: discover trends and infer logic through data interpretation will become the trend of the future.
7. **Exams will change completely**: students will no longer examined but evaluated.
8. **Student ownership**: students will have full ownership as they will make their flexible learning paths.
9. **Mentoring will become more important**: teachers will have to act as a mentors and coaches in the world of learning.

The current education system experienced lack of self-learning and flexibility among students. Education 4.0 focusing on student centric learning where students will actively participate in learning and find appropriate resources to augment their learning such as online lectures, videos, gamification in learning, etc. This will promote lifelong learning.

Academic Libraries with Education 4.0

Immense opportunities to be grabbed in the future if librarians work their way out via Education 4.0. Access and proliferation of information anytime from anywhere with peers and mentors, where knowledge evaluated not examined. In this regard librarians will have to give emphasize on current digital libraries in tune with education 4.0. Academic Libraries with Education 4.0 empowers learners to structure their personalised learning paths. Libraries have to be prepared to face post COVID-19 challenges as teaching-learning environment is expected to change from traditional to blending learning.

In order to cater to the needs of the next generations and development of next generation digital libraries, Noh (2015) suggested the concepts and keywords which academic libraries will achieve through implementing the technologies of Web 4.0 and make their way towards library 4.0 and promotes education 4.0. These are:

Intelligent library : Academic libraries in future will become Intelligent libraries. By intelligent library we mean where system analyses information itself and discusses results with their users like a colleague. Library 4.0 will carry similarities to Web 4.0 and incorporate same technologies.

Massive data library: Massive Data Library will be the future of Library 4.0. Future libraries will have the capability to manage massive amount of data and services which transfer them into massive data libraries. Big data is high volume data which cannot be stored, processed, analysed by ordinary or relational databases. With the advent of Web 4.0, huge amount of data is generated and in future, libraries will become massive to manage that much amount of data.

Augmented reality library : Azuma et al. (2001) explained "augmented reality is a technology that shows virtual elements over atop real world displays." Augmented reality technology will be used in libraries to seek location of the books by simply looking at the catalogue and this will guide the user to that location.

Context aware library : Digital libraries of the future will have the capability to understand their user's needs to better serve their user community. Noh (2013) observed context-aware computing technology as a system which is designed to search and provide the services that are required

by users by identifying and analysing the current situation of the user (the available contextual information of the user).

Cutting-edge recognition capability : Library 4.0 will make the future libraries by implementing Web 4.0 technologies such as cutting-edge display environment equipped with the recognition capability. These types of technologies have already been launched and models of these technology are Google Glass, Head Up Display (HUD), Transparent Display and Flexible Display.

Infinite creative space: Libraries of the future will provide infinite creative space to their users as to facilitate the innovation of something using technology. This type of movement in libraries facilitate users to think creatively and explore the new possibilities for a future.

Conclusion

This paper throws light on the changes brought by COVID-19 to the functions and services of the academic libraries and how libraries managed to intervene in the teaching and learning process by providing information resources remotely to their users. Librarians accepted the challenges posed by the pandemic as an opportunity. Library websites plays a very vital role in delivering the information and maximise the visibility of the library in this online scenario. Libraries will have to recreate and redesign their library websites and also use various discovery software available in the market. The paper also highlighted how libraries will redefine its resources and services for the post covid world and cater to the needs of the next generation by adopting various Web 4.0 technologies. Libraries must think of the creative/maker's space for their learners so that they may think out of the box and put their minds in making new inventions. The future will be of the Education 4.0 where learners want personalised information and will have full freedom of choosing the mode of methodologies and tools and create their own learning path. In the coming future libraries will make use of latest technologies such as artificial intelligence, augmented reality, internet of things and many more and will become libraries for the next generation.

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SECTION II

LIBRARY SERVICES DURING COVID 19

Invited Paper

SOME LESSONS LEARNED FROM EXPERIENCES OF SCHOOL LIBRARIES, INCLUDING LIBRARIANS, IN JAPAN DURING THE CHALLENGING TIMES OF COVID-19

Prof. Zensei Oshiro[1]

Introduction

A school library in Japan is generally understood as composed of three components: a) facilities, b) material resources such as books and magazines, and c) human resources. Concerning books, which is major part of material resources, MEXT (Ministry of Education, Culture, Sports, Science and Technology) provided in 1993 a standard, named as 'Standard of Number of Books to be Held in Public Elementary and Junior High School Libraries.' And MEXT stated in 2016 that it would provide financial support for many libraries for another five years because these libraries did not hold enough books, as prescribed in the Standard. Percentages of elementary and junior high school libraries which have met the Standard in 2020 were 71.2 % and 61.1 % respectively1).

Concerning human resources, School Library Act states as follows 2):

a) A school which consists of more than 12 classes must have a teacher librarian who shall be engaged in the professional works.
b) A teacher must be appointed as a teacher librarian.

The Act also states that a gakkou shisho (literal translation: school librarian) who shall be engaged in the professional works should be employed. And local governments are encouraged to employ them at a full time basis. Because of the Act, there are two kinds of professional librarians in Japan, with a teacher librarian who teaches a subject (or subjects) at almost full-time basis and performing library's professional jobs at a part-time basis, and a gakkou shisho who is assumed to also perform library's professional jobs. A gakkou shisho does not need to have a teaching certificate. Percentages of elementary and junior high schools which employ gakkou Shisho in 2020 were ca. 69% and 64% respectively. And their percentages of full-time employment were ca. 10% and ca. 11% respectively3).

An advisory committee of MEXT, consisting mostly of professors who teach school librarianship and school librarians, recommended in 2016 that a principal should be appointed as a library director, and that a teacher-librarian should plan and manage the services of a library4). This recommendation seems to stand for anti-professionalism of school librarianship. The pattern of personnel of school libraries in Japan is quite different from those in U. S. A., Canada, and Australia. This confuses school library services in Japan even during the challenging times of COVID-19.

In Japan, the functions of a school library are defined by MEXT as 'a reading center', 'a learning center', and 'an information center'. A school library, as a reading center, is assumed to develop both high academic knowledge and rich, respectable personality among students by increasing the number of students who like reading; and as 'a learning center', to develop critical

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thinking, presentation ability, etc. by providing collections, including newspapers; and as 'an information center', to develop information literacy skills by supporting inquiry-based learning5). Most of the people working in the school library field in Japan agree with this MEXT's definition.

However, when these functions are carefully examined, differences among them are not clear, presenting many ambiguities. What is worse, roles of a school librarian are not defined in this definition, nor are they rarely discussed by specialists in school librarianship in Japan. In U. S. A., Canada and Austria, roles of a school librarian are clearly described in the document such as 'standards of school library programs'6).

On February 28, 2020, MEXT suddenly requested for elementary schools, junior high schools, senior high schools, and other kind of schools to be temporarily closed from March 2nd until the end of spring vacation. This request was based on a view that Japan would be at a critical moment when infection from COVID-19 spreads rapidly.

On April 7, 2020, Prime Minister Abe proclaimed a one-month 'state of emergency' for Tokyo and prefectures of Kanagawa, Saitama, and others. And on April 17, MEXT requested to extend the school closure until the end of May. On April 26, 2020, the declaration of 'state of emergency' was extended to the rest of the country.

On June 5, MEXT provided a document named 'Comprehensive Package for Ensuring Children's Learning in the COVID-19 pandemic'. In this document MEXT stated that it would support the coverage of expenses for carrying out necessary efforts for combatting COVID-19, including learning materials. Referring to home study using ICT terminals, MEXT expressed that in the face of the COVID-19 crisis, integrated preparation of hardware, software, and personnel under the "GIGA School Program" would be accelerated. "GIGA" means Global and Innovative Gateway for All, which is NEXT's initiative started in 2019. Its objective is for every student to be able to have ICT terminal, supported by broadband internet connection.

I explained so far about school library staffing in Japan and took a quick survey of what happened during the COVID-19 crisis. I will discuss next, three lessons learned from Japanese libraries' and librarians' experiences.

Lesson 1: School Librarians in Japan Are not Recognized as Partners of Teachers

In April of 2020 when schools were closed due to COVID-19 crisis, MEXT issued a document for local educational committees, named as 'About school libraries during schools closed.'7) This document referred only to a) circulation, b) library as a study room and c) introduction of recommended books, not referring to curriculum-related functions of a library, though it emphasized educational functions in its definition. Most school libraries followed the advice of MEXT, paying much attention to circulation, etc. But I must add that some libraries helped both students and teachers by offering more services than MEXT recommended.

'Active learning' is a recently introduced pedagogy by MEXT. MEXT states that 'active learning' is an alternative to the traditional, 'passive' learning, which is based on rote memorization and teacher-centered classroom. It also states that this pedagogy is intended for learners to foster critical thinking, creativity, collaboration, communication skills, etc.

I understand that this pedagogy is almost the same as 'inquiry-based learning,' proposed by Kuhlthau in her book: *Guided Inquiry: Learning in the 21st Century*, which was authored together by other two8). Kuhlthau argues that her approach is based on the constructivism theory

of learning. The most important characteristic of her pedagogy is that it insists on a team approach for teaching, with a librarian as an essential partner.

Concerning constructivism theory of learning, Makewa argues as follows:

It [constructivism theory] states that knowledge must be constructed by the learner. The teacher can only assist the learner to do the construction. The construction of knowledge is a dynamic process that requires the active engagement of the learners who will be responsible for one's learning while the teacher only creates an effective learning environment9).

I agree with an idea that learning is done most effectively by inquiry-based approach.

Regarding with pedagogy, MEXT states as follows:

School textbooks in Japan play an important role as the main learning material of subjects used in classes. Textbooks do a great deal to ensure a child ‘s equal opportunity to receive an education. In order to maintain and improve national education standards, they must be used in elementary, lower and upper secondary schools, etc.10)

Regarding with school libraries, National Curriculum Standards (NCS) provided by MEXT states as follows:

Each school should use the school library and utilize its functions, aiming at realization of proactive, interactive and authentic learning of pupils, enhancing the autonomous, self-motivated learning activities and reading activities of the pupils. Furthermore, they should actively utilize facilities in the local community such as libraries, museums, art galleries, theaters, music halls, etc. and enhance learning activities such as the gathering
and appreciation of information utilizing information resources11).

The statements described by NCS are congruent with those proposed by Kuhlthau. The problem here is that the statements of MEXT’s above two documents contradict each other, and school libraries and librarians in Japan are not ready yet to support such learning as described in NCS. If MEXT really expects such roles of school libraries as described in NCS, MEXT should amend School Library Laws, particularly in the part of staff organization. MEXT also states during the challenging times of COVID-19 that education must be changed toward those environments (indicated by ‘⇒), by realizing ‘GIGA School,’ as described above.

Teachers can motivate children's interest by using electric blackboards, etc. ‘⇒ Teachers can understand each student’s reaction in class. It enables teachers to provide interactive lessons with detailed guidance based on the reaction of each student.

a) All students learn the same content at the same time. And learning based on the level of an individual's understanding is difficult. ⇒ Each student can learn different content at the same time. Each student’s study log is automatically recorded. It enables individualized learning and instruction based on each student’s educational needs and understanding.
b) Group presentations can be made, but it‘s hard for quiet students to voice their unique opinions. ⇒ Each student can collect information from their own perspective. Students can share their thoughts immediately and edit collaboratively. All students have immediate exposure to various opinions, while experiencing the editing of information12).

These statements above imply two things. One of them is that today's teachers are not employing an approach of 'active learning' or inquiry-based learning. The other is that 'active learning'' is possible only when 'GIGA School' is realized. I must remind you that MEXT's statement of 'GIGA School,' does not refer to school libraries. Some people may say that this is because MEXT tried to emphasize the role of ICT. But my understanding is that the statement in NCS concerning roles of school libraries is kind of a lip service. MEXT's understanding is that 'Active learning' is possible only by realizing 'GIGA School.' I can list some evidence below.

According to OCED's 2020 report, average class sizes of elementary and junior high schools in Japan are 27.2 and 32.1 respectively while those of all OECD countries are 21.1 and 23.3 respectively13). These class sizes in Japan are too big for inquiry-based learning. For instance, Ontario Department of Education has adopted inquiry-based learning as pedagogy, based on constructivism theory of learning14). However, Ontario teachers went on strike, exclaiming that a class size of 28, which then prime minister of Ontario proposed, was too big15).

OECD also states that a teacher's average workload per a week in Japan is 56 hours while that of OECD countries is 37.5 hours16). And according to OECD, only 16.1 % of teachers of junior high schools in Japan present a topic in classes for which an exact answer is not available while 37.5 % of whole OECD countries do the same thing17).

These are the present environments of education in Japan in which teachers are forced to give 'passive' learning of rote memorization in the teacher-centered classroom. There is no room for school librarians to collaborate with teachers to improve student's learning. In order for libraries and librarians to be integrated with classroom teaching, it is necessary that librarians, together with teachers, should make great efforts to change the present educational environment.

Lesson 2: School Librarians in Japan Have not Made Much Effort to Solve the Digital Divide Among Students in Japan

Under 'GIGA School Program', MEXT has been working hard in order to provide hardware, software, and personnel to realize 'one computer per student,' including the provision of communication environments between schools and students' homes. Through such measures, MEXT will ensure that all students can learn via ICT even in emergency situations such as temporary school closures due to the COVID-1918).

On April, 2020, MEXT issued a guideline for studying at home during the school closure due to the crisis of COVID-19 as follows:

Home studies imposed by a school: a) study of texts and prints made by schools, b) TV broadcasting, c) distribution of ICT materials, including videos, and d) online lessons.

Study guidance and understanding of the situation by teachers: a) use of telephones, e-mails and FAX, b) confirmation of study records by a computer or a tablet, c) home visit, and d) setting of school days19).

MEXT later found that 'study of texts and prints made by schools' was done by most students and TV broadcasting was utilized by ca. 30% of students. ICT materials were utilized by ca 35% and online lessons were made use by ca. 9% of students20).

Center for Research for Strategic and International Studies argued in 2020, regarding with MEXT's countermeasures against the COVID-19, as follows:

Covid-19 pandemic has brought attention to the issue of child poverty in Japan. During voluntary school closures in Japan this past spring, disadvantaged student populations struggled to receive food and other social services….

Covid-19 has also demonstrated to the world that online learning may become more important in the future. Yet about one in twenty Japanese children lack the amenities necessary for online learning such as a quiet study space, a computer, or textbooks….

A survey by the education ministry in April 2020 showed how little Japanese public schools were able to adapt: only 5% of local government bodies across the country planned online classes while schools were shut due to the pandemic. The digital divide between urban and rural areas and across socio-economic lines further complicated the transition to the online environment21).

When the schools reopened, it was found that some disadvantaged students became disinterested in schools because they could not catch up with teaching in the classes. You may ask what connections there are between the above conditions and school libraries? IFLA and Kuhlthau say that there are big connection.

IFLA recommends as follows:

Schools should draw on the unique expertise of school libraries and librarians, as well form partnerships with other libraries, to develop key digital literacy skills among students and to assist educators in integrating digital literacy skills in curricula22).

Kuhlthau argues as follows:

School librarians are resource specialists with broad knowledge of the extensive resources in the library, on the Internet and in the community as well. Without this expertise teachers can only minimally accomplish the information literacy requirement of 21st century learning standards. Collaborations with teachers in a team can create the necessary climate for students to inquire, participate, create and learn in an information environment23).

Indiana Library Federation (ILF) states as follows:

School librarians historically led much of the technology integration within a school, becoming the first expert on audio-visual equipment, then computers and now digital resources. Teachers relied on instruction and support from the school librarian… Now, as every teacher and student has at least one device with multiple new apps and updates every week, the school librarian is being called upon to be the "tech support" in addition to being the "tech expert"24).

Though IFLA, Kuhlthau and IDF state as above, Japanese libraries and librarians do not seem to have taken any action in order to incorporate ICT into their schools and libraries. They do not seem to have taken any action in order to support disadvantageous students' use of ICT at home. Both MEXT and local governments do not seem to recognize such roles of school libraries and school librarians as described by IFLA and Kuhlthau. I guess that these attitudes (understanding) of both governments caused an eccentric pattern of library staff organization and employment in Japan.

IFLA/UNESCO School Library Manifesto states that "school library services must be provided equally to all members of the school community, regardless of age, race, gender,

religion, nationality, language, professional or social status, and specific services and materials must be provided for those who are unable to use mainstream library services and materials25)." This means that school libraries and librarians have proactive roles in trying to realize 'social justice'. The Manifesto also states that "the school librarian is the professionally qualified staff member responsible for planning and managing the school library, supported by as adequate staffing as possible, working together with all members of the school community, and liaising with the public library and others.26)" This implies that a full-time professional librarian needs to be employed in order to realize 'social justice', not a part-time teacher librarian like in Japan.

Lesson 3: Japanese School Librarians Have Not Been Successful in Integrating Reading into School Curriculum

The main purpose of a school library has traditionally been to collect and let students access the collection and read what they like for enjoyment or information. This kind of service is still, I think, the most important function of a school library. But a modern school library is also assumed to support a school curriculum by collaborating with classroom teachers

Regarding with reading, Japanese libraries have offered the services as follows:

- Providing an open and inviting physical space
- Celebrating individual reading achievements
- Supplying titles to meet specific individual interests
- Bibliobattle
- Partnering with public libraries

However, these reading programs (services) are rarely related with classroom teaching, particularly not with teaching in junior high schools. This is partly due to school curricula and partly due to ramified staff organization of school libraries. Japanese librarians often hesitate to collaborate with teachers since they do not think that teaching is a part of their responsibilities. According to MEXT's report, the school library services during the school closure due to the COVID-19, were mainly circulation of books and the introduction of picture books27). However, it should be acknowledged that some school librarians created their own homepages and made a link to the websites which seemed to be useful for their students' studies 28). Though being anecdotal, one librarian said that she could talk with teachers for long hours for the first time because her library was forced to close during the COVID-19 crisis. This implies that school libraries in Japan are not generally integrated with school curricula.

Brodsky and other specialists argue that reading for pleasure influence on academic achievement of students29). Ontario School Library Association argue that reading is essential in its pedagogy of inquiry-based learning30). Moreover, according to constructivism theory of learning and Kuhlthau's argument, children learn by being actively engaged in and reflecting on an experience. Reading for enjoyment is an experience. Therefore, it is meaningless to separate reading from learning like MEXT's definition. Japanese librarians should not simply accept the MEXT's definition, and reexamine the functions of a school library. I argue that reading, including one for enjoyment, is essential for learning by modern students.

Conclusion

I discussed in this paper some lessons learned from experiences of school libraries, including librarians, in Japan during the challenging times of COVID-19. People may wonder how Japanese students scored high in PISAs in such an environment of education described above. MEXT has prepared national education standards which are based upon PISAs, and gives National Scholastic Ability Test (NSAT). The schools and teachers are evaluated upon the results of NSAT. With such an educational environment, teaching profession in Japan does not attract new university graduates, though it is a stable profession, and the teachers are paid a little higher than other government employees.

American Association of School Librarians argues in its Standards that goals of education are to let students acquire the abilities of inquiring, including, collaborating, curating, exploring and engaging31). However, I argue that the objectives of (public) education, though it is important to achieve high academic standards, should be to develop lifelong learners among students in the multicultural, inclusive societies, as discussed by National Board for Professional Teaching Standards32). If such a society does not exist, school librarians should work in order to realize such a society, together with teachers.

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Public Service		the term of state of emergency(＊)	Osaka Municipal Central Library (the Osaka Library)(locatd in Osaka Prefecture)	Kobe Chuo Municipal Library (the Kobe Library)(located in Hyogo Prefecture)	Kyoto City Chuo Library (the Kyoto Library)(located in Kyoto Prefecture)
a) use within library	library opened/ closed	the 1st	Closed(March 2, 2020-May 15, 2020) Opened (May 16, 2020)	Closed(April 7,2020-May 28, 2020)	Closed(April 18, 2020-May 22, 2020)
		the 2nd	Opened	Opened	Opened
		the 3rd	Closed (April 25, 2021 - June 20, 2021)	Opened	Opened
		the 4th	Opened	Opened	Opened
	closing time	the 1st	Closed at 17:00 (May 16, 2020 - May 21, 2020)	-	-
		the 2nd	Closed at 20:00 on weekdays. (The normal closing hours 20:30)	Closed at 20:00 on weekdays (The normal closing hours) One local library hastened closing time by one hour on weekdays.	Closed at 17:00 (The normal closing time at 20:30 on weekdays,17:00 on Saturday,Sunday and holidays)
		the 3rd		Closed at 20:00 on weekdays (The normal closing hourse) Two local libraries hastened closing time by one hour on weekdays.	Closed at 19:00
		the 4th	Closed at 20:00 on weekdays	Closed at 20:00 on weekdays(The normal closing time) One local library hastened closing time by one hour on weekdays.	Closed at 17:00
b) use of library facilities		the 1st	From May 16 (2020), Open hours stay time (30min) Areas not allowed for use during the open hours: Reading rooms (3rd floor), Reading seats (2nd floor), E–room (computers and other electronic devices can be brought in and used) (2nd floor), Rest space (1st floor), and Restaurant (basement 1st floor).	Not available for use (library closed)	Not available for use (library closed)
		the 2nd			Stay time was 60 min.

		the 3rd	Not available for use (library closed)	Stay time was 30 min. Admission will be restricted as necessary when crowded. Areas not allowed for use during the open hours: Reading rooms, Study rooms, and Meeting rooms.	Not available for use.
		the 4th	Areas not allowed for use during the open hours: DVD / CD viewing and the research private room (3rd floor), E–room(2nd floor), the recycling book corner (1st floor), and Restaurant (basement 1st floor).	Stay time was 30 min. Admission will be restricted as necessary when crowded. Areas not allowed for use during the open hours: Reading rooms, Study rooms, Meeting rooms and Locker rooms.	Not available for use.
c) Use of OPAC machines, copying machines and others.			At the first term, the touch panel type OPAC terminal and copying service will also be stopped.	At the first term, Not available for use.	Not available for use.
Use of Online database,Micro–film, Audio–visual materials		the 1st	^ 8DVDs, Videos and CDs were not available in the library.	Not available for use	Not available for use
		the 2nd			
		the 3rd	Not available for use	Not available for use	Not available for use
		the 4th	^ 8It is possible to use terminals dedicated to commercial databases, micro reader seats, Internet seats, and browse valuable archive materials and restricted viewing materials. ^ 8DVDs and CDs are not available in the library.	Not available for use	Not available for use
d) Circulation service	Loan	the 1st	Only hand over reserved materials at the library and the BM (May 12, 2020–May 15, 2020)	Only hand over reserved materials at the library entrance (May 16, 2020–May 28, 2020)	Lending by mail(May 5,2020–May,22 2020)
		the 2nd			

		the 3rd	Only reservation materials can be rented. From May 14,2021–May 31,2021,library cards holders only living in Osaka city can borrow books by mail. From June 1st to 20th, they were handed over at the library and the BM.		Only reservation materials can be borrowed.(users cannot choose books in the library)
		the 4th			Only reservation materials can be borrowed.(usesr cannot choose books in the library)
	Return		The return deadline has been extended for the 1st and 3rd terms. Return posts are available.	The return deadline has been extended for the 1st terms.	During the 1st term, the deadline for returning materials that are rented will be extended while the library is closed. Return posts are available.
	Read	the 1st	After the reopening of the library from May 16, all seats in the librarys were removed. reading of newspapers and in–library use only magazines were stopped. The use of archive materials were stopped.	Not available for use (library closed)	Not available for use (library closed)
		the 2nd		All seats in the libary had been removed, and the reading of the latest newspapers and magazines were stopped.	
		the 3rd	Not available for use (library closed)	All seats in the libary had been removed, and the reading of the latest newspapers and magazines were stopped.	Not available for use
		the 4th		All seats in the libary had been removed, and the reading of the latest newspapers and magazines had stopped. The rare archive materials were also unavailable.	Not available for use

	Reserve services, including lending by mail for measures to Covid–19	the 1st	During May 12, 2020–May 15, 2020, only the reservation materials were handed over at the library and the BM.	^８ During the first term,materials reserved before the library closed were put on hold until May 15, 2020. ^８ Copy service by mail started from April 9, 2020. ^ 8Lending by mail was provided during May 16, 2020–May 28, 2020.	・The hold period for reserved materials were extended (until May 15, 2020). Reservation requests were suspended during April 17–May 22. ・Loan service by mail was provided during May 5, 2020–May 22, 2020 ・Reservations were accepted only by phone during the first term. ^８ the library loaned reservation materials after designating the date and time in advance during May 16, 2020–May 22, 2020.
		the 2nd			
		the 3rd	^８ Reservations were accepted by phone or internet. ^８ The materials were received after the day when the library was closed. ^８ During the closing period (May 14, 2021–May 31,2021), reservation materials were lent out by mail to library card holders only living in Osaka city.	When materials are received at the library, the holding period will be extended. When using the automatic reservation book receiver,the renting period is the same as usual.	^８ Lending by mail (reservations can be accepted on the website, by visiting the library, or by phone)
		the 4th		・When receiving materials at the library, the hold period was extended. When using the automatic reservation book receiver, it was the same as usual.	^８ Lending by mail (reservations can be accepted on the website, by visiting the library, or by phone)
e) Reference services		the 1st	^８ The library conducted survey consultations by phone, email, etc.	^８ Received reference service by phone, email, or document	^８ Conducted reference service by phone.
		the 2nd			
		the 3rd		^８ Face–to–face reference services were canceled	^８ Conducted reference service by phone.(Face–to–face reference services are canceled)

		the 4th	^ 8Research consultation (limited to Osaka–related subjects) were acceptedby phone,documents, and e–mail.	^ 8 Face–to–face reference services were canceled	^ 8Conducted reference service by phone.(Face–to–face reference services are canceled)
f) ILL		the 1st	Not available	Not available	Not available
		the 2nd			
		the 3rd		^ 8 Not available (excluding Hyogo Prefectural Library and the library of Kobe City University of Foreign Studies)	
		the 4th		⇝ Materials in–library use only were not allowed. ^ 8 Stop issuing referral letters to libraries of universities.	
g) Service to children and young adults		the 1st	• Use of the library and events in the library were suspended. •For elementary, junior high and high schools in Osaka city, the library provided information centered on e–book services for learning English and created lists of recommended e–books by age group.	Not available	Not available
		the 2nd		Events for children with devised infection control measures have started	
		the 3rd	Some participatory events were cancelled.	Participatory events such as storytelling sessions were cancelled.	Not available
		the 4th	Some participatory events were cancelled.	Participatory events such as storytelling sessions were cancelled.	Not available

h) Service to the disabled			^ 8 Reference services and Lending by mail services are continued. ^ 8 Reading, lending, and returning in the library are same as normal materials ^ 8 Reading service for visually impaired were cancelled at the 1st term and the 3rd term.	・Reference servicess and Lending by mail services are continued. Reading service for visually impaired were cancelled from the 1st–3rd term. ・e–books have been introduced in earnest to provide services that take into consideration the visually impaired since Jan.2021.	・References and mailing services are provided. ・Reading service for visually impaired were cancelled.
i) Bookmobile Service(BM service)			・During the 1st term,The BM services were closed until May 15, 2020. From May 16, only the reservation materials were handed over. ・During the 3rd term,The services were closed until May 31,2021. From June 1, 2021, only the reservation materials were handed over.	During the 1st term,The BM services were closed until May 28, 2020. The service is available since May 29, 2020.	・During the 1st term, the services were closed until May 15, 2020, and will only be open for borrowing reserved materials from May 16, 2020 to May 22, 2020.

A STUDY OF PUBLIC SERVICES OF PUBLIC LIBRARIES IN JAPAN DURING THE CHALLENGING TIMES OF COVID-19: CASES OF OSAKA CITY LIBRARY, KOBE CITY LIBRARY AND KYOTO CITY LIBRARY

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Introduction

Japan confirmed first case of infection from COVID-19 on January, 2020. COVID-19 pandemic in Japan is divided into five waves before the number of the infected people reached 12million (Total population of Japan is 124.4 million) on August 15th, 2021. This pandemic has mainly occurred in metropolitan areas where a heavy flow of people can be seen, and it has caused troubles in almost every fields of social activities. One of these troubles is caused in the field of public services of libraries. Trying to understand the actual conditions in public libraries in Japan, we analyzed these conditions by a comparative method of research.

As research objects, we have chosen Osaka City Library, Kobe City Library and Kyoto City Library, particularly their central libraries. Cities of Osaka, Kobe and Kyoto are one integrated area geopolitically, and they are a main activity area of I-LISS Japan Chapter. We assume that a case study of these libraries may be useful in examining the synchronicity and difference of the policies adopted by public libraries in Japan against COVID-19 pandemic.

These libraries are those of metropolitan area in Kansai region and the windows toward Asian libraries. In addition, we who are members of I-LISS Japan Chapter, are greatly interested in these libraries. We are planning to offer an idea of another similar research by studying and evaluating these libraries.

Concerning the contents of public services of a public library, we tried to identify almost all services, from a) Use within library, b) Loan and return of materials, including A-V and digital materials, c) reference services, d) ILL services, e) Services to children and young adults, f) services to the disables, g) library events, h) BM services, i) use of library facilities, j) use of copying machines, and others. Although if a library opens or not and how long a library opens are not the part of public services, they are fundamental elements of library operation. Therefore, we put a priority on 'opening' in our research.

Research Methods

We studied the conditions of public services of Osaka City Library, Kobe City Library and Kyoto City Library as a case study. First, we explored the websites of these three libraries to find out what have happened in them, concerning public services, during these challenging times of COVID-19.

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Next, we interviewed with three persons responsible with these three libraries respectively. Third, we requested them to give us the documents which showed the libraries influenced by the COVID-19, and we succeeded to receive these. By these methods, we compared and analyzed the public services of these three public libraries during the challenging times of COVID-19, and we reached some conclusions.

Findings

We researched public services of Osaka City Library, Kobe City Library and Kyoto City Library as a case study. We have found the public services of these libraries influenced by the COVID-19, as Table shows.

Table. Public Services of Osaka City Library, Kobe City Library and Kyoto City Library during the Challenging Times of COVID-19

Month/Year	Government Policies	Osaka City Library	Kobe City Library	Kyoto City Library
Feb./2020		8) Library events cancelled, Feb. 2 ~ June 30.	10) Story telling and face–to–face reading for the disables cancelled, Feb. 7 ~	None
March/2020/		1) Library closed, March 2 ~ April 3.	1) Library closed, March 3 ~ March 15. Partially opened, March 17 ~ April8. 13) Reserved materials ciruculated, March 3 ~ March 15.	8) Library events cancelled, March 1 ~ 6) A–V and digital devices are not allowed to use inside the Library, March 5 ~
Apr./2020/	First 'state of emergency' for Osaka and Hyogo, April 7. Kyoto added on April16.	1) Library closed until May 15. 13) Reserved materials ciruculated, April 4 ~ April 7.	1) Opened partially, March 13 ~ April 8. Libray completely closed, April 9 ~ May 15. 4) Reference services by telephone, e–mail and mail accepted, the whole period. 13) Reserve request by e–mail not accepted, April 9 ~ May 15.	3) borrowed materials to be returned, April10 ~ May 6. Library completely closed, April 18 ~ May 15. 13) Only reserved materials ciruculated; and
May 1/2020	'state of emergency' desided to be continued untile May 31. On May 14 39 prefectures, excluding those prefectures and Fu or To as Osaka, Hyogo, Kyoto, Tokyo, Saitama, Kanagawa、Chiba and Hokkaido. On May 21, the emrgency measure lifted in Osaka, Hyogo and Kyoto.	1) Library closing continued until May 15. But Users still allowed to stay for 30 minutes. On May 16 Library opened again. But the library closes at 5 p.m. on Saturdays and Sundays. 2) Users allowed to stay in the library 30 minutes. Users not allowed to read newspapers or use degital devices. 12) Copying service is not also available. On May 26, the library began to offer the services stopped so far. 13) Circulation service of reserved materials given again on May 12.	1) Library closed, May 15 ~ Partially opened, May 29 ~ June 14. 13)May 28. Reserved materials ciruculated, May 16 ~	1) Libray closed until May 22, and reopened, May 23 ~ And the library closed at 5 p. m. Users could stay in the libray for 30 minutes and 2) users not allowed to read curent news papers. 3) Users can borrow materials. And the library website was accesible. 4) reference by telephone was available. 5) ILL service not available. 6) online databases, or CD and DVD devices not avaliable. 8) library events cancelled. 11) Many rooms, including lecture rooms, were closed. 13) Reserved materials sent to users' homes by mail with their coverage of postage, May 5 ~ May 15. 13) From May 16, users could come in the library to receive reserved materials. Even after the libray opened on May 23,

Discussion

We have made a research concerning public services of Japanese public libraries, by taking up Osaka City Library, Kobe City Library and Kyoto City Library as a case study objects. The result is shown in above Table. In the Table, 1) library opening, 2) Use within library, 3) Loan and return of materials, 4) reference services, 5) ILL services, 6) use of online database, CD and DVD devices, 7) Services to children, 8) library events, 9) BM services, 10) services to the disables, 11) use of library facilities, 12) use of copying machines, 13) reserve services, including sending reserved materials by mail, are described in this order, disregarding whether or not they are offered fully or partially.

Concerning "1) library opening," it has become evident that the three libraries are different regarding opening hours , but that they were all proactive in traying to open as long as possible. "Concerning 2) Use within library", Ministry of Health, Labor and Welfare issued a policy of "three Cs" as the prevention methods. These three Cs are a) closed spaces with poor ventilation, b) crowded places, and c) close contacts such as friendly conversations. Thanks to "three Cs," it has become evident that the three libraries tried to limit staying time of users within 30 minutes or one hour. However, it seems that this does users disservice since they cannot do much within such short stay.

Concerning 3) Loan and return of materials," it has become evident that two libraries, except Kobe City Library, made great efforts by utilizing mail methods for lending or returning materials. "Concerning 4) reference services," it has become evident that the three libraries provided reference by telephone while they cannot provide face-to-face reference. "Concerning 6) use of online databases, CD and DVD devices," it has become evident that prohibition of the use of these devices cannot be avoidable while the libraries are closed or while users are allowed to stay only 30 minutes or one hour.

"Concerning 7) Services to children," it has become evident that these services were not generally given in three libraries. The service to children is one of most important services of public libraries. It seems that they should have invented some alternative methods to serve children. "Concerning 9) BM services, " it has become evident that three libraries did not offer BM service, but that Kyoto City Library only began to offer on April, 2021. "Concerning 10) services to the disables," Osaka City Library and Kyoto City Library stated they temporally would stop face-to-face reading service for the disables on April, 2021, and on June, 2021 respectively. We could not get enough information on this service.

As a whole, we can say that public services in these three libraries during the challenging times of COVID-19 had been provided relatively well. There is one service which we cannot identify, which is young adult service, and which was first introduced in Kinki region in Japan.

Conclusion

This research has a kind of limitation. Though we have made a research concerning public services of Osaka City Library, Kobe City Library and Kyoto City Library, which are located in Kansai region, very important place geopolitically, we are aware that a research of public services of public libraries located in both Tokyo metropolitan area and other local areas in order to understand general conditions of public services of public libraries in Japan during the challenging times of COVID-19. We are also aware of the necessity of a research concerning how

the patrons living in these three big cities felt towards the public services of these libraries during the challenging times of COVID-19.

Appendix: List on integraling matter thorough the three libraries

1. (＊)In Japan the fifth wave of COVID-19 has come. State of emergency for Kansai area declared four times by the national goverment.
2. The 1st 'state of emergency' for Osaka and Kobe (April 7, 2020 － May 21, 2020),Kyoto
3. (April 16, 2020 － May, 21 2020）
4. The 2nd 'state of emergency' for Osaka,Kobe,and Kyoto (January 13, 2021 － February 28, 2021)
5. The 3rd 'state of emergency' for Osaka,Kobe,and Kyoto (April 25, 2021 － June 20, 2021)
6. The 4th 'state of emergency' for Osaka (August 2, 2021 － September 12, 2021),Kobe and Kyoto (August 20, 2021 － September 12, 2021)

LIBRARY SERVICES AND SUPPORT DURING COVID-19 PANDEMIC: A WEBSITE ANALYSIS OF IIM LIBRARIES

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Introduction:

In this digital environment, library websites plays major role in fulfilling the information needs of the academic and research community. If the organisation does not have library website, it can be said that it is locking the door of the gateway of knowledge. The academic and research community of today's environment want the services on real time for which dynamic library website with all the information is the only solution. For a new library user, library website will act as a foremost starting point for visiting and exploring the sources and services available in the library (Kumar & Bansal, 2014). Just like any business environment, website for library more essential to fulfil their information needs. COVID-19 pandemic has changed the information seeing habits from traditional way to online mode. Almost all the academic institutions have locked, which has made great setback to the users who could not visit the library for their information needs. Learn from the home was the new concept and has opened a new way of library functioning. In the initial stage, most of the libraries do not have any idea of providing services as the pandemic has made to close the libraries without any pre plan. Slowly, the libraries have switched over from traditional way of functioning to online mode of functioning for which the librarians have chosen the library website as best medium for online services. Library websites are mirror of quality library services. It acts as an immediate gateway to disclose library services to end-users. In this pandemic situation, websites has become the most important tool to communicate information regarding library services. It is also not sure, when the normal situation will be back and designing dynamic library website and updating the same quite often only will be the solution during this pandemic period. In this circumstances, a study to evaluate the library websites will be opt one. Hence, this study has been undertaken.

Indian Institute of Management (IIM's) an overview:

Indian Institute of Management (IIM) is a premier institutions located in different parts of the country. The institutes provide high quality education to different sectors of the society. There are all together twenty (20) IIM's in the country and which comes under the jurisdictions of Ministry of Education, Government of India. It offers undergraduate, postgraduate, doctoral and executive programs in the field of Business Administration. IIM's are declared as institutions of national importance by Ministry of Human Resources Development (MHRD). List of IIM's along with their abbreviation, year of establishment, state and website/webpage link are shown in Table 1.

Literature Review:

Ambika et al. (2017) have conducted a study to evaluate the engineering college library websites of Mysore region which are affiliated to VTU. They studied library resources and services provided through Webpages, Software used in engineering college libraries and facilities provided through library websites. The study revealed that engineering college libraries are providing least importance in updating their Webpages regularly. Kaushik(2015) has examined 28 NIT Library

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websites and noted the status of library related information, services, resources and other facilities available on NITs library websites. He ranked NIT Library websites based on their respective features. The study revealed that all the NIT's are members of INDEST AICTE Consortium. The study stressed that quality library website must have Web 2.0 applications which is lacking in the NIT websites and regular updates regarding collection, services, etc. The study also insisted to provide fully sophisticated library websites in all NITs. Verma & Devi (2016) studied 12 IIM Library websites under 14 categories such as accessibility of library webpage, website classification by web page size, website description, navigation, website aids and tools, website authority details, availability of library websites, general information of the library webpage, information about library collection, e-resources, services, value added services, statement of responsibility, web 2.0 tools, to analyze the web content of the IIM Libraries websites, and to find out the library services facilities provided through their respective library websites. They have also observed that all the IIM Library WebPages are unique in nature. All IIMs are familiar with web 2.0 tool but not single IIMs have RSS facility in their websites. They also suggested that library WebPages must be maintained and updated on regular basis which will help the user to know the day to day updates of library and enhance the usage of library effectively. Dadhe (2020) has studied different type of services provided by Indian Institute of Technology (IIT's) during COVID-19 Pandemic. The findings of the study revealed that significant measures were taken during COVID-19 period to give access to all digital content to end users. Leo (2020) has studied Library services during COVID-19 in The Chinese University of Hong Kong by highlighting some of the major services provided by library during COVID-19 lockdown period. The study found that the university library has given extended services like automatic extension of Loan period, automatic renewal services, exemption to pay overdue charges by students. Along with this library has provided new service like Zoom-with-a-Librarian where users can meet Librarian through Zoom meeting and avail information regarding e-services. By looking into different studies conducted, it is found that there is no such study has been conducted anywhere. Hence, the study fills the gap.

Objectives:

The Primary objective of the study is to find out the facilities and services provided by the IIM libraries during COVID-19 pandemic through library websites:

1. To find out the availability and access to e-resources during COVID-19 pandemic.
2. To know the physical access to library resources during COVID-19 pandemic.
3. To find out the Information regarding special services provided during COVID-19 Pandemic.

Methodology:

Library websites acts as gateway to the library resources. A well designed library website will definitely meet the information needs of the users. There are quite good number of studies have been conducted to find out the websites quality and purpose it serves. An evaluation of predesigned checklist of web content has been done by many like Kaushik (2015), Verma (2016) etc. During COVID-19 situation, the services provided by the libraries are different as the physical access to library is being stopped due to spread of Covid-19. In this pandemic situation, service through online will be the only solution for which the library website should be dynamic which must include all the resources, services and facilities available in the library. The present study

influences the study conducted by Dadhe (2020) who studied IIT's websites and recorded services offered by IIT's during COVID-19 lockdown situation. This study is not based on predesigned checklist but finds out innovative user services provided by libraries of premier institution during COVID-19 pandemic situation. This will set the way to follow other institutions also. The search of the websites was conducted during 1st August to 8th August, 2021. This survey studied all the 20 IIM library websites.

Scope and Limitations of the Study:

The resent study covers the library websites of the Indian Institute of Management (IIM's). All the 20 IIM library websites had been selected for the study. The findings of the study are purely based on the contents available on the day of investigation of websites.

Findings:

Table 1: List of Indian Institute of Management (IIMs)

Sl. No.	Name of the Institute	Abbreviation	Year of Establishment	State	Website
1	IIM Calcutta	IIM–C	1961	West Bengal	iimcal.ac.in
2	IIM Ahmedabad	IIM–A	1961	Gujarat	iima.ac.in
3	IIM Bangalore	IIM–B	1973	Karnataka	iimb.ac.in
4	IIM Lucknow	IIM–L	1984	Uttar Pradesh	iiml.ac.in
5	IIM Kozhikode	IIM–K	1996	Kerala	iimk.ac.in
6	IIM Indore	IIM–I	1996	Madhya Pradesh	iimidr.ac.in
7	IIM Shillong	IIM–S	2007	Meghalaya	iimshillong.ac.in
8	IIM Rohtak	IIM–Rohtak	2010	Haryana	iimrohtak.ac.in
9	IIM Ranchi	IIM–Ranchi	2010	Jharkhand	iimranchi.ac.in
10	IIM Raipur	IIM–Raipur	2010	Chhattisgarh	iimraipur.ac.in
11	IIM Tiruchirappalli	IIM–T	2011	Tamil Nadu	iimtrichy.ac.in
12	IIM Kashipur	IIM–Kashipur	2011	Uttarakhand	iimkashipur.ac.in
13	IIM Udaipur	IIM–U	2011	Rajasthan	iimu.ac.in
14	IIM Nagpur	IIM–N	2015	Maharashtra	iimnagpur.ac.in
15	IIM Amritsar	IIM Amritsar	2015	Punjab	iimamritsar.ac.in
16	IIM Bodh Gaya	IIM–BG	2015	Bihar	iimbg.ac.in
17	IIM Sirmaur	IIM Sirmaur	2015	Himachal Pradesh	iimsirmaur.ac.in
18	IIM Visakhapatnam	IIM–V	2015	Andhra Pradesh	iimv.ac.in
19	IIM Sambalpur	IIM Sambalpur	2015	Odisha	iimsambalpur.ac.in
20	IIM Jammu	IIM–J	2016	Jammu and Kashmir	iimj.ac.in

Table 2: Links to Library Websites:

Sl. No.	Name of the Institute	Direct Link from institute Home Page	Through other Headings
1	IIM Calcutta	√	x
2	IIM Ahmedabad √	√	x
3	IIM Bangalore	√	x
4	IIM Lucknow	x	√
5	IIM Kozhikode	√	x
6	IIM Indore	x	√
7	IIM Shillong	x	√
8	IIM Rohtak	x	√
9	IIM Ranchi	√	x
10	IIM Raipur	√	x
11	IIM Tiruchirappalli	√	x
12	IIM Kashipur	√	x
13	IIM Udaipur	√	x
14	IIM Nagpur	√	x
15	IIM Amritsar	x	√
16	IIM Bodh Gaya	√	x
17	IIM Sirmaur	x	√
18	IIM Visakhapatnam	√	x
19	IIM Sambalpur	x	x
20	IIM Jammu	√	√

(√=yes, x =No)

Libraries are the supporting centre for all academic activities like teaching, learning, and research. Services provided through Library webpage enables user to access information easily and also it saves the time of the reader. **Table 2** states that majority of the libraries i.e. out of 20 libraries 13(65%) has given direct link to library websites through institute home page. Other 7(35%) has given access through other sections such as facilities, institute initiatives, infrastructure & resources etc.

Table 3: Availability and Access to E-Resources

Sl. No.	Name of the Institute	Availability of e–resources	Links to Open Access e–resources	OPAC	Remote Access	User Guidance to use Remote Access
1	IIM Calcutta	√	√	√	√	√
2	IIM Ahmedabad	√	√	√	√	√
3	IIM Bangalore	√	√	√	√	√
4	IIM Lucknow	√	x	√	x	x
5	IIM Kozhikode	√	√	√	√	√
6	IIM Indore	√	√	√	√	√
7	IIM Shillong	√	x	√	x	x
8	IIM Rohtak	√	√	√	√	x

9	IIM Ranchi	√	√	√	√	√
10	IIM Raipur	√	√	√	√	√
11	IIM Tiruchirappalli	√	√	√	√	√
12	IIM Kashipur	√	√	√	x	x
13	IIM Udaipur	√	√	√	√	√
14	IIM Nagpur	√	x	√	x	x
15	IIM Amritsar	√	√	√	√	x
16	IIM Bodh Gaya	√	√	√	√	√
17	IIM Sirmaur	√	x	√	x	x
18	IIM Visakhapatnam	√	x	√	√	x
19	IIM Sambalpur	√	√	√	√	x
20	IIM Jammu	√	√	√	x	x

(√=yes, x =No)

The main purpose of any academic institution is to enhance teaching, learning and research activities by providing best resources to the students and faculty members. During this COVID-19 pandemic situation, IIM libraries have taken initiative in providing needed information to users. **Table 3** reveals that all the 20(100%) libraries have access to e-resources. Out of 20 libraries, 15(75%) have given access to open access resources which is need of an hour. All the 20(100%) libraries have OPAC to search needed information from the library. 14(70%) of the libraries are providing remote access to subscribed e-resources which will help the user to use subscribed e-resources without any barriers. 10(50%) of the libraries are providing step by step user guidance to use remote access facility which will boost the usage of the remote access and also e-resources.

Table 4: Information Regarding Library Services

Sl. No.	Name of the Institute	Working Hours	Information Regarding Overdue Charges	Access to Print Document
1	IIM Calcutta	√	x	x
2	IIM Ahmedabad	√	x	√
3	IIM Bangalore	√	x	√
4	IIM Lucknow	√	x	√
5	IIM Kozhikode	x	x	√
6	IIM Indore	√	√	√
7	IIM Shillong	x	x	x
8	IIM Rohtak	x	x	x
9	IIM Ranchi	x	x	x
10	IIM Raipur	√	x	x
11	IIM Tiruchirappalli	x	x	x
12	IIM Kashipur	x	x	x
13	IIM Udaipur	x	x	x
14	IIM Nagpur	x	x	x
15	IIM Amritsar	x	x	x
16	IIM Bodh Gaya	x	x	x

17	IIM Sirmaur	x	x	x
18	IIM Visakhapatnam	x	x	x
19	IIM Sambalpur	x	x	x
20	IIM Jammu	x	x	x

(√=yes, x =No)

Table 4 shows information regarding the services provided by the libraries. It is found from the above table that libraries such as IIM-C, IIM-A, IIM-B, IIM-L, IIM-I-, IIM-Raipur 6(30%) have given information regarding working hours (it may be restricted, only for in house users etc.,). Only one Library IIM-I 1(5%) has given information regarding reduced overdue charges during pandemic and 5(25%) of the libraries have given information regarding access to print documents during COVID-19 pandemic time.

Table 5: Special service during Pandemic

Sl. No.	Name of the Institute	Access to Information Related to Pandemic	Research Assistance through online	Organization of Virtual Events	Ask Librarian
1	IIM Calcutta	x	x	x	√
2	IIM Ahmedabad	√	√	√	√
3	IIM Bangalore	x	√	x	√
4	IIM Lucknow	x	x	x	√
5	IIM Kozhikode	x	√	√	√
6	IIM Indore	x	√	√	√
7	IIM Shillong	x	x	x	x
8	IIM Rohtak	x	x	x	√
9	IIM Ranchi	x	x	x	√
10	IIM Raipur	x	x	x	x
11	IIM Tiruchirappalli	x	√	√	x
12	IIM Kashipur	x	x	x	x
13	IIM Udaipur	x	x	x	√
14	IIM Nagpur	x	x	x	x
15	IIM Amritsar	x	x	x	x
16	IIM Bodh Gaya	x	√	√	
17	IIM Sirmaur	x	x	x	√
18	IIM Visakhapatnam	√	√	√	x
19	IIM Sambalpur	x	√	x	x
20	IIM Jammu	x	x	x	x

(√=yes, x =No)

Table 5 shows that even in COVID-19 pandemic period, some of the libraries have taken interest in providing special services to users. IIM-A and IIM-V 2(10%) provides access to information related to pandemic, 8(40%) of the libraries provides online research assistants like Similarly Plagiarism checking, Grammarly services, information regarding reference tool etc. 6(30%) of the libraries are providing virtual events like online webinars, seminars to its users and 10(50%) of the libraries provides facilities to ask librarian.

Table 6: Information Related to COVID-19

Sl. No.	Name of the Institute	SOP's	Notice & Circulars	Vaccination Information
1	IIM Calcutta	x	x	x
2	IIM Ahmedabad	√	x	x
3	IIM Bangalore	x	x	x
4	IIM Lucknow	x	x	x
5	IIM Kozhikode	x	x	x
6	IIM Indore	x	x	x
7	IIM Shillong	x	x	x
8	IIM Rohtak	x	√	x
9	IIM Ranchi	x	x	x
10	IIM Raipur	x	√	x
11	IIM Tiruchirappalli	x	x	x
12	IIM Kashipur	x	x	x
13	IIM Udaipur	x	x	x
14	IIM Nagpur	x	x	x
15	IIM Amritsar	x	x	x
16	IIM Bodh Gaya	x	√	x
17	IIM Sirmaur	x	x	x
18	IIM Visakhapatnam	x	x	√
19	IIM Sambalpur	x	x	x
20	IIM Jammu	x	x	x

(√=yes, x =No)

Table 6 shows that IIM-A has provided SOP's to be followed during COVID-19 time, IIM Rohtak, IIM Raipur, IIM-BG have given Notice and Circulars regarding COVID-19 pandemic, and IIM-V has given Vaccination information to its users.

Conclusion & Suggestions:

The outbreak of COVID-19 pandemic situation has changed the way of delivering library services. The internet and new technologies has created a new ways to serve the library users' even physical access to library is being halted due to pandemic. Library websites have become the main source to access the information. In present study, we can notice that all the IIM libraries adopted for new technology and giving services to its users without any hurdles. It has provided links to e-resources, Information regarding access to e-resources and restricted access to physical resources etc. IIM Libraries are also providing research assistance through online and providing information related to COVID-19 like SOP's, Notice and Circulars, Vaccination Information. The present study shows that IIM libraries have evolved as a smart service provider even during this pandemic time and provides continuous service to its users. Some of the suggestions are all the IIM libraries should give direct link to its library services during COVID-19 Pandemic lockdown period which will help users to access library website easily. All IIM website should provide link to subscribed as well as open access e-resources. Websites should provide restricted working hours and information regarding restricted access to physical resources so that user can plan to

visit and access print resources also. Most important is all IIM library should provide information regarding pandemic, SOP's should be followed inside the library, information regarding notice and circulars regarding vaccination etc.

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LIBRARY AND INFORMATION SERVICES PROVISION DURING COVID 19: ERNEST COOK ULTRASOUND RESEARCH AND EDUCATION INSTITUTE LIBRARY-MENGO HOSPITAL, UGANDA'S PERSPECTIVE

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Introduction

COVID-19 pandemic has become a global threat and has established a fear among the mankind. Uganda reported its first case of COVID-19 on the March 21, 2020 (Coronavirus Disease, 2020). A 36-year-old businessman from Kampala, Uganda's capital, who had travelled to Dubai, United Arab Emirates (UAE) in a healthy condition returned with fever and flu-like symptoms to Entebbe International Airport (EIA) and he was tested positive for SARS-CoV-2 (Coronavirus Disease, 2020). Consequently, individuals who had been to UAE two weeks prior to the first case were traced by Ministry of Health (MoH) Uganda and subjected to institutional quarantine. In the following two weeks (March 21 to April 5), there was a rapid rise in the number of cases to 52, most of whom were imported cases from institutional quarantine (MOH,Uganda 2020).

With the spread of Corona Virus, Uganda was put on lock-down, travel was put to a halt, and Conferences were cancelled, higher institutions of learning, colleges and schools were equally shut-down, the Libraries particularity those in academic institutions faced with unique situations just as their mother institution. It became hard and so difficult for academic libraries to take decisions on how and which library and information services to provide to users amidst full closure of education institutions. In Uganda, normally, library and information services are offered physically and interactively, offer counter interactions with clients and books, Record Centres – offer counter interactions with clients and records. All these are facing hardships.

As a way of easing on the lock down and ensuring continuity of learning among students, the government of Uganda recommended online learning to ensure continuity for learners. Though already challenged, such a recommendation piled more pressure on the already financially and structurally strained education system. It left a lot of questions and challenges on how to cope with this new dimension of learning albeit ill preparedness and exploration of new grounds for learners of the education system. The Library is taken to be a competent authority for providing access to authoritative, current and timely information to support learning and research while leveraging innovations of the information age brought about by ICTs.

Background to Ernest Cook Ultrasound Research and Education Institute Library- Mengo Hospital Kampala, Uganda

Ernest Cook Ultrasound Research and Education Institute (ECUREI) library- Mengo hospital is one of the libraries whose purposes is to serve mainly students and staff both academic

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and clinical. The Library provides services to approximately 800 users. Its library resources are both print and electronic, and these involve textbooks, journals, e-books, Medical encyclopedia, thesis and dissertations and others.ICT facilities in the Library include, over 25 computers, Wifi and LAN to students, discussion rooms, research and Journal room and a computer laboratory

Before the onset of COVID-19, ECUREI Library was running smoothly providing face to face library and information services to the users, such as Provision of reference and information services, current awareness, selective dissemination of information (SDI), user orientation and trainings, photocopying, ICT, user on spot training, Reading and study space. The library opened its physical doors from 8:30 am to 9:00pm EAT (Monday to Friday) plus weekend hours.

Due to the need to keep students engaged at home and complete their academic calendars, Universities have begun to adopt online teaching and learning methodologies (University World News, 2020a, University World News, 2020b). The closure of reference services, Borrowing Books & Equipment not circulating physical items because of the attenuation period of the SARS-CoV-2 virus on library materials and denial on physical access to resources and reading materials at the library as such contributed to the negatively to research and reading culture among the users, and this left the library staff with thoughts of adopting the technology which was not in place to be the only way to fit in the thought-provoking period of COVID-19 pandemic.

After the relaxation by the government of Uganda on the lock-down and allowed education sector to reopen, the Ministry of education allowed institutions to open partially for Finalists on September 20th, 2020. ECUREI Library partially opened amidst restrictions following the government of Uganda Standard operating procedures (SOP) such as social distancing keeping, wearing of face Masks, sanitizing hand and washing hands with soap and water. Also, these included; limited number of students and staff at the same seating in the library from 120 users to 30 users ,wearing of face masks, sanitize hands when in library at all time, Washing hands with soap at the library entrance and exit, no borrowing of information materials out, limited time for individuals to seat in the library.

Library and Iinformation Sservices Prevision in Pre COVID-19 Pandemic era at ECUREI Llibrary.

Before COVID-19 pandemic, ECUREI Library provided face to face services within the physical wall of the library, and the use of IP address to access resources on campus. Below are some of the library and information services provided to the users;

Reference Services: This service was usually provided at reference desk as a public service counter where professional librarians provide library users with direction to library materials, advice on library collections and services, and other expertize information.

User Education: Library user are trained on how to search and retrieve library materials for example tutorials on searching on-line and off-line databases resources and virtual tours of library collections.

Selective Dissemination of Information: These are services provided to individual users who needs unique information.

Current Awareness Service Provision: Library users were allowed access to up-to date information that will give them news on new developments around the world and Uganda.

Indexing and Abstracting Services: It is a service that is carried out to provide summaries of documents and also to assign descriptors for referencing documents.

Library Retrieval System: This involves the use of compact disc read only memory (CDROM), a technological mechanism for acquisition of specialized CD-ROM databases.

Reprographic services: Reprographic machines is used for providing photocopying services for the library users for example, users who wished to have a copy of a page from a textbook.

Online Public Access Catalogue service (OPAC): which a service provided via online used by the library users to access list of available information materials in the library.

Internet Services (IS), and Circulation Services (CS), etc. were also provided by the library so as to satisfy the information needs of the students and staff of ECUREI.

Contextualising Library and Information Services Pprovision Dduring COVID-19 Pandemic Era at ECUREI Library

COVID-19 has caused everyday life of individuals and has hindered the worldwide economy, social, transport, health and education sector. This pandemic also impacted a social life of people all over the world. From inception to now, the attainment of educational objectives in Uganda has been achieved through non electronic teaching and learning methodologies. Eze et al. (2018) posited that the traditional educational system required having students on campus and taking lectures, examinations, seminars and other academic assignments in classrooms in physical buildings. More so, a library was seen traditionally as a building that houses a collection of books and other materials; a depository built to contain books and other materials for reading and study (WordNet Search-3.0). Library and information services and operations are built around this traditional system. Thus, most library services provisions are modelled in such a way that users have to be on campus to access the resources.

Academic libraries in Uganda including ECUREI Library were much affected hard by COVID-19 pandemic with difficult times as it was forced to shift its services which were traditionally rendered face to face to library users to the use of ICT. These services include Reference services, Lending of materials, physical learning space, physical information literacy, reading environment, bibliographic services, ICT room etc. All these services were redesign and the daily routine services changed due to pandemic. Eze et al. (2018) posited that the traditional educational system required having students on campus and taking lectures, examinations, seminars and other academic assignments in classrooms in physical buildings. In the education sector, online learning has emerged as an elixir to address the restrictions imposed in the wake of corona virus pandemic and considered as a feasible option to overcome the challenges. COVID-19 challenged the ways the library used to render its services to the users since they were on lock-down with no access to physical library. The closure of reference services, Borrowing Books & Equipment not circulating physical items because of the attenuation period of the SARS-CoV-2 virus on library materials and denial on physical access to resources and reading materials at the library as such contributed to the negatively to research and reading culture among the users in the first early days of the closure, and this left the library staff with thoughts of adopting the technology which was not in place to be the only way to fit in the thought-provoking period of COVID-19 pandemic.

Consequently libraries have been exploring the collection of potential e-resources and providing remote access to those which may be of interest to the fraternity in support of academic

and research activities. The library has provided direct link on the institution web page to increase the visibility of its library and information services.

In order to deal with the high demand of the users, the library came up with multiple ways of how users can access resources at a timely manner when they need it. Some of the significant library and information services provided by the ECUREI Library during COVID-19 are discussed here.

Vital Support Services to the Users: To keep users near the library, vital services such as strengthened open vital support services through open library help lines, emails, customized interactive services, live chats and ask a librarian are provided at ECUREI Library to users. Maximizing on skills for managing electronic networks, specifically how best clients can access electronic resources and databases that are normally accessed through institutional internet protocol (IP) address to remote access

Remote Access to Subscribed E-resources: ECUREI Library has a provision of remote access to all the subscribed resources in terms of e-books, e-journals, medical cases and video lectures, and this has led to the expansion of the existing resources. Students have been trained on how to use the remote access resource and given step by step user guide on remote login to get access to the licensed E-resources through the use of MyLOFT system that brings all resources together in one central place for easy access and information retrieval by the library users.

Open Access Resources : Through the use of Consortium of Uganda University libraries (CUUL), ECUREI Library provided links to information resources to its users. The library also train users to use the Directory of Open Access Journals (DOAJ), AMS Free Online Books, Book Boon, Directory of Open Access Books (DOAB) and many more.

More so, Electronic Information for Libraries (EIFL) negotiated commercial e-resources and made them available for free or at discounted prices to library consortia and their members in eligible EIFL partner countries, for example in Uganda, through the Consortium of Uganda University Libraries (CUUL) were ECUREI library is a member. Links have been highlighted to these free and expanded resources on their portal to facilitate visibility of these options available for users. This has enhanced the possibility of users availing the virtual services.

Free and Expanded Access by the publishers: In response to the pandemic time, some publishers opened their published resources free of charge to all the researchers, and this increased access to additional library resources such as e-books, e-journals, and databases during the time of COVID 19 pandemic. These free resources provided are displayed on the homepage of the institution such that users can be able to access them through the use of via a link, and this has enhanced the provision of library and information services provision to the library users during the COVID pandemic.

COVID -19 Information for All

Authentic websites such as World Health Organization (WHO) website are used to fish information on COVID-19, users are updated daily with statistics of the pandemic across the world using map data. Library professional associations such IFLA has also provided resources on COVID-19 and these resources are shared to users on frequent basis, ECUREI Library created links to these websites for real time mapping of data required by the users for evidence based guidelines, policy instructions and research output for quick wins to alleviate the spread of corona virus.

Knowledge Mapping as a Quick Win

Repackaging of the required information in various formats is one of the ways through which resources were disseminated using available channels that include e-library system, ECUREI websites, emails, Ask the Librarian, social media such as Mobile Apps including SMS, WhatsApp and e-noticeboards. This made communication between the librarian and the library users convenient and efficient since the users could contact the library at any time.

Conclusion and Recommendations

The outbreak of the COVID-19 pandemic has dictated unexpected fundamental changes in the provision of library and information services to the users at ECUREI Library, as strict wearing of mask, social distancing, washing of hands with soap and water, re-engagement of library furnitures and other measures during the pandemic. There was a complete unprecedented shift from the traditional methods of information service delivery to electronic platforms, this new normal has has presented so many challenges to the library. However, the ICTs have created a new and ultimate environment and permitting the library to enhance and strengthen services to enhance research, teaching and learning even in this difficult and uncertain time. The concept and practice of providing remote access to e-resources by libraries is not new, but the user friendly way adopted by many libraries and the number of resources made available by them during the pandemic is exemplary.To the problems encountered in the library during the pandemic, the study made the following recommendations as the way forward for enhanced service delivery at ECUREI Library.

Review of Library Collection Development Policy and Improvement of Information Resource Budget

Due to the unprecedented shift from the use of print information to the use of digital objects, there is urgent need for the redesigning of the current collection development policy and improvement of the library's budget to carter for the new shift

Responsive Library Website Design and Adoption

A major feature of online education is the fact that teaching and learning takes place in a virtual space. In order to satisfy information needs of users on-line, ECUREI Library has to design and adopt a responsive and robust library website.

Retraining and Retooling of ECUREI Librarians

Facing the new library management in the new-normal era requires a new skills for librarians. Undoubtedly, it required more training, workshops and other learning discussing libraries in the new normal.

Adoption of the Blended Librarianship Model

Blended librarianship is a relatively new concept in developing countries like Uganda. It suggests the combination of 'the traditional skill set of librarianship with the instructional technologist's hardware/software skills and the educational designer's ability to apply technology appropriately in the teaching-learning processes (Bell & Shank, 2007). There is need for ECUREI Library to urgently switch to blended librarianship in other to promotes the direct and automatic integration of librarians and library resources in the teaching - learning process on online platforms.

Massive Use of Social Networks

Social media networks are growing rapidly as channels of communication interaction and information dissemination among individuals in Uganda. The major advantages of social

media networks are their abilities to establish and build relationships and build social interaction; this will help ECUREI Library to connect with the information needs of users and subsequent information service delivery.

Networks both National and international.

The ECUREI Library should deliberate activities to build, reinforce and maintain relationships of trust with other institutions and bodies to achieve its goal. Professional networking is simply networking focused on professional goals." (Anders, 2018).

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TRANSFORMATION OF NATIONAL INSTITUTE OF TECHNOLOGY-WARANGAL LIBRARY DURING COVID-19 PANDEMIC

Dr. K. Veeranjaneyulu[1]

Introduction

The COVID-19 pandemic across the globe forced government authorities to implement public safety measures to prevent the spread of the deadly virus, and many academic and research institutes quickly responded and modified their operations, services and procedures. The libraries attached to these institutions started providing library services virtually even after their closure. The impact of the pandemic on libraries is unprecedented and libraries around the world are facing hard choices about which services to offer and how, ranging from minimal restrictions to complete closure. Every problem brings new opportunity, and thus many libraries have started new initiatives to support the academic and research community during the covid pandemic.

COVID-19 Pandemic and Indian Higher Education

The COVID-19 pandemic has undoubtedly been a driver for change, viz., providing library services virtually to ensure uninterrupted information services to the academic and research community.

The University Grants Commission (UCG) an apex body, which regulates higher education in India, has issued instructions that the faculty members and researchers should utilize this period of leave to engage in the following activities:

- Development of online content, online teaching and online evaluation,
- Prepare lesson plan and develop instructional material for the courses to be offered during the next academic year/ next semester
- Continue to do research, and Write articles, papers, etc.
- Prepare innovative questions for the 'Question Bank'
- Prepare innovative projects on "Ek Bharat Shrestha Bharath" and other topics

The day-by-day changing pandemic situation had left many students wondering what the future holds for them. At this moment, the best thing to do is to follow state and central regulations to keep themselves and others safe and healthy; and take advantage of the resources provided by the UGC to them during this time and do their part to help the country get through it.

UGC also conveyed, "*Let COVID 19 not stop you from learning- ICT initiatives of MHRD and UGC"* and listed some of the e-resources, which the academic community can use and get benefit out of them. These e-resources are:

- SWAYAM on-line courses
- UG/PG MOOCs
- E-PG Pathashala
- E-content courseware in UG subjects
- SWAYAMPRABHA

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- CEC-UGC You Tube channel
- National Digital Library
- Shodhganga
- E-Shodh Sindhu
- Vidwan

The above resources cover a wide range of subjects and courses, which are very useful to the academic community during the pandemic lockdown period.

NIT-Warangal Library

The National Institute of Technology Warangal (NITW), formerly known as "Regional Engineering College" was established in 1959. Over the years, NITW has developed into a premier institute of higher learning and ranked among the top technical education institutions in India. The central library was established immediately after the inception of the institute to support regular academic and research activities. The library has a wide range of learning resources on Engineering, Technology, Sciences, and Humanities & Social Sciences described in the Table-1.

Table-1 NIT-W Library Resources

Sl. No.	Collection	Quantity
1.	Books (No. of Volumes)	1,85,218
2	No. of. E-Books	235
3.	Books (No. of Tittles)	22,534
4.	No. of e-journals subscribed	7845
5.	No. of Print Journals	22
6.	No. of Books in Book Bank	30,445

The NIT-W Library is a member in the E-Shodh Sindhu consortium and subscribes the online journals from E-Shodh Sindhu as well as other journals from the institute funds. The Central Library has a state-of-the-art digital library with sufficient number of computers, server, OPAC terminals, digital printers, etc.

New initiatives of NIT -W Central Library during COVID-19 pandemic

During the pandemic, the NIT-W library focused on safeguarding the health and well-being of their staff as well as the students and faculty and enabled library staff to work from home as and when necessary. The central library initiated many new facilities and services to ensure uninterrupted access to all the library resources & services . The following services are provided.

Remote Access Service - My LOFT (My Library on Fingertips)

The Central Library, NITW introduced a new service called "Remote Access Services - MyLOFT (My Library On Fingertips)" for the benefit of students, research scholars and faculty. The Remote Access Services Request Form is available in the library webpage at: https://forms.gle/3UxbXJ3q9MEqY3PCA

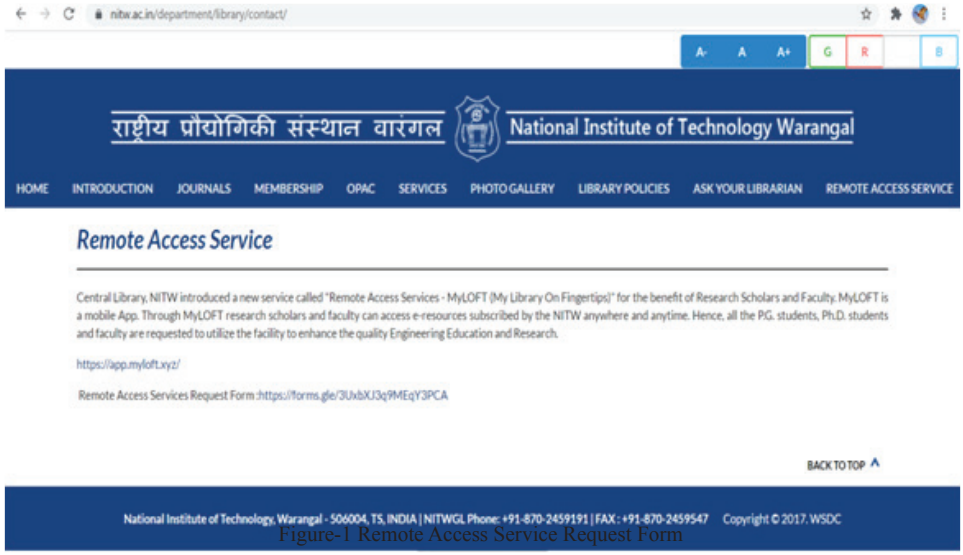

Figure-1 Remote Access Service Request Form

MyLOFT is a mobile App (Fig.2) through which students, research scholars and faculty can access e-resources subscribed by the NITW library from anywhere and anytime.

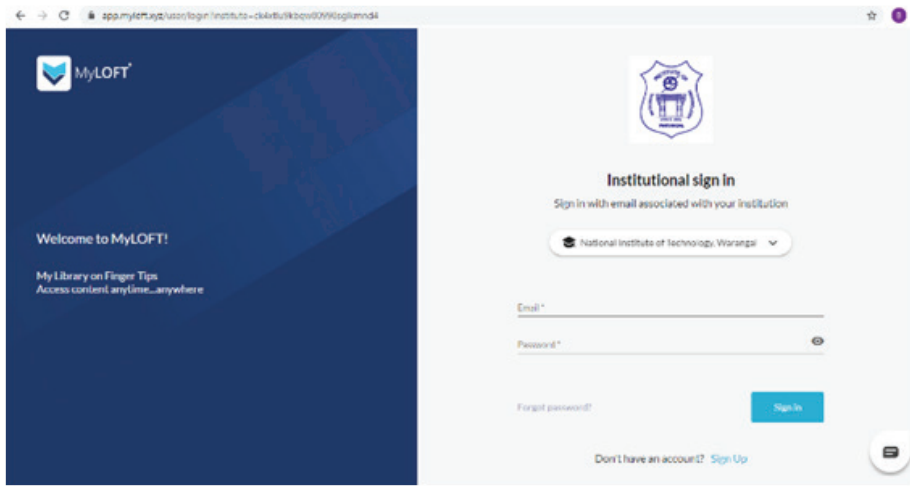

Figure-2 Home Page of MyLOFT

Implementation of KOHA LMS-Open Source Software

All the Central Library operations were computerised using KOHA - Integrated Library Management Software for automation of Library Functions and OPAC (Online Public Access Catalogue) was made available on the Intranet (http://opac.library.nitw.ac.in:8081/). The launching of this facility was done during the pandemic period

Web Online Public Access Catalogue (OPAC):

Web-OPAC has been implemented during this period using cloud computing to ensure

"anywhere anytime access" to the library collections. The Web OPAC enabled the faculty and students to access the open source link of e-books from anywhere and anytime by visiting the URL: http://nitwopac.in:7071/

Figure-3 Home Page of OPAC

Free and expanded Access to e-resources

During the pandemic, some publishers started providing expanded access to their e-resources (access to additional materials than subscribed by the library) including e-books, e-journals, etc., for a limited period. The web links to these resources were compiled and made available to the faculty, researchers and students to enable them to avail the service in a virtual environment.

Document Delivery Service

Document delivery service (DDS), which was previously not available, has been introduced during the COVID-19 pandemic. The e-mail based DDS ensures prompt delivery of research articles in PDF format to the patrons. Through this newly introduced service, library members are able to send request to the library for obtaining photocopies of journals articles, which are not available in our central library. This service is provided free of charge to all NIT Warangal library members for academic and research purpose only.

To avail this service, library users are requested to fill Google Form (https://forms.gle/XHRYHffmsJ3wXzko8) with full bibliographic details of the documents (not exceeding 2 articles at a time) and the same is illustrated in Figure-4

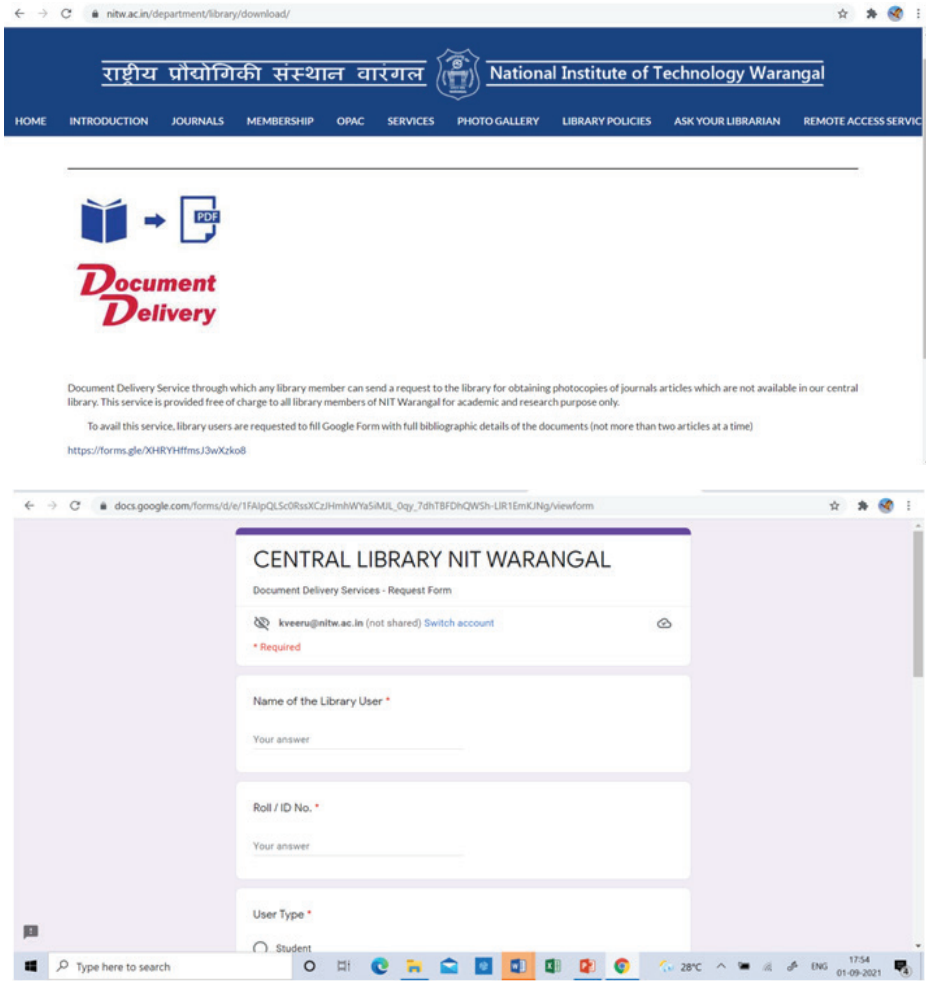

Figure-4 Document Delivery Service Request Form

NIT-W Faculty Information System

The Central Library has implemented a new "Faculty Information System" under the Indian Research Information Network System (IRINS) to showcase the academic and research activities of the institute faculty members and provide an opportunity to create a scholarly research network. It supports the integration of the existing research management system such as HR system, course management, grant management system, institutional repository, Open and commercial citation databases, scholarly publishers, etc. It has become the source of data for the NIRF, NAC and other international raking systems. The Faculty Information System depicted in Figure-5 is available at: https://nitw.irins.org/

Figure-5 Home Page NIT-W Faculty Information System

Single Point Access to Scholarly Open Access Resources

The NIT-W Library collected several URLs of scholarly Open Access e-books & e-journals and created a single point access for library users to scholarly OA resources through Library OPAC and Remote Access System.

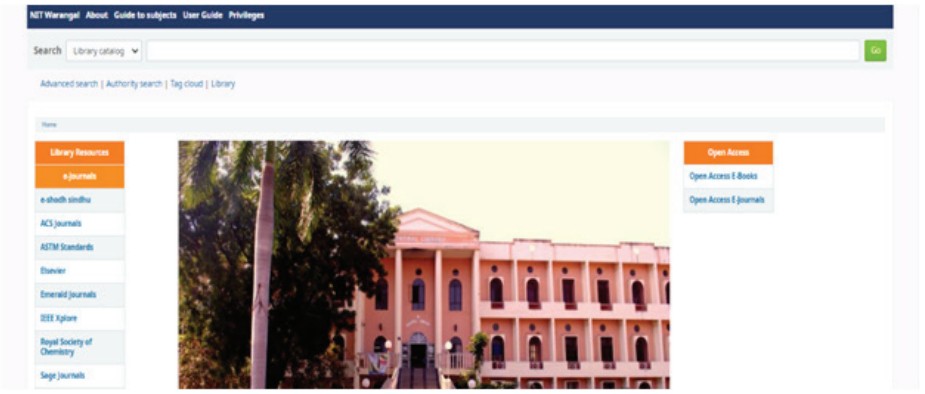

Figure-6 OA Resources Link @ OPAC

Institutional Repository

The NIT-W Institutional Repository has been designed and developed to showcase, organize, share, and preserve the research output of National Institute of Technology Warangal. The Repository has been designed to facilitate scholarly communication by providing access to the knowledge resources created by NITW and preserving for future generations of scholars is available at: http://ir.library.nitw.ac.in:8080/jspui/

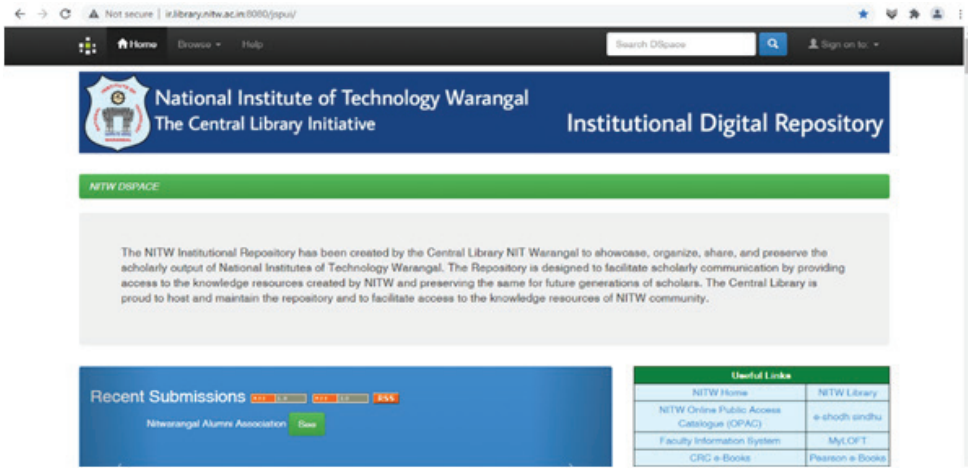

Figure- 7 Institutional Repository of NIT-W

Annual Research Digest of Ph.D. Theses (Online)

The NIT-W Library started bringing out an "Annual Research Digest of Ph.D Theses of NITW" for the benefit of Students, Research Scholars and Faculty not only to know the Doctoral Research work completed in the institute, but also to facilitate identification of research areas/ problems for the benefit of research scholars.

Figure - 8 Annual Research Digest of Ph.D. Theses

Ask a Librarian

Due to the Covid-19 pandemic, the Central library of NIT Warangal was closed down for the public. However, we do not want the students and faculty suffer from getting any information or help from the library. Hence, the central library has created an online, real time 'virtual reference service' facility in the library webpage. **'Ask a Librarian**' a free online web-based service through email.

Figure - 9 Ask a Librarian

4.10 Organization of Virtual Events

The NIT-W Library organized several webinars on different topics such as "Research Simplified with Elsevier: Plan Effectively ... Read Quality… Publish Quality", "Web of Science: Discovery starts here!", etc., for the benefit of the faculty and students.

4.11 Online User Awareness Programmes

The NIT-W Library has organized a series of Online User Awareness programmes on the following resources for the benefit of students, research scholars and faculty so that they can use them effectively and efficiently.

- SWAYAM online courses
- UG/PG MOOCs
- e-PG Pathshala
- e-Content courseware in UG subjects
- Swayamprabha
- CEC-UGC YouTube channel
- National Digital Library
- Shodhganga
- e-Shodha Sindhu
- NPTEL
- Krishikosh : Institutional Repository of NARES
- Ideal : Union catalogue of NARES
- Open source e-books
- e-Journals, etc.

Conclusion

The COVID-19 pandemic has undoubtedly become a 'change driver', which pushed libraries to provide library services virtually to ensure uninterrupted service to their clients. Libraries around the world have started working hard to provide access to their collections and services remotely and taking efforts to enhance their digital platforms in order to deal with the increasing demand. There is no doubt that the libraries are now able to serve their clients in

spite of any kind of natural hazards and challenges to ensure uninterrupted access to knowledge resources with the help of digital tools and techniques. Amidst the COVID-19 pandemic, the NIT-W library has also undertaken many new initiatives to extend library services to its clientele and the efforts have met with success.

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REENVISIONING LIBRARIES AND LIBRARY SERVICES DURING THE TIME OF CRISIS: A LESSON TO TAKE FROM THE GLOBAL PANDEMIC

Prarthana Borthakur[1]

Introduction

It is indeed a great quote that 'Life is unpredictable and sometimes life takes a turn in a way beyond human imagination, which is been proved by the ongoing pandemic that has changed human perspectives of seeing any event, an incident occurs in their lives. Starting from a technologically advanced region to an underprivileged village, pandemics made an adverse impact on the lives of every individual. The pandemic in its beginning period has put a stop to our day-to-day activities and gradually in our lives. Nevertheless, now people all over have been learning to adapt to this new normal indulging them to learn new skills, techniques in every possible way so that they can continue with their occupations smoothly and Perhaps this is what we call a blessing in Disguise'. Although people have to fight with this situation as expected, people of age groups were highly successful to transform this challenge into an opportunity.

Speaking about the professional sector, work environment, and all, the coronavirus has affected very badly be it government, private, or corporate sectors. Non-profit making organizations suffered more in terms of performing vivid functions, serving their clients or users, which always remains their priority. Library and Information center as service-oriented and most importantly as non-profit making body constantly work towards locating the exact information or finding out the source of that information required by users. Pandemic has brought a physical distance between the library and its users, a gap between information seeker and information giver. However, even in that remorse situation, technology has made possible virtual interaction of users with library professionals, accessing online resources: all these arose a hope in the minds of people that whatever the situation be, it always give something or the other for humankind.

Objectives of the study

The study on the current situation and its impact on the LIS sector is carried out in order -

- To find out how libraries adapt themselves to this new normal
- To know in what way professionals will prepare to fight back against these situations shortly.

How the ongoing pandemic made an impact on Library and Information Centers: focusing on Indian Scenario

Like every other sector, the scenario of libraries is of no difference. When coronavirus has imposed lockdown globally, information and service sectors also get badly affected. These Sectors, which constantly engage in documenting, preserving, maintaining every information in both physical formats as well as a digital format have no worth without their users. A school does not have an educational environment without its students, similarly, the library cannot be called as such in its real sense until users read or consults those documents i.e., what is meant by the first

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law of library science 'Books are for use'. Although these situations created a tough challenge for professionals but successfully to continue their operations, libraries have adopted, adapted, and learned new skills and varied mediums to interact with users. Many have started it freshly while a few others where the digital medium was already an option to provide services have gone digital.

Uneven picture of Libraries in India: Libraries in India are in the process of transforming themselves into institutes with all modern facilities, learning new skills, expertise to deal with current problems of users and to provide satisfactory solutions. Libraries, Information centers, documentation centers of some advanced institutes or libraries in metro cities as IITs, IIMs, DRDO, NISCAIR, etc., are no doubt efficiently have managed with their constant hard work to continue services to users. They are incorporating every modern means and way to offer seamless service to users.

However, the scenario of libraries all over the country is not equal or the same. Libraries in remote areas or with poor infrastructure or libraries that have just started to computerize their operations have had to see a very bad phase, seemed confused, and faced great difficulties to deal with the situation before them. These situations arise may be due to various reasons as-

- Staffs of these libraries are not comfortable with using technologies. When users stopped coming to libraries owing to an ongoing pandemic, they left no other alternatives to communicate and give services to regular library members.
- Inadequate number of staff, unskilled and non-professional staff posed another barrier to continuing library services.

Lack of commitment and professionalism came out to be another factor found among library staff. Sometimes, their attitude seemed to be very negative, they are not willing to adapt to the changing situation, hesitant to learn something new, etc.

Challenges turned out to be opportunities: Demand of the Current Situation

The libraries globally met with a situation completely unexpected and unseen, which posed a serious challenge before professionals to prove their existence and their role to the broad reader community. The situation taught us to find out the other side (positive side) of every occurrence or incident. Here, are some points describing the opportunities taken up by professionals out of the ongoing situation-

Academic Libraries come closer to their users: Staff in an academic library get a lesser chance to interact with students, faculty except on occasion when the users themselves ask for help in library usage. However, organizing webinars, technical sessions during pandemics on how to use various resources of their library or resources available online, which are attended by both faculties and students provide more opportunities to know about their (users of the library) expectations, problems they face in browsing resources. They got the tough job of educating their users.

Applying new techniques and innovative ideas: Corona pandemic has allowed the professionals to learn new skills, handle technologies in a better way, do experiments with new techniques and innovate with their ideas. Every effort has been made to find out new ways of simplifying browsing techniques for users and provide help in their study or research work. Therefore, overall, library staff get the chance to make themselves more resourceful for their users.

Collaborate with professionals of premier libraries: Institutional libraries as college libraries, university libraries got better scope to collaborate with premier libraries as National library,

INFLIBNET, Libraries of technical institutes as IIT, etc. and even with Library of Congress. These most important libraries focused much on extending their services to reach more and more users and library professionals of our counter made the best use of this opportunity to learn from these experts

Library Associations seemed very active during this period: It is been seen that many associations, which were not very, have shown their best during this one year towards the objectives with which these associations formed. The organized back-to-back webinars, seminars training sessions for progressing and underdeveloped libraries. With the help of experts, they trained many unskilled library staffs to upgrade their libraries with new software, digitize their records, documents for easy retrieval and dissemination.

Need to be ready to meet unexpected situations: No one can ever imagine a situation of an epidemic, pandemic, or any undesirable happenings. However, it is said that one must expect for good only but should be ready for bad also. Ongoing situations taught us that we need to be always ready to face challenges or unexpected situations so that when the need arises we can turn it into an opportunity and can make the best use of the situation.

The above-mentioned points are only a small observation on the positive aspect of a global pandemic in libraries. However, it is not the end in itself, there is much more than library professionals have achieved and are still in the process of improving and learning to provide better service to users.

Conclusion

Every incident or occurrence has two aspects- positive or negative. The positive impact or effect of a global pandemic as covid 19 discussed over here and observation made hoped to throw some light on the role of libraries and people associated with it. Although, the corona has devastated millions of lives, families, affected almost all sectors of growth of a nation, from developed to underdeveloped countries yet it must be admitted that it taught people how to adapt to the new normal, how to tackle challenges, how to make the best use of the opportunities even in a negative environment. This massive pandemic taught each one of us an unforgettable lesson that nothing remains the same always, there is always an end to everything and changes are inevitable. It enlightens professionals like us to look into our work, its ethics, and norms in a broad aspect. It illuminates us to take up challenges with a new zeal and to be creative library professionals for our library users.

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THE TRANSFORMATION OF ACADEMIC FUNCTIONING DUE TO THE IMPACT OF COVID-19 OUTBREAK

Dr. A. Bagavathi[1]

Introduction

The Transformation due to global outbreak of Covid-19 pandemic and the its impact, has forced to have new lifestyle, functioning and operation in the day to day life of the individual, operation and functioning of organisations, business establishments, academic institutions etc. Its Technical / Technological impact also affects the functioning of the Organizers, Resource Persons and Participants of seminars, workshops, orientation p[programs etc. In general it has mostly positive impact such as breaking the location barrier, breaking the time barrier, sharing the knowledge and expertise of a few skilled resource persons to very large number of audience comprising of students, research scholars, faculties and other academic personals, avoid travel, accommodation, space for stay and study for the resource persons and participants, Cost etc. It fails to give the desired results and impact such as personal touch and feel, hands on practical experience etc. on certain occasions when it comes to workshops with practical exposure / demonstration. This was evident based on the feedback results of the 3 days online workshop was conducted by The Tamilnadu Dr. Ambedkar Law University. This study discusses in detail on the transformation and impact of transformation happened during the Covid-19 pandemic.

Research is the systematic indulgence of one's curiosity - - - and When systematically pursued for the elucidation of events, we call it science. ***-:Felix Frankfurter***

"Research" is defined as "The creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings. This could include synthesis and analysis of previous research to the extent that it leads to new and creative outcomes" (Western Sydney University, 2021).

In simple terms "Research" can be defined as 'systematic investigation towards increasing the sum of human knowledge' and as a 'process' of identifying and investigating a 'fact' or a 'problem' with a view to acquiring an insight into it or finding an apt solution therefor. An approach becomes systematic when a researcher follows certain scientific methods.

Applying this context on legal research, it may be defined as 'systematic' finding law on a particular point and making advancement in the science of law. However, the finding law is not so easy. It involves a systematic search of legal materials, statutory, subsidiary and judicial pronouncements. For making advancement in the science of law, one needs to go into the 'underlying principles or reasons of the law'. These activities warrant a systematic approach. An approach becomes systematic when a researcher follows scientific method (Khushal Vibhute, 2009).Law is generally influenced by the prevailing social values and ethos and it also attempts to mould or change the existing social values and attitudes. Since Law is having such a complex nature, its operation definitely requires systematic approach for 'understanding' of 'law' and its 'operational facets'. With the understanding of this characteristics and nature of law, a systematic investigation will help in bringing out better understanding of the existing and emerging legislative policies, laws, their social relevance and efficacy, etc.

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The study is intended to familiarise the Research Scholars, Students and Faculties of The Tamilnadu Dr. Ambedkar Law University and its affiliated Institutions the nature, scope and significance of Legal Research and in particular to create and awareness on the role of legal research in the development of law and legal institutions, in particular and socio-economic development of the country in general. Social Science Research in Law helps to achieve this. It was identified that the awareness and knowledge on Social Science Research in Law or Socio-Legal Research and in particular the awareness and knowledge on the Quantitative and Qualitative Techniques of research was very limited among the legal academic fraternity.

Understanding this background The Library of The Tamilnadu Dr. Ambedkar Law University, Chennai one of the premier Legal Institution in India has organised a Three Days Online National Workshop On "Quantitative and Qualitative Techniques For Social Science Research" during 28th to 30th June, 2021 through Cisco WebEx Platform for the benefit of the Research Scholars, Students, Faculties of the University and its affiliated colleges in particular. Since there are no restrictions on the limitation of the participants and no location barriers on Online programs, for the benefit of Research Scholars, Students, Faculties and professionals, the organisers have kept the program open for everybody. This study briefs the need and objectives of this workshop, analysis the feedback from the participants of the workshop along with the Quiz program test results in order to understand the advantages and challenges raising out of the transformation from physical presence programs and online programs in view of the global outbreak of Covid-19 pandemic situation.

Literature Review

Mutual Relationship & Interaction of Law and Society:

The social science of law, jurisprudence, in common parlance, means a rule that (unlike a rule of ethics) is capable of enforcement through institutions. However, many laws are based on norms accepted by a community and thus have an ethical foundation. ... Laws are politics, because politicians create them.

Society and law are closely related to each other. Law tells the nature to live the social life and this also increases with the Economic, Scientific and Technological progress. Law is a form of Social Science.

As stated by (Khushal Vibhute, 2009) "A contemporary modern state, which endeavours to bring socio-economic transformation envisaged in its Constitution, assigns a catalyst role to law. It strives to bring such a transformation through a cluster of social welfare legislations enacted in pursuance of its constitutional objectives, policies and perceptions."

Law does not operate in a vacuum. It has to reflect social values, attitudes and behaviour. Societal values and norms, directly or indirectly, influence law. (Lawrence M Friedmann, 1969) Law also endeavours to mould and control these values, attitudes and behavioural patterns so that they flow in a proper channel. It attempts either to support the social system or to change the prevalent social situation or relationship by its formal processes. (Roscoe Pound, 1969) Law also influences other parts of the social system. Law, therefore, can be perceived as symbolizing the public affirmation of social facts and norms as well as means of social control and an instrument of social change. (Sir Carleton Kemp Allen, 1964).

Luhman (Luhman, 1972, English Translation, 1985) has Comments on the interrelationship between law and societies are "All collective human life is directly or indirectly shaped by law.

Law is, like knowledge, an essential and all pervasive fact of the social condition. No area of life-whether it is the family or the religious community, scientific research is the internal network of political parties-can find a lasting social order that is not based on law ---. A minimum amount of legal orientation is indispensable everywhere."

He states that Law is not, nor can any discipline be, an insular one. Each rule postulates a factual situation of life to which the rule is to be applied to produce a certain outcome.

He also states that Law, in essence, is a normative and prescriptive science, which lays down norms and standards for human behaviour in a set of specified situation(s). Law is a 'rule of conduct or action' prescribed or formally recognized as binding or enforced by a 'controlling authority' and operates in a formal fashion with prescribed norms through state's coercive powers. Though, the societal values and patterns are dynamic and complex, The dynamically changing societal values and ethos in the modern world obviously make the discipline of law dynamic and complex. Hence Law, has to be dynamic and has acquired a paramount significance in a modern welfare state as an effective instrumentality of socio-economic transformation. It indeed operates as a catalyst for such a transformation.

A Systematic approach is required to the 'understanding' of 'law' and its 'operational facets' because of its complex nature. This leads to systematic investigation into the above aspects of law for better understanding and know the existing and emerging legislative policies, laws, and their social relevance. In turn it enables to assess efficacy of law as an instrument of socio-economic changes and to identify bottlenecks, if any. Law without its above social context is simply a noteworthy mental exercise. 'Law without social content or significance is law without flesh, blood or bowels' (S P Simpson, 1946)

Legal System as a System of Norms and Social System

Based on the above principles, we can conceptualized the Legal system into three,

(1) Normative System: A legal system can be conceived as an aggregate of legal norms, which possess the questions like How / origin / source, Background or the force that influence, the need for the normative materials and the concepts and criteria of the Legal System (Adam Podgorecki, 1974).

(2) Social System: A Legal system can be conceived as systems of social behaviour, of roles, statutes, and institutions, as involving patterned interactions between the makers(Legislature), law interpreters (Judges), law-enforcers (the police), law-breakers (wrongdoers) and law-compliers (law-abiders) of the norms of law and study on their influence, individual or cumulative, in the legal system and legal processes can be done (S K Verma, 2001).

(3) Combination of Formal & non-formal norms of Social Control: The Legal system may be equated with social control systems, involving differential bases of social authority and power, different normative requirements and sanctions, and distinctive institutional complexes such as inter-relationship (supportive or otherwise) between the formal (legal) rules and (informal) non-legal rules (such as religious, indigenous, or customary norms) in shaping law as social control system (Upendra Baxi, 1975).

Based on the above principles and its working there are certain Myths and truth about the functioning of Law and its role. As per Marxian approach "Law is a Social system and structure

it is an instrument in the hands of the classes in power to use it to protect their own interests and to exploit powerless classes". As per Roscoe Pound "Law is an instrument of Social engineering and reengineering, and emphasised that based on the application, use and enforcement it can be an effective tool for establishing an egalitarian social order".

Research

There is no shortcut to the truth --- no way to gain knowledge of the universe except through the gateway of scientific method. (Karl Pearson)

- The Advanced Learner's Dictionary of Current English (Oxford, 1952) describes the meaning of 'research' as 'a careful investigation or inquiry specifically through search for new facts in any branch of knowledge'.
- Redman and Mory (L V Redman, 1923), define research as a 'systematized effort to gain new knowledge'.
- D Slesinger and M Stephenson (D Slesinger, 1930) observed the term 'research' as 'the manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art'.
- Summarising the above, term 'research' is the 'careful, diligent and exhaustive investigation of a specific subject matter' with a view to knowing the truth and making original contribution in the existing stock of knowledge. Shortly, 'systematic search' in 'pursuit of knowledge' of the researcher.

Legal Research

Legal research is "the process of identifying and retrieving information necessary to support legal decision-making. In its broadest sense, legal research includes each step of a course of action that begins with an analysis of the facts of a problem and concludes with the application and communication of the results of the investigation." (Steven Barkan M, 2018) Legal research is that branch of knowledge which deals with principals of law & legal institutions. It's the study of the relationship between the world of law & the word that law purported to govern. The systematic investigation of problems & matters concerned with law such as codes acts constitution etc.

Purpose of Legal Research

Some of the Importance and Purpose of Legal Research are (i) for ascertainment of law on a given topic or subject, (ii) to highlight ambiguities and inbuilt weaknesses of law, (iii) to critically examine legal provisions, principles or doctrines with a view to see consistency, coherence and stability of law and its underlying policy, (iv) to undertake social audit of law with a view to highlighting its pre-legislative 'forces' and post-legislative 'impacts', and (v) to make suggestions for improvements in, and development of, law. (B A Wortley, 1964-65).
Briefly Legal research can be carried out for the following reasons:

1) To ascertain laws on a given topic or subject.
2) To identify 'gaps' and 'ambiguities' in law.
3) To critically examine consistency, coherence and stability of law and legal propositions.
4) To undertake 'social auditing of law' [i.e. auditing pre-Legislative 'forces' and post-Legislative 'impacts' of law].

5) To suggest reforms/developments in law by undertakings research intended:
    a. To investigate 'gap' between the 'legal ideals' and 'actual practice'.
    b. To understand 'effectiveness' or 'impact' of law in a given social set-up at a given time.
    c. To find out as to whether law is serving the needs of the society and has a social value.
    d. To make suggestions for improvements in the law on concrete formulations and proposals.
    e. To predict future trends of law.

Importance of Legal Research

Legal research is necessary for ascertainment of law on a given topic or subject, to highlight ambiguities and inbuilt weaknesses of law, and to critically examine legal provisions, principles, or doctrines to see consistency, coherence, and stability of law, to make suggestions for reform of the law.

Critically, Legal research is important for initiating legal reform and change in society. It may be driven by current and proposed legislation's and its social, political, and economic implications. Law must keep pace with social change and has to either respond to social change or initiate social change.

Because of changing social, moral, political context, many laws may lose their relevance or seem inadequate to meet society's needs. Legal researches are the ones which can help find out the old laws and which need reforms. Further, on-going scientific and technological developments add to these complexities by creating new complex human relationship that needs law to regulate. (B A Wortley, (1964-1965))

Types of Legal Research

Traditional classification of Legal Research is Pure / Doctrinal Research and Applied / Non-doctrinal / Empirical Research.

Pure / Doctrinal Research

The Pure / Doctrinal Research deals / implies analysis of legal theories, concepts, rules, and principles. Most doctrinal legal research is based on the 'black-letter law' approach, which focuses on the knowledge of law found in the legal texts, legal theories, statutes, and court judgments with 'little or no reference to the world outside the law.' (Kothari, 1990).

Applied / Non-doctrinal / Empirical Research

The Applied/Non-doctrinal/Empirical Research is concerned with testing the theories in the real world. Further, depending on the nature of the research question, the legal research is also classified as Descriptive and Exploratory Research. The Descriptive Research attempts to describe a situation, problem, phenomenon, or behaviour systematically. A description is concerned with making complicated things understandable and simple.

Exploratory Research is undertaken to explore areas about which the researcher has little or no knowledge. Exploratory research enables the researcher to formulate problems for more in-depth study, develop hypotheses, and find the best solution. It involves findings the reason for things, events and situations, showing why and how they have come to be what they are. Empirical or Inter-disciplinary Legal Research emerged as a distinct type of legal scholarship

in the law schools of western countries to study law in the broader social and political contexts. This empirical and interdisciplinary legal research employs a range of methods applied in social science and humanities.

According to Epstein and King (Lee Epstein, 2003), What makes research empirical is that it is based on observations of the world, in other words, data, which is just a term for facts about the world. These facts may be historical or contemporary or based on legislation or case law, the results of interviews or surveys, or the outcomes of secondary archival research or primary data collection.

Another important classification is between Qualitative and Quantitative Research.

Qualitative Research for Legal Research: Qualitative research is about explanation, interpretation, and understanding of phenomena or issues, or things. Further it is concerned with the subjective assessment of the social or legal problem, situation, and attitude and it primarily relies on human perception and understanding.

Quantitative Research for Legal Research:

Quantitative Research is based on Quantity or Measurement or Value or Amount which is Quantifiable or Measurable. It also includes counting of Frequency of events / happenings or applying any phenomena that can be expressed in terms of quantity or that can be measured or converted to numerals. It is also known as the statistical method. Researchers use an array of statistical methods and generalizations to determine the meaning of data in Quantitative Research. For Socio-legal Research Statistics has been the dominant strategy. Existing theories or hypotheses are often test or verify in Quantitative methods.

Many Variables are tested in Quantitative Research, through the generation of primary data. The generalization process from sample to population is an example of quantitative instead of qualitative research methodology. Quantitative research comprises of finding out a solution to a real-life problem which requires an action or policy decision. Quantitative research can contribute new evidence, can challenge old theories, and may help in conceptual clarification.

The Need

In current dynamic global environment due to Covid-19 pandemic has changed the functioning and operation of the academic institutions drastically. Further, Pure Doctrinal Legal Research is criticized because of its rigidity, narrower scope, and not flexible to address diverse contexts in which legal issues or situations arise and operate. On the other hand socio-legal research renders an invaluable help in 'shaping' social legislations in tune with the 'social engineering' philosophy of the modern state and in 'making' them more effective instruments of the planned socio-economic transformation. (S N Jain)

Further, Legal scholars, therefore, have not been able to evolve any specific methodology of their own for carrying out legal research. Legal Scholars do not have well-articulated research methods to employ and research methodology to follow in legal research. On the other hand, Sociologists, have developed and inherited a comparatively well-developed research methods and methodology for systematic investigation of social fact or behaviour.

They have been involved in discovering, testing or verifying the old social facts and/or discovering new ones. They further analyse the sequence of these facts, finding their relationships

and causal explanations, and develop new scientific concepts and theories about human behaviour.

Their Research Methodology is well-developed, covering all major processes of research, such as, Problem identification; formulation of a workable Hypothesis (or hypotheses); Research Design preparation; Data Collection of data (through interview, questionnaire, schedule or observation etc.); Processing, Analysing and Interpretation of data, and Report Writing. The above can be applied to 'understand' social dimension or role of law, as 'law' has been perceived as 'means' (and not 'end') of social change, social control or social engineering.

Understanding the above and based on the outcome of the need analysis among the Scholars, Students and Faculties of Tamilnadu Dr. Ambedkar Law University, Chennai a 3 days Online Workshop on "Quantitative and Qualitative Techniques for Social Science Research" was organised and conducted on 28th – 30th June, 2021 in Cisco WebEx platform.

Objectives of the Study

1. To understand the advantages and challenges of the online workshop in view of the transformation.
2. To understand the success of the workshop based on the feedback and suggestions of the participants.
3. To understand the geographical distribution of the participants.
4. To Understand the distribution of Participant Type
5. To understand the feedback of participants on the Content and Presentation of the individual secession.
6. To understand the feedback of participants on the Overall Evaluation of the individual secession.
7. To understand the Pattern of Quiz score distribution.
8. To understand the individual topic wise distribution of Quiz Score.

Methodology

The 3 days Online Workshop on "Quantitative and Qualitative Techniques for Social Science Research" was organised and conducted on 28th – 30th June, 2021, by The Tamilnadu Dr. Ambedkar Law University, Chennai. Due to Covid-19 Pandemic challenges the workshop was conducted in in Cisco WebEx platform. Since the Cisco WebEx platform supports a large number of participants without any location barrier it was decided by the University Management to keep the workshop open to all, so that it can reach the student and academic community in large. The participants are asked to register online through the circulated registration link. The participants registration details are captured through Google form. The Workshop meeting link was shared to the registered participants.

The workshop consists of 4 Secessions (Each Session 1.5 hrs.) with 2 Expert resource personals on the following Topics.

1. Research Process in Social Science: covering
    a. Research Methodology,
    b. Types of Research,
    c. Research Approach,
    d. Significance,
    e. Methodology,
    f. Steps in the process of research.

2. Hypothesis Theory – "When to Select, What Statistical Techniques: The Secret": Covering

    a. Definition,
    b. Types,
    c. Hypothesis & Testing,
    d. Statistical Methods & Tools and its
    e. Application on various Types of study, interpretation & inference of data analysis and results.

3. SPSS – Part I – "Introduction to SPSS"

    a. Data entry, coding, Grouping and Data Transformation,
    b. Variables – Types,
    c. Descriptive statistics, Frequencies, Diagram , Hypothesis - Confidence Intervals Test of Significance – Sig Value
    d. One Sample t-Test, Independent Sample t-Test, Paired t-Test, One way ANOVA

4. SPSS –Part II

    a. Chi-square test,
    b. Correlation -
    c. Simple Regression, Multiple Regression, Step-wise Regression.
    d. Dummy Variable regression
    e. Binary Logistic Regression
    f. Trend Analysis – Estimating Growth – Prediction.

The objective of the workshop

- Introduction to Social Science Research Process.
- Acquaint with methods and tools on Qualitative Techniques an data collection,
- Strengthen the ability to frame, formulate and test the hypothesis for research problems;
- Understanding on the various Statistical Methods and Tools which can be applied on research based on the type of study.
- To understand the basic concepts of quantitative and qualitative data analyses, and interpret and evaluate results of data analysis.
- Understand the mechanics of writing research report, research paper through better interpretation and inference of data.
- Learning data analysis and statistical computing through SPSS

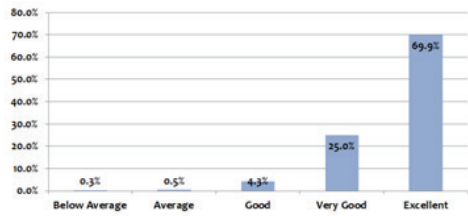
At the end of each secession, the participants were shared with the Google Form link to fill the feedback form. The feedback on Clarity of the workshop Objectives, organisations workshop, relevance and usefulness of the presentation, Participant-cantered learning strategies and techniques, Knowledge gained, Informativeness of individual secession, overall rating of the individual secession, Overall rating of the program, in 5 point Scale and any suggestions and recommendation of the program from the participants are collected. On the final day in order to understand the effectiveness of the program an online quiz questioner with 25 objective type questions on workshop secession topics was conducted online and the results are captured for analysis. Further individual results are shared to the participants immediately. The above participants Registration information, Feedback Form data and the Quiz Data received through online are the basic source for data for the study.

The above date is tabulated on Excel and the data analysis is done.

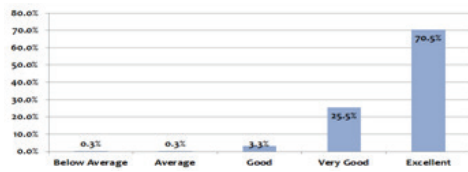
Data Analysis

Figure-7
Overall rating for Secessions

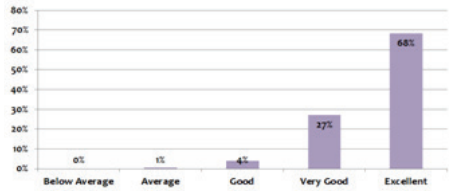
Secession-1



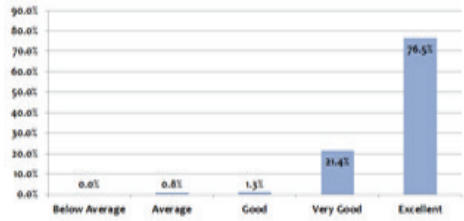
Secession-2



Secession-3



Secession-4



The feedback on overall rating for individual secession is rated on a 5 point scale with Excellent, Very Good, Good, Average, Below Average. The graphs for the overall rating for individual secessions are compiled in Figure-7.

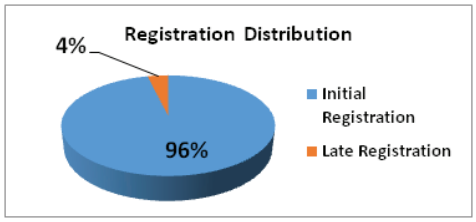
From the graph it is found that 69.9% of the participants have rated Secession-1 as Excellent and 25% have rated as Very Good.

In Secession-2 70.5% has rated as Excellent and 15.5% have rated as Very Good.

In Secession-3 68% have rated as Excellent and 27% have rated as Very Good.

In Secession-4 76.5% have rated as Excellent and 21.4% have rated as Very Good.

Figure-1

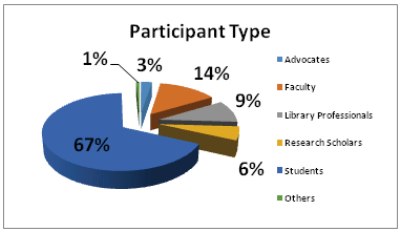


The Figure-1 illustrates the Participants registration distribution details a total of 894 participants from all over the country and few from abroad have registered for the program. A few very much interested participants 33 in number have requested for registration after the cut-off date, on the larger interest of the participants the organisers have accommodated their request.

Figure-

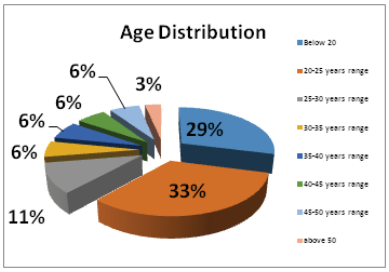
Figure-2 shows the Gender Distribution of the Registered Participants. Among the registered participants 77% are Female Participants and 23% are Male

Figure-3



The distribution of Type of Participants is shown in Figure-3. Students form the majority with 67% of the participants, followed by 14% of Faculties, 9% of library professionals and 6% of Research Scholars. A few advocates and Judges have also participated on the program.

Figure-4



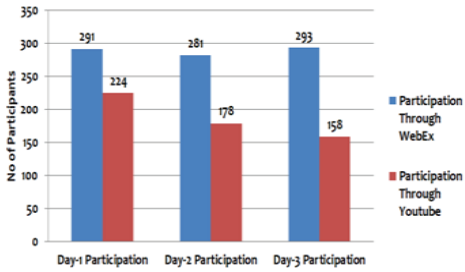
The Age Range categorised to various ranges starting with below 20 years of age, followed by increment of 5 years of age up to 50 year of age and above 50 years of age. A good Majority of 33 % of the participants are in the age group 20 to 25 year of age, followed by 29% of participants in below 20 years of age, 11% of participants are 25 to 30 years of age and 6% are in the age group of 30 to 35, 35 to 40, 40 to 45 and 45 to 50 years of age. Only 3 % of the participants are above 50 year of age.

Table-1
Loacation wise Distribution

Sl. No.	Description	No of Participants	Sl. No.	Description	No of Participants
1	Andaman and Nicobar Islands	1	12	New Delhi	5
2	Andhra Pradesh	5	13	Odisha	1
3	Bihar	5	14	Pondicherry	3
4	Chhattisgarh	2	15	Punjab	2
5	Gujarat	1	16	Rajasthan	2
6	Jammu and Kashmir	2	17	Tamil Nadu	778
7	Jharkhand	1	18	Telangana	2
8	Karnataka	17	19	Uttar Pradesh	5
9	Kerala	16	20	West Bengal	2
10	Madhya Pradesh	0	21	Malaysia	1
11	Maharashtra	10	22	Others	33
	Total				894

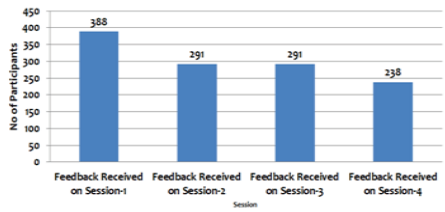
Table-1 illustrates the Location wise distribution of registered participants. A good majority of 87% of the registered participants are from Tamilnadu, followed by Karnataka and Kerala with 2% respectively and Maharashtra with 1% of the total registered participants. Further there was 1 participant registered from Malaysia.

Figure-5
Participant Distribution



Apart from Cisco WebEx, the program was Broadcasted live on YouTube on all the 3 days. The graph in Figure-5 exemplifies the distribution of participants who have participated on the program through Cisco WebEx and YouTube. On Day -1 291 participated through WebEx and 224 through YouTube. During Day-2 281 participants through WebEx and 178 through YouTube have participated and 293 participants have participated through WebEx and 158 Participated through YouTube on Day-3.

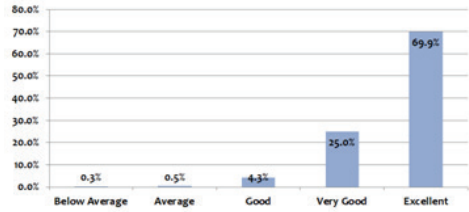
Figure-6
Number of Feedback Received



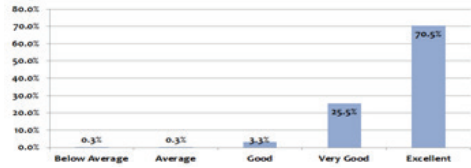
Among the participants a considerable number of participants only have completed and submitted the Feedback Form. The secession wise distribution of Feedback form Received is shown in Figure-6. Among the participants 388 participants have submitted the feedback form for Secession-1, 291 participants have submitted for secession-2 and 3 and 238 participants have submitted the feedback form for Secession-4.

Figure-7
Overall rating for Secessions

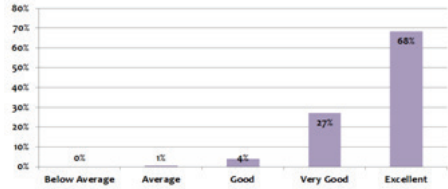
Secession-1



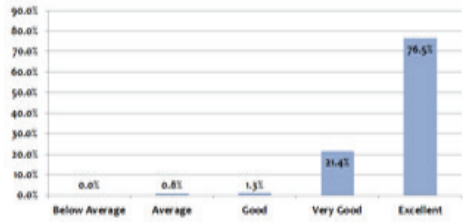
Secession-2



Secession-3



Secession-4



The feedback on overall rating for individual secession is rated on a 5 point scale with Excellent, Very Good, Good, Average, Below Average. The graphs for the overall rating for individual secessions are compiled in Figure-7.

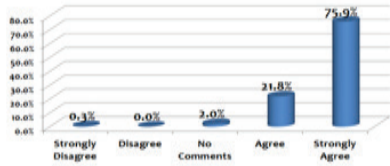
From the graph it is found that 69.9% of the participants have rated Secession-1 as Excellent and 25% have rated as Very Good.

In Secession-2 70.5% has rated as Excellent and 15.5% have rated as Very Good.

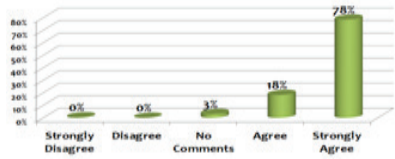
In Secession-3 68% have rated as Excellent and 27% have rated as Very Good.

In Secession-4 76.5% have rated as Excellent and 21.4% have rated as Very Good.

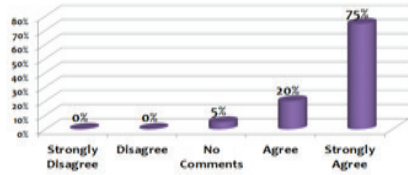
Figure-8
Workshop General Feedback
1. Objectives Clearly Stated &



2. MetProgram Relevant & Useful



3. Improve Knowledge & Skills



The General Feedback of the workshop on various parameters are rated in a 5 point scale with Strongly Agreed, Agree, No Comments, Disagree and Strongly Disagree.

1. For the parameter "The Objectives are clearly stated and Met", 75.9% of the participants have rated as Strongly Agree and 21.8% have rated as Agree.

2. For the parameter "Program Relevance & Usefulness", 78% have rated as Strongly Agree and 18% have Agreed.

3. For the parameter "The program has Improve Knowledge & Skills", 75% have rated as Strongly Agree and 20% have rated Agree.

Figure-9
Distribution of Quiz Score

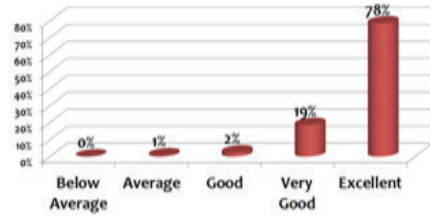
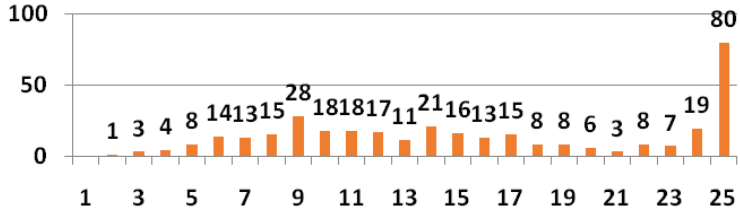


Figure-9 describes the overall rating of the participants on program organisation, in which, 78% of the participants have rated as Excellent and 19% have rated Very Good and 2% have rated Good. 1% and Less than 1% have rated as average and below average respectively.

Figure-10
Distribution of Quiz Score



A total of 353 participants have completed the Quiz program. The Quiz program consists of 25 multiple choice questions from the 6 secession for the workshop. Each right answer carries 1point. The above Graph illustrate the distribution of the Quiz score received by the participants.

Average	Median	Range
15.80 / 25 Points	15 / 25 Points	2 – 25 Points

The average score earned by the participants is 15.8 points out of 25 points, the median is 15 out of 25 points and the Range is 2 to 25 points.

Out os the 353 participants who have participated on the online quiz program 23% have scored 25/25 points, followed by 5% with 24/25 points. It is found that around 29% of the participants have scored less than 40% marks. It is also found the a majority of them have scored less points on the questiones related to SPSS.

General Feedback & Suggestion:

With regard to any other general feedback and suggestions about the program a good majority of more than 97 participants have stated that, due to not having hands on practical exposure of the SPSS practical secession, they presume that during the program they were able to understand and know the SPSS practicaly, but the reality was that later on or even at the time of the Quiz program they were not able to recollect and apply what they have learned on SPSS practically.

Hence a majority of the participants request for having a similar physical presence program with hands on practical secession on SPSS.

Findings

1. The number of female registered participants is more than the male participants.
2. Out of the 28 states and 8 Union Territories in India Participants have registered from 20 states and 2 union territories. Apart from the above 1 overseas participant has registered from Malaysia.
3. With regard to the type of participants response is as per the objective of the program and the target group, with majority of the participants is from Students and Faculty members and Library Professionals.
4. Since majority of the participant are from student group the average age of the participants was also lower.
5. It is unfortunate to found that not all the registered participants have participated on the individual secessions. The participants have participated based on the topic of interest.

That is the advantage of Online workshop. Incidentally not all the participants participated on the secession have submitted the feedback form. It is found that Participants who are interested in getting the Course completion Certificate have submitted the feedback form.

6. With regard to the overall rating of individual secessions, irrespective of secession, a good majority of around 70% of the participants have rated as Excellent. Further regarding the overall rating of the program more than 78% have rated as Excellent. The negative feedback is less than 2%.
7. With regard to the general feedback on the 3 parameters, 1) Objectives Clearly Stated & Met, 2) Program Relevant & Useful, and 3) the workshop Improve Knowledge & Skills, more than 75% of the participants have rated as Excellent and above 18% have rated as Very Good irrespective of parameters.
8. It is observed that more than 98% of the participants have submitted positive feedback for both Content & Presentation and Secession Evaluation.
9. It is observed that less than 29% of the participants have scored less than 40% marks.
10. It is found that more than 42% of the participants have scored less than 40% in the questions related to SPSS Topic.
11. It is also found that the participants who have given negative feedback have scored less marks on the Quiz.
12. The above pattern correlates that the Content & Presentation feedback and the Secession Evaluation feedback is directly proportionate to quiz score, with the positive feedback participants getting higher marks on quiz and negative feedback participants getting lower marks on quiz.
13. It is found that faculties outsmart the other participant types in the quiz score with 78% of them having scored above 60% mark.
14. It is found that female participants out-smart the male participants in scoring above 40% marks by more than 5% of the participants.
15. It is found that online workshops are a very powerful tool to reach the masses.
16. Online workshops are beneficial for Theory classes by sharing the knowledge of Experts who are limited in number and reach out to large audience, located in various geographical locations without location barrier and traveling and it is very cost effective.
17. The interest of the participant benefits the individual.
18. It was found that based on the General feedback & suggestions by participants more than 97 participants have stated that for workshop like this which is having practical hands on secessions physical presence in the workshop is a better option than the Online workshop.
19. The participants have suggested and requested for repeating the workshop with physical presence for better understanding.

Suggestions

1. The transformation of physical workshop to Online workshops are beneficial for Theory classes by sharing the knowledge of experts to reach out to large audience, located in various geographical locations without location barrier and traveling and it is very cost effective.
2. In spite of all these advantages the online workshop was not able to achieve the desired results / objective.
3. It is suggested that, for workshops with hands-on practical secessions like SPSS, workshops with physical presence was expected to provides better results than online workshops.

Conclusion

The transformation through application of technology like online workshops due to the pandemic were advantages in many areas, but on certain circumstances like workshops having hands-on practical secessions for practical purpose offline or physical presence workshops provide better results and that was expected by the participants.

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IMPACT OF VIRTUAL TECHNOLOGY TOOLS ON THE SCHOLARLY COMMUNICATION AMONG RESEARCH SCHOLARS OF ALAGAPPA UNIVERSITY DURING COVID19: AN ANALYTICAL STUDY

M. Sivagami[1] Dr. R. Jeyshankar[2]

Introduction

The coronavirus pandemic considerably interrupted the educational landscape countrywide by forcing the prevalent closure of institutions from elementary to tertiary levels. With the shutting of organizations, programs which characteristically trusted on face-to-face interactions to convey content were brusquely demanded to shift to online-based education. This upheaval has procreated exclusive challenges in conveying content for various subjects and disciplines. Virtual reality technology is used to generate immersive involvements and understandings that can aid for education value and entertainment. Apart from academic and amusement, virtual reality is practically utilized in a diversity of industries, such as medicine, architecture, military, and others. This technology inspires and stimulates the students to absorb and know better in life. Strategies integrating the use of learning administration systems, web conferencing software, and open-source software can, however, accepted and recognized to alleviate the challenges in the scholarly communication, teaching and learning of information technology and other computing courses.

Scholarly communication is the system and scheme through which research and other academic writings are created, assessed for excellence, dispersed to the scholarly community, and conserved for upcoming practice. Conventionally scholarly communication has occurred in the authorized literature - in journal articles, conference proceedings, book chapters and books. Some important turning point in recent years is the expansion of the Internet and the web has had a chief influence on scholarly communication. Basically the e-resources can be retrieved by research scholars through IP-filtering but it can be accessed only when they are inside the campus to overwhelmed this limitation, the INDIAN Access Management Federation (INFED) has adopted Shibboleth, open source software, for validating accredited users from institutions and offers them unified access to e-resources from anywhere, anytime. It also evades the obligation of upholding multiple passwords for multiple resources in multiple domains.

This study aims to analyse the perception of Virtual Technology Tools on scholarly communication of research scholars of Alagappa University during COVID19 and the use of VT supports in research growth and progression, expert's development and library services, (Anasi, 2018; Beemt et al., 2019; Harris and Rea, 2009). With the increase in practice of communication tools, the chances of refining efficiency of virtual technology are also growing. The widespread usage of communication tools have brought together geographically detached individuals at a very low cost.

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Review of Literature

Sanchez-Vives & Slater (2005) analysed the Immersive virtual environments existence is well-intentioned of study by neuroscientists, perception and consciousness. Kenyon, Jason Leigh & Keshner (2004) determined the capability to offer new technology for reintegration services for clinicians and patients. It can be a treasured tool for healing interferences that require variation to complex, multimodal environments. Chanishvili, (2020) discovered the new visualization, inferences and accomplished to effectively observe the reality. The education systems made efforts to promote the distance teaching and this twisted out to be more or less resourceful, cognition oriented process. Bolkas, et al (2020) discussed the expansion of a leveling laboratory in immersive and collaborating virtual reality, as well as the challenges encountered. Kellmeyer, et al (2019) measured about virtual reality (VR) technology offers a digital replication of an environment, laboratory, a city center or a rollercoaster. The user can feel and can explore such an environment, and interact with them. Bailenson, (2018) exposed virtual reality offers implausible experiences, effective incorporation into the broadcasting landscape given its role in communiqué, tutoring, and training. Dominguez, et al (2020) demonstrated about Pollinator Hotshot team and some of the encounters of upholding a amalgam team with virtual and in-field participants during the COVID pandemic. AbdELhamid, et al (2020) revealed the major benefits of virtual technology are obtainability, tractability, contribution, interaction, inspiration, collaboration, digitalization and suitable usage of ICT. Singh, et al (2020) exposed the virtual technology is advantageous for isolated sites for discovering telemedicine, development, treatment, and regulatory of the contagions by providing proper consciousness to the people concerning this disease.

Methodology

The study was design to scrutinize the impact of virtual technology on research scholars, how virtual technology is deploying in educational activities, usage of INFED E- resources, category of tools utilized by researchers to access E-resource, Source of sharing their knowledge and their impact of knowledge sharing are evaluated in this study. An online survey method was adopted by disseminating Google form through e-mail and WhatsApp, due to epidemic condition. This study conducted only on research scholars of Alagappa University, Karaikudi. A total of 50 respondents were earmarked as sampling structure for this study, which satisfies the Krejcie and Morgan (1970) suggested requirement.

Objectives

- To explore the Virtual Technology Tools on the scholarly communication of the Research Scholars in Alagappa University during COVID19;
- To examine the Virtual Technology Tools in knowledge sharing Practices of Research Scholars in Alagappa University during COVID19;
- To explore the possibility of bringing about Virtual Technology Tools of Research Scholars in Alagappa University and
- To develop virtual technology tool that can be used by research scholars for enhancing their effectiveness during COVID19.

Hypotheses

- There is no significant association between the frequency of use of virtual technology among gender
- There is no association between age and the frequency of usage of Virtual Technology;
- There is no significant difference between effectively VT tools are used for sharing knowledge and the impact of scholarly communication;
- There is no significant difference between residing place of respondents and level of satisfaction in achieving VT tools during COVID-19.

Data Analysis and Interpretation

Table 1: Demographic Information of Respondents

Descriptive statistics			
Demographic profile	**Options**	**Frequency**	**Percent**
Location	Rural	21	42
	Urban	22	44
	Semi-Urban	7	14
	Total	50	100
Discipline	Science	24	48
	Arts	12	24
	Management	14	28
	Total	50	100
Gender	Male	19	38
	Female	31	62
	Total	50	100
Age Group	23-25	3	6
	26-30	34	68
	31-35	8	16
	Above 35	5	10
	Total	50	100

The table - 1 interprets the residing place of research scholars, which describes those students in semi-urban areas, is not involved in doing research, it may be lack of facilities or poverty or English proficiency or family instability or some other physical problems faced by them. Consequences of this study depicted that the gender distribution is not even; the number of female participants is 24% greater than that of the male counterparts. The gender composition well signifies the trend of the educational programmes, in which female students are more curious to secure good position in society than the males. From the total respondents, most of the respondents are from the science discipline. The analysis proves that students fit the age group of 26-30 relatively had a better performance in academic than other age group, due to level of understanding about research and its importance to the society.

Table 2: Chi-Square test for significant association between frequencies of using of VT among gender

Variables		N	R	O	F	Total	Chi–square Value	P Value
Smart Phone	23–25	0	0	0	3	3	–	–
		0	0	0	3	3		
	26–30	0	0	0	34	34		
		0	0	0	34	34		
	31–35	0	0	0	8	8		
		0	0	0	8	8		
	Above 35	0	0	0	5	5		
		0	0	0	5	5		
Desktop/ Laptop	23–25	0	0	1	2	3	7.363	0.61
		0	0	0.1	2.9	3		
	26–30	0	0	1	33	34		
		0	0	1.4	32.6	34		
	31–35	0	0	0	8	8		
		0	0	0.3	7.7	8		
	Above 35	0	0	0	5	5		
		0	0	0.2	4.8	5		
I Phone	23–25	1	0	1	1	3	23.757	0.05
		0.5	0.1	0.1	2.3	3		
	26–30	7	0	0	27	34		
		6.1	0.7	0.7	26.5	34		
	31–35	0	1	0	7	8		
		1.4	0.2	0.2	6.2	8		
	Above 35	1	0	0	4	5		
		0.9	0.1	0.1	3.9	5		
Tab	23–25	3	0	0	0	3	4.461	0.615
		2.4	0.4	0	0.2	3		
	26–30	28	4	0	2	34		
		27.2	4.8	0	2	34		
	31–35	6	1	0	1	8		
		6.4	1.1	0	0.5	8		
	Above 35	3	2	0	0	5		
		4	0.7	0	0.3	5		

Table: 2 illustrate the estimated significance value are more than 0.05. Hence null hypothesis is accepted that there is no significant difference between gender and usage of VT in obtaining and sharing knowledge. But in employing I phone between researchers are low due to its pricey, multi-tasking, limited storage and so many reasons. Almost all categories of tools are utilized for accessing the e-resources, no statistics are computed for smart phones because it is used by most of the research scholars and its probability value is constant. Obviously now-a-days every individual are using smart phones.

Table 3: ANOVA test for the significant difference in the residing place and accessing INFED- e resources

		Sum of Squares	df	Mean Square	F	Sig.
American Chemical Society (Chemistry Journals)	Between Groups	9.449	2	4.724	6.517	**0.003**
	Within Groups	34.071	47	0.725		
	Total	43.52	49			
Annual reviews (Reviews on Environmental and engineering)	Between Groups	8.99	2	4.495	5.296	**0.008**
	Within Groups	39.89	47	0.849		
	Total	48.88	49			
Emerald (Management E–Journals)	Between Groups	0.952	2	0.476	0.324	0.725
	Within Groups	69.128	47	1.471		
	Total	70.08	49			
JSTOR (Database for scholarly journals in a variety of academic fields)	Between Groups	2.942	2	1.471	0.776	0.466
	Within Groups	89.058	47	1.895		
	Total	92	49			
Nature (Multidisciplinary Science Journals)	Between Groups	0.019	2	0.009	0.004	0.996
	Within Groups	104.701	47	2.228		
	Total	104.72	49			
Oxford University Press (Academic and Educational resources)	Between Groups	0.275	2	0.137	0.146	0.864
	Within Groups	44.225	47	0.941		
	Total	44.5	49			
Project Muse (Humanities and Social Science Research)	Between Groups	0.165	2	0.082	0.121	0.886
	Within Groups	31.835	47	0.677		
	Total	32	49			
Project Muse (Humanities and Social Science Research)	Between Groups	0.165	2	0.082	0.121	0.886
	Within Groups	31.835	47	0.677		
	Total	32	49			
Project Muse (Humanities and Social Science Research)	Between Groups	0.165	2	0.082	0.121	0.886
	Within Groups	31.835	47	0.677		
	Total	32	49			
Springer Link (Collection of scientific, technological and medical journals, books and reference works.)	Between Groups	9.685	2	4.842	1.999	0.147
	Within Groups	113.835	47	2.422		
	Total	123.52	49			
Taylor and Francis (Online– peer–reviewed journal articles)	Between Groups	8.856	2	4.428	2.979	0.061
	Within Groups	69.864	47	1.486		
	Total	78.72	49			
Web of Science (peer–reviewed, high–quality scholarly journals)	Between Groups	5.898	2	2.949	2.13	0.13
	Within Groups	65.082	47	1.385		
	Total	70.98	49			

Table 3 exemplifies that most of the INFED e-resources are above the probability value of 0.05 which depicts that there is no significant difference between the residing area and utilization of e-resources because the Alagappa University researcher can access e-resources by their home

with the personal login ID and password. The access of INFED e-resources by using virtual tools are steady and the researcher can scrutinize them at spare time. While the speed of internet can be varied at will. Savings in cost and time are another effect. American chemical society (0.003) and Annual reviews (0.008) had some significant difference with their existing place, may be the science research scholars mostly using Nature (Most preferred Science Journal) and other e-resources, due to network difficulties and may be respondents from arts discipline is lower than comparing to other disciplines.

Table 4: Independent Samples t-test for the significant difference in the factor influence on online meeting and gender

Variables		Levene's Test for Equality of Variances		t–test for Equality of Means		
		F	Sig.	t	df	Sig. (2–tailed)
Zoom	Equal variances assumed	0.989	0.325	–0.967	48	0.339
	Equal variances not assumed			–0.921	32.541	0.364
Go To Webinar	Equal variances assumed	0.117	0.734	0.714	48	0.479
	Equal variances not assumed			0.706	36.739	0.485
Live storm	Equal variances assumed	3.073	0.086	–0.239	48	0.812
	Equal variances not assumed			–0.26	47.086	0.796
Click Meeting	Equal variances assumed	1.333	0.254	0.242	48	0.809
	Equal variances not assumed			0.25	42.108	0.803
Google Meet	Equal variances assumed	0.757	0.389	–1.122	46	0.268
	Equal variances not assumed			–1.086	34.338	0.285
Outlook	Equal variances assumed	0.441	0.51	0.491	48	0.625
	Equal variances not assumed			0.492	38.434	0.625
Go to Meeting	Equal variances assumed	0.441	0.51	0.491	48	0.625
	Equal variances not assumed			0.492	38.434	0.625

The estimated significant value for the factors are greater than 0.05; hence null hypothesis is accepted and proves that there is no significant difference between virtual tools and gender. Almost all the research scholars are making use of VT tools for their progression in research without any gender discrimination. The factors Live storm, Click Meeting, Outlook, and go to meeting had been employed by many researchers because of their friendly usage, ability to present information and ability to access that information. Most probably these tools are also engaged for Secure Connection, Data Transmission and Encryption, Online courses & training sessions, video conferencing, desktop sharing, send and receive email messages, manage calendar, store names and numbers of contacts, and track tasks and more options are available in these tools.

Table 5: Correlation test for a significant relationship between sources of sharing their knowledge and impact of such knowledge sharing activities

Control Variables		Facilitates communication	Information exchange	Problem solving	Team working	Decision making
Facilitates communication	Correlation	1	0.391	0.433	–0.08	0.411
	Sig (2–tailed)	.	0.005	0.002	0.586	0.003
	df	0	47	47	47	47

Information exchange	Correlation	0.391	1	0.386	0.349	0.35
	Sig (2–tailed)	0.005	.	0.006	0.014	0.014
	df	47	0	47	47	47
Problem solving	Correlation	0.433	0.386	1	0.488	0.812
	Sig (2–tailed)	0.002	0.006	.	0	0
	df	47	47	0	47	47
Team working	Correlation	–0.08	0.349	0.488	1	0.454
	Sig (2–tailed)	0.586	0.014	0	.	0.001
	df	47	47	47	0	47
Decision making	Correlation	0.411	0.35	0.812	0.454	1
	Sig (2–tailed)	0.003	0.014	0	0.001	.
	df	47	47	47	47	0

Correlation represents the statistical measure articulates the degree to which two variables are linearly associated. The strongest correlation is between Problem solving and decision making with 0.812 based on 47 respondents and its 2-tailed significance, $p = 0.000$, this represents the linear relationship between two variables with 81% of positive relation. If the Correlation Coefficient is equal or nearing to 0.6 there exist a moderate positive relationship which is accomplished by all other variables. The estimated significant value is less than of 0.05 and null hypothesis is rejected and depicts there is a significant relationship between effective usage of virtual technology and their impact of sharing their knowledge.

Major Findings and Discussion

Findings of this study designate that the research scholars residing in semi-urban areas aren't involved in performing research due to their individual concern and some common issues are also raised in this pandemic situation. The researcher's opinion is compatible with (Hashim et al., 2020) that female students are more enthusiastic and eager to do research than the male students. In line with the study of virtual technology tools are mostly used to access information easily (Becker, et al, 2005) and depict the changes in research progression. (De Gauquier et al, 2019) findings of this study correlate and refers that smart phone are most probably utilized by every research scholars to obtain information and to access e resources. As Schon (1983,) ¨has explained, about the access of INFED e-resources by using virtual tools are stable and the researcher can examine them at spare time. Especially Alagappa University subscribed the INFED e-resources for their research scholars in various disciplines to make use of the e-resources at free cost. While the swiftness of action can be varied at will. Savings in cost and time are another roundabout, effect. The level of research and passing message can be augmented due to the interaction of various virtual technology tools by video conferencing, e-mails, virtual meetings and many more other virtual technology tools. (Orlikowski, & Barley, 2001) has associated with this study as greater interface between the fields of virtual technology in research studies should be viewed as more than a matter of enrichment, it is an intellectual intelligent. The effective usage of virtual technology tools in knowledge sharing activities crated a good impact in information sharing activities (Orlikowski, & Barley, 2001).

In the recent period, the majority of people adapted Virtual Technology tools for a variety of reasons. The epidemic situation concerned the academic activities; the use of technology in the learning processes became indispensable and the only way to educate, exchange a few words and work together for months. This study divulge that mainstream of the research scholars are well approachable of VT tools and using them for enlightening the academic purpose and also agree that the social media tools are very much helpful in practicing and sharing their skills and knowledge in their academic activities. The study also discloses the elevated practice and exploitation of library e-resources except some resources may be due to lack of signal problems in their residing areas.

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SECTION III

SMART LEARNING EVIRONMENTS: ROLE OF LIS PROFESSIONALS

Invited Paper

THE ROLES OF LIBRARIES: SUPPORTING SUSTAINABLE DEVELOPMENT AND CLOSING SMART DIVIDE

Seungmin Lee[1]

Introduction

The aftermath of COVID-19 will not disappear completely. It has brought that non-face-to-face and online services have already permeated our daily lives. After the COVID-19 crisis, the concept of 'New Normal' has been used as a core word symbolizing the current society. The phenomena and standards that previously seemed abnormal are gradually becoming very common.

Currently, the harms caused by COVID-19 have been discussed so much and many research insist how we should lead our lives in the era of new normal after COVID-19. Due to the epidemic of COVID-19, the entire society is undergoing many transformations and we are now facing many social problems caused by COVID-19. Although many people may recognize those problems from various perspectives, there are some issues that we are overlooking: the evolution of digital divide caused by the pandemic situation and sustainable development.

The digital divide is a social phenomenon generally due to the evolution of information technology. Many countries have made efforts over a long period of time to close the digital divide as a social problem. Different from the traditional phenomenon of digital divide, however, the digital divide in the pandemic situation caused by COVID-19 is more serious and is developing in a different way from the traditional digital divide, including educational divide, economic divide, and social divide.

Many countries are already aware of the seriousness of the educational divide resulted from the interruption of information activities, social distancing, and non-face-to-face communication in the COVID-19 era. Although many approaches and strategies have been proposed to solve these problems and bridge the gaps resulted from the digital divide, most of them, including applying a new infrastructure, dissemination of digital devices, and education to enhance digital literacy, have not been much effective yet.

One of the approaches to solve these problems is to use libraries and library communities as social and informational infrastructure because libraries have been playing an important role in closing the digital divide for a long time. In order to fully function as an institution for resolving the problems of the digital divide and close the social and educational gap in the current situation, it is necessary to come up with a plan and direction to secure the sustainable development of library communities and to bridge the social and educational divide. From this perspective, this research aims to discuss the roles of library community to cope with the two important but not widely recognized issues: supporting sustainable development and closing the evolving digital divides in the new normal era.

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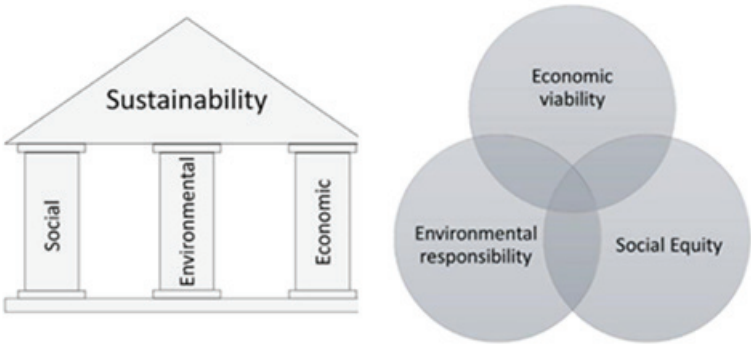
2. Sustainable Development and Library Community

2.1 Implication of Sustainable Development

Currently, sustainable development is being discussed focusing on environmental aspects such as sustainable materials, recycling, and reuse. However, what these concepts mean and how they should be reflected in our society are often mentioned in somewhat ambiguous ways. Although the importance of the roles that library communities should play to support sustainable development is growing, the direction or guidelines are not clearly discussed. Thus, in order to fully function to support sustainable development, the concept and scope of sustainable development should be analyzed first.

The concept of *sustainability* is generally defined in many ways. The word *sustainable* is not a new term, and has paid a lot of attention over the past few decades. It is established as a concept that directly or indirectly affects the lives of modern people. The term *sustainable development* was coined in 1987 in the Brundland Report of the United Nations World Commission on Environment and Development, named as *Our Common Future*. In addition to environmental aspects, this report deals with sustainable development from a social, economic and cultural perspective.

Since then, many researchers have continued to discuss the concept of sustainable development in a way that can be specified and applied to the current society. In general, the concept of sustainable development consists of three main dimensions: environment, economy, and society, commonly known as 'The Triple Bottom Line' in the sustainability-related community. This definition has been extended and applied to the concept of sustainable development all over the world, and it is currently positioned as an important axis in discussing the direction of sustainable development



(see Figure 1)

Figure 1. Concept of The Triple Bottom Line (Datta and Chaudhuri, 2018)

In this regard, "Transforming Our World: The 2030 Agenda for Sustainable Development," adopted at the UN Summit in September 2015, addresses the challenges facing the world. While proposing possible solutions, "Sustainable Development Goals (SDGs)" was presented (see

Figure 2). It provides 17 sustainable development goals consisting of social, economic, and environmental development and a set of 169 detailed goals (IFLA 2015), which were officially announced on January 1, 2016. Currently, the UN's Sustainable Development Goals are playing a role as a medium to integrate three aspects of economy, society, and environment and to connect various institutions to solve problems occurring all over the world. Since sustainable development requires a holistic approach to economic, environmental and social issues, however, it should be able to pursue the possibility of improving the quality of life or work of people, and thus many social institutions including libraries should play an important role in supporting sustainable development.

Figure 2. 17 Goals of Sustainable Development (IFLA, 2015)

2.2 Sustainable Development and the Roles of Libraries

The social and informational responsibility of library communities is in line with the adoption of the UN 2030 Agenda. Many countries already recognize the important roles of libraries for supporting sustainable development. In addition, as a basis for community members and as a place for lifelong learning, the cooperative relationship with library communities can be a great asset to the UN. Thus, the UN expected library communities to play informational and social roles from various perspectives in the current environment and in the future (IFLA 2018).

Accordingly, in August 2002, IFLA declared "Statement on Libraries and Sustainable Development" in Glasgow, Scotland, on the event of its 75th anniversary (IFLA 2002). Since then, IFLA has reached an agreement on the final draft of the "UN 2030 Agenda" through discussions with many stakeholders including UN member states. IFLA welcomed and declared its continued support for the "UN 2030 Agenda," which can achieve the results of access to Information and Communication Technology (ICT), access to information, universal literacy, and protection of cultural and natural heritage (National Library of Korea 2017).

As such, library communities occupy an important part in achieving Sustainable Development Goals, and to play a role directly linked to the achievement of these goals. In addition, problems such as the digital divide between the rich and the poor (Goal 1), gender equality (Goal 5), and employment inequality (Goal 8) can be addressed with support through library communities. Library communities are also expected to contribute to achieve the formation of an industrial base (Goal 9) and awareness of the natural environment (Goal) 6, Goal 13, Goal 14, Goal 15). In this way, library can play a role as an institution that can enhance the social and informational level of the current society and as an institution that can support the achievement

of the Sustainable Development Goals. It can also serve as a tangible and intangible platform that connects people and communities.

Through these functions and roles, libraries can be a center of social cohesion. In this respect, library communities should support community members socially, informationally and culturally. They also play a pivotal role in closing digital divide by enhancing digital literacy of general people.

3. Closing Smart Divide through Library

3.1 Implication of Digital Divide

The development of information technology and the widespread dissemination of wireless networks leads to the establishment of a digital convergence environment where networks, information, media devices, and contents are converged. In particular, the use of smart devices triggered by smartphones has radically changed people's information activities. Smart devices are becoming indispensable tools for people to obtain, express, transmit and utilize information. In addition, these devices have become the core devices for education because many people are on the Internet to get the access to educational information and many countries offer school classes via Web. Thus, smart devices are becoming a key tool not only for people's information activities but also for education.

COVID-19 is entirely changing our lives and the way of education. Non-face-to-face services are provided in various fields such as education, culture, economy, and medical care. Among these, the field of education is significantly affect by COVID-19 because of the absence of face-to-face education in school. In this situation, people use smart devices such as tablet PCs and smartphones in addition to the existing information devices for information activities and education in school. It is causing an intangible and notorious gaps in education between those who can utilize smart devices and those who cannot.

Smart devices enhance information activities at both the personal and social level by allowing various types of information to be efficiently utilized using a single device. In addition, it performs a function of supporting communication between people by utilizing various applications based on wireless networks. In contrast, smart devices are complex media, and they have the characteristic that they require a certain level of knowledge or competency to fully utilize the functions of those devices. As a result, for those who cannot fully utilize smart devices, the convergence environment of information and media through smart devices may lead to a situation in which they face a social problem of the digital divide.

Although the digital divide is a concept that appeared with the dissemination of personal computers, the traditional quantitative digital divide focusing on the access to information has been evolved into a qualitative digital divide resulted from the utilization of smart devices. Particularly, in the current situation with the pandemic of COVID-19 with the absence of face-to-face education, the traditional concept of the digital divide is further evolving into the smart divide.

3.2 Evolving Digital Divide into Smart Divide

The smart divide is a term coined in a research by Lee (2016). It is defined as an intellectual divide that occurs within a group using smart devices or a qualitative gap determined by the competency to use smart devices (Lee, 2016, 262). Based on the definition of Lee (2016), Li,

Chen, and Wu (2020, 560) describes the concept of the smart divide as an evolutionary aspect of the digital divide closely related to people's digital literacy in relation to economic level, race, gender, age and place of residence.

Taken together, the smart divide is a diversified digital divide that occurs depending on the competency of the use of smart devices. In particular, it can be seen as a concept that includes not only the degree of possession of smart devices, but also the gap resulted from how much information can be accessed and utilized by using smart devices. If the traditional digital divide has been the inconvenience caused by the inability to use ICT, the smart divide goes beyond simple inconvenience and expands to economic, social, cultural, and informational gaps, leading to various types of social and informational inequality. Thus, in order to solve the social problem of the smart divide in the current society where smart devices are widely distributed, a more in-depth approach should be prepared, different from the existing approaches to resolve the digital divide.

In particular, in the current situation where face-to-face education or information activities are not sufficiently conducted, educational support from various aspects should be provided through libraries in order to close the smart divide. This is not simply for supporting information activities, but has a meaning as an important activity to address the informational, social, and educational divides in our society.

4. Roles of Library Communities in the Era of New Normal

4.1 Supporting Information Activities for Sustainable Development

The support of information activities is one of the keys to sustainable development. In this respect, libraries, which has contributed to society for a long time as a hub of knowledge-information, can be a core institution for supporting information activities to achieve sustainable development. However, libraries should not only focus on supporting information activities, but also consider creating an environment in which all community members can access and use information through libraries.

One of the ways in which libraries can support sustainable development is that libraries provide informational support so that community members can get the access to information they need from libraries (Shaffer 2018). In addition, library communities provide various information services to the community and should play a role as a driving force for social change at both individual and societal levels.

4.2 Supporting Educational Activities for Sustainable Development

Library is one of the most convenient institutions for everyone to use. It provides a learning environment that everyone can equally use and participate without disparity or discrimination. Library provides wide range of information resources for learning, as well as physical environments such as reading rooms, facilities, and facilities. In addition, library operates various lectures and programs using facilities, spaces, and library collection. At the same time, it supports lifelong learning for community members, and additionally should provide an environment to build a wide human network among community members.

In terms of supporting sustainable development, however, library should also consider providing an active educational environment, not passive information services such as providing facilities and educational programs. In other words, the implementation of sustainable development

through libraries is not only tangible development but also intangible development. Also, indirect development that lays the foundation for development is also included in its scope. Thus, the providing equal access to information and a learning environment is the core of the library's mission and the essential value of librarians.

As such, library not only plays an informational role, but also plays an educational role for community members. This is closely related to the traditional role of library as a hub of information. In particular, reference service that provides and guides the use of information resources needed by community members for various purposes is one of the important functions of the library as an educational institution of community.In the current information environment, these educational functions are evolving into a wide range of information services that can be accessed and used anytime and anywhere beyond physical limitations. Thus, it is necessary for library communities to consider the evolution of library to an embedded library service that not only provides information services limited to the library, but also performs linkage with information resources outside the library.

4.3 Closing Smart Divide through Library

Library is an institution closely related to the implementation of the Sustainable Development Goals. It can make a significant contribution to addressing problems such as poverty, education and social disparities. For a sustainable society, various disparities must be resolved. Library and information service can be one way to solve the problems such as the digital divide, evolved smart divide, and information inequality, which are currently recognized as social problems (IFLA 2018). In order to close the smart divide, library should actively provide effectively and efficiently information and educational environment. Additionally, it should target everyone who needs it, not just the info-poor.

As such, library can play a role as a social and informational agency that connects information and people. Library is a hub of knowledge information where information is collected and utilized from past to present, which can contribute to the construction of informationally equal society. However, this role cannot be fulfilled by simply expanding library collections. In order to quantitatively and qualitatively enhance the various social functions and to close the smart divide, library needs to actively build a human network. In other words, it is possible to establish a cooperative system that can solve various social problems through communication within the community. It can also increase the possibility of sharing necessary information and close the social and informational gaps (Lee and Park 2019).

Through these social, informational, and educational functions, library can improve the quality of life of community members by performing various roles in the community and society as a whole based on information services, which in turn lays the foundation for the sustainable development of society. Library provides a variety of informational and educational programs that can enhance the cohesion of society. It can have a positive impact on securing the sustainability of society, such as bridging social gaps, providing opportunities for lifelong learning, and forming social and cultural capital.

In order to efficiently and effectively conduct these functions, however, librarians are the most important among the many ways to support sustainable development. A library cannot exist without librarians, and a sustainable library cannot exist without librarians. In particular, if the level of information service by librarian enhances, the roles of library community will be recognized by people and will be more likely to evolve into a more valuable professional service.

5. Conclusion

COVID-19 is causing many serious social problems and social issues throughout society. Although the problems resulted from this pandemic situation can be discussed in various aspects, it can be considered from two important but not widely recognized issues: continuing the sustainable development and the evolving digital divide.

These issues are not just limited to the development of society and information activities, but cause many social problems, including social divide, educational divide, and information divide. In particular, the gaps in education in schools is getting worse, which can lead to social polarization rather than social cohesion. Even worse, the current pandemic situation is resulted in the evolved digital divide, which is termed as the smart divide. It becomes a more serious social and informational problem than ever.

In order to address these problems and support sustainable development of society, library needs to play a role as a social and community-oriented institution that can close the social, educational, and informational gaps caused by COVID-19. To fully function to address these problems, it is necessary to raise awareness about libraries and librarians, and to make efforts to strengthen the roles of library communities so that they can perform their professional roles. This will be the ideal and substantial role of library in supporting sustainable development in the current society and in the future.

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THE ROLES OF LIBRARIAN AND ARCHIVIST IN AI AND BIGDATA ERA: FOCUSED ON DATA QUALITY MANAGEMENT

Jeong Ho Na[1]* Jin Sol Lim[1]* Hyo-Jung Oh[2]*

Introduction

As artificial intelligence (AI) technology has shown high growth rate and business feasibility recently, the data underlying the technology is drawing attention. According to IDC(International Data Corporation)'s "2021 Global Artificial Intelligence Market Forecast Report", the AI market will grow 17.5% annually and total sales will reach $554.3 billion by 2024[1]. Reflecting this trend, the U.S. is setting data construction as its main goal to secure the base of artificial intelligence technology in AI R&D strategy. In addition to Canada, the EU, the U.K. and China are also putting forward data-building strategies to lead AI research. Similarly, the Korean government is striving to develop the data industry by selecting a '*data dam*' project to advance AI technology as one of the key challenges of the 2020 Digital New Deal policy[2][3].

However, as the types and amounts of data collected and produced by governments and private companies exponentially have been increased, a lot of problems related to the data quality have been arisen. According to Garter[tm]report "Measuring the Business Value of Data Quality",40 percent of the expected value of all business plans in the organization is not achieved. This is a problem caused by poor data quality during the planning and execution stages. Low quality data reduces operational efficiency, increases excessive processing costs, and affects productivity [4].Even though data quality management(DQM) is the essential requirement to reduce losses from low quality data and increase the efficiency of data analysis and AI technologies, most companies focus only on the analysis of data, but do not consider quality management important and academic research is also insufficient.

In this study, our ultimate goal is a consideration of the capabilities of librarians and archivists on DQM and reconsideration of the prestige of librarians and archivists in the era of AI and big data. To this end, we conducted literature surveys on some requirements for DQM and details in DQM procedures. Comparisons with the roles of big data analysts, librarians and archivists were conducted. In addition, we derived the implications through the cases of big data curation where librarians and archivists played a major role.

Relevant literature

Most of studies related to DQM said that data production increases and its types are also diversifying as technology advances. For this reason, it was argued that DQM is becoming important to secure reliable data. Dravis (2004) said that in order to maximize the benefits of organizations investing in BI (Business Intelligence) projects, data quality should be managed. He argued that in order to secure the quality of data, the data quality strategy should be established considering six factors: context, storage, data flow, work flow, stewardship, and continuous monitoring [5]. Viscusi et al. (2014) discussed a quality-based framework for compliance

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assessment of open government data using public data provided by local public administration in Italy. The study collected public data provided by 50 administrative sites among Italian local institutions. After that, they classified the collected data by data provider and evaluated the quality in terms of completeness, accuracy, timeliness, and compliance. As a result, about 40% of websites operated local public administrations did not satisfy completeness, and more than 55% of the datasets are Word/PDF/Power Point, formats not suitable for machine readable. It suggested that the quality management of public data is not being done properly [6].Ghasemaghaei & Calic (2019) investigated effect of processing and quality of big data on firm decision-making using the Organizational Learning Theory and the data quality framework. As a consequence, the utilization of big data does not significantly impact the quality of firm decision-making However, it is fully mediated through data quality and data diagnosticity, thus, they emphasized the need for DQM prior to the utilization of big data [7].

According to a study discussing the work of the librarians and archivists in the data era, the competencies required of librarians and archivists are changing as the information environment changes. Accordingly, previous studies emphasized that librarians and archivists should have necessary competencies and skills as information professionals in line with the changed demands. Park et al. (2018) analyzed the technology substitutability for each task of public library librarians in the era of the 4th industrial revolution and discussed the roles of librarians required in the present age by deriving core tasks of future librarians. They said that the competency of ICT technologies affecting most librarian works should be strengthened and librarians should be performed the role of a data scientist and the role of a service creation foundation element proposer [8]. Klapwijk (2018) argues that data science has appeared as the times have become data-intensive and knowledge of computer programming, software engineering, and statistics are included in data science, but the most important is data cleaning and data preparation. he said that librarians should collect, preserve, and manage scholarly datasets as data curators, and accept specialized skills to add new value [9].Larson (2020) examined the digital preservation needs of government big data from the perspective of archival theory. she emphasized that archivists need technical knowledge and a critical point of view to capture the context and records of big data. because archivists are called to intervene in the digital preservation of government big data as big data becomes a key part in transactions and decision-making processes[10].

Researches so far have raised issues related to low-quality data and said that the demand for DQM is rising. Even though most of the studies designed and built a quality management framework or system to manage data quality and evaluated its effectiveness, there have been few studies considering the role that information experts can play to contribute to DQM.

Therefore, this study examines the changes in the skills and competencies required for librarians and archivists, who are traditional information professionals, as new types of data are generated. and we identify the role that can contribute to DQM through comparison with big data analysts.

Bigdata Analysis and Data Quality ManagementProcedure

3.1 Big data Analysis

Big data is datasets whose size is beyond the ability of typical database to capture, store, manage and analyze [11], it should be performed at each stage of the information life cycle in 4 processes: *Plan, Obtain, Maintain,* and *Apply* as shown in the <Fig. 1>. Big data analysts are responsible for producing value-added results through the process of designing, collecting, storing, managing, analyzing and visualizing them.

	Stage of Plan		Stage of Obtain	Stage of Maintain	Stage of Apply	
Bigdata Analyst	Design	Collection	Store	Management	Analysis	Visualization
Perform	- Set Objective - Select target Data	- Collect Data	- Process Data - Clean Data - Store Data	- Manage Data: · Accuracy · Completeness · Timeliness · Consistency - Include Manage Data security	- Analyze Data - Find Value	- Visualize Result
Tool& Technologies		Crawling, FTP, Open API, RSS	RDB, DFS NoSQL	Access control, encryption	Data mining, Statistical Techniques	Chart, Graph

<Fig 1> Bigdata process procedures performed by bigdata analyst

Big data analysts, as shown in the <Fig.1>, define the goals they want to solve and determine the data needed to solve the problem at the design stage. In other words, big data analysts formulate and hypothesize problems arising from organizations as data analysis problems, determine the data required for data analysis, and identify resources such as manpower, applications, and technologies to implement selected analytical models [12]. Furthermore, big data analysts deal with unstructured, semi-structured, and structured data as well as data of various sizes ranging from terabytes to zettabytes. In hence, they need specialized skills for data analysis like statistics and design techniques.

3.2 Data Quality Management

Researches on data quality were being conducted in a variety of ways, and as the utilization of data increased, the definition of data quality was also changing. Among them, ISO 8000-2 defines data quality as "degree to which a set of inherent characteristics of data fulfills requirements". Systematic and continuous management is required to maintain and enhance this data quality. So, DQM means "coordinated activities that direct and control the organization in relation to data quality" and includes attributes such as accuracy, integrity, consistency, validity, timeliness and accessibility [13].The UK Government has argued that data quality assessments should be performed at each stage of the information lifecycle[14] and NIA(National Information Society Agency) of Korea also systematized the DQM process to be applied at each stage of POSMAD information life cycle in 4 processes[15], as shown in the <Fig. 1>.

Data quality should be considered at all stages in the process of big data analysis. First, in the *planning* stage, an organization or institution establishes a DQM plan for quality management. In this stage, the organization selects DQM targets, defines quality management goals, establishes data quality diagnosis and improvement plans, standardization measures, and linked data quality assurance plans, and then allocates personnel and resources required for quality management.

The *obtain* stage is a stage of building databases by storing the collected data. quality management in the *obtain* stage can improve data quality by standardizing data, managing outputs from data construction, eliminating unnecessary items and performing data cleaning such as filtering, converting, refining, and reducing according to the standardization plan established in the *planning* stage.In addition, it is possible to prepare the basis for data quality diagnosis and quality improvement activities in the *maintain* stage by grasping the status of the collected data.

The *maintain* stage is a phase that includes data quality diagnosis and improvement in

the process of operating the database managed by the organization. This stage includes activities such as quality management of linked data, quality diagnosis and improvement of the quality management target selected in the *planning* stage, database product check, maintaining integrity and timeliness due to data change, and notification of database changes to stakeholders.

Lastly, in the *apply* stage, the organization identifies and improves data quality problems that arise when internal and external users utilize the data collected or generated by organization. In addition, they reflect the actions according to the data quality diagnosis and evaluation in the data quality goals and management targets defined at the *planning* stage. In particular, data created by an organization may be inappropriate data for use, and data corruption may occur during the service process, so data quality feedback management is required. When managing feedback, it should be defined in advance whether the scope of feedback to be accepted should be limited only to simple data errors or including difficulties encountered when users use data.

Big data has different quality problems for each data life cycle. Therefore, for DQM, organizations must identify factors that impede data quality at each stage of the life cycle and prepare countermeasures to maintain and improve data integrity, uniqueness, consistency, timeliness, validity, and accuracy. In addition, in order to encourage the use of data, it is necessary to continuously manage the quality of data through user feedback and quality evaluation while securing the reliability of the data.

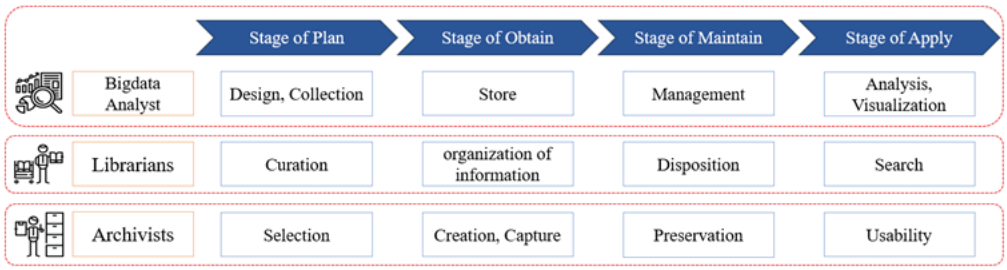
The roles of Librarian and Archivist for Data Quality Management

Librarians and Archivists

Librarians are generally a profession that serves to collect, analyze, organize, accumulate, preserve, and use materials for users in centering on libraries. Meanwhile, in the big data era beyond the information age, librarians are expected to play the role of an information manager who understands the characteristics of data and collects data needed by users. Also, they are required to analyze the collected data, evaluate usefulness, organize or accumulates data, and mediates data in the most appropriate form when data needs occur.

Records management is a set of activities to ensure that the authenticity, reliability, integrity, and usability of records are not compromised in all processes from creation to disposition and preservation. ISO 15489-1 defines records management as “field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records”[16]. Recently, as the management and preservation of datasets are included in the field of records management, archivists are required to have specialized knowledge to collect and preserve data for a long period of time.

Indeed, both librarians and archivists have traditionally played a role in dealing with information sources. As times and their tasks have been changed, the size of the information they handle increases, and the types of information are also diversifying. In particular, the information that they handle is expanding from simple document type to unstructured data type. With such a background, it is considered that both occupations can contribute greatly to DQM in that they manage records including documents and data according to a specific information life cycle and aim to preserve and utilize information.



<Fig 2>The roles of Big data analyst, librarian, and archivist in Data processing procedures

4.2 Specialist for Data Quality Management

Based on the analysis in Chapter 3, The <Fig. 2> summarizes the roles of big data analysts, librarians, and archivists that can be performed in DQM procedures.

Librarians can contribute to DQM by performing roles such as data curation, information organization, and retrieval in the data processing procedures. Librarians can help to derive meaningful results while discovering and preserving trustworthy data sources in the *planning* stage. In the *obtain* and *maintain* stages, unlike big data analysts who simply store data, the librarian can take charge of organizing the collected data so that it is easy for users to access it. Especially librarians excel at creating index or constructing metadata in order to increase the effectiveness of data use, in terms of librarian's own job. Finally, in the *apply* stage, librarians suggest information access points to archive collected and organized data or improve user's ability to utilize information through information services such as information provision, education, and guidance, and mediate information sources to obtain information. It is possible to increase the data utilization of the requestor.

The remarkable examples of big data curation by librarians, there are library big data platforms such as 'Data for Library' and 'Solomon' built and operated by the National Library of Korea. In fact, librarians were sharing and analyzing library big data through big data platforms. The analysis results and data obtained from the platform were used as the basis for setting collection management, program planning, and policy direction for the acquisition. In addition, library big data was provided to users as a book information service [17]. Furthermore, spatial usage analysis based on user activity big data logs in library can be conducted [18].

In addition, university libraries such as UCLA Library, UCSD Library, and University of Melbourne Library provide users with data curation services such as data management, access improvement, data protection, citation and documentation, and creation of collaboration opportunities through sharing for research data[19][20][21].In short, librarians acquired and created reliable data, manage and share the collected data, and use it to create meaningful values while preserving data quality. In addition, it can be confirmed that the librarian has established a virtuous cycle system that recycles library data utilization results through the library big data platform.

<Fig. 2> shows archivists can also play a significant role in DQM. Like librarians, archivists in *planning* stage can provide guidelines for selecting valid data or contribute to identifying the location of data and determining whether it can be gathered. In the *obtain* stage,

archivists are possible to ensure authenticity, reliability, accessibility by creating and capturing data according to the guidelines presented in the *planning* stage. Besides, they can be responsible for classifying and organizing the collected data according to the context, and at the same time creating descriptions for searching.

At the *maintain* stage, data is appraised, selected, and disposed of in a way that ensures public reliability while maintaining the integrity of the constructed data. In other words, archivists maintain and preserve data that is judged to be of continuous value through data appraisal. But they discard data that have not reached certain criteria through reappraisal. This will help archivists improve data quality. In the *apply* stage, archivists perform migration of data format to the new version to guarantee usability and keep the audit trails for proving that records have not changed from unauthorized use, modification, and destruction. They also can provide various retrieval tools such as thesaurus and catalogs. Thus, archivists will increase the usability of data by providing efficient access without compromising the integrity of the data.

As examples of data collection and construction by the archivist, Han et al. [22]attempted to establish a disaster safety information archive to systematically collect, preserve, manage, and utilize disaster safety record information resources for preemptive response and prevention against disasters. To this end, they analyzed the management status of disaster safety record information resources produced by the disaster safety-related institutions. As a result of the study, they said that the subjects of data creation and distribution differ according to the type of disaster safety record information resource. when collecting and classifying data, the characteristics of institutions that produce, distribute, and manage record information resources should be reflected. In addition, Han said that the classification system and metadata are different for each institution, so it should be standardized to maintain consistency and conformity. Through this process, it is possible to prepare a disaster response plan through the analysis of the constructed data and to increase the satisfaction of users by subdividing the service by purpose of use.

In addition, Yoo & Oh [23] compared acquisition methods, status and period of web records of domestic and foreign disaster archives such as PAHO (The Pan American Health Organization) and OASIS (Online Archiving & Searching Internet Sources) to suggest an automatic method for acquiring web records of disaster archives. The researcher analyzed life cycle of disaster issues that occurred in Twitter and Internet newspapers over the past 10 years and proposed an automatic acquisition method and acquisition cycle of web records suitable for each model. In order to maintain data quality in the automatic collection process, they urged that measures be taken to filter out duplicate and unnecessary records, and that exceptional abrupt factors due to political and social issues should be checked.

Looking at the above case for disaster archive construction, archivists analyzed location, characteristics, and current status of data, and suggested improvements and guidelines for disaster record acquisition and archive construction. It can be confirmed that archivists can secure reliable data and perform quality management of the acquired data.

Conclusion

This study compared the tasks of librarians and archivists with those of big data analysts in the data processing procedures. As a result, we try to establish the vision of librarians and archivists in the era of the 4th industrial revolution and consider the roles of librarians and archivists to contribute to DQM.

First, we analyzed the role of big data analysts and the DQM procedures based on the data life cycle in four stages: plan, obtain, store, and apply. Big data analysts were designing, collecting, storing, managing, analyzing and visualizing data according to the data life cycle. They were taking various measures to secure reliable data at each stage in order to maximize the value to be derived with big data. DQM should also be performed at each stage.

Second, we analyzed the traditional roles of librarians and archivists in terms of information professions. Librarians and archivists have been playing the role of dealing with information sources according to their respective purposes. Especially, it has been confirmed that librarians and archivists need skills and competencies to meet new information needs with the development of technology and changes in information media consists of various types of data.

Based on the comparison with big data analysts, the roles that librarians and archivists can contribute to DQM were identified and confirmed through actual case studies. Librarians can collect, preserve, and organize data through data curation in the planning, and provide access points for retrieval to increase the utilization of data. Examples of this were the case of using the library big data platform and the research data curation service implemented by the university library. In the case of archivists, guidelines for the acquisition of valid data can be presented at the *planning* stage. And data are created and captured according to the guidelines during the *obtain* stage and organized and classified according to the production context to ensure the authenticity, reliability, and integrity of the data. In the *maintain* stage, the quality of data can be improved by appraising the value and usefulness of data and disposing of data according to the results. As an example of data curation performed by archivists, there was a study that analyzed the disaster issues that appeared on disaster safety record information resources of disaster safety-related institutions and SNS to identify the characteristics and management status of data, and suggested improvements and acquisition guidelines for archive construction.

As a result of this study, librarians and archivists have many similarities with big data analysts in the way they handle information sources and perform appropriate tasks for DQM in real cases. We hope that this will set up the capabilities of librarians and archivists in the age of AI and big data and enhance their stature as data experts.

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USAGE OF MOBILE TECHNOLOGY APPLICATIONS IN SMART LIBRARIES

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Introduction

The twenty-first century is observing much technological and wireless networking revolution and the internet is the momentous of them all .Web and digital Libraries are enjoying a mutual relation making information distribution an easier and hassle-free and taking the form of digital Libraries. Libraries constantly change with user needs, the developing technological situation and the wide-ranging growth of information which in turn while creating smart users and smart services evolve smart Libraries to keep pace with the wrapping nature of the information access and distribution.

Smart Library

"The term smart library appears in various contexts as a synonym for the concept of an intellectual library, digital library or virtual library. The term smart means flexible, adaptive and Extendible. The smart library is a hardware and software complex with a wide range of opportunities for searching and providing necessary information to virtual users according to their inquiries and requirements. Smart Libraries may be called as the amalgamation of electronic, digital, intelligent, virtual and network Libraries, which are completely and unconditionally reliant on the technology and cannot operate without it to provide better services. The mobile library falls under smart user-oriented library where users are able to receive and use library service on their personal computers, and tabs and are likely to receive computerized services like SDI, RSS feeds, current contents, and access to eBooks on their Kindle readers, PDAs, MOPACS and other such services" (Kroski, 2008).

Smart Technologies in library

With the advent of Web-based information, born-digital collections and institutionally significant collections have risen to prominence, displacing library efforts to conserve print holdings. Serial subscriptions, cooperative online resource cataloguing, including e-reserve scanning stations, and other tasks proved insufficient for traditional ILS. ERM, DAM, and IR systems would built new library workflows with twenty-first century technologies.

"In the digital age technologies are the essential and foundation of smart library and can range from cloud computing, artificial intelligence, augmented reality, Internet of things (IoT), mobile internet, wearable device technology, smart bookmarking apps, electronic resource management, mobile internet to drones and robots in Libraries. However, the core technologies without which the smart Libraries are not visible is the IoT, data mining and artificial intelligence (AI). Cao et al.(2018) categorized the smart library technology integration framework into 3 layers known as a communication layer, Computing layer, and perceptual layer".

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Mobile Technology

"Mobile technology is technology that goes where the user goes. It consists of portable two-way communications devices, computing devices and the networking technology that connects them.

Currently, mobile technology is typified by internet-enabled devices like smartphones, tablets and watches. These are the latest in a progression that includes two-way pagers, notebook computers, mobile telephones (flip phones), GPS-navigation devices and more.Mobile technology is pervasive and growing. The number of smart phone users has climbed beyond 3 billion[1] and the global mobile workforce is expected to reach 1.87 billion by 2022".

Mobile Applications

Mobile apps are categorize in to three types, they are

Native apps – It was created for a particular platform / operating system.

Web apps - are receptive forms of websites that can work on any mobile device or OS because they're transported using a mobile browser.

Hybrid apps are groupings of both native and web apps, but enfolded within a native app, giving it the aptitude to have its own icon or be downloaded from an app store. Google's android,Apple's iOS s and windows phone are the leading apps

Mobile application for Learning:

1. **Books - 23,469 Classics to Go :** The Ultimate Ebooks and Audio books it as a large collection of e-books available freely with Over 4,000 audio books featuring librivox recordings can be unlocked to go along with the e-book collection. You can easily switch between e-book and audio book versions while reading whic works with iphone and ipod touch and ipad

2. **Drop box:** Library resources are stored, synchronised, shared can be used in offline mode too.it works with i-phone, i-pad, Black Berry, Android.

3. **Evernote :** The digital resources like Text, video, audio, images are searchable and accessible within snapshot. The app works brilliantly, keeping everything in synchronised between computer, smart phone, or tablet.

4. **iSSRN:** This app provides free instant access to the latest Social Science and Humanities research articles for scholars around the world. Which is compatible with i-Phone and i-Pod Touch users to search over 250,000 papers and read.

5. **i-Books:** i-books ia an app that includes acess to i-book store for a wide range of reading materials.

6. **Kindle :** "Amazon developed a small hand-held electronic device for reading books known as Kindle app you can download an iPod or MP3 player with music, download books (via wireless technology) on to a Kindle and read them on it.is an e-reader that allows you to access books, magazines, newspapers and other content".

Library Services via Mobile Technology

Libraries can provide a wide range of mobile services to users:

1. **OPAC:** Online Public Access Catalogue (OPACs) are provided by the Libraries through mobile apps. New York Public Library provides the mobile OPAC and allows the library users to browse locations and hours.

2. **Mobile Applications:** District of Columbia Public Library developed the iPhone mobile applications for Smartphone's which includes a mobile OPAC, information on library holding with hours and location of local Libraries.

3. **Mobile Collections:** Libraries are collaborating with third-party content providers to distribute audio books, e-books, audio language courses, streaming music, videos, photos, and other multimedia to mobile devices. The Overdrive service is available on a various of mobile devices, and an app for BlackBerry Smartphones has been developed.

4. **Mobile Library Instruction:** Library instructional materials (Library Induction and Orientation) and resources are offered by certain libraries via mobile platforms. For e.g., East Carolina University Research First Aid" is a series of podcasts for library researchers on the go.

5. **Mobile databases:** National Library of Medicine mobile web portal is PubMed for Handhelds

6. **Library Short Message Service / E-mail notifications:** Most of the Libraries use SMS / E-mail for a variability of purposes, including notification for items available.

7. "Duke Mobile App was created by Duke University, a free iPhone application containing a wealth of information on digital library resources, including extensive access to the library's digital photo archive and other collections".

Advantages and Dis-advantages of Mobile Technology in Smart Libraries

Advantages

- User Friendly
- User participation
- Limitless access
- Location awareness
- Time saving

Disadvantages

- Insufficient contents
- Expensive
- Content ownership and licensing
- Limited memory capacity

Conclusion

In the digital world use of internet through mobile phones have increased tremendously among the people all over the world .In future, mobile applications and its usage will dominate the upcoming generations in a bright and its need of the hour. Its a boon to future smart Libraries . The library professionals are playing a virtual role in providing the information to the users .Globally

adopting the mobile technology can share and notify the users with variety of information to enhance usage of resources .It is essential for the Libraries to be dynamic and change their outlook to adopt new technologies and to develop new kind of relationship with the users . In order to stay relevant Libraries must be smart enough to implement mobile technologies for the maximum utilization of their resources .

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A STUDY ON UTILIZATION OF ADAPTIVE TECHNOLOGIES AND ASSISTIVE DEVICES AMONG DIFFERENTLY ABLED STUDENTS IN ARTS AND SCIENCE COLLEGE LIBRARIES IN TAMIL NADU

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Introduction

Libraries are transforming themselves over a period of time to meet the information needs of the present generation of users in the light of information and communication tools and technologies. The library building is getting reshaped, the library resources are reformatted and revised, the library services are created and refreshed, the ICT infrastructure is upgraded and updated and the library professionals are up skilled and competent-packed to adopt to the modern environment. The college library is expected to be an inclusive library – an organization capable of serving all kinds of students - first year students, last year students, students with interest to read for pleasure, for life and for academics, etc. Most importantly the library should be an all-encompassing environment. Both normal students and physically challenged / differently abled students are to be taken care of by college libraries.

Though the number of physically challenged / differently abled students may be less in number, it is the moral responsibility of any college library to serve this small set of users. The differently abled users may be either orthopedically challenged (they have mobility problems) or Visual / Hearing impaired students. Both these groups of users have different set of expectations from their libraries. The Orthopedically challenged users need the same kind of resources that are required by other normal users. But, they need more physical provisions in the library that help them have easy mobility with in the library or they need special kind of arrangement of resources so as to enable them reach the resources without any issue. But in the case of visual / hearing impaired students, they need entirely different set of resources and resource accessing tools than both normal students and orthopedically challenged students.

ICT tools and technologies to transform them to meet the information requirements of differently abled students and prove that the college libraries are inclusive libraries. As they are not able to read normal library resources, they need required information in different format or they need different assistive tools to access the normally available resources. The present research work aims at exploring the status quo of college libraries usage of adaptive technologies and assistive devices, its physical provisions, its resources and services in the select arts and science colleges of three southern districts Madurai, Sivagangai and Dindigul of Tamil Nadu State, India.

Methodology

The present article aims at exploring the status and utilization of adaptive technologies and assistive devices among differently abled Students in Arts and Science College Libraries services in the select arts and science colleges of three southern districts Madurai, Sivagangai and

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Dindigul of Tamil Nadu State, India. The research paper questionnaire used for the survey was a structured questionnaire. One third of data collected the available arts and science colleges. So, 27 colleges were to be selected from these three districts. 5 colleges from Dindigul, 7 colleges from Sivagangai District and 15 colleges from Madurai were randomly selected by the researcher from among the college students where some sort of physically challenged UG/PG students are pursuing their higher education.

Data Analysis and Interpretation

Table 1: Nature of Disability of the Respondents Vs. Other Independent Variables

Variable	Levels	Nature of disability					
		Visual, Hearing and Speech Impaired (VHSI)		Orthopedically Challenged (OC)		Total	
		Count	%	Count	%	Count	%
Gender	Male	51	58.00%	84	65.10%	135	62.20%
	Female	37	42.00%	45	34.90%	82	37.80%
	Total	88	100.00%	129	100.00%	217	100.00%
Age	Below 20	62	70.50%	85	65.90%	147	67.70%
	20 - 30	26	29.50%	44	34.10%	70	32.30%
	Total	88	100.00%	129	100.00%	217	100.00%
Course	UG	63	71.60%	88	68.20%	151	69.60%
	PG	25	28.40%	41	31.80%	66	30.40%
	Total	88	100.00%	129	100.00%	217	100.00%
	Social Science	36	40.90%	59	45.70%	95	43.80%
	Language	34	38.60%	57	44.20%	91	41.90%
	Total	88	100.00%	129	100.00%	217	100.00%
Nativity	Urban	24	27.30%	26	20.20%	50	23.00%
	Semi- Urban	19	21.60%	35	27.10%	54	24.90%
	Rural	45	51.10%	68	52.70%	113	52.10%
	Total	88	100.00%	129	100.00%	217	100.00%

Table 1 shows the distribution of respondents falling in two separate disability groups in terms of other socio-demographic variables.

Visual, Hearing and Speech Impaired (VHSI): Out of 88 respondents who are VHSI, 58% are male and 42% of female ; 70.5% are aged less than 20 and 29.5% are aged 20-30 years; 71.6% are undergraduates and 28.4% are post graduates; 46.6% are first year students, 38.6% are second year students and 14.8% are third year students; 40.9% are from social science courses, 38.6% are from language studies and 20.5% are from science courses ; 51.1% are from rural areas while 27.3% are from urban areas and 21.6% are from semi-urban areas. Thus, most of the respondents who are VHSI, are male, they are aged less than 20, undergraduates, first year graduates, from social science courses, belonging to Madurai, studying in co-education colleges and hailed from rural areas.

Orthopedically Challenged (OC): Out of 129 respondents who are orthopedically challenged, 65.1% are male and 34.9% of female ; 65.9% are aged less than 20 and 34.1% are aged 20-30 years; 68.2% are undergraduates and 31.8% are post graduates; 50.4% are first year students, 33.3% are second year students and 16.3% are third year students; 45.7% are from social science courses, 44.2% are from language studies and 10.1% are from science courses; 49.6% belong to Madurai district while 24% belong to Sivagangai district and 26.4% belong to Dindigul district ; 89.9% are studying in co-education colleges while 10.1% are studying in women's colleges ; 52.7% are from rural areas while 20.2% are from urban areas and 27.1% are from semi-urban areas.

More males are OC while more females are VHSI. More number of respondents aged less than 20 are VHSI while more number of respondents aged 20-30 are OC. More UG students are VHSI while more PG students are OC. More students of Social Science courses and language studies are OC.

Table 2: Availability of Adaptive technologies and Assistive devices Vs. Nature of Disability of the Respondents

Technology	Availability	Nature of disability					
		VHSI		OC		Total	
		Count	%	Count	%	Count	%
OCR scanner	Available	0	0.00%	0	0.00%	0	0.00%
	OK	2	2.27%	7	5.40%	9	4.10%
	NA	86	97.70%	122	94.60%	208	95.90%
	Total	88	100.00%	129	100.00%	217	100.00%
Speech Synthesizer	Available	0	0.00%	0	0.00%	0	0.00%
	OK	1	1.10%	2	1.60%	3	1.40%
	NA	87	98.90%	127	98.40%	214	98.60%
	Total	88	100.00%	129	100.00%	217	100.00%
Braille input and output devices	Available	0	0.00%	0	0.00%	0	0.00%
	OK	2	2.27%	6	4.70%	8	3.70%
	NA	83	97.70%	123	95.30%	209	96.30%
	Total	88	100.00%	129	100.00%	217	100.00%
Braille printer	Available	0	0.00%	0	0.00%	0	0.00%
	OK	2	2.27%	5	3.90%	7	3.20%
	NA	86	97.70%	123	96.10%	210	98.80%
	Total	88	100.00%	129	100.00%	175	100.00%

Character enlarging software	Available	0	0.00%	0	0.00%	0	0.00%
	OK	3	3.40%	3	3.40%	6	2.80%
	NA	85	96.60%	126	97.70%	211	97.20%
	Total	88	100.00%	129	100.00%	217	100.00%
Magnifying lens for computer monitor	Available	0	0.00%	0	0.00%	0	0.00%
	OK	1	1.10%	6	4.70%	7	3.20%
	NA	87	98.90%	123	95.30%	210	96.80%
	Total	88	129	129	100.00%	217	100.00%
Large print key labels and keycaps	Available	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	8	6.20%	8	3.70%
	NA	88	100%	121	93.80%	209	96.30%
	Total	88	100.00%	129	100.00%	217	100.00%
Touch screens	Available	0	0.00%	0	0.00%	0	0.00%
	OK	1	1.10%	3	2.30%	8	3.68%
	NA	87	98.90%	126	97.70%	209	96.31%
	Total	88	100.00%	129	100.00%	217	100.00%
Page turners	Available	0	0.00%	0	0.00%	0	0.00%
	OK	2	2.27%	6	4.70%	8	3.70%
	NA	86	97.70%	123	95.30%	209	96.60%
	Total	88	100.00%	129	100.00%	217	100.00%
Visual signaling devices	Available	0	0.00%	0	0.00%	0	0.00%
	OK	2	2.27%	2	1.60%	4	1.80%
	NA	86	97.70%	127	98.40%	213	98.20%
	Total	88	100.00%	129	100.00%	217	100.00%
Screen reading software	Available	0	0.00%	0	0.00%	0	0.00%
	OK	3	3.40%	4	3.10%	7	3.20%
	NA	85	96.60%	125	96.90%	210	96.77%
	Total	88	100.00%	129	100.00%	217	100.00%
e-readers	Available	0	0.00%	0	0.00%	0	0.00%
	OK	2	2.30%	3	2.30%	5	2.30%
	NA	86	97.70%	126	97.70%	210	97.70%
	Total	88	100.00%	129	100.00%	217	100.00%
DAISY format reader	Available	0	0.00%	0	0.00%	0	0.00%
	OK	1	1.10%	5	3.90%	6	2.80%
	NA	87	98.90%	124	96.10%	211	97.20%
	Total	88	100.00%	129	100.00%	217	100.00%

Earpiece headsets	Available	0	0.00%	0	0.00%	0	0.00%
	OK	3	3.40%	3	2.30%	6	2.80%
	NA	85	96.60%	126	97.70%	211	97.20%
	Total	88	100.00%	129	100.00%	217	100.00%
Necessary software	Available	0	0.00%	0	0.00%	3	0.00%
	OK	2	2.27%	6	4.70%	8	3.70%
	NA	86	97.70%	123	95.30%	209	96.30%
	Total	88	100.00%	129	100.00%	217	100.00%
Large monitors	Available	0	0.00%	0	0.00%	0	0.00%
	OK	1	1.10%	5	3.90%	6	2.80%
	NA	87	98.90%	124	96.10%	211	97.20%
	Total	88	100.00%	129	100.00%	217	100.00%

Note: NA = Not Available

Table 2 show the availability of various Adaptive technologies and Assistive devices in the college libraries. The findings said that there is no technology services are available such as OCR scanner, speech synthesizer, Braille input and output devices, Page turners, Visual signalling devices and Screen reading software, Braille printer, Character enlarging software and e-readers, Magnifying lens for computer monitor, large print key labels and keycaps and Earpiece headsets in the libraries. Therefore, there is a lack of using technology services among respondents and the libraries should develop up on the requirement of physically challenged users. Most of the libraries in this research area, there is no availability of funds to utilize for the challenged persons. The respondents expect the technology services are needed for effective learning and assistive services.

Table 3: Availability of Adaptive Technologies and Assistive devices Vs. Nature of Disability of the Respondents: Chi-square Test

Technology / Device	Chi-square	df	Sig.
OCR scanner	1.309[a]	1	0.253
Speech Synthesizer	.066 [a]	1	0.798
Braille input and output devices	.833 [a]	1	0.361
Braille printer	.431 [a]	1	0.512
Character enlarging software	.228 [a]	1	0.633
Large monitors	1.460 [a]	1	0.277
Magnifying lens for omputer monitor	2.070 [a]	1	0.15
Large print key labels and keycaps	2.666 [a]	1	0.117
Touch screens	.409 [a]	1	0.523
Page turners	.833 [a]	1	0.361
Visual signalling devices	.151 [a]	1	0.698
Screen reading software	.016 [a]	1	0.9

e-readers	.001 [a]	1	0.98
DAISY format reader	1.460 [a]	1	0.227
Earpiece headsets	.228 [a]	1	0.633
Necessary softwares	.833 [a]	1	0.361

To investigate whether there is a significant association between VHSI student sand OC students and whether they comment on the availability of adaptive technologies and assistive devices as sufficiently available, somewhat available or not available, Chi-Square test was conducted. Table 3 shows the result of the test and reveals that –

There is no significant association between nature of disability of the respondents and their comment on the availability of fifteen adaptive technologies and assistive devices namely OCR scanner ($\chi2$=1.309[a], df=2, p=.253), Speech Synthesizer ($\chi2$=.066 [a], df=2, p=.798), Braille input and output devices($\chi2$=.833 [a], df=2, p=.361),Braille printer($\chi2$=.431 [a], df=2, p=.512),Character enlarging software($\chi2$=..228 [a], df=2, p=.633),Large monitors($\chi2$=.1.460 [a], df=2, p=.277),Magnifying lens for computer monitor($\chi2$=2.070 [a], df=2, p=.150),Touch screens($\chi2$=.409 [a], df=2, p=.523),Page turners($\chi2$=.833 [a], df=2, p=.361),Visual signalling devices ($\chi2$=.151 [a], df=2, p=.698),Screen reading software($\chi2$=.016 [a], df=2, p=.900),e-readers($\chi2$=.001 [a], df=2, p=.980), DAISY format reader($\chi2$=1.460 [a], df=2, p=.227), Earpiece headsets($\chi2$=.228 [a], df=2, p=.633) and Necessary softwares($\chi2$=.833[a], df=2, p=.361),as the p value is more than the significant level of 0.05 in all these cases. The null hypothesis is accepted.

Table 4: ***Availability of Adaptive technologies and Assistive devices Vs. District wise of the Respondents***

Technology	Availability	Nature of disability							
		Dindigul		Madurai		Sivagangai		Total	
		Count	%	Count	%	Count	%	Count	%
OCR scanner	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	1	2.50%	5	3.70%	3	7.30%	0	4.10%
	NA	39	97.50%	131	96.30%	38	92.70%	208	95.90%
	Total	40	100.00%	136	100.00%	41	100.00%	217	100.00%
Speech Synthesizer	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	2	1.50%	1	2.40%	3	1.40%
	NA	40	100.00%	134	98.50%	40	97.60%	214	98.60%
	Total	40	100.00%	136	100.00%	41	100.00%	217	100.00%
Braille input and output devices	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	4	2.90%	4	9.80%	8	3.70%
	NA	40	100.00%	132	97.10%	37	90.20%	209	96.30%
	Total	40	100.00%	136	100.00%	41	100.00%	217	100.00%

Braille printer	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	2	5.00%	3	2.20%	2	4.90%	7	3.20%
	NA	38	95%	133	97.80%	39	95.10%	210	96.80%
	Total	40	100%	136	100%	41	100%	217	100%
Character enlarging software	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	3	2.20%	3	7.30%	6	2.80%
	NA	40	100%	133	97.80%	38	92.70%	211	97.20%
	Total	40	100%	136	100%	41	100%	217	100%
Large monitors	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	4	2.90%	2	4.90%	6	2.80%
	NA	40	100%	132	97.10%	39	95.10%	211	97.20%
	Total	40	100%	136	100%	41	100%	217	100%
Magnifying lens for computer monitor	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	1	2.50%	4	2.90%	2	4.90%	7	3.20%
	NA	39	97.50%	132	97.10%	39	95.10%	210	96.80%
	Total	40	100%	136	100%	41	100%	217	100%
Large print key labels and keycaps	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	5	3.70%	3	7.30%	8	3.70%
	NA	40	100%	131	96.30%	38	92.70%	209	96.70%
	Total	40	100%	136	100%	41	100%	217	100%
Touch screens	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	4	2.90%	0	0.00%	4	1.80%
	NA	40	100%	132	97.10%	41	100%	213	98.20%
	Total	40	100%	136	100%	41	100%	217	100%
Page turners	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	2	5%	4	2.90%	2	4.90%	8	3.70%
	NA	38	95%	132	97.10%	39	95.10%	209	96.30%
	Total	40	100%	136	100%	41	100%	217	100%
Visual signaling devices	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	4	2.90%	0	0.00%	4	1.80%
	NA	40	100%	132	97.10%	41	100%	213	98.20%
	Total	40	100%	136	100%	41	100%	217	100%
Screen reading software	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	2	5%	4	2.90%	1	2.40%	7	3.20%
	NA	38	95%	132	97.10%	40	97.60%	210	96.80%
	Total	40	100%	136	100%	41	100%	217	100%
e–readers	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	1	2.50%	3	2.20%	1	2.40%	5	2.30%
	NA	39	97.50%	133	97.80%	40	97.60%	212	97.70%
	Total	40	100%	136	100%	41	100%	217	100%

DAISY format reader	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	4	2.90%	2	4.90%	6	2.80%
	NA	40	100%	132	97.10%	39	95.10%	211	97.20%
	Total	40	100%	136	100%	41	100%	217	100%
Earpiece headsets	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	0	0.00%	4	2.90%	2	4.90%	6	2.80%
	NA	40	100%	132	97.10%	39	95.10%	211	97.20%
	Total	40	100%	136	100%	41	100%	217	100%
Necessary software	Available	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	OK	2	5%	4	2.90%	2	4.90%	8	3.70%
	NA	38	95%	132	97.10%	39	95.10%	209	96.30%
	Total	40	100%	136	100%	41	100%	217	100%

Note. **NA** = Not Available

Table 4 shows the availability of various Adaptive technologies and Assistive devices in the college libraries. Overall Analysis The findings said that there is no technology services are available such as OCR scanner, speech synthesizer, Braille input and output devices, Page turners, Visual signalling devices and Screen reading software, Braille printer, Character enlarging software and e-readers, Magnifying lens for computer monitor, large print key labels and keycaps and Earpiece headsets in the libraries. Therefore, there is a lack of using technology services among respondents and the libraries should develop up on the requirement of physically challenged users. Most of the libraries in this research area, there is no availability of funds to utilize for the challenged persons. The respondents expect the technology services are needed for effective learning and assistive services.

Table 5: ***Availability of Adaptive Technologies and Assistive devices Vs. Nature of Disability of the Respondents: Chi-square Test***

Technology / Device	Chi–square	df	Sig.
OCR scanner	1.385[a]	2	0.5
Speech Synthesizer	.904[a]	2	0.636
Braille input and output devices	5.998[a]	2	0.05
Braille printer	1.215[a]	2	0.545
Character enlarging software	4.456[a]	2	0.108
Large monitors	1.834[a]	2	0.4
Magnifying lens for computer monitor	.461[a]	2	0.794
Large print key labels and keycaps	3.053[a]	2	0.217
Touch screens	2.427[a]	2	0.297
Page turners	.571[a]	2	0.752
Visual signalling devices	2.427[a]	2	0.297
Screen reading software	.520[a]	2	0.771
e–readers	.016[a]	2	0.992
DAISY format reader	1.834[a]	2	0.4

Earpiece headsets	1.834[a]	2	0.4
Necessary software's	.571[a]	2	0.752

To investigate whether there is a significant association between district wise of the respondents and whether they comment on the availability of adaptive technologies and assistive devices as sufficiently available, somewhat available or not available, Chi-Square test was conducted. Table 5 shows the result of the test and reveals that

There is no significant association between district wise of the respondents and their comment on the availability of fifteen adaptive technologies and assistive devices namely OCR scanner ($\chi2$=1.385[a], df=2, p=.500), Speech Synthesizer ($\chi2$=.904[a], df=2, p= .636) Braille input and output devices ($\chi2$=5.998[a], df=2, p=.050), Braille printer ($\chi2$= 1.215[a], df=2, p=.545), Character enlarging software ($\chi2$=4.456[a], df=2, p=.108), Large monitors ($\chi2$=1.834[a], df=2, p=.400), Magnifying lens for computer monitor ($\chi2$=.461[a], df=2, p=.794), Touch screens ($\chi2$= 2.427[a], df=2, p=.297), Page turners ($\chi2$=.571[a], df=2, p=.752), Visual signalling devices ($\chi2$=2.427[a], df=2, p=.297), Screen reading software ($\chi2$= .520[a], df=2, p=.771), e-readers ($\chi2$=.016[a], df=2, p=.992), DAISY format reader ($\chi2$=1.834[a], df=2, p=.400), Earpiece headsets ($\chi2$=1.834[a], df=2, p=.400) and Necessary softwares ($\chi2$= 571[a], df=2, p=.752), as the p value is more than the significant level of 0.05 in all these cases. The null hypothesis is accepted.

Discussion and Conclusion

A good number of assistive and adaptive tools and technologies are not available in the college libraries. The college authorities or government or both together should acquire these softwares and hardwares required by the libraries under a cooperative acquisition mode. Though all the devices need not be available in each and every library, it may be ensured that all the required softwares and hardwares are available in the libraries located within a district or taluk. Sufficient funds may be released for the purchase of these tools and technologies. This warrants two more points of discussion. The library staff should be given proper training on the use of the assistive and adaptive tools and technologies. Unless they are aware of the operations of various softwares and hardware tools, they may not be able to help the PCUs. Secondly, enough maintenance budget is be allocated every year to keep the hardware components in working condition and to update the softwares to the latest versions, if required.

One college library in every taluk / district may be designated as the Common Tool Centre / facilitation centre for all the colleges of the respective taluk/district. When a tool is required by other college libraries, they may approach the common tool centre to borrow the device for a couple of days. The common tool centre may even permit the registered library users of all the colleges of the taluk/district to directly come and make use of required tools / softwares, if possible. More than half of the respondents agreed that they don't have required ICT skills, computer skills, internet skills and skills to use adaptive and assistive tools and technologies. The best way is to train them on the use of such tools and technologies. Hands-on training programmes, workshops, seminars, short term training classes, lectures, practical sessions, one to one assistance hours etc., may be organized or conducted by the colleges either by themselves or jointly with other libraries every year. One library may organize such programmes for visually impaired users, other library do so for hearing impaired users, so on and so forth.

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ROLE OF LIS PROFESSIONALS FOR MAKING THEMSELVES ADAPT TO SMART LEARNING ENVIRONMENTS DURING COVID PANDEMIC PERIOD

Sridevi Baskar[1] Dr. C. Baskaran[2] Y.Lakshmi[3]

Introduction

During the pandemic period, many people got affected through Coronavirus, and due to this profound impact, people are having serious illnesses suffering from psychological stress and fighting for mental well-being across society. Also, social isolation measures have been imposed among people and issues including suicide, self-harm, substance misuse, and domestic and child abuse. This pandemic situation throws many challenges for the library regarding its transformation in many faces. The Covid pandemic situation changes the library environment through 3 stages – Modernization, Automation, and Digitization. Libraries open up windows to the world and inspire us to explore, achievability and contribute to improving the quality of transformation resources of the library. By developing a digital platform, librarians serve the whole community through sharing of development of knowledge resources like new library e-tools. This pandemic enlightens the librarian community for the creation of Smart Library in order to serve the user's community of the library. The role of Library professionals to implement smart library technology is to be allowed freely open to library readers with no library staff. The smart learning environment provides permission to use resources 24/7 hours so that the reader can use the library at times that are convenient for them. According to the demand of the user, the role of librarians is changing in the present era. This transition of the Covid pandemic period changes the library's present environment and shows the necessity of creating the smart library, smart service, planning for impact, smart management, smart library staff, green library building, smart librarians, and their e-service in this digital era. In this article, it is vividly explained that the library is the place where all documents are kept in digital format storage, processed in digital format and accessed through computer federated search tools, discovery tools, and the Web Opac and also the need of upgrading the skills of librarians technologically.

Objectives

1. To discuss the important role of library professionals as a storage of information.
2. To provide the glimpses of details of E-learning platforms available around the world.
3. The necessity of acquiring the information of various types of resources available in which library during the lockdown period.
4. To transform the available resources of the library to the E-media / formats to provide smart access to the different group of the community like researchers, students, scholars, readers, etc…

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5. In order to tackle this pandemic situation, the need of changing library to digital era for sharing of library resources effectively and the concept of " Library without walls " imposed the necessity of creating e-resources in order to know the future working condition of the library system.

The Issues Faced By Library Professionals During Covid Period

1. Temporary closures of libraries.
2. No chance for consulting the physical learning materials.
3. Routine library services were affected.
4. No chance to collect the books from the users thereby library transaction service is very much affected during this transition period.
5. Lack of digital literacy skills.
6. Slow internet speed.
7. Purchasing access to collections also get limited.
8. Time spent responding to user queries and unable to give reply under some circumstances due to question complexity asked by the user.
9. Normal reference service switched over to exclusively virtual online reference service.

Planning of Strategies to Tackle The Issues

1. The necessity of creating the digital platform for the user community to engage through social media and in turn imposes the challenge to organize the reading books according to user interest area.
2. To manage the normal life of the people, libraries organized many writing competitions, skill development programs, etc… that develops the skills of the participating users and also helpful in reducing their psychological stress is the most significant challenge by the library professionals and their contribution to the society during this pandemic period.
3. The need for conversion of library resources of hard copy of the books to soft copy to share the information quickly.
4. The necessity of role of librarians by developing their skills to provide remote access, cloud-based library services, and the collections can be linked together and access on the electronic platform.
5. Campus Administration limitations and services in limited capacity also to reinvent new services.
6. Library professionals can create a platform in order to extend the checkout date of books and provisions for library card expirations and issue return dates should be extended in lockdown period.

Challenges Faced During Reopening of Libraries are

1. Lower capacity of users visiting the library.
2. Working of library hours limited to fewer hours and restrictions for users to use the Children section, periodical section.
3. Wearing Face coverings i.e. mask, instructing the user to use sanitizer and to follow social distancing.
4. Making instructional use of the library's digital resources.
5. To handle the users during pandemic situations every librarian should possess the qualities of patience, flexibility, optimism of human nature and build information literacies into searches and assignments.
6. For evaluating the user service every librarian should have the knowledge of Information literacy that involves media literacy, academic literacy , digital literacy, multidiscipline literacy. This in turn can enhance and enrich a being embedded as part of critical thinking skills and knowledge developments.

Insights Of Various Online Digital Platforms That Supports Smart Learning Environment For Librarians Are :

- **National Digital Library Of India (NDLI) (https://ndl.iitkgp.ac.in):** During Covid, NDLI has served the users with a user-oriented interface which is specially designed for digital collections of e-resources like e-books, e-journals, etc… All communities of people can visit the website of NDLI to access the resources free of cost and easily through mobiles, laptops, or computer systems. It also provides learning study material, which will be helpful for students in the form of books, journals, video lectures, and solved question papers of the various educational boards. It also provides guidelines for the various competitive examinations like JEE, NEET, etc…
- **Yukti Portal** (Young India Combating Covid with knowledge, Technology, and Innovation) It is the initiative of MHRD. It will provide opportunities for various institutions in order to share their way of working in which they face the various challenges due to the pandemic situation of Covid – 19 and other future goals.
- **e-pathshala (http://epathshala.nic.in/)**: This portal was initiated by MHRD AND NCERT in November 2015. It provides the facilitates of referring study material from class 1 to 12 including videos, text curriculum, and the same can be easily downloaded by the different types of the user community with no restriction. Accessing e-resources is also easy through a QR Codes scan.
- **Delnet (Developing Library Network) (http://www.delnet.in**/): This platform has been developed with the objective of sharing resources to its member libraries. It aims to collect, store, and disseminate information besides offering computerized services to users, to coordinate efforts for suitable collection development and also to reduce unnecessary duplication wherever possible.
- **National Programme on Technology Enhanced Learning (NPTEL) (http://nptel.ac.in/**): It is a collaborative effort of renowned institutions of India like IITs and IISC. Through this individual person can access certification in various topics starting from engineering to humanities.

Study Webs of Active Learning for Young Aspiring Mind (Swayam)

- **(https://storage.googleapis.com/uniquecourses/online.html)**: This platform facilitates access the learning resources to students from class 9 to post-graduation and also serves as backbone support for young learners.
- **Shodhganga (http://shodhganga.inflibnet.ac.in/):** This is designed by Information and library network (INFLIBNET) for young researchers to deposit their theses.

The other digital platforms are :

- **Sakshat (http://www.sakshat.ac.in)**
- **Krishikosh (https://krishikosh.egranth.ac.in/aboutUs.html)**
- **Ebasta (https://www.ebasta.in/)**

Avid learning(https://www.avidlearner.com/podcast**)**

- Digital interactive classrooms serve as tools for accessing and upgradation of knowledge :
- During Covid many webinars and conference meetings can be held through accessing tools like Google classrooms, Google Hangouts Meet, Zoom Classroom, Webex online VC Tool, Go to a meeting, Goto Webinar, Impartus, Easy Class, and for conducting survey / Quiz tests through online Google form can be accessed.
- Users can access Youtube videos for gaining knowledge in whatever topics they are interested. Users can gain more information through Virtual Social interactions with learned professionals/expertise.

E Newspaper And Magazines :

Various online platforms provide the E- Newspaper and magazine accessing facility like **Pay TM(https://paytm.com/) , Magzter (https://www.magzter.com/), PAPER BOY (https://www.paperboy.com/).**

Knowledge Sharing Platforms Through Using Social Medias Among Libraries Are :

1. Whatsapp 2. Facebook 3. Twitter 4. Instagram 5. Linked in 6. Telegram.

Among these social medias **Whatsapp is ranked highest** as area the librarians shared work related knowledge and not violating group guidelines . Frequent visiting to Whatsapp group to keep track of shared knowledge among group users.

Knowledge is shared via the Whatsapp group work related areas among librarians includes are :

1. Continuing professional development eg: Conference, Seminars Workshop, formal education.
2. Cataloguing, reference, ICT.
3. Research/ Publication.
4. Job openings / Vacancies
5. Promotion / advancement.
6. Clearing up all the queries asked by the librarian's and user community.

Work related knowledge can be shared through this Whatsapp group in the format of

sharing 1.Text 2. Pictures / photos 3. Audios 4. Videos 5. Word doc. 6. Pdf 7. Spread sheets.

The main draw backs while sharing are :

- Non – adherence to group guidelines by some members .
- Giving contradictory opinions .
- Inability to keep track of knowledge due to increased volume of posts.
- Hence, Whatsapp group are used as platforms for knowledge sharing among librarians due to their ease of use, immediate feedback, opportunity to reach wide range of audience and to ensure decorum in work related area.

E Book Platforms For Libraries :

There are many ebook platforms for purchasing ebooks by librarians in and around the world are :

a. 123 Library
b. 3 M cloud Library
c. Axis 360
d. Books of Jstor
e. Brain Hive
f. Dawsonera
g. Cambridge books online
h. EBL (Ebook library)
i. Ebooks on Ebsco host
j. Gale Virtual reference library (GVRL)
k. Knovel
l. Lexis Nexis Digital Library
m. Mc Graw Hill ebook library
n. Oxford Handbooks online
o. Oxford reference
p. Routledge reference online
q. SAGE Knowledge
r. Science Direct
s. Springer reference
t. Springer link
u. Taylor and Francis ebooks
v. Wiley online library
W. World Book web

Inorder to create e book digital platform librarian can contact of any these publisher depends upon the institution/ Universitities for purchasing of ebooks that includes academic / research/ Publication , e book type like trade books, reference books and also covering various subjects.

Impact of Covid Pandemic Period and to overcome the challenges faced by the Librarian Professionals

Librarians play an important role by offering the following library services that are needful to the user's community are:

1. Library Marketing and promotion service.
2. Ask the Librarian / contact us / feedback process, webliography.
3. Collaborative virtual reference services, RSS (Really simple syndication), Streaming media.
4. Developing portals to provide E- document delivery services.
5. To make a plan for the library to provide innovative and new services that enable every librarian fit to survive in this smart technological era which will create a great impact upon readers.
6. Shifting of Information resources away from books to e-books.
7. The new identity of the smart librarian can be viewed if they play their role as an information scientist / Website builder / Publisher/ Consultant/ Facilitator/ Trainer /

Knowledge Manager/ Information architecture / Marketing officer / Resource preserver/ Information provider from / in Internet.

8. Responsibility for developing new skills for the smart librarians to serve as effective Library Information professionals.
9. Compilation of bibliography list of different subjects according to the need of user's interest area.
10. Creating a digital platform.
11. Services through the website.

Recommendations :

1. To overcome any disaster situation, librarians should have the potential of knowledge to surpass the issues which they are facing. They should possess enough ICT-based knowledge and also acquire all technological and managerial skills.
2. If they have enough funds then they should commence the activity of initiation for digitization of the library's valuable resources which will be useful for all communities of people with the help of experts especially during this pandemic period.
3. Through this implementation of digitization project in the institution in which they are working that in turn, they are contributing their incredible service to society.
4. Librarian should cultivate the habits of patience, life long learning for rendering valuable referral service to whatever complex question asked by the user community in a short time.
5. Librarian should preserve the documents by periodical usage of proper chemicals and pesticides which can preserve the resources for long period.

We have to build library buildings that make sense in terms of statements such as:

1. "**All learning is conversation" "thinking is nothing but talking to yourself inside"**
2. **"The entire campus is an interactive, social learning (or research) device,"**
3. As one LIS analyst of postmodern information problems has said, "Librarians need to have a strategy which is flexible … the postmodern world is a world of constant change. Resources can appear and disappear with frightening speed. Your strategy must be capable of equally rapid response".
4. As **the information industry** seems to **be vast expanding uncontrollable** , the need **for the volunteers to rise to the challenge of postmodern librarianship**. Is anyone willing to step forward?

Conclusion

Implementation of access to digital platforms in different ways provides the librarians to enhance future library services and some application of recent advances for creating smart library insists the responsibility of playing the vital role of Library professionals can be clearly explained through this article. Every librarian should improve their existing skills to face the challenges & complete automation of library services seems too good to be true,in all disaster situations of today and tomorrow. Librarians in turn by creating digital platforms and providing their new ideas need to retain their flexible working. The new e- environment demands the smart librarian must have technical skills, IT skills, Managerial skills as the world is in transition due to many

pandemic situations. Hence the role of smart librarians thereby to tackle the future smart learning environment technological era, where users can access all types of resources with ICT enabled via the Internet.

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ONLINE LEARNING A BOON TO URBAN STUDENTS AND ENCUMBRANCE TO RURAL STUDENTS

Dr. R. Deepalakshmi[1]

Introduction

Increase in online learning, is taken in virtual platforms. Research has shown the studies of students are elevated [1]. Though the virtual mode of teaching might not have reached fully to rural students, urban students are using the virtual mode of teaching in full swing. With a shift in the method of teaching, this gives raise to how the higher studies will be impacted. COVID – 19 [2].

Education Sector response to COVID-19

COVID 19, has paved way for many academicians where several courses like COURSEERA are given free [3] for students where before pandemic these courses has to be enrolled with huge amount. Many online teaching platforms has 200% increase in the registration of students like BYJUS. Many cloud servers are deployed by Alibaba platform cloud to increase the settings [4].

Upcoming learning methods

There are many transformations in universities and colleges now like Zhejiang university and Imperial college where both have enrolled in Coursera. In urban areas the virtual mode of teaching is more effective as many mentors find it easy to disseminate the information to the students in more effective manner [5]. In future we can expect the blended mode of learning to be in practice as both the traditional methods and online methods will be followed parallelly [6].

The challenges faced by rural students in virtual learning

The rural students are facing many challenges during this pandemic period. Though there are many courses and materials are available online, these students find it difficult to overcome as the technology is not supporting these children to fulfil their learning thirst. Many intelligent students are not in the position even to have an android device. Hence even if the students have the thirst to learning the technology makes them struggle to indulge in virtual learning. The gap is also there in urban areas as the virtual learning is more effective in middle class and upper middle class than in lower class.

Limit of education in unsighted persons

Digital platform scenario is not equipped in blind persons. Any subject is out of the question. Theoretical subject people must know how to type and how to get awareness in subject. Eventually google has paved way for app like “Give my eyes” where this will involve volunteer to help the blind persons. To scale up any of the material, get the teachers use the android phones. Blind school teachers get systematically introduced and within few months they can take up their classes independently [7]. As typing skills are not popular in blind students, the implementation may not be cent percent. Zoom is compatible as it enables the blind people to cooperate. Screen share option cannot be used by blind teachers and since there are many issues, including they cannot see their windows. Additional help is needed by the students to work with.

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Operating of online learning

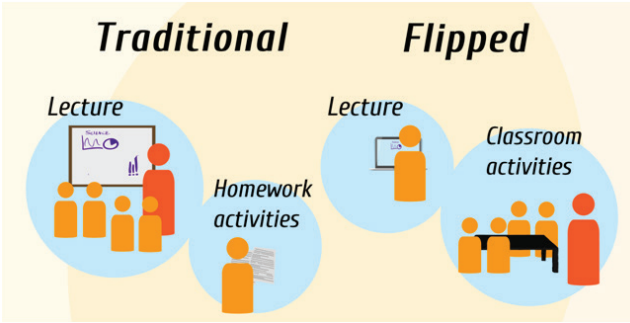
The online learning pedagogy operates in effective manner due to the following reasons as listed below:

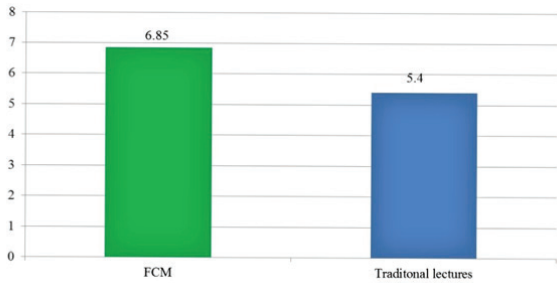
- Students retain more than 50% of study material than compared to classroom as only 10% of material is retained by the students.
- Online learning is very quick learning. It takes less time to acquire the study contents. More amount of time can be utilised for this.
- Students can get access to more reading contents and they can work on structured environment.
- Pure theoretical mode and lecture mode of learning will not create interest among students. Hence teaching with game oriented and with fun related activities this makes the students to learn in more effective manner.
- Younger students fall in love with the learning as they are indulged their learning with fun related activities.

Overbearing of change in education system

COVID -19 has given rise to investment of knowledge through various parts of the society. It is easy for us to use the full potential of knowledge sharing. A student can listen to the lecture from different countries sitting in their place. This has been made happened due to this pandemic.

Results





The above figure shows the difference between traditional class room and flipped class room methodology. Traditional classroom activity combines Lecture and Homework activities.

Flipped Classroom Method combines Lecture and Class room activities. It is found that Flipped classroom method that is the Blended Learning method is more effective compared to the Traditional Lectures

Conclusions

The research finding in the education during pandemic has the positive opinion on the use of online teaching method. Taking into account the maximum number of students who have gained knowledge in this, in future even if the traditional method of teaching comes into use, the online teaching will play a major role in assigning assignments to students by google classroom and other e-learning methodologies.

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j1AN EMPIRICAL STUDY ON THE EFFECTIVENESS OF WEBINAR ON THE STUDENTS OF THE GOVERNMENT LAW COLLEGES IN TAMIL NADU

Mrs. Hepzibah Beulah[1]

Introduction

A webinar or web-seminar is a presentation, seminar, lecture, or workshop transmitted over the internet. This emerging technology is becoming increasingly popular due to its convenience and affordability.[2] The majority of the students of the government law colleges are from the rural areas and their financial affordability is weaker when compared to other private college students. Their dependency on improving their legal knowledge is inclined towards either the teaching methodology in the class or the books available in the library. The textbooks in the lending sections are prescribed books in the syllabus which are of limited scope and therefore the students receive a basic knowledge on the particular subject. The reference section is being maintained for the students to use after their class hours. The limited time between the class hours and the library closing hours is not sufficient for the students to update more on the concerned topics. The language in the reference books are at a higher level which consumes more time of the student to understand a particular concept. Students travelling from a long distance are the most affected.

Webinars, on the other hand are a new technology-based learning method for the students which is affordable and packed with information within a small period of time. The webinars conducted for the law students are generally for a timespan of one hour or two-hour within which the students are able to grasp a lot of information from the comfort of his/her home which is not possible in the normal days. The new normal has created a platform for the students to acquire more legal knowledge. Even if the student is unable to listen to the webinar on a particular day, he is able to access it in youtube at a time which is comfortable for him in terms of the sufficient mobile data and non-working hours. The reason being the students have a limited mobile data package or the data frequency may not be sufficient for them to listen to the webinar. Many of the students have been working in part-time jobs as the pandemic has hit their families financially. Therefore, such webinars have done the by-pass surgery in terms of healing the learning disability and has assisted the students in keep themselves updated.

Objective

The objective of the study is to analyse and find whether the libraries have been beneficial to the students or whether the webinars have replaced the library sources

Methodology

The data was collected from 100 students by way of random sampling. The students from the Five-year course of B.A., L.L.B., alone were participants in the survey. All the five-year

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2 Virginie Zoumenou et.al., Identifying Best Practices for an Interactive Webinar, *Journal of Family & Consumer Sciences*, Volume 107, Number 2, Spring 2015, pp. 62-69(8), American Association of Family & Consumer Sciences

students from the first year to the final year have participated. The participants include both the residents of the hostel facility in the colleges and the day-scholars. Both male and female students participated in the survey.

Major Findings

The participation was higher among the fourth year and the final year students. There were 46 students from the fourth year and 31 students from the final year who participated in the survey. 18 students participated from the third year. The least were the first year and the second year. (Fig. 1) The first year had joined the course during the pandemic and therefore were new to both the library and the webinars. The second years were also new to the higher education environment.

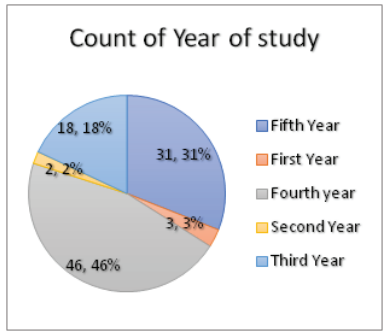


Figure 1: Count of Year of study

There were 84 female students who participated in the survey and 16 male student participation. (Fig. 2) The reason being, the female students of the government law colleges are more academic oriented and the male students prefer to start their professional practice from the first year of college. The research mindset and mooting attitude is more among the female students when compared to the male students.

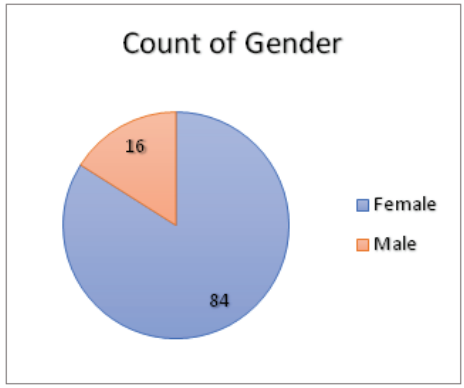


Figure 2: Count of Gender

Mode of stay was also taken as a parameter as the students who reside in the hostel benefit more from the library than the day-scholars. The library is effectively used till the end of the day by the residents of the hostel (both male and female). In this study 45 day-scholars have participated in the survey and 55 residents of the hostel have participated (Fig. 3)

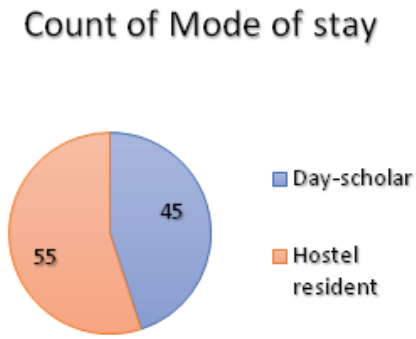


Figure 3: Count of Mode of Stay

Though there are students travelling from a longer distance who are not benefitted by the library. There are also students who reside nearby. Around 42 students are residing closest to the college premises. There are 9 students residing less than 5 kms and 5 students between 5 to 15 kms. The rest are residing beyond 15 kms which involves a certain amount of travel especially in case of city residents. (Fig 4).

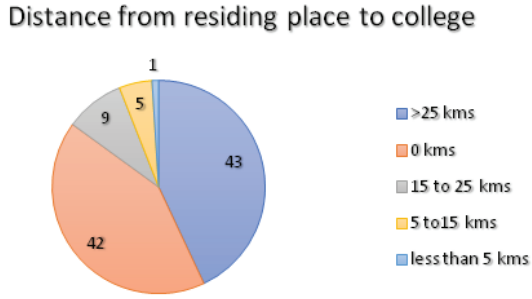


Figure 4: Distance from residing place to college

The participants were enquired whether they have accessed the college library for which 76 students replied 'yes' and 24 students replied 'no'. Out of the 24 students who stated that they have not accessed the library, 11 students are residents of the hostel and 23 students travel from a distance of more than 15 kms to the college premises. It is inferred that the student interest towards accessing the library is neither related to their proximity to the college nor related to their residence in the hostel.

In either the odd semester or the even semester the student is required to utilise the library facility. Therefore, the participants were required to provide the number of hours spent in the library during one semester. It was found that 24 students have spent 'nil' hours in the library. Around 63 students have spent only 1 to 5 hours in the library. (Fig 5) It is inferred that the usage of the library is at a declining trend. Only 4 students have spent more than 15 hours in a semester.

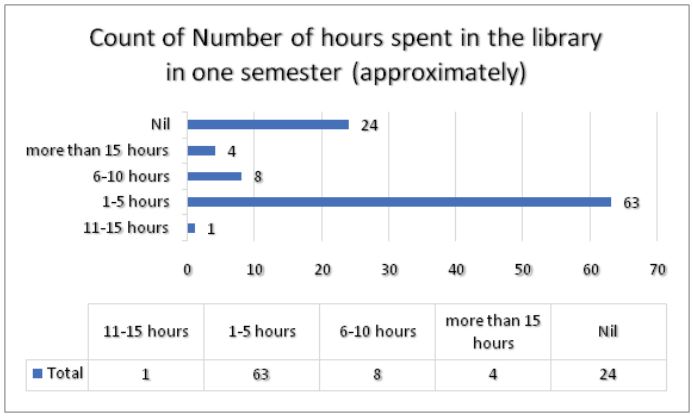


Figure 5: Count of Number of hours spent in the library in one semester (approximately)

Whereas in the case of webinar, 94 students have confirmed that the webinars were useful in updating their knowledge. (Fig 6) 75 students have confirmed that they have viewed the webinar on a later date in youtube. (Fig 7) It is inferred that the students have been benefitted more and the webinars tend to be more attractive in providing a the content of the topic of their interest in a nut-shell.

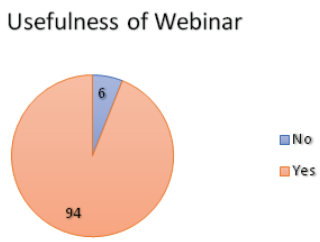


Figure 6: Usefulness of Webinar

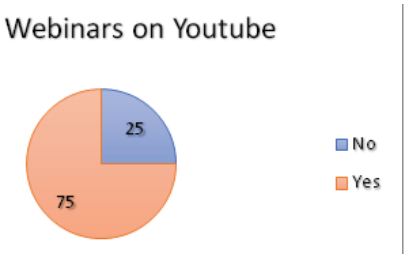
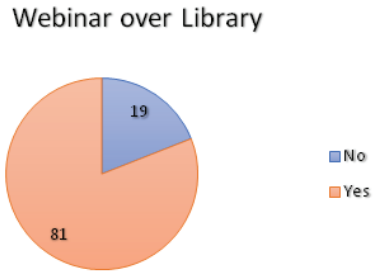


Figure 7: Webinars on Youtube

The students were also asked for their opinion on the usefulness of webinar over the usage of library. There were 81 students who stated that it was convenient to listen and understand a specific topic than reading it from books.



Further the participants were also asked for their opinion on the usefulness of webinar on moot court preparations and for other competitive examinations. It is inferred from the response that the webinars have been more useful for the students to understand the nuances and the ways

of updating their skills through webinars when compared to the knowledge received from the libraries.

Conclusion

The research was exclusively done amongst the students of the government law colleges in Tamil Nadu. There are 14 law colleges in the State of Tamil Nadu. It is inferred from the results of the survey the students have been benefitted more from the webinars than the libraries. However, the reason for not accessing the library maybe attributed to the distance from the college or the non-availability of all the law books in the regional language. The students from the rural background may not be in a position to understand the advanced English language adopted in writing the legal textbooks. The webinars on the other hand were conducted in Tamil language as well with expert speakers and eminent jurists explaining the important topics of law. The webinars conducted in English also had law teachers as speakers and therefore the topic was illustrated in a way that a student was able to understand. Webinars have been a great asset during the pandemic, but the continuance of the lockdown has seen a loss in charm of the webinars. Further, the re-opening of colleges has led to a dip in the interest level in the webinars. Therefore, this the golden opportunity for the librarians in the legal fraternity to take a quantum shift from the archaic practices of collecting traditional books to encouraging young writers to publish more books in regional languages as well as in simple terms for a law student even from a rural background to understand the different concepts in law.

LAWS RELATED TO DIGITAL LEGAL LIBRARY

Dr. Lily Srivastava[1] Shreyashi Srivastava[2]

Introduction

"Digital library is where the past meets the present and creates a future."
- APJ Abdul Kalam

Libraries are the most important source of information to the individuals in our society, including students, teachers, researchers and professionals. In the current COVID pandemic situation, almost all the public and private libraries have been affected by the nationwide lockdown. In order to prevent the spread of coronavirus, the libraries are under obligation to follow the social distance and lockdown guidelines. Therefore, it has become extremely important for digitalization of libraries as it helps in remote access to the information base through a digital platform. During the lockdown period in India, all individuals were unable to travel from one location to another. The physical interface of libraries has already been shut down to comply with the lockdown requirements, but many libraries throughout the world have made their digital collections available to the whole community for simple access. The "father of the Web," Berners-Lee envisioned a universal digital library that would provide the world with free access to all available knowledge.[1] "The concept of the web is of universal readership," he wrote.[2] When all computers everywhere were linked up, all of the world's knowledge would be available to anyone with a computer, and there "would be a single, global information space."[3]

Digital Library

To be considered a digital library, an online collection of information must be managed by and made accessible to a community of users. Many academic libraries are actively involved in building institutional repositories of the institution's books, papers, these and other works which can be digitized and made available to the general public with a few restrictions, in accordance with the goals of open access to information and communication technologies.

A digital library can be generally defined as one in which information is preserved in digital formats rather than a physical format. In the digital format, the library materials are accessible remotely through computer networks. A digital library is defined as an online collection of information that is available to a community of users. The term "digital library" was presumably coined in 1988 by national research efforts and earlier it was known as "electronic library" or "virtual library." The digitalization of libraries has helped to make the information available to the its users or even general public with minimal limitations in the pandemic times.

Digitalization of libraries will preserve the physical information for a longer period of time. A user of a digital library does not need to physically visit the library. One significant advantage of digital libraries is that users may access material at any time of day or night. A number of institutions and customers can use the same resources at the same time. The user may search the whole collection using keywords. Further, digital libraries have the ability to store far more information than physical library and is an inexpensive option. However, the obstacles include the cultural, technological, and learning needs that accompany the transition to a digital library.

Digital libraries also need an awareness of sophisticated search strategies, which we may attain by teaching the users through workshops, and these skills can be enhanced. The development of digital libraries and role of librarians will have an impact on the legal research which must be pushed to a higher level.[4]

Characteristics of A Digital Library[5] - It can be generalized 5 major aspects:

The digitalization of the information resources: It is the basis of the Digital library and the other characteristics are based on the Digitalization of the information resources. Digital is the basis of the information and the information lives on the digital.

The internet of the information transfer: On the basis of the digitalization of the Informational resources, the digital library has contracted the world libraries with innumerable computer and Internet system. It also bridges cross-time Information service, opens the Information use and standardizes the information transfer.

The share of the information: Because of the solid foundation of the digitalization and Internet, this aspect of the digital library: embodies cross-district, cross-industry limitless resource and service and embodies cross-district cross country cooperation of resource setting up together and convenient of the resource of the sharing.

The knowledge of information supply: The digital library has been realizing changing document offering into knowledge offering differ from the traditional library. Form analysis, recombine information, it can offer the knowledge to readers requirement or help readers find the way to solve the question, and the information offering will be met from several times to one time.

Legal Research

There is no universally acceptable definition for Legal Research. Peter Clinch (2008)[6] stated that legal research has been used to describe the skills students need to acquire as part of their degree and professional studies and eventually employ when in legal practice. It is trite to note that legal education and training are in two stages: an initial or academic stage focused on developing the students with knowledge based (thinking like a lawyer) and the vocational stage, in which the students are instructed on how to 'do things like a lawyer'. The above statement shows that there is nothing distinctively 'legal' about the skill of legal research, what the students have been thought are generic skills of problem analysis, search and retrieval of information and finally the skill of communication. Peter also emphasized that legal research was restricted to knowing the structure of the literature of law and showing technical competency in finding one's way around different types of publication. Digitization of legal education and research is obviously not a recent phenomenon, which is evident from the fact that we already have a digital repository in portals such as Manupatra, Westlaw, Hein online etc. Full-text digital law libraries arguably got their biggest start in the legal profession, with Lexis/Nexis and Westlaw predating the Web by almost two decades as huge databases of information electronically accessible on mainframe computers." [7]

Role of Librarians in the era of digigal library

In today's environment, the job of library professionals has evolved from data custodian to effective information facilitator. The primary tasks of library professionals are to identify queries/problems, choose, organise, conserve, and disseminate information. In all of the above-mentioned sectors, an immediate response is required. It is a significant challenge for Library

Professionals to actively to serve the entire community even in the times of pandemic. The Role of library professionals is to familiarise users with the open access system. Customer service, community outreach, administration are the primary responsibilities of library professionals. Library professionals may play an important role in educating their users about information literacy and bridging the digital divide that exists at various levels. Librarians can inform users about the different digital platforms that are accessible. Library Professionals can offer a variety of online digital platforms via which consumers may quickly access their information. These online digital platform links can be published on company websites and social media platforms.[1]

DATA PROTECTION IN INDIA

In the absence of specific legislation, data protection in India, remedy can be achieved through the enforcement of privacy and property rights. An individual's right to privacy has evolved out of Article 21 of the Constitution and other constitutional provisions protecting fundamental rights "that no person shall be deprived of life or personal liberty except according to the procedure established by law." The Indian Contract Act, 1872, the Indian Penal Code, 1860 the Copyright Act, 1957[2] are protecting the property rights .The Information Technology Act (2000) (IT Act) and IT (Amendment) Act 2008 contains provisions for the protection of electronic data. The IT Act penalises 'cyber contraventions' (Section 43(a)–(h)), which attract civil prosecution, and 'cyber offences' (Sections 63–74), which attract criminal action

Penalties, Compensation And Adjudication

"Section 43 Penalty and Compensation for damage to computer, computer system, etc. If any person without permission of the owner or any other person who is in charge of a computer, computer system or computer network.

a. Accesses or secures access to such computer, computer system or computer network or computer resource (ITAA2008)
b. Downloads, copies or extracts any data, computer data base or information from such computer, computer system or computer network including information or data held or stored in any removable storage medium;
c. Introduces or causes to be introduced any computer contaminant or computer virus into any computer, computer system or computer network;
d. Damages or causes to be damaged any computer, computer system or computer network, data, computer data base or any other programmes residing in such computer, computer system or computer network;
e. Disrupts or causes disruption of any computer, computer system or computer network; (f) denies or causes the denial of access to any person authorised to access any computer, computer system or computer network by any means;
f. Provides any assistance to any person to facilitate access to a computer, computer system or computer network in contravention of the provisions of this Act, rules or regulations made thereunder, (h) charges the services availed of by a person to the account of another person by tampering with or manipulating any computer, computer system, or computer network,
g. Destroys, deletes or alters any information residing in a computer resource or diminishes its value or utility or affects it injuriously by any means (i) Steals, conceals, destroys or alters or causes any person to steal, conceal, destroy or alter any computer source code used for a computer resource with an intention to cause damage, he shall be liable to pay damages by way of compensation not exceeding one crore rupees to the person so affected.

h. Section 43A and Section 72A, to provide a remedy to persons who have suffered or are likely to suffer a loss on account of their personal data not having been adequately protected."

Section 43- "A Compensation for failure to protect data- Where a body corporate, possessing, dealing or handling any sensitive personal data or information in a computer resource which it owns, controls or operates, is negligent in implementing and maintaining reasonable security practices and procedures and thereby causes wrongful loss or wrongful gain to any person, such body corporate shall be liable to pay damages by way of compensation, not exceeding five crores."

Section -72 – "A Punishment for Disclosure of information in breach of lawful contract. Save as otherwise provided in this Act or any other law for the time being in force, any person including an intermediary who, while providing services under the terms of lawful contract, has secured access to any material containing personal information about another person, with the intent to cause or knowing that he is likely to cause wrongful loss or wrongful gain discloses, without the consent of the person concerned, or in breach of a lawful contract, such material to any other person shall be punished with imprisonment for a term which may extend to three years, or with a years, or with a fine which may extend to five lakh rupees, or with both."

The Indian Penal Code, 1860 ("IPC") can be used as an effective means to prevent data theft. Offences such as misappropriation of property, theft, or criminal breach of trust attract imprisonment and fine under the IPC. Although the offences of theft and misappropriation under the IPC only apply to movable property, it has been defined to include corporeal property of "every description," except land and things permanently attached to the earth. Therefore, computer databases can be protected under the IPC, as they are movable by their very nature, and under the Copyright Act 1957 because they are a form of IP.[1]

The Copyright Act of India 1957 provides right holders dual legal machinery for enforcing their rights. The enforcement is possible through (1) the Copyright Board and (2) the Courts. Legal remedies include imprisonment and/or monetary fines - depending upon the gravity of the crime. Sometimes remedies also include seizure, forfeiture and destruction of infringing copies and the plates used for making such copies.[2] The Amendment 2012 has also inserted a new Section 33A providing for the following:

"[33A. Tariff Scheme by copyright societies. — (1) Every copyright society shall publish its tariff scheme in a prescribed manner. (2) Any person who is aggrieved by the tariff scheme may appeal to the [3] [Appellate Board] and the Board may, if satisfied after holding such inquiry as it may consider necessary, make such orders as may be required to remove any unreasonable element, anomaly or inconsistency therein: Provided that the aggrieved person shall pay to the copyright society any fee as may be prescribed that has fallen due before making an appeal to the [4] [Appellate Board] and shall continue to pay such fee until the appeal is decided, and the Board shall not issue any order staying the collection of such fee pending disposal of the appeal: Provided further that the [5][Appellate Board] may after hearing the parties fix an interim tariff and direct the aggrieved parties to make the payment accordingly pending disposal of the appeal.]" [6].

Intellectual property laws enable authors and other rights owners to protect their contributions and to control or license their use by others. Historically, databases are protected under copyright law. In Indian Libraries are given below certain specific rights. The making of not more than 3 copies of a book by or under the direction of the person in charge of a public library for the use of the library if such book is not available for sale in India.

- The reproduction for the purpose of research or private study or with a view to publication, of an unpublished literacy, dramatic or musical work kept in a library to which the public has access.[7]
- A work is capable of being used in various ways once it is digitized. Uploading the work on a website involves the right of communication to the public. As per the Copyright Act, In India, "communication to public means making any work available for being seen or heard or otherwise enjoyed by public directly or by any means of display or diffusion other than by issuing copies of such work regardless of whether any member of the public actually sees, hears or otherwise enjoys the work so made available". [8]

Landmark Cases

Michael Baigent and Richard Leigh v. The Random House Group Limited

The copyright infringement case[9] against the publishers of The **Da Vinci Code,** a non-fiction work.The court held that, while the evidence was clear that Dan Brown had drawn on the Holy Blood and the Holy Grail, this did not mean that he had infringed copyright in the book. Rather, he had used the book to provide general background material[10].

In **Suntrust v. Houghton Mifflin Co.-**The US Court of Appeals[11] overturned the decision prohibiting the publisher of Alice Randall's. The Wind Done Gone from distributing the book. According to this case, the creation and publication of a carefully written **parody novel** in the US counts as **fair use.**

La bicyclette bleue (The Blue Bicycle)

Régine Desforges wrote a novel in three parts entitled La bicyclette bleue (The Blue Bicycle) [12] set in France during World War II. The Court of Appeals of Versailles rejected the claim, stating that only the idea of "free course" had been taken and that it was not possible to consider the scenes and dialogues, or even the litigious situations or episodes from La bicyclette bleue as infringement.

Playwright Anne Nichols Abie's Irish Rose. (Nichols v. Universal Pictures Corp)

In this famous case[13], the US Court of Appeals on copyright infringement by non- literal copying of a dramatic work, refused to find that copyright subsisted in a character.".

International, 'copied' versions of Harry Potter

The Harry Potter character is a highly profitable but heavily copied/imitated/counterfeited character. In a number of countries it is possible to find a Harry Potter 'sequel' entitled Harry Potter and Leopard-Walk-Up-to-Dragon; a Harry Potter twin, Tanya Grotter, star of Tanya Grotter and the Magic Double Bass; Porri Gatter and the Stone Philosopher; and Harry Potter in Calcutta, where Harry meets up with various characters from Bengali literature.[14]

Eastern Book Company &Ors V D B Modak Another[15]

The decision of the Supreme Court of India in this landmark case is significant as it decided the extent of copyright on the case laws and on the subject of 'originality'. The SC directed that the defendants/ respondents shall not use the paragraphs made by the appellants in their copy edited

version .The Court relied on the judgement of Supreme Court of Canada in **CCH Canadian Ltd.V Law Society of Upper Canada**,[16] to state that to claim creativity, the work must not be a product of mere skill and labour. As per the law now laid down, mere exercise of skill, labour and capital is not sufficient for copyright but requires a minimal degree of creativity. This brings the standard of originality in Indian law similar to the standard of originality in United States as laid down in **Featist Publication Inc v Rural Teliphone Services Co.Inc**[17] where the US Supreme Court held that minimal creative spark is required deviating from the sweat of the brow. In ***Sony Corporation v. Universal City Studios Inc***.[18], popularly known as the *Betamax* case, the U.S. Supreme Court held that the manufacturers of home video recording devices, known in the market as Betamax, would not be liable to copyright owners for secondary infringement since the technology was capable of substantially non-infringing and legitimate purposes.

Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd[19]. This case called into question the liability of websites that facilitated peer-to-peer (P2P) file-sharing. Re-formulating the test for copyright infringement, the U.S. Supreme Court held that "*one who distributes a device with the object of promoting its use to infringe copyright, as shown by clear expression or other affirmative steps taken to foster infringement, is liable for the resulting acts of infringement by third parties*."

In ***Super Cassettes Industries Ltd. v. Myspace Inc***[20] the defendant was running a website that facilitated the sharing of media content by users/subscribers. The plaintiff's case for primary infringement was that the defendant authorized the communication of the copyrighted works of the plaintiff to members of the public without permission..[21] The strategy employed by counsel representing the copyright owner in such cases is to seek injunctive relief against various John Does, i.e., unknown infringers, as well as to implead different internet service providers ('ISPs') as defendants along with such John Does. The permissibility of this strategy was called into question before the Madras High Court in ***R.K. Productions Pvt. Ltd. v. B.S.N.L***[22]**.**

Telefonaktiebolaget LM Ericsson v. Competition Commission of India[23], for the first time ever, considered at how IP law interfaced with competition law. It allowed Competition Commission of India (CCI) to continue its investigation into anti-competitive practices by Ericsson regarding use of its SEP's by other companies such as Micromax and Intex.

The Chancellor, Masters & vs Rameshwari Photocopy Services[24] Indian Copyright Act 1957 section 52 "The following acts shall not constitute an infringement of copyright namely - (a) A fair dealing with a literary, dramatic, musical or artistic work [not being a computer programme"] for the purposes of. However, on the other hand, when we say that the work is in public domain it means that no copyright protection is available to the concerned work and everyone is free to use that work in whatsoever manner he wishes to. In other words, the utilization of the copyrighted work would be a fair use to the extent justified for purpose of education.[25]. **Phantom Films Pvt. Ltd. v. The Central Board of Film Certification**,[26]- Bombay HC passed a series of judgments cases that laid down a strict agenda for the grant of John Doe orders leading to path breaking shift in the John Doe jurisprudence in India.

Eros International Media Limited v. Telemax Links India Pvt. Ltd.[27], is a leading case that unwrapped the scope of arbitration of IP disputes arising out of licensing and other commercial transactions.

Conclusion

Digital works have created significant problems to copyright that have yet to be resolved, notably under Indian law. The sharing of digital literary works and books has sparked some debate. The defence against copyright infringement for the purpose of digital lending would rely

primarily on two arguments: first, as defined in Section 14 of the Copyright Act that the 'lending' of a lawfully possessed copy of a literary work does not infringe copyright and second, as under Section 52 of the Copyright Act that the use is in case of fair dealing.

The Section 14(ii) of the Copyright Act provides that the owner of copyright has the exclusive right to 'issue copies of a work, not being copies already in circulation.' The section enables copies that have previously been sold or redistributed by an authorised buyer or owner of a copy, and such resale or redistribution would not constitute a copyright infringement. However, due to the nature of digital setting, almost every computing or networking transaction, whether within a computer or over a network, involves the copying of digital content. The question remains as to what is the position of 'digital' redistribution in copyright law. In the case of *Capitol Records v ReDigi Inc.*[28], the US court ruled that the first sale doctrine did not protect a digital music "resale" business that sought to assure that only one copy of a work existed at a time by destroying the reseller's "original copy" bit by bit. However, there is absence of any legislation or judicial precedent on how the Indian courts would assess the scope of digital works in which the 'copies already in circulation'. Libraries that want to engage in 'digital lending' may also claim that such lending fits under any of the copyright exclusions under Section 52. In this case, three exclusions may be available. To begin, libraries may argue that digitising and distributing information constitutes 'private or personal use, for study,' which is excluded under Section 52(1)(a)(i). Fair dealing is a contextual question that must be resolved on the circumstances of each case. This makes it a vital right to have in times of need, such as now, when digital access is one of the only potential alternatives to school libraries. Another potential provision that educational institutions and their patrons may rely on is Section 52(1)(i), which permits the replication of a work 'in the course of teaching. Controlled Digital Lending, if correctly implemented, may help solve most of the problems. The present pandemic situation has made us realise that our laws and our public educational institutions are in dire need of reform for the digital learning system.[29]

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SECTION IV

USE OF SOCIAL MEDIA AND SOCIAL NETWORKS

RETHINKING THE POTENTIALS OF ADOPTING DIGITAL PLATFORMS/SOCIAL NETWORKS FOR INFORMATION SERVICE DELIVERY TO LEGISLATORS TO CURTAIL THE EFFECT OF COVID-19 PANDEMIC IN NIGERIA

Shamsuddeen Aliyu Sada[1] Abubakar Ladan PhD[2]

Introduction

The outbreak of the Covid-19 pandemic has redefined the narrative in so many aspect of life especially in the provision of library services landscape across the globe. Traditional information service provision methods have been rendered nearly useless as library like any other public service institution had to be shut down in order to protect users from the risk of contracting the virus.Thus, the enforcement of a lockdown occasioned a forfeiture of legislative institutions who depended mostly on information services rendered by legislative libraries to complement their legislative business.

Moreover, the role of legislative library in complementing democratic governance cannot be undermined. Legislative libraries are not only one of the best places to meet the information needs of the legislators but also this category of libraries needs to engage various strategies in order to achieve their mission. With the emergence of Covid-19 pandemic it is important that legislative libraries adopt digital platforms for their information service delivery to legislators. This is because theuse of digital platforms/social networks would no doubt enabled easy access to information and information sharing among the legislators. In addition, this will control the spread of the disease and to ensure legislative librariessustained relevance post Covid-19and the promotion of legislative process.

Concept of Digital Platforms/Social Networks

In the context of this paper digital platforms and social networks are interchangeable used. The concept of digital platforms has been variously defined and described by a number of writers. According to Gawer (2014) digital platforms refer to multisided digital frameworks which help to shape the participants mode of interaction. Digital platforms are also complicated mixtures of software, hardware, operations, and networks. Furthermore, digital platforms have grown to be a major method to organize a wide range of human activities, including economic, social, and political activities. Platforms leverage networked technologies to facilitate economic exchange, transfer information and connect people (Ghazawneh& Henfridsson 2015).

It needs to be emphasized that the concept of digital platforms is popular in bring about collaboration between number individuals and institutions in their efforts to enhanced service delivery and meet certain desire.According to Watts (2020) a digital Platform refers to the sum total of a place for exchange of information, goods or services between producers and consumers as well as the community that interact on the platform. In other words, Gupta (2014) refers to Umoru (2015) who opines that social networking sites include Face book,

Twitter, LinkedIn, Google+, Internet Forums, Chat rooms and message boards where

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people meet and discuss topics of interest, Flickers and video, Blogs, Wikis, and social book marking. Accordingly, due to the effect of Covid-19 pandemic legislative libraries requires the adoption of divergent technological facilities in discharging their role of information service delivery to legislators.

Digital Platforms/Social Networks to be adopted for Information Service Delivery to Legislators

It is no doubt that the development of different types of digital platforms has brought impact to the way and manner information is being handle by the society. The adoption of these digital platforms for information service to legislators may no doubt led to fundamental, significant and fast-paced changes in the way and manner legislative library services are to be offered especially with the advent of Covid-19 pandemic. This is because physical contact between the legislators and the library staff will highly be minimized if not completely stopped. In other words, a digital platform encompasses social networks like Face book, Twitter, Blogs, Websites among other. According to Ifijeh and Yusuf (2020) Social media networks are growing rapidly as channels of communication and interaction among individuals. The major advantages of social media networks are their abilities to establish and build relationships and build social interaction; thus helping libraries to connect with the information needs of users. Equally, Safo (2008) maintained that a social network service focuses on the building and verifying of online social networks for communities of people who share interest and activities, or who are interested in exploring the interests and activities of others.

In addition, it is also acknowledged that the introduction of social networks is similarly having noticeable impact on all strata of society and all segments of societal activities. Facebook, WhatsApp, Instagram, e-mail among others have become commonplace in all the nooks and crannies of the planet with great impact on all activities. In the field of librarianship in particular, social networks are rapidly becoming the instrument of choice for communication between the librarians and the users (Calista, O. Ikore &Kanu, 2019). Going by the above submission it is clear that adoption of digital platforms/social networks will significantly impact positively in the provision of information service to legislators. Similarly, as a result of the Covid-19 pandemic it could be seen that for legislative libraries to achieved their mission of satisfying the information needs of legislators they need to deploy and integrate various types of digital platforms/social networks in discharging their operations.

Information Services Rendered by Legislative Libraries to the Legislators

It is a fact that information service delivery provided by libraries irrespective of their types should be governed mainly by the needs of their users. Thus, the work of legislators requires them to have easy access to the right information at the right time. This cannot be possible in the absence of legislative libraries. Legislative libraries are expected to render different types of information services to the legislators in order to meet their information needs. These needs can therefore be incline to the three major functions carried out by legislators which are: representation, law-making, and oversight functions. In light of the foregoing, information needs of legislators can broadly be categories as follows: information needs for representation, information needs for law-making, and information needs for oversight functions.

Furthermore, the types of information services legislative libraries rendered may differ slightly from one legislative library to another. However, since virtually all legislative libraries perform similar functions, common information services are rendered to a large extent. Moreover, to curtail the effect and sustained relevance post Covid-19 pandemic legislative libraries in Nigeria

today are better to adopt digital platforms/social networks to provide information services such as Selective Dissemination of Information (SDI), Current Awareness, Indexing and Abstracting, Literature Search, Bill Analysis, Analytical Reports, legislative Summaries among others. These services conversely make pieces of information which are directly relevant to legislative matters easily accessible to legislators. Consequently, with the outbreak of Covid-19 pandemic the possibility of a breakthrough in the information service delivery is envisaged in the adoption of digital platforms/social networks. This would allow the opportunity for access and exchange of thoughts and ideas between the librarians and legislators.

Benefits of Digital Platforms/Social Networks Application for Information Service Delivery to Legislators

Digital platforms/social networks have long been recognized as vital tools that are complementing the services rendered by so many institutions. It is therefore important for the legislative libraries to rethink on how to integrate digital platforms/social networks for the purpose information service delivery to legislators. Effective integration of digital platforms for information services delivery to legislators has the potential to play an important role in the reduction in the spread of Covid-19 disease. In addition, effective application of digital platforms in information service delivery to legislators will automatically increase the capacity of legislative libraries to excel in their linkages and collaborations with the legislators. For legislative libraries to maintain and succeed in playing their vital roles they need to establish linkages and networks for legislators to promote sharing of knowledge and information for constructive and mutual benefits towards evidence based legislative process (Sada and Maidabino, 2017).

In this context, as a result of Covin-19 scenario adoption of digital platforms/social networks will enables legislative libraries to communicate with the legislators in addition to the advocacy and promotion of their activities. For example, legislative libraries will be able to communicate with the legislators and get response and feedback with the aim of restructuring their services for better achievement of objectives. In fact, turning on to the adoption of these different technological facilities may facilitate legislative libraries to achieve their desire of meeting the information needs of legislators. In, essence, the application of digital platforms/social networks for information service deliveryto legislators might ensure efficient and effect conduct of parliamentary business as information that is current, relevant, comprehensive, accurate and impartial will be available at the fingertips of the legislators. It is inferred from the above submission that the quest for the adoption of digital platforms/social networks towards successful information service delivery to legislators is of immense benefit.

Challenges to the application of Digital platforms/Social Networks for Information Service Delivery to Legislators

Despite the relevance of digital platform/social networks for information service delivery to legislator, however, this paper cannot be completed without looking in to issues related to the challenges that would affect the adoption of digital platforms/social networks for information service delivery to legislators in Nigeria. One of the greatest challenges to the application of digital platforms/social networks for information service delivery to legislators is that of ensuring that the best form of digital platforms/social networks are used. In addition, most of the legislative libraries in Nigeria lack adequate professionals to provide support services to legislators using digital platforms/social networks (Habu, 2012). Equally, Sada and Maidabino, (2017) stated that non-conducive library environment is another important area that affects effective running of legislative libraries in Nigeria. This implies that support expected from the legislative libraries

in Nigeria using digital platforms/social networks for information service delivery to legislators towards sustaining relevance post Covid-19 pandemic and the promotion of legislative processis shrinking, which therefore necessitate the need for improvement. Moreover, legislative libraries can be rendered ineffective and impotent without them adopting to the digital plat forms/social networks to deliver information services to the legislators in a specialized way.

Conclusion

The outbreak of the covid-19 pandemic has necessitated swift changes in delivery of library services globally. It is no doubt that digital platforms/social networks would create a new and enabling environment for libraries to enhance information services delivery. Hence, legislative libraries in Nigeria should adapt to changing trends by embracing the use of digital platforms/social networks in the provision of information services to legislators. This is because for the legislative libraries to succeed they must make sure that every provision with regard to information service delivery is fine-tune to meet legislators 'need in order to withstand relevance post Covid-19 pandemic and the promotion of legislative process.

Recommendations

It is a common knowledge that we are now in a globalized world which has been affected by the Covid-19 pandemic. Furthermore, the changing situation has made organizations and institutions to fashion out new ways in order to be amenable to change in the services they rendered. In view of the realization of the significance of digital platforms/social networks in information service delivery, there is no disputing fact that digital platforms/social networks are needed to be adopted by legislative libraries in Nigeria for information service delivery in order to curtail the effect of post Covid-19 pandemic. It is therefore recommended that this scenario requires legislative libraries to re-design their techniques of information service delivery in order to meet the demands of the legislators.

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IMPACT OF SOCIAL MEDIA NETWORKING TOOLS IN LIBRARIES

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Introduction:

Social media began through various online platforms to share their interests and connect with others who shared similar interests. Then, it evolved into an online public space to connect and network with people. According to Boyd (2014), "social media refers to the sites and services that emerged during the early 2000s, including social networking sites, video sharing sites, blogging and microblogging platforms, and related tools that allow participants to create and share their content" (p. 6). Additionally, social media enables people to interact in online communities (Boyd, 2014). It bridges the gap between not being around people and wanting to connect with them physically. Social media refers to interactions among people who create, share, and exchange information and ideas in virtual communities and networks. Social media refers to the collective intelligence of Internet Users, the communities, and web real estate.

The variety of platforms allows for a wide range of uses and attracts users in various ways. Facebook is popular because users can friend and follow others they know or like and keep up with the events in their lives. Twitter is the home of the #hashtag and a great place to follow people and read about events shortly and sweetly since tweets are limited to 140 characters. Instagram is a platform where all posts include a picture or video followed by a caption. Snapchat allows users to communicate through images and videos seen once or twice and then go away forever. Each platform has its unique interface, but they are all similar in being a public online space for users to connect and stay in touch.

Social Networking

Social networking websites are a collection of web pages that are user-generated using a form. The information put into the form is then published on a generated page. From that point on, the user can customize the page, add pictures, videos, MP3s, and other media that are the user's choice. But social networking sites are not just for regular people looking to make friends. According to Computing Dictionary (2011), social networking sites are designed to allow multiple users to publish their content themselves. The information may be on any subject and maybe for consumption by friends, mates, employers, employees, to mention a few. Boyd and Ellison (2007) define social networking sites as web-based services that allow individuals to construct a public or semi-public profile within a bounded system. Articulate a list of other users with whom they share a connection, view and navigate their list of connections and those made by others within the system. Powell (2009) defines social networking as a community in which individuals are somehow connected through friendship, values, working relationships, ideas, and so on. Webopedia (2014) described social networking site as the phrase used to describe any Website that enables users to create public profiles within that Web site and form relationships with other users of the same Web site who access their profile. Social networking sites can be used to describe community-based Web sites, online discussions forums, chatrooms, and other social spaces online.

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Social Media and Social Networking

It is important to note that there is some overlap and integration with social media and social networking. Social media experts say that Facebook, Twitter, and Pinterest are whole package platforms and are considered social media (tools) and social networking (a way to engage). YouTube, on the other hand, is a tool for video, so it's social media. Chatting with other colleagues on LinkedIn, that's social networking. Both work together for overall social media strategy. Social Media and Social Networking are the two social concepts that will be used interchangeably.

Social Networking Tools

Social networking tools help library professionals to share information with research scholars, students, and faculty members in an effective way in the academic environment. Library professionals mainly use social networking in two broad categories to attract these users, like information communication and information distribution, This paper discuss the most useful social media tools

Information Communication

In the digital era, library professionals can keep constant touch and effective interaction with teaching faculty, students, and research scholars in an online collaborative environment to meet user needs and provide pinpoint information. The social networking tools that the Library can use for information communication purposes are:

Blogs:

In General: A platform for casual dialogue and discussions on a specific topic or opinion.

In Library: Library users can enter their thoughts, ideas, suggestions, and comments chronologically. Blog act as a platform where user can send their feedback, comments, file their queries, suggestions regarding the services and activities of the Library.

Facebook:

In General: Users create a personal profile, add other users as friends, and exchange messages, including status updates.

In Library: Now it becomes much popular in libraries because of its user-friendly nature. Library professionals can use Facebook to a great extent to share and collaborate information among peers.

Twitter:

In General: Twitter is a micro-blogging platform, and it makes it easy to connect with other people and share brief bursts of information. Twitter has a limit to no more than 140 characters per post, but that brevity seems to be the secret to twitter's success.

In Library: It is a microblogging application to keep library staff and patrons updated on daily activities, like updating collections status, new arrivals, current content service of Library, etc. Library professionals can use this tool to provide quick information on the ongoing program of the Library. Users can send instant message (IM) on complaints or ask questions on a particular issue and get feedback from the Library using Twitter.

LinkedIn:

In General: LinkedIn is the site for professional connections and online business networking. A place where groups of professionals with similar areas of interest can share information and participate in a conversation. LinkedIn is a powerful place to promote yourself and your website.
In Library: It is a platform for Library professionals to get connected with their users, which can help disseminate information.

MySpace:

In General: Myspace is now a social networking site for musicians and bands and a featured content publisher. People use the site to show off their talent and connect with fans. Artists can upload their complete discographies and even sell music from their profiles.
In Library: students and library professionals can post calendars, custom catalogue search tools, and blog features to improve their presence.

Instagram:

In General: It is a social media platform that emphasizes photo and video sharing via mobile app. Like Facebook or Twitter, everyone who creates an Instagram account has a profile and a news feed. Instagram is not only a tool for individuals but also for businesses. The photo-sharing app offers companies the opportunity to start a free business account to promote their brand and products.
In Library: Library users have created various hashtags in Instagram that libraries may use to promote their services, resources, or events. Hashtags are both searchable and hyperlinked so a group of photos using the same hashtag can be easily found. People use hashtags to find and be connected to similar images.

Information Distribution
The main aim of the Library is to provide the right kind of information at the right time to the users. So information sharing is a vital part of the Library in the digital era. Following are some of the social networking tools that are used for information distribution purposes:

YouTube:

In General: It refers to all kinds of videos on the web. YouTube is not only one of the most popular social media sites, but it's also the world's second-most popular search engine. YouTube has become the default place users around the world turn to when looking for internet video.
In Library: This is a platform where Library professionals can upload videos of the Library, elearning tutorials, and events of inaugural lectures, conferences, and workshops.

Flickr:

In General: An image and video hosting website and online community. Flickr is a media platform used for uploading, organizing, and sharing digital media such as photos and videos. Flickr is not just for professionals. Even those who have a casual interest in photography can peruse the digital galleries and discover creative photography.

In Library: Library professionals can use this tool to share and distribute new images of library collections. The Library can share photo collections of workshops, conference, and cover pages of the new arrivals list (NAL) of both books and journals.

Pinterest

In General: The highly visual site exploded on the social media scene and became the fastest growing site in 2012. Especially popular among designers, artists, fashionistas, and other creative people. Pinterest profile pics are incredibly small compared with the other images on the page, and Pinterest allows users to post only a brief, limited bio.
In Library: The Library's participation in Pinterest provides a different way of sharing information and interacting with the Library community. An image or video is referred to as a pin, and Users can add a description to a pin. Already existing pins can be added to a user's board, referred to as repining. Library users can also use a heart icon to like a pin and can add comments below the description

Advantages of Social Media Networks:

- Social media/networking technology gives us to access easy and instant communication.
- Social media networking gives a chance to connect with people around the world.
- Social media networking helps easily people connect with others
- Social media networking gives users immediate access to their teaching updates.
- Social media networking improves our strategies.
- Social media networking increases innovation and learning.
- Social media networking easily updates the day to day news
- Social media networking develops communicative skills along with social relationships
- Social media networking media allow users to share their academic tasks quickly.

Disadvantages of Social Media Networks:

- To learn many social media tools and techniques
- Lack of time to use the social media
- Lack of privacy and identity theft
- Confidentiality of the information
- Need for the lack of knowledge how to use Social Media
- Insufficient funding for libraries
- Electricity failure
- Low speed of the Internet.
- Low interest of librarians in learning and utilizing social media
- Inadequate training opportunities for library staff

Conclusion

Social media is a great informational and support tool for library users increasingly present in the digital environment. Library professionals mainly use social networking in two broad categories, information communication, and information distribution. Libraries can be part of Social media and use the tool as a part of ongoing promotions, contests, and events. Libraries are using the latest technology and social networking tools to meet user expectations. Using or creating a new one specifically for the Library allows library users to join the larger community effectively.

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IMPACT OF SOCIAL MEDIA TOOLS ON THE INFORMATION GATHERING AND KNOWLEDGE SHARING PRACTICES OF RESEARCH SCHOLARS OF ALAGAPPA UNIVERSITY DURING COVID19: AN ANALYT ICAL STUDY

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Introduction

The outburst of COVID19 has had caused major social, political and economic consequences worldwide (Praveen, 2020). The COVID19 pandemic has affected researchers, students and academics. As institutions of higher education have restricted in-person activities, research and training have been interrupted and they faced many new barriers as a result (Chenneville & Schwartz-Mette, 2020; Thompson, 2020). The implementation of social distancing and quarantine along with the COVID19 pandemic to virus spread which consequences the libraries to shift their information sharing and knowledge gathering through Social Media mode. This study aims to analyse the Impact of Social Media on the Information Gathering and Knowledge Sharing Practices of research scholars of Alagappa University during COVID19 and the use of SM supports in research development, professional development and library services, (Anasi, 2018; Beemt et al., 2019; Harris & Rea, 2009; Manca & Ranieri, 2013, 2016; Vie, 2015). Now-a-days, large amount of information's are available only in the digital, electronic and online modes. Personal or Home libraries are getting widespread to satisfy the information thirst of ultra-modern users. The influence of SM has brought all the mandatory information sources and services to the desktops of the users.

Methodology

The study was design to scrutinize the impact of social media on research scholars, how social media is manipulating in academic activities, satisfaction level of e-resources and problems faced in progressing research are evaluated in this study. An online survey method was adopted by disseminating Google form through e-mail and Whatsapp, due to pandemic situation. This study covers the research scholars of Alagappa University, Karaikudi. A total of 50 respondents were targeted as sampling frame for this study, which satisfies the Krejcie & Morgan (1970) suggested requirement. Since the respondents were residing at diverse places during the COVID-19 Period. This questionnaire survey was carried out on a voluntary basis.

Objectives of the Study

- To explore the Social Media on the Information Gathering behaviour of the Research Scholars in Alagappa University during COVID19;
- To examine the Social Media in knowledge sharing Practices of Research Scholars in Alagappa University during COVID19;

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- To explore the possibility of bringing about Social Media of Research Scholars in Alagappa University.

Hypotheses

- There is no significant association between the frequency of use of social media and virtual technology among gender
- There is no significant difference between the preference of usage of INFED E-resources subscribed in the library, their level of satisfaction among gender;
- There is no significant difference between residing place of respondents and Problems encountered in accessing library sources during COVID19.

Data Analysis and Interpretation

Table 1: Demographic Information of Respondents

Descriptive statistics			
Demographic profile	**Options**	**Frequency**	**Percent**
Location	Rural	21	42
	Urban	22	44
	Semi-Urban	7	14
	Total	50	100
Discipline	Science	12	24
	Arts	24	48
	Management	14	28
	Total	50	100
Gender	Male	19	38
	Female	31	62
	Total	50	100
Age Group	20-25	3	6
	26-30	34	68
	31-35	8	16
	Above 35	5	10
	Total	50	100

The table - 1 interprets the residing place of research scholars, which describes those students in semi-urban areas, is not involved in doing research, it may be lack of facilities or poverty or English proficiency or family instability or some other physical problems faced by them. Consequences of this study depicted that the gender distribution is not even; the number of female participants is 24% greater than that of the male counterparts. The gender composition well signifies the trend of the educational programmes, in which female students are more curious to secure good position in society than the males. From the total respondents, most of the respondents are from the arts discipline, reason may be the researcher also belongs to the art department. The analysis proves that students fit the age group of 26-30 relatively had a better performance in academic than other age group, due to level of understanding about research and its importance to the society.

Table 2: Chi-Square test for significant association between frequencies of using of SM among gender

Variables		N	R	O	F	Total	Chi-square Value	P Value
Face Book	Male	1	14	1	3	19	0.798	0.85
		0.8	14.4	1.5	2.3	19		
	Female	1	24	3	3	31		
		1.2	23.6	2.5	3.7	31		
Twitter	Male	2	17	0	0	19	0.711	0.701
		2.3	16.3	0	0.4	19		
	Female	4	26	0	1	31		
		3.7	26.7	0	0.6	31		
You tube	Male	0	0	3	16	19	0.001	0.975
		0	0	3	16	19		
	Female	0	0	5	26	31		
		0	0	5	26	31		
Messenger	Male	3	0	3	13	19	0.366	0.833
		3.8	0	3	12.2	19		
	Female	7	0	5	19	31		
		6.2	0	5	19.8	31		
Whatsapp	Male	0	0	4	15	19	0.582	0.445
		0	0	3	16	19		
	Female	0	0	4	27	31		
		0	0	5	26	31		
Instagram	Male	0	5	9	5	19	4.999	0.172
		1.5	4.2	10.3	3	19		
	Female	4	6	18	3	31		
		2.5	6.8	16.7	5	31		
Others	Male	8	4	6	1	19	0.764	0.858
		7.6	3.8	5.7	1.9	19		
	Female	12	6	9	4	31		
		12.4	6.2	9.3	3.1	31		

Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	4.999[a]	3	**0.172**
Likelihood Ratio	6.291	3	0.098
Linear-by-Linear Association	2.231	1	0.135
N of Valid Cases	50		

Table: 2 illustrate the estimated significance value is 0.172, which is more than 0.05. Hence null hypothesis is accepted that there is no significant difference between gender and usage of SM in acquiring and sharing knowledge. Even though every social medium are in usage mostly utilized sources are you tube, WhatsApp, and messenger for information gathering and sharing due to those social media platforms are used by many people. Through YouTube, they can learn

more software and it reflects the offline mode classes and aids to convey the research related messages through what's App groups and messengers.

Table 3: Usage of SM with their Standard Deviation

Types of SNs	Frequently	Occasionally	Rarely	Never	Total	Mean	Median	SD
Face book	6 (12.0)	4 (8.0)	0	40 (80.0)	50	1.52	1	1.074
Twitter	1 (2.0)	0	0	49 (98.0)	50	1.06	1	424
You tube	32 (64.0)	18(36.0)	0	0	50	3.64	4	485
Messenger	4 (8.0)	36(72.0)	0	10(20.0)	50	2.68	3	0.891
Whatsapp	38 (76.0)	12(24.0)	0	0	50	3.76	4	0.431
Instagram	4 (8.0)	31(62.0)	0	15(30.0)	50	2.48	3	1.015
others	5(10.0)	15(30.0)	0	30(60.0)	50	1.9	1	1.147

The standard deviation (SD) measures the dissemination of the data about the mean value. It is useful in evaluating sets of data which may have the similar mean but in diverse range in table 3. The highest value of mean score was achieved by You tube, what's App, and messenger social medium depicts the most usage of SM due to more online classes, tutorials, videos, etc., which represents the best way of learning. What's App and Messengers are exploited by many scholars due to their easy usage and to disseminate the information quickly and easily. The least mean value scored by Twitter, Face book, and other way of SM were not utilized; this may be those SM were used for personal use and not for academic purpose or due to not acquaintance with everyone.

Table 4: Independent Sample t-test for the level of satisfaction of E-resources and Gender

Independent Samples Test						
Variables	Levene's Test for Equality of Variances		T–test for Equality of Means			Null Hypothesis
	F	Sig.	t	df	Sig. (2–tailed)	
RFID (Radio Frequency identification)	5.371	0.025	–1.072	48	0.289	Accepted
			–1.111	42.592	0.273	
Web OPAC	0.526	0.472	–0.35	48	0.728	Accepted
			–0.351	38.575	0.727	
Electronic Theses and Dissertations	1.105	0.298	0.216	48	0.83	Accepted
			0.224	42.328	0.824	
E–resources access through e–shodh Sindhu	0.526	0.472	–0.35	48	0.728	Accepted
			–0.351	38.575	0.727	
E–books access	2.826	0.099	0.863	48	0.392	Accepted
			0.824	32.777	0.416	
Anti–plagiarism Check	1.443	0.236	0.585	48	0.561	Accepted
			0.563	33.548	0.577	

Display of current events/ information	0.001	0.971	1.061	48	0.294	Accepted
			1.058	37.895	0.297	
Institutional Repository Service	0.816	0.371	–0.437	48	0.664	Accepted
			–0.442	39.685	0.661	
Internet Browsing / Online Resources	0.371	0.545	2.087	48	**0.042**	**Rejected**
			2.198	44.306	**0.033**	
Newspaper Clipping	4.712	0.035	0.873	48	0.387	Accepted
			0.955	47.395	0.344	
Reprographic Service	0.526	0.472	–0.35	48	0.728	Accepted
			–0.351	38.575	0.727	

The estimated significance value shows there is no significant difference between gender and level of satisfaction except for internet browsing and online resources. Most of the e-resources in university libraries are accessed by research scholars. Reason for significant difference may be technology and the internet can be easily accessed by male than female during this pandemic period. Accessibility is impossible for females because of lack of opportunity, ability, and dread of inequity avert many from using digital tools and online content. To accomplish gender equality, girls and young women require equivalent access to technology, digital guidance, and to be safe online are analyzed in the table 4.

Regression analysis is an influential statistical method that allows scrutinizing the association between two or more variables. It is used to observe the impact of pandemic situation in progressing their research activities and the problems faced by them while residing at their native place.

Table 5: Regression test for impact on problems faced by research scholars during COVID19 by residing in their native place

Model Summary						
Model	**R**	**R Square**		**Adjusted R Square**		**Std. Error of the Estimate**
1	0.505	0.255		0.151		0.646
a. Predictors: (Constant), Stress and anxiety, Distance with physical lab, Lack of institutional and peer support, internet services and social distancing						
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.141	6	1.023	2.453	0.04
	Residual	17.939	43	0.417		
	Total	**24.08**	**49**			
a. Dependent Variable: Residing Place						
b. Predictors: (Constant), Stress and anxiety, Distance with physical lab, Lack of institutional and peer support, internet services and social distancing						
Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**

		B	Std. Error	Beta		
1	(Constant)	1.524	0.543		2.807	0.007
	Social Distancing	0.825	0.371	0.991	2.228	0.031
	Distance with Physical lab	–0.812	0.239	–1.043	–3.399	0.001
	Lack of Institutional Support	–0.038	0.187	–0.045	–0.201	0.842
	Lack of Peer Support	0.077	0.24	0.1	0.322	0.749
	Lack of Internet Services	0.104	0.34	0.178	0.307	0.761
	Stress and Anxiety	–0.151	0.308	–0.275	–0.49	0.627
a Dependent Variable: Residing Place						

The estimated R value and R^2 value is between 0 and 1, hence it is proved there is a significant impact of problems faced by the research scholar while residing at their native during this COVID-19 period. Lack of institutional support, peer support, internet services and stress and anxiety agitates the research activities at higher level. Because researchers are not able to have face to face communication with their guide and other researchers, not able to access library resources, not having scholarship funds leads them to stress and strain and obstructs the research progression. Even though they can access library e-resources by their home through separate login ID and password, fault in signals, unreliable internet connection and soo many issues are possible in accessing internet are expressed in table 5.

Discussion and Conclusion

Consequences of this study indicates that the research scholars inhabiting in semi-urban areas aren't interested in performing research due to their personal issues and some common issues that can be eradicated by providing funds for research scholars, facilitating internet services and online spoken English classes in future. The gender composition well signifies the tendency of the educational programmes (Hashim et al., 2020), in which female students are more willing to do research than the male students. In line with the study of social media platforms are mostly used to gain information (Ahmad & Murad, 2020) in that some of the social media like you tube, Whatsapp, and messenger are used for information gathering and sharing (Boukes, 2019), (Nagaraja et al., 2016). The findings of the study shed more glow on the types of e-resources obtainable in the university libraries are compatible with (Mukhtar, 2020). This study further exposed a statistical difference between male and female students in accessing e-resources are well matched with (Manda & Mulkangara, 2007) and (Ford, Miller, & Moss, 2001), (Bassi, & Camble, 2011).There was a high pervasiveness of psychological symptoms among research scholars are verified in the study of (Li et al., 2020). Corona virus can create impact on the mental health of people in diverse communities (Preti, et al 2020), & (Salari, et al., 2020).

Due to the total lockdown worldwide, the majority of people adapted Social Media and Virtual Technology tools for various purposes. The pandemic situation also disturbed the academic activities; it abruptly stopped the face-to-face learning, teaching, and research activities. As a result, the use of technology in the learning processes became essential and the only way to teach, communicate and collaborate for months. This study reveals that majority of the research scholars are well responsive of social media tools and using them for educational purpose and also agree that the social media tools are very much helpful in practicing and sharing their skills and knowledge in their academic activities. The study also reveals the high usage and level of satisfaction of library e-resources except internet services may be due to lack of signal problems

in their inhabiting areas. Lack of institutional and peer support, internet services and funding problems create more mental stress to scholars.

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USES OF SOCIAL NETWORKING SITES (SNSS) IN LIBRARIES

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Introduction

Social network is a website that brings people together to talk, share ideas and interests, or make new friends. This type of collaboration and sharing of data is often referred to as social media. Unlike traditional media that is often created by limited people only, social media sites contain content that has been created by hundreds or even millions of different people. It offers ways to communicate one's ideas and also provides us with feedback from users.

Definitions

According to Computing Dictionary (2011), Social networking site as any website designed to allow multiple users to publish content of them. The information may be on any subject and may be for consumption by friends, mates, employers, employees just to mention a few.

Boyd and Ellison (2007) stated that social networking websites allow individuals to: (1) construct a public or semi public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. They also noted that these websites vary in terms of features and membership. Some websites allow photo/video sharing, while others allow blogging and messaging. Participation in blogs has been regarded as social networking because blogs support formation of social connection through blog-roll activities.

Social Networking Tools and their Possible Implication in the Library

Social networking sites are most helpful to users and librarian to share information with students/users in the easiest way. In libraries that can be done based on the below headings

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1. Information communication
2. Knowledge distribution
3. Knowledge organization

Purposes of Social Networking Sites in Libraries

- To reach a new audience
- To provide speedy updates
- To build discussion groups
- Marketing specific children's and youth services programs adult programs and services.
- To modernize the library image
- Marketing of library product and services.
- To spread news and service alerts.

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Application of Social Networking Services in Libraries

Social networking services for collaboration in libraries applies through various aspects which deals with collaborative partnerships, the partners in library collaboration and the types of work. By examining where and how librarians already collaborate, this analysis will provide a foundation for evaluating tools used in academic library collaboration. Ramsey (2008) detailed out the collective aspects of social networking services as below.

Information Exchange

Information exchange fall into small-scale collaborative activities, including exchange of informal ideas about concepts and technologies, and also formal categories of collaborative tasks engaged in by academic librarians.

Resource Sharing

The resource-sharing category of collaborations includes interlibrary loan and reciprocal borrowing arrangements, cooperative collection development efforts, and cooperative resource management programs.

Sharing Services

The sharing services category focuses primarily on public services functions such as reference and instruction. It includes efforts between librarians within individual institutions and externally, between librarians and vendors and with government entities.

Work-Related Project Collaboration

Work-related tasks include consortia partnerships. In this long-term groups seeking to establish priorities and standardize practices across member institutions in a particular consortium, as well as short-term groups focused on particular shared projects or concerns for particular functional areas. Aside from consortia, work-related project collaboration also appears as participation on committees from local to international levels and as work with donors and friends of the library groups

Resource Description and Standards of Practice

The final category of collaborative tasks, establishing rules for description and standards of practice, encompasses creating and refining classification rules and instituting broad standards of practice.

Possible strategies on incorporating SNSs in library service provision:

1. Libraries can create social links such as facebook page, fan-pages and library blogs onto the library website. Such platforms would allow interaction between library and users and among users. They can also be used as marketing tools for library resources and services, while students would be able to access and share concerns and experiences on library services with peers.
2. Creation of accounts for all students on social media platforms to ensure easy and equal participation among users on the available network.
3. Come up with a roadmap on how SMTs will be adopted, stage by stage, starting with the most preferred and used SMTs.
4. Establish an SMT policy to guide the use of SMTs on the institutional network.

Problems on Use of Social Networking Sites (4)

- Lack of awareness how to use.
- Inadequate funding for libraries.
- Speed of Internet
- Low interest of library professional in learning and utilizing social media.
- Inadequate training opportunities for library professionals.
- Electricity failure
- Non Co-operation of Management

Recommendations

- Keeping in view the importance of social media for marketing library among internet users.
- Internet service must be provided in all types of libraries in order to utilize social media tools.
- All libraries should develop their web site.
- Libraries should create their social media marketing plan and social media services.
- In competitive environment libraries should employ social media to communicate the library mission.
- It is recommended that libraries should provide their patrons with tools for accessing social media by developing social media page on library web site.
- Librarians must be educated and trained in using social media tools for marketing library resources and services.

Conclusion

Nowadays everything is digitalized. With small gadgets, we can store and share lot of information. Sharing information in social networking may be useful to many people. Sharing information is very easy because of social networking. With the help of SNSs, Libraries can increase their users' strength. It helps in active participation of users in library activities. SNS assists Libraries to make it as vibrant institutions in this digital environment. To conclude, application of SNSs would certainly give good results for the Libraries growth and development.

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ACADEMIC SOCIAL NETWORKING SITES (ASNS) FOR COLLABORATIVE LEARNING IN THE VIRTUAL ENVIRONMENT

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Introduction

Social media has become an important platform in our daily routine life in all fields (Hussain, 2021). Academic and research institutions are no exception to it. For many years, social media or social networking sites are becoming popular media among the people (Hamade, 2013). The arrival of social media has altered many things and has changed the way people communicate with their friends and family. In recent times, building a relationship among the people in any field becomes much easier due to emergence of social networking technology. Billions of people are using social media for different purpose across the globe. It provides enormous information in the form of text, audio, video, tweets, posts, live streams etc which are very useful to different kinds of communities. Social Media are web based services gives individuals an opportunity to create connection to be visible to others, add a list of others, follow others and share the resources. It has made tremendous changes in research visibility. Scholarly information processing has been changed due to social media. Scholarly communication has been lifted to greater height with dissemination of publication through social media. With the help of high speed networks and technological gadgets such as smart phones, personal computers, smart TVs, it acts as tool for communicating the information. In this virtual learning environment, social media are considered as preferred medium for new communication process, where the students, research scholars and faculty members can discuss with their peers, get solution for their problems, and update their knowledge base (Asmi, Madhusudhanan, 2015).

Academic Social Networking Sites

Academic Social Networking sites has revolutionized publication pattern of information and sharing the same among the research community by offering a platform. In this study, some of the relevant ASNs where the academic and research community work together and share their information in the digital environment.

Academia, edu

Academia.edu is a multidisciplinary ASNs established by Richard Price in 2008 purely for the academicians. The site allows the academicians or researchers to create their own profile to follow or share their information with their fellow users, updates their profile, measure papers status in the form of view, downloads citations etc. The author can deposit their articles, view count, download count, unique visitors, and geographic distribution of visitors. It also connect with other users such as Facebook, Twitter, Google, etc and notifies through e-mail to the followers whenever there is new paper added into their list.

LinkedIn

It is not meant exclusively for academics or researchers. This platform enables the individuals and companies to connect for working relationships or employment opportunities, knowledge sharing and acquiring skills. It is very much useful for sharing publications and other

research outputs, experiences, talents, and current and previous employment. It is meant for reaching out to a larger audience, such as industry, business, or government.

Research Gate

It is a popular multidisciplinary academic social network has more features than its competitors, allowing it to enable additional strategies for obtaining reputation. It can be used to share publications, interact, collaborate, ask questions, and look for jobs with others. It allows the members to create a profile, upload their publications, and track the impact of their publications. But, the RG scores from ResearchGate lacks standards and is normally not considered in the educational institutions for promotion.

Mendely

Mendeley is free reference manager and academic social network allows users to organise their research papers, collaborate and identify the new research of their interest. The main features of mendeley is, it automatically generate the bibliographies, collaborate with other researchers, import papers from other software, find relevant papers and access the papers from anywhere online (Elsevier, 2021).

Google Scholar

Google scholar is search engine for finding scholarly information. It enables the academic community to search wide range of academic resources across the world such as journal articles, conference papers, institutional repositories, professional societies and so on. It allows the users to create account and save their articles. It allows the users to know their citation level and provides easy way to authors to the visibility of their papers and influence of recent articles in scholarly publications. (Lawal, 2017)

Previous studies

The article Rempfer (2016) highlights how to promote publication through social media, how to select suitable social media to disseminate information. Altmetrics measures each article update information in real time, which can be used for measuring self-promotion. Banshal et al. (2019) conducted a study on how much research in India gets Social media attention, in that article it is noted that only 28.5 % of research output has been highlighted in social media from India compared to 46.7 world average. Still Social media has not been fully utilized from Indian Research. Research visibility can be made through social networking like blogging, multimedia video sharing, using social bibliography like Mendely, Zotero (Fagblue, 2018). Christophe, Durand-Barthez (2020) conducted a study on use of author identifier services and compared Academia.edu, Research Gate, concluded that in a medium sized university in France concluded that the researchers not interested in using AIDS and ASNs. Because of the lack of compatibility across various services, researchers are unable to invest sufficiently in several sites in a timely manner. . Lee et al. (2019) have conducted a study on Research gate users with two motivational models including various influencing factors such as professional, personal, publicity, reputation, learning analysed upon researchers from top universities in United states, concluded that wider audience attracted after using Research Gate.

Academic Social Media Use

Technology in this digital learning environment has drastically changed the way the students to learn and share their resources and the way the teachers teaches. Academics in this virtual learning environment are making use of the ASNs for their academic success and survive. Students have become pro-active in use of academic social networks and becoming technology savvy. Although social media is being used by all, ASNs are employed in academic environments for many purposes such as encouraging students interaction, providing supplement information, course related information, and research collaboration.

Many studies have revealed that students' participation and use of social media learning has been increased. Engagement with social media involves students' mental efforts in spending time with social media for interacting with instructors and peers as part of collaborative learning. This collaborative learning among the researchers enables the researchers to solve their problems through the interactive virtual learning environment. Through this platform, the research scholars are able to interact, collaborate, and share their education related content with fellow researchers. The researchers will be able to follow other researchers if he/she feels that the content of the particular researcher is fit to his/her study. Apart from visibility of content across the globe, the citation score of the researcher also increases. The researchers could share the resources in the form of texts, images, audio, video, graphs, notes, messages, comments etc through social media platform which promotes the researchers learning process (Al-Adwan, et al, 2020). The main purpose of using social media is, the four walls of class room boundaries are removed and thereby academic engagement or performance is promoted. The students engaged with the social media activities will have much more knowledge on activities with other researchers such as enhancing knowledge acquisition, keen in sharing additional information, active participation, interaction, collaborative learning and motivation for further learning which significantly influences their academic and research performance.

Collaborative Learning

ASNs is being used by academic and research community for distributing any vital educational information. It facilitates to communicate and engage with fellow colleagues in the virtual learning environment. It acts as novel platform to build knowledge base and sharing the information among the researchers. The researchers in this digital environment are increasingly using ASNS for many reasons. Among the reasons, the major reason is to make it available of their resources to the wide public and visibility. Each site has its own combination of tools has different combination of research activities such as collaboration, communication, and networking which poses challenge to the academic to evaluate and use the tools (Vasquez & Bastidas, 2015). Internet has facilitated the researchers directly publishing and archiving their papers which are boosted by the advent of social media like ResearchGate, Academia.edu, Mendeley, Google Scholar and so on. In the web 2.0, social media provides much visibility to scholars' work. Academic Social Media platform acts as medium for publication and paying attention to someone's academic and research work. It acts as powerful medium for researchers to create and boost their professional profile and for scientist to communicate their research. According to Jordan (2019), the term ASNS encompasses "a variety of online platforms which have sought to bring the benefits of online networking to a specifically academic audience". ASNS such as ResearchGate, Academia.edu, Google Scholar, Mendeley, etc are used for storing the data and share through social media platform which creates better visibility among the research community. These tools are used as tool for measuring the research status. ORCHID ID links the author with research output

distinguishes uniqueness of the author. It has wide influence in research and new information produced in research, reaches wide audience through social media. Researchers feel that social media will be the new way for more visibility of their research and it will be a better tool for their peers to discover the research on the topic they are looking for. The other major purpose of ASNS is its visibility that the academic resources are made available even before peer-review process. It alerts the researchers by sending mail, whenever the researcher whom they are following for new study and alerts others who are looking for certain topic. With the help of digital technology, ASNS bridge distances in cross-disciplinary and cross border collaborations. In this situation, this paper explores the impact of ASNS on research and selects the ASNS based on the commonalities and differences will help the researcher select the tool for their information access and sharing. In this paper, a comprehensive investigation of ASNS, features, and its impact on research visibility.

Discussion

Social media has wide influence in research. It has become popular because of its more features being used effectively for communicating and interacting with other researchers. The sites are designed with the objective to fulfill the information needs of the academic and research community. Though there are good number of ASNs, there are few sites such as Google Scholar, Research Gate, Academia,edu and Mendeley were highly used by the academic community whereas other ASNs have not reached to them. There is no doubt that ASNs will be one stop solution to the research scholars who want to be their work to be more visible. Moreover, the platform brings all the academic scholars in once place to share and update their research work (Asmi and Margam, 2018). The sites have more information sources and if the scholars not aware of ASNs, does not have experience and IT skills, effective utilization of the resources will not happen. It is also common to notice that both the faculty members and research scholars hesitate to use social media for privacy related concerns. New information produced in research, reaches wide audience through social media. Grouping of researchers with their identical researchers makes sharing more visible. The academic research community visibility depends on their sharing of information.

Conclusion

Academic Social Media is going to be dominant platform for all the users of the higher education realizing the importance of the same. It acts as learning platform for effective interaction, sharing and great chance for collaborative learning. The main aim of the study was to discuss different ASNs and to make it available of the importance of the media for their education and research purpose. If social media effectively utilized research visibility will also increase.

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SECTION V

USE OF OER, MOOCS

EXPLORING THE GROWTH AND STATUS OF MASSIVE OPEN ONLINE COURSE (MOOC)PROVIDERS AND LEARNERS GLOBALLY; AN EXPLORATORY ANALYSIS

Dr. N. Siva[1] Dr. P. Rajendran[2] Dr. S. Vivekanandan[3]

Introduction

Online learning became an essential part of society; the online courses reach society via some platforms like educational institutions or organizations, to improve the status and popularization, this platform has increased from the national level to the International level. Online learning in higher education and distance education recently attracted and expanded the global learning environment due to the tremendous change in the concept of teaching and learning. An innovation of web technologies improved growth in online education by being easily accessible, flexible. It enabled the educational systems to emerge the revolution in a digital age by producing the knowledge in much faster communication and collaboration [Harasim 2000][1].

Open Digital Learning Resources

Open access makes every learning community engage at the global level. Nowadays, the development of openness is increased in the academic community; it breaks the barriers in the academic in sharing knowledge by open access. Open access means everything free of cost and access the materials to tread, download, copy and distribute anywhere, anytime without any financial, legal, technical barriers (Budapest Open Access Initiative, 2002)[2].

In University education or Higher education, Digital learning has become a significant mode. First, an open course was launched in April 2001 by the Massachusetts Institute of Technology (MIT) to make learning materials free of cost and freely accessible through the internet. It makes the model for others and is followed by global counterparts (Massachusetts Institute of Technology, 2001)[3], 2011 around 18.6 million visits the sites and with an average of 2 million page requests per day and more than 2,150 online courses were offered by MIT in Oct'2012. Worldwide accessing this site contents is about 125 million individuals since 2001(Massachusetts Institute of Technology, 2012)[4].

MOOC (Massive Open Online Course)

McAuley et al. (2010)[5] define a MOOC as "an online course with the option of free and open registration, a publicly shared curriculum and open-ended outcomes." MOOC is designed for unlimited online learners to enroll access and learn worldwide and disseminate to all individuals. David Carnier, coined the term MOOC in 2008 (Lepi, 2012)[6].

There were only 25 tuition-paying students, but the enrollment took for an online class was 2300 members free of cost. This course was the first one to develop massive connectivity through online education. Khan Academy is the earliest example of MOOC. In 2004 Khan received help from his cousin and a similar help from his relative to tutor in mathematics. He started his tutorials by posting on YouTube; their fame arose very high within a short period. (McKenna,2012)[7]. At

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free of cost, Khan started the Khan academy for the public, which is a non-profit in 2006 with support at the backend from Bill Gates Foundation and Google; now the Academy has video lectures which covers the subjects of maths, medicine, history and economics, and this course materials have been viewed 200 million times by the users (Ta'eed, 2012)[8]. This is how the first modern MOOC has born. Therefore, the year 2012 is referred to as "the year of MOOC" (Pappano, 2012)[9]. In the recent development, massive open online courses (MOOCs) rapidly invaded the new trend in the global learning environment and increasing the education systems by accessing the resources without any geographical boundaries.

Reason for choosing MOOCs

The number of MOOCs online platforms has been created more and more in recent years due to the rise of new MOOC learners [New York Times 2012][10]. Learners are choosing to join MOOCs for different purposes. Anderson (2013)[11] points out that most of the learners join the MOOCs only to satisfy their interest with no aim of completing the courses. Learners sign up for the MOOCs for "the desire to learn about a new topic or to extend current knowledge, they were curious about MOOCs, for personal challenge, and the desire to collect as many completion certificates as possible" (Hew & Cheung, 2014). Zheng et al. (2015)[12] identified student motivation into four broad types, they are "fulfilling current needs, preparing for the future, satisfying curiosity, and connecting with people". Sooryanarayan & Gupta (2015)[13] perceive that "a majority of learners subscribe to MOOCs based on valuing the knowledge proposition it holds rather than other benefits or end goals". While some are curious about MOOCs (Young, 2013)[14]. Similarly, for personal challenges also some want to take MOOCs to see if they could make it through an MIT course (Breslow et al, 2013)[15] while some other want to get more course certificates as possible.

Some of the main reasons for choosing MOOCs are as follows:

- Courses offered Worldwide
- Universal Access anytime, anywhere
- No, restrict on enrolments
- Free registration or small cost for the certificate
- Equal education opportunities and disseminate to all individuals
- Can learn from the best Institution
- Selecting courses from top universities around the world

Class Central

The most popular search engine for MOOCs is Class Central[16]; which contains information about the free online course catalogs offered by many online platforms, which makes it easy to choose the best, wherever they exist. Their main aim is to provide online education for everyone. As per the nine years, data provided by the Class central in 2012 started with 40 universities with 40 courses; at the end of 2020, more than 900 universities were launched 16.3 thousand MOOC courses. Overall, learners who signed up for the MOOC course in 2012 is 2 million in 2020 crossed 180 million. In 2020 alone, around 60 million new learners signed with a minimum of one course. The increase of learners, courses makes the MOCCs more popular, and the growth for the last few years dramatically increased.

Growth of MOOC providers by registered users

In 2020 growth of the MOOC learners increased enormously; about one-third of the learners

that ever registered joined the MOOC courses. The pandemic brought many people into online education. MOOC providers, in particular, benefited immensely by attracting many learners with their free online courses from top universities. Coursera, edX, and FutureLearn attracted in April 2020, due to pandemic, many new learners registered in a single month as they did in the entirety of 2019. China out of Class Central analysis because the metrics are sometimes unavailable, sometimes available but difficult to validate.

Table-1 : MOOC providers by Registered users

Providers / Year	Registered users			
	2017	2018	2019	2020
Coursera	7 million	7 million	8 million	31 million
edX	4 million	4 million	5 million	10 million
FutureLearn	2.2 million	1.6 million	1.3 million	5 million
Udacity	4 million	2 million	1.5 million	2.5 million

Source: https://www.classcentral.com/report/tag/mooc-roundup-2020/ (retrieved on 23.07.2021)

In 2020, the top four providers gained nearly 50 million new learners combined. Table 1 shows that more than half of these were just for Coursera, which gained almost as many learners in a year than edX, its next closest competitor, who gained 11 million learners. FutureLearn and Udacity gained 4 million and 2.5 million learners, respectively. While we compare the growth of learners last five years, ie., from 2016 to 2020, Coursera, edX, and Udacity have gained more than three times of learners, and FutureLearn is near to three times of learners.

Top 20 Course Providers

Table 2: Top 20 Course Providers

Sl. No	Providers	Courses	%
1	Udemy	11763	26.91
2	Coursera	7586	17.35
3	edX	4568	10.45
4	LinkedIn Learning	3185	7.29
5	Pluralsight	2360	5.4
6	FutureLearn	2309	5.28
7	Swayam	2065	4.72
8	Skillshare	1231	2.82
9	CreativeLive	889	2.03
10	Miríadax	687	1.57
11	France Université Numerique	675	1.54
12	Independent	631	1.44
13	Canvas Network	607	1.39
14	Domestika	402	0.92
15	Datacamp	345	0.79
16	Udacity	326	0.75

17	ThaiMOOC	242	0.55
18	openSAP	220	0.5
19	Kadenze	164	0.38
20	The Great Course Plus	143	0.33
Others		3317	7.59
Total		**43715**	**100**

Source: *https://www.classcentral.com/providers (retrieved on 23.07.2021)*

Class Central listed the top 51 MOOC course providers in the Globe. From Table 2, we can observe the top 20 course providers (course includes Certified Course and Free courses, only free course providers are not listed in the table). In this, Udemy provides 11763 (26.91%) online courses, more than a quarter of the total courses, followed by Coursera with 7586 (17.35%) and edX provides 4568 (10.45%) online courses respectively, these three providers covers more than half of the online courses globally. The top eight providers provide more than 1000 courses.

Top 20 Course Learners

Table 3: Top 20 Course Learners

Sl. No.	Providers	Learners	%
1	Coursera	475053	30.27
2	edX	340875	21.72
3	FutureLearn	207055	13.19
4	Udacity	180670	11.51
5	Canvas Network	127740	8.14
6	France Université Numerique	82662	5.27
7	Miríadax	55521	3.54
8	Swayam	35588	2.27
9	Stanford OpenEdx	5907	0.38
10	Udemy	4911	0.31
11	Open2Study	4890	0.31
12	OpenLearning	4878	0.31
13	Open Education by Blackboard	4731	0.3
14	OpenClassrooms	4396	0.28
15	MOOC-ED	4177	0.27
16	World Science	1986	0.13
17	openSAP	1883	0.12
18	iversity	1834	0.12
19	Desire2Learn	1784	0.11
20	Complexity Explorer	1629	0.1
	Others	21154	1.35
Total		**1569324**	**100**

Source: *https://www.classcentral.com/providers (retrieved on 23.07.2021)*

Table 3, shows that 15, 69,324 MOOC learners from 51 MOOC providers, two providers Coursera and edX has more than 50% of learners. Coursera has 475053 (30.27%) followed by

edX 340875 (21.72%). More than 95% of MOOC learners are from the top eight providers. As per Class Central in 2020, one-third of the learners joined the MOOC platform that ever registered, in combined, providers gained above 60 million new learners. Coursera gained half of these in a year, followed by edX, its next nearby competitor, gained since its inception. The pandemic creates many people to learn through online education. Top Universities benefited vastly by attracting many online learners with their free online courses. Out of all the persons who ever used Class Central, 40% did in 2020 for the first time.

Course Distribution by Subject

Table 4: Course Distribution by Subject

Course Distribution by Subject	No. of Courses	%
Programming	8801	19.85
Business	8738	19.71
Computer Science	4988	11.25
Art & Design	4945	11.15
Humanities	2710	6.11
Social Sciences	2442	5.51
Engineering	2227	5.02
Science	2134	4.81
Health & Medicine	1809	4.08
Education & Teaching	1777	4.01
Personal Development	1620	3.65
Data Science	1312	2.96
Mathematics	829	1.87
Total	**44332**	**100**

Source: *https://www.classcentral.com/subjects (retrieved on 23.07.2021)*

As per the data from Class Central, the courses across subjects listed in Table 4 show among the broader subject fields (as classified by Class Central), the majority of courses are offered in Programming with 8801 courses accounting 19.85% of total courses count. Business and Art and Design followed the list with 8738 courses accounting 19.71% and Computer Science with 4988 courses accounting 11.25%. Mathematics covers least of 829 courses accounting 1.87% of the total courses count.

Subject Distribution by Learners

Table 5: Subject Distribution by Learners

Subject Distribution by Learners	No. of Learners	%
Computer Science	479072	11.2
Business	476431	11.14
Personal Development	462191	10.8
Programming	408068	9.54
Data Science	336851	7.87

Art & Design	314551	7.35
Health & Medicine	298620	6.98
Humanities	289864	6.78
Education & Teaching	259508	6.07
Social Sciences	249265	5.83
Science	247099	5.78
Engineering	242892	5.68
Mathematics	213764	5
Total	**4278176**	**100**

Source: *https://www.classcentral.com/subjects (retrieved on 23.07.2021)*

As per the data from Class Central, the learners across subjects listed in Table 5, shows among the broader subject fields (as classified by Class Central), most learners are registered in Computer Science, with 479072 learners accounting 11.20% of the total count. Business and Personal Development followed the list with 476431 learners accounting 11.14% and 462191 learners accounting 10.80%. Mathematics covers least of 213764 learners, accounting 5.00% of the total count.

Course Distribution by Universities

Table 6: Course Distribution by top 20 Universities

Sl. No	Course Distribution by Universities	No. of Courses	Rank	No. of Learners	Rank	Country
1	Indian Institute of Technology, Kharagpur	428	1	84781	10	India
2	University of Michigan	370	2	245675	5	USA
3	Massachusetts Institute of Technology	368	3	330579	3	USA
4	Indian Institute of Technology Madras	366	4	90970	9	India
5	Indian Institute of Technology Kanpur	299	5	78576	11	India
6	Stanford University	276	6	504597	2	USA
7	University of California, Irvine	219	7	202910	7	USA
8	Johns Hopkins University	212	8	222945	6	USA
9	University of Illinois at Urbana–Champaign	210	9	125812	8	USA
10	University of Colorado Boulder	207	10	60245	13	USA
11	University of Pennsylvania	205	11	268086	4	USA
12	Harvard University	203	12	580775	1	USA
13	Coventry University	203	12	27471	19	UK
14	Indian Institute of Technology Roorkee	195	14	43911	16	India
15	University of Naples Federico II	190	15	50379	15	Italy
16	Indian Institute of Technology Bombay	178	16	52382	14	India
17	Saint Petersburg State University	173	17	43774	17	Russia
18	Tecnológico de Monterrey	167	18	36225	18	Mexico
19	Higher School of Economics	164	19	74383	12	Russia
20	Indian Institute of Technology Guwahati	160	20	21617	20	India

Source: *https://www.classcentral.com/universities (retrieved on 23.07.2021)*

As per the data from Class Central the Course Distribution by Universities listed in Table 6, Indian Institute of Technology, Kharagpur ranked first with 428 courses but ranked tenth in the number of registered learners followed by University of Michigan ranked second in Course Distribution by Universities with 370 courses but in the number of registered learners ranked fifth with 245675,. Harvard University ranked first in the number of learners registered with 580775 and ranked twelfth in course providers with 203. Stanford University ranked second with 504597 and ranked sixth in course providers. In the top twenty Universities in course distribution, nine universities are from the USA, followed by India with six Universities.

Conclusion

In the race of online courses, many countries have entered MOOC platforms to offer the course globally. While implementing MOOCs initially, the providers have to face some issues. First, they have to understand the top courses, subjects, popularity among the learners. Finally, they have to consider several parameters to provide a platform. MOOC courses are also used for economic benefit by providing MOOC certificates and content licensing; only the enrolment is free to the learners. Some of the notable organizations offer both non-profit and commercial purposes worldwide. The main advantage of the learners is they can choose top-quality courses from top-quality universities which allow accessing course materials anywhere, anytime, without any restriction in geographical boundaries.

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INITIATIVES FOR ONLINE LEARNING DURING COVID-19 PANDEMIC IN SRMIST

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Introduction

The COVID-19 pandemic affected all business sectors, particularly educational institutions. Most of the countries around the world closed their schools, universities, and other educational institutions indefinitely. This closure will affect around 90% of the student population to control the spread of the Covid-19 pandemic. [2] On the other side during the COVID-19 pandemic, some business sectors show exceptional growth, like online shopping, Communication, online Entertainment, and online education.

As per the UNESCO report, in India approximately 0.32 billion students were affected by school closures due to the Covid-19 pandemic (UNESCO 2020). Out of these, 84% reside in rural areas, while 70% attend government schools. Education during the lockdown period has been essentially focused on online or television learning. Educational institutions to ensure curriculum has continued to shift lectures through online mode. The higher use of online learning platforms by private schools will increase this disparity. Both students and teachers use their personal computers, laptops, or mobile phone to attend the classes and deliver classroom lectures. Ministry of Human Resource Development (education) ties up with Doordarshan - Prasar Bharati and allocates 34 specific channels for an educational purpose [1]. Online Learning is encouraged during the lockdown period to provide convenience to the educators and learners[4].

COVID-19 pandemic and Global Learning

Learning online is the best solution during this pandemic situation of Covid-19; knowledge can be transferred online using multiple media. Online learning is a learning environment that takes place over the Internet. It is often referred to as e-learning. An online educator compensates for the lack of physical presence in the virtual classroom by creating a supportive environment where all students feel comfortable participating in online classes [4].

The special features of Online learning are:

- Access at any location with an internet connection
- Flexible scheduling offers
- Monitoring students community as well as knowing the progress
- Increases the Institution image by offering online classes with effective learning environments
- Gaining the knowledge even staying at home by maintaining social distancing

Table 1 shows that the growth of online learners during the pandemic, *"Coursera"* shows 387%, and *"EdX"* shows 200% growth compared to the normal period i.e. 2019.

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Table – 1 : New Registered Users and Providers

New Registered Users / Providers	2019	2020	Total
Coursera	8M	31M	76M
edX	5M	10M	35M

Online Education platform

During the COIVD-19 lockdown period, many online learning platforms offer free access to their services, including Coursera, Udemy, EdX, SWAYAM- NPTEL, etc., they provide 1000 + certificate courses to the academic community. It is highly appreciable efforts of online course platforms to academic communities to engage themselves actively in learning.

Coursera Campus Program

With the "Coursera for Campus Basic" plan, students will continue to have free, long-term access to high-quality online learning on Coursera. Benefits include:

- Up to 20,000 licenses for university students under "Coursera for Campus" program
- Unlimited Guided Projects and one course per student per year
- Continued access to the Coursera platform, including administrative and analytics dashboards
- Online help centers for program administrators and learners

The Coursera for Campus Basic plan is (free enrollment) opens to academic institutions in April 2020. The learners can clarify their doubts through the FAQ in the support center of the Coursera platform. Interested learners to know more about the Coursera for Campus Institution plan with unlimited access to courses, private authoring, and advanced academic integrity features.

Coursera Campus Response Initiative at SRMIST

SRMIST academic community actively participates in the Coursera Campus programme during the lockdown period i.e., Mid April to August 2020. An administrator account is created to send the learners an invitation or bulk. The learners will also receive an email notifying them to enroll in the courses based on their interests. The usage indicates massive adoption, utilization in 4 months. There 58905 learners enrolled an average of 3 courses per learner. (Fig.1)

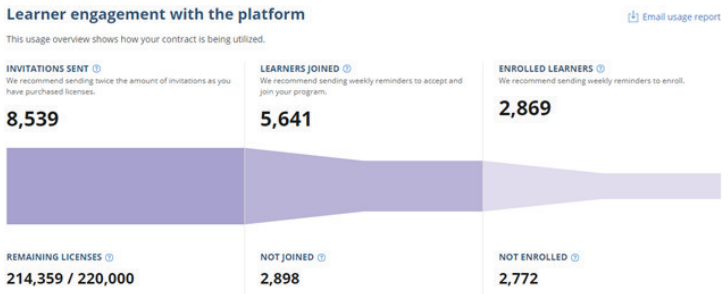

Figure -2 Details show the numbers of invitation sent and learners joined

The details of the SRMIST learner's campus wise and discipline wise are shown in table 2; it is observed from table 2 that 68.21% (2996) are from KTR campus and 18.65% (819) are from RMP campus. While comparing the discipline wise 62.66% (2752) are from *'Computer Science*" and 10.20 (448) % from *Electronics and Communication Engineering*.

Table – 2: Learners of SRMSIT: Campus and Discipline Wise

Discipline	KTR	NCR	VDP	RMP	Total
Aero Space Engineering	67	-	-	-	67
Architecture & Interior Design	18	-	-	-	18
Automobile Engineering	53	30	-	-	83
Bio Medical Engineering	14	-	1	-	15
Bio Technology	129	-	-	-	129
Chemical Engineering	56	-	-	-	56
Civil Engineering	52	1	-	-	53
Computer Science Engineering	1571	343	99	739	2752
Electronic &Communication Engg.	352	1	71	24	448
Electrical & Electronic Engineering	87	11	-	-	88
Electronic & Instrumentation Engg.	33	-	-	2	35
Food Process Engineering	5	-	-	-	5
Genetic Engineering	12	-	-	-	12
Information and Technology	103	4	-	29	136
Mechanical Engineering	233	12	5	23	273
Mechtronics Engineering	102	-	-	-	102
Nano Technology	10	-	-	-	10
Software Engineering	65	-	-	-	65
Others (Medical, Pharmacy etc)	34	9	-	2	45
Total	2996	411	176	819	4392

Top 10 courses preferred by the SRMIST learners

As per the data shown in Table - 3, the learners from SRMIST are most preferred courses by Rank wise is Programming for Everybody (Getting Started with Python) is 1st rank “Machine Learning” 2nd rank and Crash Course on Python in 3rd Rank. “AWS Fundamentals Going Cloud Native” is rand 10th place.

Table -3 : Top ten courses preferred by the SRMIST learners

Course Name	**Rank**
Programming for Everybody (Getting Started with Python)	1
Machine Learning	2
Crash Course on Python	3
Algorithmic Toolbox	4
Into. to the Internet of Things and Embedded system	5
Neural networks and deep learning	6
SQL for Data science	7
The Bits and Bytes of computer networking	8
Into. HTML 5	9
AWS Fundamentals Going Cloud Native	10

EdX

EdX is an American massive open online course provider started by Harvard and MIT. It is the second-largest course provider globally. The platform provides a wide range of disciplines to a worldwide student body, including some courses at no charge. It also conducts research into learning based on how people use its platform. This platform offers around 3000+ courses, 110 million enrolments, 35 million users, 160 partners, 15 thousand instructors, and 1.4 million verified course certificates, which were issued. The SRMIST learners also take part in the programme during the COVID-19 pandemic. Figure - 3 shows the number of learners who registered and completed the courses.

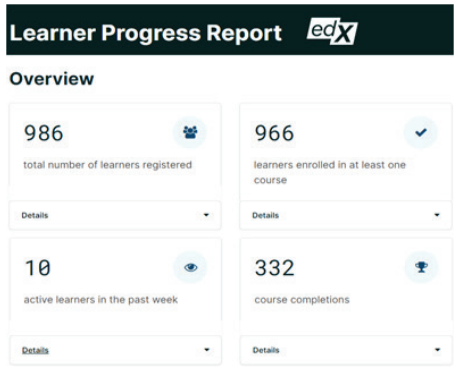

Figure – 3: Details of SRMIST learners enrolled edX platform

Swyam Nptel

SWAYAM is a programme initiated by the Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity, and quality. The objective of this effort is to take the best teaching-learning resources to all. It is done through a platform that facilitates all the courses—taught in classrooms from Class 9 to post-graduation. It can be accessed by anyone, anywhere at any time. All the courses are interactive, prepared by the best teachers in the country, and available, free of cost. More than 1,000 specially chosen faculty and teachers from across the country have participated in preparing these courses.

Steps have been taken to enrich the learning experience using audio-video, multi-media, and state-of-the-art pedagogy/technology. There are nine National Coordinators who have been appointed to deliver the lectures. They are:

- AICTE (All India Council for Technical Education) for self-paced and international courses
- NPTEL (National Programme on Technology Enhanced Learning) for Engineering
- UGC (University Grants Commission) for non-technical post-graduation education
- CEC (Consortium for Educational Communication) for under-graduate education
- NCERT (National Council of Educational Research and Training) for school education
- NIOS (National Institute of Open Schooling) for school education
- IGNOU (Indira Gandhi National Open University) for out-of-school students
- IIMB (Indian Institute of Management, Bangalore) for management studies
- NITTTR (National Institute of Technical Teachers Training and Research) for Teacher Training programme

Courses delivered through SWAYAM are available free of cost to the learners; however, learners wanting a SWAYAM certificate should register for the final proctored exams that come at a fee and attend in-person at designated centers on specified dates. Eligibility for the certificate will be announced on the course page, and learners will get certificates only if these criteria are matched. Universities/colleges approving credit transfers for these courses can use the marks/ certificate obtained in these courses for the same.

Table -4: NPTEL Online course learners from SRMIST

Year	Period	Registration	No. of courses	Staff	Student	Total
2017-2018	Jul - Dec	283	63	35	248	
	Jan - Jun	695	111	75	620	
	Total	978	174	110	868	868
2018-2019	Jul - Dec	1436	143	103	1333	
	Jan - Apr	1696	160	137	1559	
	Total	3132	303	240	2892	2892
2019-2020	Jul - Dec	2804	169	96	2708	
	Jan - Apr	1233	138	84	1149	
	Total	4037	307	180	3857	3857
2020-2021	Jul - Dec	2357	197	70	2287	

SRMIST learners in SWAYAM – NPTEL

SRMIST is taking an active part in the SWAYAM-NPTEL program from 2016 onwards; table -4 shows that the enrollment and other details of the SRMIST's. It is observed from the Table that the number of learners is increased year by year. SWAYAM-NPTEL recognizes SRMIST as a valuable local chapter with a rating of "AAA" based on NPTEL online certification courses' performance for the past 4 years. SWAYAM-NPTEL awards the SRMIST "Local Chapters" with star criteria as one of the top 10 local chapters in the last 8 consecutive semesters and with a recognized certificate.

Conclusions

The COVID-19 pandemic affects most of the business sectors, including academic institutions. On the other this pandemic, some business sectors show exceptional growth like online shopping, communication, online Entertainment, and online education. The educators and learners are also facing some problems to continue the classroom environment to an online platform.

Not all Learners have the necessary knowledge and resources to keep themselves safe online. Learners from low-income families may suffer mainly due to afford a high-speed internet connection, and learners from remote areas are more likely to suffer from a bad signal for internet connection. It widens the gap between privileged and unprivileged learners. Government/ educational institutions must provide free internet and digital gadgets to all learners during the lockdown and remain safe from pandemics. Learners are facing without reliable internet access and technology. They are struggling to participate in digital learning.

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A STUDY ON IMPACT OF USING ELECTRONIC INFORMATION RESOURCES AMONG THE RESEARCH SCHOLARS AND STUDENTS OF MADURAI KAMARAJ UNIVERSITY, MADURAI

G. Shantha[1] Dr. P. Chellappandi[2]

Introduction

An electronic resource is defined as a resource which require computer access or any electronic product that delivers a collection of data, be it text referring to full text bases, electronic journals, image collections, other multimedia products and numerical, graphical or time based, as a commercially available title that has been published with an aim to being marketed. These may be delivered on CD ROM, on tape, via internet and so on. Over the past few years, a numbers of techniques and related standards have been developed which allow documents to be created and distributed in electronic form. The e-resources on magnetic and optical media have a vast impact on the collections of University libraries. These are more useful due to inherent capabilities for manipulation and searching, providing information access is cheaper to acquiring information resources, savings in storage and maintenance etc. and sometimes the electronic form is the only alternative

Objectives of the study

- to study the frequency of using E-resources
- To execute the purpose of using E-resources
- To find out the Problems in using E-resources
- To know the level of satisfaction on using UGC-INFONET journals
- To study the type of materials to search through OPAC
- To study the perception to influence the use of electronic information

Hypotheses

- There is no association between the residential sector of the respondents and their frequency of visit to the library.
- There is no association between the gender of the respondents and their level of satisfaction on using UGC-INFONET journals.

Research Methodology

The present study is a descriptive survey method. The questionnaire method has been adopted to collect the primary data. In this study, purposive sampling method was used to collect the primary data from the respondents. There are 100 Questionnaires were distributed to respondents of research scholars and students in Madurai Kamaraj university and 92 filled questionnaires were received back by the respondents. Hence 92 questionnaires were used for data analysis and interpretation.

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Data analysis and interpretation

Table 1: Gender and Age-wise distribution of respondents

Particulars		No. of respondents	%	Cum %
Gender	Male	60	65.20%	65.2
	Female	32	34.80%	100
	Total	**92**	**100**	
Age	Below-25	43	46.70%	46.7
	26-30	25	27.20%	73.9
	31-35	16	17.40%	91.3
	Above-36	8	8.70%	100
	Total	**92**	**100**	

Source: Primary Data

Table 1 reveals the gender and age-wise distribution of respondents. In this study, 60(65.2%) respondents are male while 32(34.8%) respondents are female. Hence most of the respondents belong to the category of male. The respondents were also categorized under their age frequency. The highest numbers of respondents 43(46.7%) were in the age category of below-25, 25(27.2%) of them were in the age category of 26-30, 16(17.4%) of them were in the age category of 31-35 and 8(8.7%) of them age category of above-36.

Table 2: Distribution of respondents by status

Status		No. of Respondents	Percentage
Postgraduate Students	Ist Year	25	25.8
	IInd Year	46	47.4
Research Scholars	Ph.D	21	21.6
Total		**92**	**100**

Source: Primary data

Table 2 describes the distribution of respondents by status. Among the overall respondents, a majority of 46 (47.4%) of them who belong to Postgraduate second year students and it is followed by, 25 (25.8%) respondents who belong to Postgraduate first year students while 21 (21.6%) of them who belong to Ph.D scholars.

Table 3: Frequency of using electronic information resources by the respondents of Residential Sector

Residential Sector	Frequency (%)				Total
	Daily	Weekly	Monthly	Rarely	
Rural	16 (28.1)	19 (33.3)	15 (26.3)	7 (12.3)	57
Urban	12 (34.3)	14 (40)	6 (17.1)	3 (8.6)	35
Total	**28**	**33**	**21**	**10**	**92**

Source: Primary data Chi-square value: 1.737 df: 3

Table 3 presents the frequency of visit to the library by the residential sector. Of the respondents of rural areas, a majority of 19 (33.3%) of them visit the library weekly and it is followed by 16 (28.1%) of them visit daily, 15 (26.3%) of them visit monthly and 7 (12.3%) of them visit rarely respectively. Among the respondents of urban areas, a majority of 14 (40%) of them visit the library weekly and it is followed by 12 (34.3%) of them visit daily, 6 (17.1%) of them visit monthly and 3 (8.6%) of them visit rarely respectively. It is concluded that 35.9% of the respondents visit the library weekly.

Null Hypothesis

There is no association between the residential sector of the respondents and their frequency of visit to the library.

Chi-Square Summary Result

Chi-square Calculated	Degrees of freedom	Chi-Square
Value		Table Value 5%
1.737	**3**	**7.815**

The table value of χ^2 for 3 degrees of freedom at 5% level of significance is 7.815. The calculated value of χ^2 is lower than this table value and hence the Null hypothesis is accepted and hence Alternative hypothesis is rejected. Therefore, it is concluded that there is no association between the residential sector of the respondents and their frequency level of visit to the library.

Table 4 Purpose using electronic information resources

Purpose	**No. of responses**	**% of valid respondents N=92**	**% of overall responses N=137**	**Rank**
For learning books	27	29.3	19.7	3
For prepare examination	33	35.9	24.1	2
For taking notes	19	20.7	13.9	4
For reading newspaper	41	44.6	29.9	1
For study/ research	10	10.9	7.3	5
Other purpose	7	7.6	5.1	6
Total	**137**	**148.9**	**100**	

Source: Primary data Multiple Responses

It is observed from the table 4 that 29.3% of the respondents use electronic information resources for learning books and it has got the third rank, 35.9% visit the prepare for the examination and it has got the second rank, 20.7% goes to the library for taking notes and it has got the fourth rank, 44.6% spend their time in the library for reading newspaper and it has got the first rank, 10.9% use the library for study/research and it has got the fifth rank and 7.6% visit the library for some other purposes and it has got the sixth rank. Hence the majority of the respondents are purpose of using electronic information resources for reading newspaper.

Table 5: Problems faced while accessing electronic information resources

Problems	No. of responses	% of valid respondents N=92	% of overall responses N=145	Rank
Slow internet bandwidth	39	42.4	26.9	1
Slow system speed	34	37	23.4	2
Lack of assistance	25	27.2	17.2	4
Overload of the information on the internet	28	30.4	19.3	3
Lack of IT knowledge	19	20.7	13.1	5
Total	**145**	**157.6**	**100**	

Source: Primary data

Table 5 reflects the 42.4% of the respondents opine that slow internet bandwidth is main problem faced while they are accessing electronic information and it has got the first rank, 37% respondents for slow system speed and it has got the second rank, 27.2% respondents for lack of assistance and it has got the fourth rank, 30.4% respondents for overload of the information on the internet and it has got the third rank and 20.7% respondents for lack of IT knowledge and it has got the fifth rank. Hence a majority of the respondents opine that slow internet bandwidth is main problem faced while they are accessing electronic information.

Table 6: Level of satisfaction on using UGC-INFONET journals by the respondents of gender-wise

Gender	Opinion (%)				Total
	Very Good	Good	Satisfactory	Not satisfactory	
Male	14 (23.3)	25 (41.7)	12 (20)	9 (15)	60
Female	8 (25)	12 (37.5)	7 (21.9)	5 (15.6)	32
Total	**22**	**37**	**19**	**14**	**92**

Source: Primary data Chi-square value: 0.155 df: 3

Data presented in table 6 reveal the level of satisfaction on using UGC-INFONET journals by the respondents of gender-wise. The study attempts to get the opinion from the respondents from male category, a majority of 25 (41.7%) respondents' level of satisfaction on using UGC-INFONET journals is good followed by, 14 respondents (23.3%) very good, 12 (20%) of them satisfactory and 9 (15%) of them not satisfactory respectively. Among the respondents from female category, a majority of 12 (37.5%) respondents' level of satisfaction on using UGC-INFONET journals is good followed by, 8 respondents (25%) of them very good, 7 (21.9%) of them satisfactory and 5 (15.6%) of them not satisfactory respectively.

Null Hypothesis

There is no association between the gender of the respondents and their level of satisfaction on using UGC-INFONET journals.

Chi-Square Summary Result

Chi-square Calculated Value	Degrees of freedom	Chi-Square Table Value 5%
0.155	**3**	**7.815**

The table value of Chi-Square for 3 degrees of freedom at 5% level of significance is 7.815. The calculated value of Chi-Square is lower than this table value and hence the Null hypothesis is accepted and hence Alternative hypothesis is rejected. Therefore, it is concluded that there is no association between the gender of the respondents and their level of satisfaction on using UGC-INFONET journals.

Table 7: Opinion about the type of materials to search through OPAC

Options	No. of overall responses	% of valid respondents N=92	% of overall responses N=129	Rank
Text Book	41	44.6	31.8	1
Printed Journals	29	31.5	22.5	3
Reference Book	32	34.8	24.8	2
Theses/Dissertations	18	19.6	14	4
A/V Materials	9	9.8	7	5
Total	**129**	**140.2**	**100**	

Source: Primary data Multiple Responses

Table 7 reflects the type of materials to search through OPAC. It is inferred from the above study, a majority of 44.6% of the respondents opine that they use the OPAC for searching the text books and it has got the first rank, 31.5% of the respondents search printed journals and it has got the third rank, 34.8% of the respondents search reference books and it has got the second rank, 19.6% of the respondents search theses and dissertations and it has got the fourth rank and 9.8% of the respondents search A/V materials and it has got the fifth rank. Hence most of the respondents use the OPAC for searching the textbooks.

Table 8: Perception to influence the use of electronic information

Options	No. of respondents	%	Cum %
Use of conventional documents decreased	22	23.9	23.9
Dependency on the e-resources increased	33	35.9	59.8
Expedites of the research process	12	13	72.8
Improve the professional competence	16	17.4	90.2
Others	9	9.8	100
Total	**92**	**100**	

Table 8 shows the perception to influence the use of electronic information by the respondents. It is inferred from the above table, a majority of 35.9% of the respondents report

that dependency on the E-resources increased, 23.9% of the respondents use of conventional documents decreased, 17.4% of the respondents improve the professional competence and 13% of them expedites of the research process. Besides cited above, there are some other perceptions also (9.8%).

MAJOR FINDINGS

- Most of the respondents belong to the category of male
- The highest numbers of respondents 43(46.7%) were in the age category of below-25
- 57 of them (62%) belong to the rural area
- Most of the respondents 46 (47.4%) them who belong to Postgraduate second year students
- 35.9% of the respondents visit the library weekly
- Majority of the respondents are purpose of using electronic information resources for reading newspaper
- Majority of the respondents opine that slow internet bandwidth is main problem faced while they are accessing electronic information.
- Majority of 37 (40.2%) respondents' level of satisfaction on using UGC-INFONET journals is good
- Most of the respondents use the OPAC for searching the textbooks

CONCLUSION

The proliferation of e-resources has had a significant impact on the way the academic community uses storage and preserves information. The advantages of e-resources have drawn attention of the library users to a great extent. Accordingly, these resources have occupied a significant place in the collection and in the budget of almost all libraries. Students and Research Scholars' attitudes seem to be very positive towards the benefits of e-resources for their study and Research and the role of libraries as gateways to provide assistance in accessing these resources.

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AN INSIGHT INTO OPEN EDUCATION RESOURCES INITIATIVES: EUROPEAN SCENARIO

Madhu Midha[1]

Introduction:

Teaching and learning community worldwide are developing plenty of educational resources on internet to be used freely and openly by everyone. These collaborative efforts have given birth to a new world where every human can access, create or contribute in the wealth of human knowledge. Open educational resources movement is nurturing a knowledge society where a culture of learning, cooperating, creating and sharing is developed among educators. Education is a prime factor in the academic, social, political, technological, economical and actual overall development of any country. Educational or learning resources are important component of any teaching learning process.

OECD (2009) has described "a learning resource can refer either to any resources used by teachers and students for the purpose of learning, or to resources particularly designed to be used in learning settings".In the past few decades, education sector has witnessed a major paradigm shift both in terms of teaching methods and in terms of educational resources. Print resources have been largely replaced by Digital Learning Resources. This digital transformation has made educational content available and affordable for the communities at large.After Open Access and Open-Source Software movements success Open Educational Resources is an extended version of these globally accepted higher education movements towards openness.

Open Education and Open Educational Resources:

The open education movement is a combination of established tradition of resource sharing and using technology collaborating with other educators and learners who can contribute in use, access and creation of this open education movement. Technological advancements and OERs together have opened up wider opportunities to access globally created educational resources by different communities and sectors across the globe.Walker has defined the term open "convenient, effective, affordable, and sustainable and available to every learner and teacher worldwide"

Open Education is a "A mode of realizing education, often enabled by digital technologies, aiming to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customizable for all. It offers multiple ways of teaching and learning, building and sharing knowledge, as well as a variety of access routes to formal and non-formal education, bridging them".(source:https://ec.europa.eu/jrc/sites/default/files/20170328_openeduframework_centred_video_support.pdf.. Assessed on 01-07-2021)

The European Commission's definition of open education is:

"a way of carrying out education, often using digital technologies. Its aim is to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customizable for all. It offers multiple ways of teaching and learning, building

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and sharing knowledge. It also provides a variety of access routes to formal and non-formal education, and connects" (Opening up Education: A Support Framework for Higher Education Institutions, 2016) (source: https://ec.europa.eu/jrc/en/open-education. Assessed on: 01-07-2021) There are four main rationales to become involved in OE: (1) the public mission of higher education institutions (HEIs) -to spread knowledge, widen participation; (2) costs containment; (3) institutional enhancement and reputation; (4) increasing quality of learning for regular students.

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According to Adeleke and Nwalo (2017) "the emergence of e journals with other e resources has revolutionized the scholarly communication concept. So, the required scientific information for the purpose of disseminating research information can be retained with the help of ICT applications. It also provided the self-publishing facilities where ownership of scholarship could be decided by scholar. Research output can be measured in terms of number of publications. So, publication should not be controlled under the publication houses, subscription cost for electronic journals and cost of printed materials force the librarians and professionals to pursue alternate source of scholarly communication process like Open Access".

COL(2017) " Open education is a philosophical construct that refers to policies and practices that allow entry to learning with no or minimum barriers with respect to age, gender or time constraints. In short, openness is about open entry, learning anywhere, anytime and the freedom to choose courses. Educational institutions provide flexibility so that if the learners cannot come to the university, the university goes to the learners".

Open Educational Resources is a combination of two words Open + Educational Resources. Which means those electronic resources which are covering educational content e.g Textbooks, lecture notes, course material, full courses etc and are Openly available to teaching and learning community means without any cost freely available to use, adapt and to reuse it.

In 2002, UNESCO's forum on the impact of Open Course ware for higher education in developing countries for the first time used the term "Open Educational Resources".

William and Flora Hewlett Foundation has described Open Educational Resources as "OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. OER include full courses, course materials, modules, textbooks, streaming videos, testes, software, and any other tools, material or techniques used to support access to knowledge" (William and Flora Hewlett Foundation, 2008).

UNESCO (2002) has defined OER as "… technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes. They are typically made freely available over the web or internet. Their principal use is by teachers and educational institutions to support course development, but they can also be used directly by students. Open Educational Resources include learning objects such as lecture material, references and readings, simulations experiments and demonstrations as well as syllabi, curricula and teachers' guide."Torres (2013) advocate the OER concept as "OER is the freedom to share knowledge and that knowledge should be legally, socially and technologically open".In 2010 UNESCO and Commonwealth of Learning jointly initiated the project" Taking the open education resources beyond the OER community: Policy and Capacity".Atkins, Brown

& Hammond (2007) had mentioned" OER include full courses, course materials, modules, textbooks, streaming videos, tests, software and any other tools, materials, or techniques used to support access to knowledge".

OER Initiatives in Europe:

The European countries have implemented number of policies frameworks and activities which primarily focus on the promotions and usage of ICT in education and training sector. The various thematic groups created on ICT and education keep on update about latest trends, scenario continuous reporting of ongoing initiatives and keeps on sharing good practices in use. These thematic groups consist of members as representatives of different member states listed under open method of coordination on education and training.

The European commission strategy Europe 2020 states that " a fundamental transformation of education and training is needed to address and skills and competences required for Europe to remain competitive, overcome the current economic crisis and grasp new opportunities". In 2012, European commission launched "Rethinking Education" communication. This initiative emphasis on the importance to accelerate the open and flexible learning to provide skills required in labour and economy market of 21st century. This rethinking education communication point out that the quality of education depends upon the various educational approaches and materials mixed together.

Hence, this communication of European commission emphasized that the clear quality standards and reliable mechanism to assess and validate competence and skills acquired along with a larger access and utilization of OER is required. The OER frequent use and promotion will facilitate collaboration, knowledge sharing and exchange of policy dialogues between states, academic groups and institutions at the pan European level. Many such reasons stimulated European commission to initiate a dedicated program "opening up education" in Europe. Commonwealth of learning and UNESCO both have developed systematic guidelines for integration of OERs higher education which results in encouraging and facilitated creation use and adoption of OER.

OPAL and SCORE are two such initiatives in Europe that has supported individuals, institutions, projects and programs by providing necessary advice and guidance that facilitate the creation, publication, remixing, re- distribution and re-use of OERs. Sabadie(2014) has considered such initiatives as " Top Down" approach to developing OER : initiatives funded by international organizations, educations funding bodies, public institutions or foundation".

SPARC Europe: The acronym SPARC stands for the Scholarly Publishing & Academic Resource Coalition. SPARC was founded in 1997 at USA and its further extension SPARC Europe was founded in the year 2004. It is one of the international alliance of libraries developed by association of research libraries. It contains various research and academic groups and libraries that works together in promotion of open access to scholarship. SPARC has been actively involved in promotion of open content philosophy. SPARC has different international chapters also SPARC Europe, SPARC Japan and SPARC Africa has around 600 libraries and Academic institutions as global partners. SPARC Europe is a Dutch foundation and it's Europe's one of the key and long lasting project that is committed to provide unfettered access to education and research and advocates the concept of open science, open access, open education and open scholarships for the higher education community. The major work plans of SPARC focus around policy making, advocacy in open education and various knowledge exchange initiatives. SPARC published a report "Open access: an analysis of publisher copyright and licensing policies in Europe in, 2020".

This report provides concrete recommendations and alignment of standards and policies making resources easy to find and understand. This report also highlights the importance of open access and increases literacy about copyright and how to use creative commons license framework etc. In addition to this SPARC also published one another report on " An analysis of open science policies in Europe".

Open EduProject: This "Open EduProject" was designed by European commission as a support framework for higher education institutions. This Open Eduproject is one of the 6 priorities of European commission listed under E&T2020 priority list. This priority states that "Open and Innovative education and training" by fully embracing the digital era. This priority further states the opening up of education as an innovative teaching and learning for all through open education resources and through new technologies. The Joint research centre a division of European commission supports this opening up education project. JRC analysed those various factors like quality, efficiency, equity and innovations are influencing the adoption of Open EduProject. Hence, JRC released Open Education framework for higher education. This framework was designed to support the European higher education institutions to make various strategic decisions regarding open education. The framework is a hands-on tool with 10 dimensions of open education. 6 are the core dimensions which includes access, content, pedagogy, recognition, collaboration, technology and research and 4 are transversal dimensions which includes: strategy, leadership, technology and quality.

Open Access Books Network (OABN): The open access books network is an open network where any researcher, publisher, librarians or students who is interested in open access books can join it for freely as it is open for all. This network was jointly began by many other big and successful initiatives working on Open Access Philosophy in Europe such as OAPEN, OPERAS, Scholrled and SPARC Europe. The open access book network is an online platform and has 15 community contributors and has 125 members. This network is an online space for passionate dialogues and conversations among academic communities and groups about Open Access Books.

OPERAS: OPERAS is an "Open scholarly communication in the European research area for social sciences and humanities. This research infrastructure support was established with an aim to provide scholarly communication and knowledge produced in social sciences and humanities free of cost and without any barriers to the students, researchers and academic groups of Europe and other countries of the world. "OPERAS provides the research community with the missing brick it needs to find, access, create, edit, disseminate and easily and efficiently validate SSH outputs across Europe. In one word, OPERAS unlocks scholarly communication resources and enables the whole field to reinvent itself in the new open science paradigm. (SOURCE: http://operas-eu.org)

OAPEN: OAPEN is an online library and publication platform that help stakeholders in promotion and support related to transition of academic books into open access. It provides a platform that provide open infrastructure services to various stakeholders in scholarly communication. OAPEN collaborates with various publishers and builds an open books collection and work on its collection development, quality control, hosting, dissemination and digital preservation. OAPEN provides many services such as open books toolkit, deposit services, discovery services and dissemination services. OA books toolkit: this toolkit helps authors in better understanding the open access book publishing system and help in building authors trust in open access books. OAPEN deposit service: This deposit service of OAPEN provides uploading services to publishers, authors and researchers. It further deploys the metadata, distribution channels and classification schemes

to these academic books. OAPEN dissemination services: IN order to disseminate the OAPEN collection in a better way and making books in reach of target audience. OAPEN feeds metadata on daily basis in various formats for libraries and provides freely available harvesting options to disseminate academic books to target audiences.

OAPEN Discovery services: the open books initiative will be successful only if these free and open books are easily discoverable on the web. The OAPEN library is indexed in google scholar and it is also indexed in directory of Open access books (DOAB). The OAPEN books are easily searchable in libraries metadata and these open books with open licenses are easily optimizable in search engines.

Digital School: Digital School is Poland government program which advocates the use of ICT in schools. Digital School is a national platform for educational resources and contain open textbooks etc. It was formally launched in 2012 these open educational resources repository includes three types of resources

- E textbooks certified by ministry of education
- Other educational materials and
- Educational TV programs.

Wikiwijs: Wikiwijs is a public platform where one can search, create, use and share the open educational materials. All these educational resources are free to use for all. Wikiwijs was launched by Netherland's minister in 2008 which later on in 2009 was adopted as a public service by ministry of education, culture and science. It is maintained by kennisnet. This wikiwijs platform stimulates and supports the use and development of OER education in Europe. On this platform there are teachers and resources from all levels primary to university education. The open-source software, open standards and open content is used in the whole project. The main key characteristics to the success of wikiwijs is its collaborations among educational publishers and combination of traditional materials with OER.

Klascement: Klascement is an nonprofit organization and is funded by ministry of education in Flanders (Belgium). It is open educational resources repository which have around 70 thousand learning resources generated by large number of teachers and some of these are available with open licenses such as creative commons.

Learning Resource Exchange: This platform is run by European schoolnet and provide facility to European schools where they can find educational content from other countries and from different providers. It has provided access to a large network of educational resources repositories and this tool has allowed the schools to exchange the quality learning content easily with other country teachers. Learning resource exchange has large number of resources and content providers which are continuously adding more resources in the platform.

Conclusion:

Like world wide web, open education resources has also represented a radical culture change. Open educational resources have cut down the costs and has increased the accessibility without any barriers. Many countries have shown greater interests in OER and have embarked notable initiatives in this OERs journey. The initiatives of European government in stimulating the open educational resources projects is supporting the creation, preservation and dissemination of quality digital content to individuals, institutions or universities. These European initiatives and framework will support the collaboration among countries in practicing innovative teaching and learning practices and would also help to improve the quality of education in Europe.

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AWARENESS AND USE OF OPEN EDUCATIONAL RESOURCES IN COLLEGE STUDENTS IN THE SIVAGANGA DISTRICT, TAMILNADU, INDIA

M. Nagaiah[1] Dr. S. Thanuskodi[2] Dr. A. Alagu[3]

Introduction

Open Education Resources (OER) implies Textbooks, Media, Info graphics, Modules, PDF records, Openstax, Documents, Podcasts, Case examines, Narrated visuals, articles, Education related recordings, Education related sounds, magazines, photos, or anything computerized or non-advanced can be utilized for nothing in open instructive sources. That any learning and examination assets identified with educating are promptly accessible or totally free. Additionally, hold it to the individual getting it or change it to suit you, have a full opportunity to appreciate or provide for someone else. India has countless uneducated individuals with framework, social and financial elements that forestall equivalent admittance to quality training. Because of the quickly developing innovation and web utilization in the nation, Open Education Resources (OER) is progressively being utilized as a significant instrument to assist with beating the hindrances to proficiency and to additional instruction. With colossal advances in ICTs, the present instruction framework is improved by different OERs. Streamlining the chances presented by mechanical advances represents a significant test to training frameworks and has genuine ramifications, including cost, access, value, instructing, and quality. This exploration will examine the different chances and difficulties introduced by the utilization of OERs in the present training framework.

Need of the study

The main reason for the present state of open educational resources is the lack of adequate resources, funding, and manpower. The open educational resources serve as a resource center and a source of information on rural development in the world. The majority of people in Tamil Nadu state lives in rural areas and face several problems. To overcome the day-to-day problems, the rural students need effective open educational resources.

Objectives

1. To evaluate the attitude of college students towards open education resources (OER).
2. To raise awareness of OERs by college students in Sivaganga district.
3. College students to know the extent of use of OERs.
4. To identify the purpose of using OER
5. To find out the frequency of OERs used by college students in Sivaganga district
6. Understand barriers to the use of OERs

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Methodology

A combination of standard and quantitative methods was adopted in carrying out the study according to Kothari (2013) position. The target population is college students in the Sivaganga district of Tamil Nadu. Sample 214 Sivaganga district students, were asked questions via WhatsApp and Gmail via the Google forms, to which 121 college students answered. The research design taken from 121 college students was adopted, and the data collection was by questionnaire. The questionnaire consisted of open and closed questions, the respondents were allowed to express their opinions freely, and detailed statistics including average, constant deviation and frequency counts were collected and analyzed. Software version 26 (SPSS) of the social sciences was used to encode data and run analyzes.

Table 1: Gender * Age Cross tabulation

Gender * Age Cross tabulation N=121											
Age (N=121)		Below –20		21–25		26–30		30 and above		Total	
		N	%	N	%	N	%	N	%	N	%
Gender	Female	6	4.96	23	19.01	32	26.45	5	4.13	66	54.55
	Male	0	0	12	9.92	43	35.54	0	0	55	45.45
Total		6	4.96	35	28.93	75	61.98	5	4.13	121	100

Table 1.1:Chi-Square test for Gender and Age

Table 1 and Fig 1 Shows the Details of gender and age: only 6 females are below -20, 23 female and 12 moles are 21-25, 32 female and 43 males are 26-30 and only 5 female age above 30.

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	15.196[a]	3.00	0.002
Likelihood Ratio	19.38	3.00	0
Linear-by-Linear Association	4.07	1.00	0.044
N of Valid Cases	121.00		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 2.27.

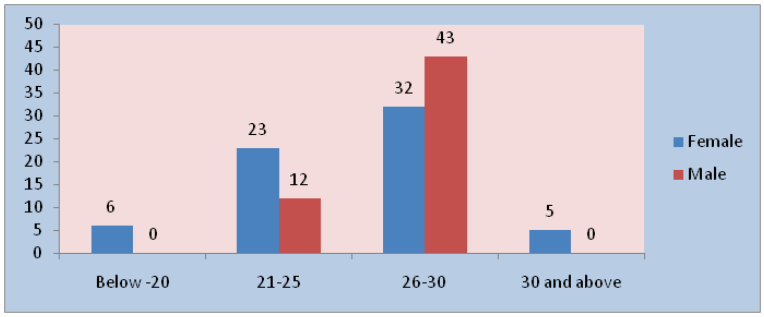

Fig 1: Gender * Age

Table 2: Gender and Frequency of using OER

Frequency of using OER						
		Daily	Weekly	Twice in a week	Monthly	Total
Gender	Female	37.00	14.00	11.00	4.00	66.00
	Male	30.00	12.00	13.00	0.00	55.00
Total		67.00	26.00	24.00	4.00	121.00

Table 2.1:Chi-Square tests for Gender and Frequency of using OER

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.086[a]	3	0.252
Likelihood Ratio	5.597	3	0.133
Linear-by-Linear Association	0.049	1	0.825
N of Valid Cases	121		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.82.

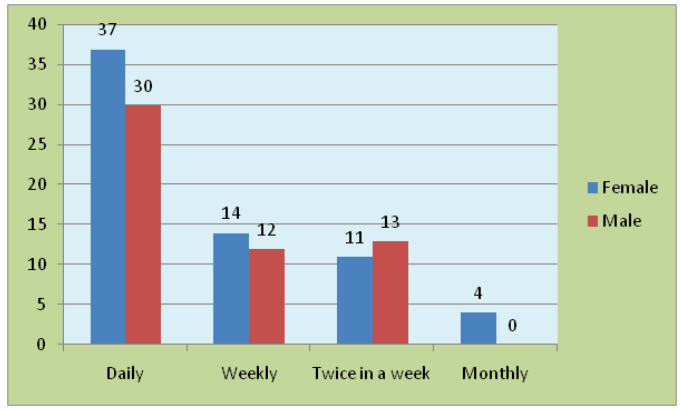

Fig 2: Gender and Frequency of using OER

Table 2 Shows The Details of gender and frequency of using OER: 37 female and 30 male are using OER daily, 14 female and 12 male are using OER weekly, 11 female and 13 male are using OER twice in a week, and only 4 female are using OER monthly.

Table 3: Barriers of Using OER

S.No	Barriers of Using OER	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Median	mode	Std. Deviation
1	Internet browsing is not encouraging due to erratic electricity	5	81	22	13	0	2.36	2	2	0.729
		4.10%	66.90%	18.20%	10.70%	0%				
2	My department is not internet–connected	16	68	19	18	0	2.32	2	2	0.887
		13.20%	56.20%	15.70%	14.90%	0%				
3	I am ignorant of OER online facilities	5	56	32	22	6	2.74	2	2	0.973
		4.10%	46.30%	26.40%	18.20%	5.00%				
4	I waste much time browsing due to poor network	10	48	27	34	2	2.75	3	2	1.011
		8.30%	39.70%	22.30%	28.10%	1.70%				
5	Lack of a personal computer hinders my free access to online course materials	5	62	29	22	3	2.64	2	2	0.913
		4.10%	51.20%	24.00%	18.20%	2.50%				
6	I cannot access the internet on my own due to inadequate browsing knowledge	7	45	39	30	0	2.76	3	2	0.895
		5.80%	37.20%	32.20%	24.80%	0%				
7	Searching for OER	0	24	23	67	7	3.47	4	4	0.876
		0%	19.80%	19.00%	55.40%	5.80%				
8	Choosing appropriate OER	0	23	26	67	5	3.45	4	4	0.846
		0%	19.00%	21.50%	55.40%	4.10%				
9	Language difficulty	5	26	29	56	5	3.25	4	4	0.977
		4.10%	21.50%	24.00%	46.30%	4.10%				
11	Difficult to adapt	5	26	19	66	5	3.33	4	4	0.995
		4.10%	21.50%	15.70%	54.50%	4.10%				

Table 3 extracts the details of barriers of using OER: s.no: 1. Internet browsing is not encouraging due to erratic electricity. Mean value is 2.36, Median value is 2.00, Mode value is 2, and std.deviation value is .729 major of 81 respondents are disagreeing with this statement. s.no: 2 my departments are not internet-connected. Mean value is 2.32, Median value is 2.00, Mode value is 2, and std.deviation value is .887 major of 68 respondents are disagreeing with this statement. s.no: 3 I am ignorant of OER online facilities. Mean value is 2.74, Median value is 2.00, Mode value is 2, and std.deviation value is. 973. Major of 56 respondents are disagreeing with this statement. s.no: 4 I waste much time browsing due to poor network Mean value is 2.75, Median value is 3.00, Mode value is 2, and std.deviation value is 1.011 major of 48 respondents

are disagreeing with this statement. s.no: 5 Lack of a personal computer hinders my free access to online course materials. Mean value is 2.64, Median value is 2.00, Mode value is 2, and std. deviation value is .913 major of 62 respondents are disagreeing with this statement. s.no: 6 I cannot access the internet on my own due to inadequate browsing knowledge. Mean value is 2.76, Median value is 3.00, Mode value is 2, and std.deviation value is .895 major of 45 respondents are disagreeing with this statement. s.no: 7 searching for OER. Mean value is 3.47, Median value is 4.00, Mode value is 4, and std.deviation value is .876 major of 67 respondent are agreeing with this statement. s.no: 8 choosing appropriate OER Choosing appropriate OER Mean value is 3.45, Median value is 4.00, Mode value is 4, and std.deviation value is. 846. A major majority of 67 respondents are agreeing with this statement. Language difficulty: 9 Language difficulties: Mean value is 3.25, Median value is 4.00, Mode value is 4, and std.deviation value is .977 major of 56 are agreeing with this statement. s.no: 10 Difficult to adapt: Mean value is 3.33, Median value is 4.00, Mode value is 4, and std.deviation value is. 995. Only a major of 66 respondents are agreeing with this statement.

Conclusion

This study aims to identify the awareness and use of OER in sivaganga district college students table 3 given the details to clearly identify the awareness and use of OER in college students, Most of the students disagree the barriers of Internet browsing is not encouraging due to erratic electricity, My department is not internet-connected, I am ignorant of OER online facilities, I waste much time browsing due to poor network, Lack of a personal computer hinders my free access to online course materials, and I cannot access the internet on my own due to inadequate browsing knowledge this shows the students are well know the ICT skills and have ICT equipment's, but high respondents are agree the following statement of Barriers Searching for OER, Choosing appropriate OER, Language difficulty, Difficult to adapt this all are given to inform they have wand to know more awareness to use OER.

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SECTION VI

COVID IMPLICATIONS FOR LIBRARY MANAGEMENT

DISASTER MANAGEMENTS STRATEGY FOR FUNCTIONAL CONTINUITY OF ARCHIVES AGAINST THE PANDEMIC[1]

Kippeum Choi[1] Yoona Kang[1] Hyo-Jung Oh[2]

Introduction

The pandemic caused by COVID-19 has changed everything in society as a whole and in our daily lives. Many countries, including Europe and the United States, have imposed lockdown to prevent the spread, prohibited access to publicly used facilities, and controlled immigration restriction. According to the Global Risk Report of The World Economic Forum (2020), infectious diseases is one of the top 10 risks, and it is selected as a risk with a low probability of occurrence but a very high impact. In fact, it has only taken 3 months for WHO to declare the pandemic alert level to phase 4 since the outbreak of COVID-19 in December 2019.

The situation caused by COVID-19 also had a significant impact on the major information institutions. Archives, as one of them providing integrated access to information resources, not only serve as memory institutions for a culture but also make public records available to citizenry as legally and ethically appropriate [1]. However, due to the closure of information institutions caused by pandemic, many people are not provided with information services from public. As a result, information gap is widening. Therefore, archives should be able to provide continuous core functions, especially should have a system in place to prepare for unexpected social disasters such as a pandemic. Thus, this study intends to present a sustainable and continuous strategy for disaster management of archives in the face of a pandemic and the upcoming post-corona era.

To achieve this goal, our study, two major sections were conducted: 1) compare with activities of domestic and foreign archives management institutions against a pandemic; 2) to derive of considerations for ensuring the business continuity function of the archives and present the actual strategy of the archives in preparation for infectious diseases.

The Process of Disaster Management

General disaster managements to prevent and prepare for disasters due to abnormal weather conditions and earthquakes usually accomplished by a cycle of four processes: *Prevention – Preparedness – Response - Recovery (PPRR)*. More specifically, the process of 'Prevention' takes actions to reduce or eliminate likelihood or effects of an incident.

The process of 'Preparedness' takes steps before an incident to ensure effective response and recovery. The process of 'Response' contains, controls or minimizes the impacts of an incident, and last the process of 'Recovery' takes steps to minimize disruption and recovery times [2]. The comprehensive approach to the PPRR risk management model is adopted as a basic model in countries such as the United States, Canada and Australia [3][4].

In addition, there are international standards, which are ISO 22301:2019 (Business continuity management systems) and ISO 22313:2020 (Business continuity management systems – Guidance on the use of ISO 22301), to implement the plan necessary to maintain the core

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functions of the institution in disaster. It provides consistent principles for planning, response, and recovery in the situation of business interruption due to disasters so that the institution can continue to operate as well [5][6]. In particular, infectious diseases such as COVID-19 are classified as gradual disruption in ISO 22301:2019 and ISO 22313:2020. In those standards, the key to risk management is how effective control of plans based on BCM (Business Continuity Management).

In Korea, the PPRR model is also followed by the Framework Act on Disaster and Safety Managements. The government of Korea recently implemented the COOP (Continuity of Operations Plan) to continue the core functions of public institutions in accordance with the mandatory establishment of a functional continuity plan for disaster management agencies [7]. The COOP based on ISO 22301 is to prepare for business functions interruption of major national projects and public institutions including archives and libraries, during the disruption due to a large-scale disaster.

In 2018, COOP was implemented in Korea. A number of public institutions operating COOP were selected: 41 central administrative institutions, 245 local governments, and 69 disaster management agencies. However, the National Archives of Korea was not in the list. Meanwhile, the National Archives of Korea established Security and Disaster Management Standard based on the PPRR model, but business functional continuity plan was not included [8]. In addition, most of the standards included natural hazards, such as construction and facility defects, industrial disasters, and insufficient preservation management due to disasters that could occur in archives. However, there was no guidance for managing social risks caused by a pandemic as well. Therefore, it is time to establish a new direction and strategy after the suspension of records management work and the closure of archives in a pandemic situation for the smooth operation. For this, it needs to quickly reactivate the core functions of the institution and to ensure continuity of business functions.

The activities of archives against the pandemic

The major cases of domestic and foreign archives were compared to ensure continuity of work by quickly resuming the core functions of archives after the spread of infectious diseases: in terms of operation, service, and collection of record information resource aspect. To explain in more detail, in the operational aspect, the most important thing to reduce the time of functional interruption to a minimum is the most important, so we investigated the changes in the overall operation of the archives. In the service aspects, we looked at how the user services was operated after the closure of the archives. In particular, the service of archives is necessary for establishing wider business continuity planning according to TNA [9]. Finally, we examined the status of collection of records related to the pandemic in archives. The comparison consists of ICA (International Council on Archives), TNA (The National Archives), NARA (The US National Archives and Records Administration), Archives Nationales de France, and 5.18 Archives of Republic of Korea. As shown in <Table 1>, the contents of comparison were divided into O, △ and X. O indicates that detailed guidelines and services are being provided. △ indicates that it was simply written as a post through a web page, and X indicates that no special response activity was found.

First, operational activities include conducting self-investigation of internal and external changes in archives against the pandemic. It includes preparing guidelines for remote work and controlling archives according to crisis alert level as well. ICA, TNA, LAC distributed teleworking

guidelines and intended to supplement the guidelines with continuous feedback [9][10][11]. In the case of TNA, a survey was conducted to check the business continuity panning, and the digital conservation workflow was implemented to develop digital technologies as the digital environment rapidly shifted to a contact-free environment due to COVID-19 [10]. In addition, most of archives posted guidelines on the closure and control of archives according to crisis alert level on their web page.

<Table 1> Analysis of domestic and foreign archives activities against the pandemic

Archives / Activities		International Association	Foreign Archives			Domestic Archives
		ICA	England TNA	Canada LAC	France Archives Nationales	REPUBLIC OF KOREA 5.18 Archives
Operational Activities	Survey for the pandemic	X	O	X	X	X
	Guidelines for remote work	O	O	O	X	X
	Controlling Archives	△	O	O	△	△
Services	Online exhibition	△	O	△	O	O
	Free open data	△	O	O	X	X
	Webinar	O	O	O	O	X
Collecting records	Corporation	X	O	O	X	X
	Personal	X	X	△	X	X

Secondly in the service aspects, offline exhibitions have almost been turned to online. TNA, Archives Nationales of France, and the 5.18 Archives of Korea run VR panorama exhibition, providing a service that looks like an actual exhibition. It can be selected and viewed the records displayed in the online space [10][12][13]. In the case of ICA, digital maps have been developed to share information of digital collections, online exhibitions, and so on [9]. In the case of LAC, they recognized that citizens could not physically come to the archives, the data and records were opened online for free so that various people could access the records [11]. Likewise, TNA, LAC, and the Archives Nationales of France held academic seminars through video conferences and released them to ensure that the academic infrastructure could be continued [10][11][12].

Third is the activity of collecting records and information resources. Many archives have collected corporate and personal records to collect fragments of history and to secure data to cope with disaster. TNA collected a variety of web information, in addition to testimony to memories of corporations [10]. Also, LAC collected personal records during COVID-19 era [11].

In summary, the activities that archives have done in order not to lose core functions in the pandemic era are as follows: Before a disaster, the goals shall be set**,** and disaster management plans and guidelines shall be newly established in consideration of the institutional conditions. Next, the core functions of archives are identified. It also investigates the impact of business

suspension on the institution as well. At the same time, guidelines for the management and operation of human resources of archives shall be established, and education and training shall be conducted to cope with disaster. In addition, the lowest service level shall be secured to enable access of archives. Finally, the records related to disasters shall be collected for the future

Actual strategy for functional continuity of archives

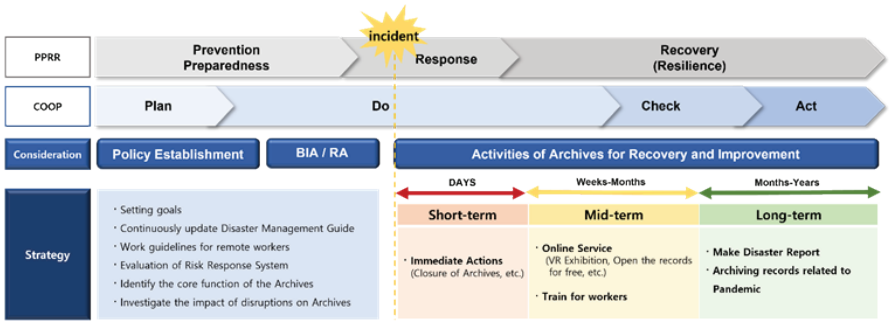
To draw up advanced disaster management strategy for archives, it is necessary to derive considerations ensuing functional continuity plan of archives. For this, traditional disaster management processes and COOP were compared as shown in <Fig. 1>. The COOP follows the comprehensive approach of the general disaster management process, so most of the processes are similar, but the detailed progress is different. The most similar thing is analyzing risk factors and selecting an object to be managed when conducting risk assessment. The biggest difference is COOP focuses on recovering core functions of institution as soon as possible when the institution is shut down. The considerations in pandemic situation were derived to ensure functional continuity function of archives based on the COOP's PDCA (Plan - Do - Check - Act) cycle.

In this study, four considerations are derived. The first consideration is to establish needs for policies for operation continuity of the archives. Secondly, the plan should be prepared to identify the core functions by analyzing the impact of temporarily suspension called BIA (Business Impact Analysis). Also, it conducts an evaluation on the risk that causes disruption called RA (Risk Assessment). Third, procedures for the recovery plan should be prepared and trained to prevent the functioning of the archives from being interrupted. Finally, problems are figured out and improve through monitoring.

Existing Disaster Management Process
Prevention
Preparedness
Response
Recovery (Resilience)

COOP (Continuity of Operation Plan)	
Plan	- Policy for Operation Continuity
Do	- BIA·RA *BIA: Business Impact Analysis *RA: Risk Assessment
	- Strategy & Procedure of Continuity
Check	- Review
Act	- Improve

To present the actual strategy of the archives in preparation for infectious diseases, the above four considerations were divided into before and after the disaster occurred time. And then practical strategies for disaster management is suggested by arranging the archives' activities against the pandemic in chronological order. The <Fig. 2> sum up the PPRR process, the cycle of COOP and the considerations and new strategies in our study are diagrammed in the order of order of disaster occurrence time for easy viewing First, policy establishment and preparation of BIA and RA should be carried out in the pre-disaster phase. In the post-disaster phase, the activities of archives for recovery and improvement divided into short, mid, and long-terms are presented. More detailed, the activities of domestic and foreign archives against the pandemic analyzed in Chapter 3 are summarized by time flows and proposed as a strategy.



<Fig.2> Disaster response strategies of Archives in conditions of andemic

In the pre-disaster phase, the first thing to do is to set goals to cope with a wide range of disaster such as a pandemic. The plans and guidelines for disaster management should be continually updated as well. Similarly, work guideline should be implemented since remote work for employees of archives are also mandatory. Also, it should be preceded detailed assessment of the system that can respond to risks. And then, it is necessary to identify the core functions of the institution and to investigate the impact when the institution is interrupted.

In the post-disaster phase, it is to resume the role of archives, which had been temporarily disrupted due to COVID-19. Mainly, the activities that archives should take to recover the service level are organized by time flows. First, the short-term stage corresponds to the Days immediately after the outbreak of an infectious disease disaster. In order to respond to the disaster and be initiated recovery activities, the operation and closure of the archives according to crises alert level are taken immediately. At this stage, a notice on the operation of archives should be posted on the web page. In addition, it should be implemented to necessary prevention measures such as prohibition of access and disinfection. The mid-term stage is the stage corresponding to Weeks-Months after the outbreak of infectious diseases. At this stage, online public services such as VR exhibition and free opening of archive records are allowed. Also, employee training and education required by archives are carried out. In addition, archives continue to offer e-learning courses for training to develop skills, knowledge and understanding within the archives sector to citizens and students. The long-term stage is the stage corresponding to months-years after the outbreak of infectious diseases. This stage prepares a disaster report or archives records related to the disaster. The goal is to capture or collect records of individuals and corporations to preserve web records related to COVID-19 so that they can respond to future disasters.

Conclusion

A business functional disruption scenario may occur in the pandemic situation that is gradual disruption. Therefore, it is necessary to establish advanced disaster management process such as COOP that can be more useful than the existing disaster management process in that situation. Disaster management agencies of Korea have been already obligated to establish functional continuity plans. However, the current standards for disaster management of records of the National Archives of Korea are difficult to flexibly respond to disasters such as infectious diseases. It is necessary to establish a COOP to quickly resume the core functions of the institution. With archives facing a pandemic, we examined several cases of what activities domestic and foreign archives have done to ensure the institution's core functions. And then we analyzed them to suggest strategies that are practically possible in the event of an infectious disease disaster.

This study proposed new paradigm for disaster management to strengthen the management system that can respond to infectious diseases disaster and unexperienced disasters. Through this, it is meaningful in that it suggests a direction for the establishment of disaster response scenarios for the National Archives of Korea in the pandemic including infectious diseases disaster.

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HUMAN RESOURCE DEVELOPMENT IN UNIVERSITY LIBRARIES: AN ANALYSIS OF PROBLEMS AND PROSPECTIVE CHANGES

Dr. A. Senthilkumar [1]

Introduction

In order to survive and thrive in today's environment, an organization needs to have a certain number of employees with the appropriate skill level. People are the soul of an organization. An organization may have the best facilities and equipment, but it will not be successful without qualified employees, their knowledge, skills and experience (Rigby & Ryan, 2018). All this fully applies to the library.

It is clear that in the 21st century, libraries will have an advantage over other libraries that have invested heavily in the selection and training of staff who are most suitable for their respective jobs. Today, libraries need professionals who combine high moral qualities, a culture of subject knowledge, the ability to reflexively work at the intersection of sciences, who have professional mobility - the ability to quickly respond to constantly emerging changes in practical and scientific activities; able to understand and foresee what will be in demand in the future; able not only to work in a team, but also to lead it. This conceptual paper is an exploration of various published research and other academic contributions with respect to problems and prospective requirements in university libraries (Trivedi et al., 2021).

Need for Human Resource Development in University Libraries

As on July 2021, there are 984 universities in India which include 54 Central Universities, 425 State Universities, 125 Deemed Universities, and 380 Private Universities. Today, university libraries in India not only provide information services and participate in the development of skills in using information in order to ensure a high level of the educational process, but in a number of cases are leaders in the library sphere in organizing the functioning, scientific-methodological and reference-bibliographic activities, development technologies, the introduction of automated library and information systems, etc (Heitzman & Asundi, 2000). The problematic situation lies in the fact that at present university libraries are not provided with personnel focused on working in these libraries, they do not have scientifically substantiated recommendations for the formation of staff, for overcoming contradictions between the degree of qualifications of employees and the content of their work, the system the requirements for the educational and professional level of the staff of university libraries require revision (Ravikumar, 2016).

The development of human resources and their effective use is an important aspect of the functioning of a modern organization. Currently, specialists in the field of human resource management are increasingly turning to the study of group behaviour, leadership and team building, as the number of highly qualified workers who are interested in the maximum use of their knowledge and creative potential is increasing (Onwubiko, 1996). According to HR professionals, a team-based organization is the management system of the future, the response of the higher education world to the need to respond to an increasingly competitive environment (Lim, 1999). The team form of work organization has a number of advantages, since the team involves professionals from different fields, which allows us to consider the problem from different points

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of view and find the most optimal solution in the shortest possible time. Teamwork contributes to a fuller realization of the potential of each of its members, since the team takes into account the opinion of all participants, each of whom is competent in a particular area. This fact contributes to the realization of creative potential and plays an important role in the professional activities of employees, that is, it actively develops human resources in the organization (Sukiasian, 2015).

Human Resource Development Problems in University Libraries

According to one American professor of management, "... 80 percent of success depends on the leader and only 20 percent on the subordinates." Historical experience testifies that the successful development, prestige, and performance of a university library is determined by the quality of its leadership. In any civilization, at any level of socio-economic development, in any economic and social upheaval, political conditions, sufficient or insufficient funding of libraries of educational institutions, there have always been leaders with high and low levels of professional competence (Boon, Den Hartog & Lepak, 2019). The lack of professionalism of administrators cannot be compensated for either by comfortable and well-equipped premises, or by material incentives for the employees of this organization. Responsibility in duty, the ability to take risks in non-traditional situations, sensitivity to innovations, the ability to manage conflicts, the desire for self-improvement, high efficiency, resistance to stress, a positive attitude to life (Robinson, 2018) - this is not a complete list of qualities that should be possessed modern leader. At the same time, one cannot agree with the statement that an academic administrator can lead any organization, no matter what it does. That a specialist in the field of management is not obliged to understand the subtleties of a certain activity (in our case, in librarianship), but should only know well management and psychology (Robinson, 2018). In our opinion, it is impossible to establish which is more important: library process management or personnel management. We believe that a leader who is incompetent in solving production problems will not be able to manage the team either. First of all, because he does not know exactly where and why to lead him, what and how exactly people should do at the moment and in the future. That is, he does not see the goal for the achievement of which it is necessary to predetermine the way a person acts. It is for this reason that no one will take him seriously as a leader, even if in his power to fire employees or significantly raise their salaries (Guest, 2017). Conversely, when an administrator does not know how to deal with people, even if he has something to manage (objective levers), and why manage (a deep understanding of production goals and objectives), he will not cope with personnel. Employees will not do what he thinks is right. Or they will do it as badly as they can. Thus, a modern head of a university library must have both high professional competence and special knowledge, skills and abilities in the field of library management. At the same time, a good knowledge of management by a librarian does not necessarily mean that he is ready and able to become a leader (Carnevale & Hatak, 2020).

The number of managers (professor-in-charge, chief librarian, Deputy and Assistant Librarian) in university libraries in India are 12% of the total number of staff (Pathak & Vyas, 2020). At the same time, it should be noted that the distribution of the percentage of managers across the university network is uneven. For example, in large libraries (such as the Maulana Azad Library of the Aligarh Muslim University, the Chandigarh University library, the VIT University Library), the share of management staff in the total number of personnel ranges from 13% to 20%. At the same time, in a number of university libraries there is only one head. At the same time, a completely different situation is encountered, when in a small library there are a lot of leadership positions, especially in private universities (Trivedi et al., 2021).

Analysing the librarians of university libraries by length of service, we note the following: the main percentage are librarians who have worked in this library for more than 20 years - 59%; 18% of librarians work in one place for 11 to 20 years, 10% - from 6 to 10 years and, finally, 13% of librarians who have worked in it for no more than 5 years (Ravikumar, 2016).

This is the portrait of the current leadership of the university libraries of India. It is gratifying to note that recently young specialists who, in addition to a post graduation and/or Ph.D in library management, have a whole set of professional and management qualities that are necessary for a modern leader, including dedication, optimism, have been increasingly promoted to managerial positions in the libraries of universities. The ability to create a team of like-minded people, the ability to prioritize and achieve set goals, the ability to see the future, finally, having respect for their profession and feeling a sense of pride in belonging to the professional library community (Tse, To & Chiu, 2018).

Prospective Changes Recommended

In the United States, university libraries have always been run only by professional librarians, prominent scientists, authors of many articles and books on library science. Very often in America, the management of a large library is combined with teaching at a library school; the directors of large libraries are the authors of practical manuals. The content of textbooks and the educational process should not be divorced from reality, from the problems and trends in the development of librarianship, therefore, in our opinion, the American approach is very correct and worthy of this experience being applied in the practice of libraries of universities in India (Kaufman, 2019).

An integral quality of the head of a university library should be a high level of professional competence, which is why we believe that when building a system of advanced training for managers of all levels of university libraries, it should be based on an integrated model that allows, throughout the entire period of training, to carry out as a general professional training of managers and their preparation for leadership of the university library staff in the context of dynamically developing library practice, innovations and new information technologies (Sant-Geronikolou & Martínez-Ávila, 2019). The result of the training should be a change in the personal position of the head or potential head of the university library, along with the deepening of his professional competence, the creation of a program for updating his activities and leadership style.

The success of cultural transformations, the significance of the university library in the library community depends, first of all, on its personnel potential. And how correctly the personnel are selected for the tasks and goals of the organization, the more successful their functioning and development will be. It is necessary to select specialists in such a way that they make up a creative and efficient team that meets the objectives and goals of the organization at every stage of its development. And here it is on the professional competence and managerial training of the head that the quality of the staffing of the university library will be carried out (Bryson, 2017). We believe that the correct selection of personnel is much more important than the correct training. In our opinion, heads of university libraries should focus on building a well-coordinated team of employees by selecting and hiring the "best of the best", instead of wasting time, effort and money on the strict management and training of poorly selected staff.

Career advancement should be possible only if the qualification level meets the qualification requirements. It is necessary to develop professiograms for university librarians (including management staff), an effective methodology for personnel certification, and make computer

testing a mandatory stage of interviews when applying for a job in a university library (Fiaz, Su & Saqib, 2017).

We consider it necessary to constantly analyze and forecast the personnel situation in the libraries of the system of the Ministry of Education of India. It is not enough one-time scattered studies that do not allow identifying trends and feeling changes in a timely manner. It is necessary to create an analysis and forecasting system adequate to modern problems, which will allow tracing all the main processes in interconnection and, which is especially important, in dynamics. It is necessary to monitor the personnel situation, moreover, monitoring should include not only the use of statistics, materials of a special press, but also a sociological survey of various categories of library specialists: administrators, librarians, graduates, young specialists, students (Onwubiko, 1996). Of course, this must be done by the joint efforts of all interested organizations and, possibly, within the framework of the Indian Library Association with the simultaneous maintenance of an appropriate database and widespread public use of this data.

It is necessary to track and analyze the reasons for professional migration (both external, when specialists leave for other areas of activity, and intra-library). In order not to lose their highly qualified specialists, head of university libraries should reconsider their personnel policy, pay more attention to the personal and professional qualities and achievements of each library employee, create the necessary conditions for creativity, self-expression and professional growth, look for sources additional material incentives for specialists (Danylova & Salata, 2016).

At the same time, increasing the initiative and responsibility of each employee, professional growth, the formation and development of corporate culture should become the pivotal direction in the personnel policy of the university library. We believe that each employee of a university library should have an individual program of personnel growth, coordinated with the management of the department and the personnel department. Taking stock of the development of human resources annually should become the same norm as drawing up production reports. In order to see how effectively a person solves the professional tasks assigned to him, it is necessary to revise the personnel structure, analyzing changes in the volume and complexity of work at each workplace, carrying out certification of workplaces. It is very important to have regularly revised job descriptions and qualification characteristics to justify any personnel appointment and to create regulations on structural divisions of university libraries. Many of them are now obsolete; the certification of workplaces requires revision; Regulations on structural divisions do not always correspond to the changed content of activities, and, therefore, the proportion between the level of labor complexity and the required qualifications of workers is violated (Anasi & Ali, 2012). There is a discrepancy in the level of complexity of the work performed to the position occupied by a specialist in the library of the university; This is especially true for newly recruited staff members. Today there is a special need for librarians to be trained in doing research, especially in the areas of scientific-methodology, scientific-pedagogy and management activities. They will be able to work in the future as researchers of the largest libraries, teachers in higher educational institutions, library and information, etc. Young staff members have a high level of command of a computer, are fluent in one or more additional languages, and are able to put into practice modern forms and methods of library work (Warraich, 2011). Undoubtedly, it is encouraging that librarians with higher professional education want to work in their specialty, giving preference to the university library. Thus there is a need for framing a new model for the staffs of university libraries is necessary and urgent. Thus based on the exploration the following changes are proposed:

- The MHRD, UGC, and ILA should pay special attention to enhancing the prestige of higher library education (and, accordingly, the remuneration of its holders).
- On the either MHRD or UGC or ILA website, as well as in print media (newsletters, newspapers, professional magazines), provide detailed information about the needs of the library, its employees, appointments, promotions, etc.
- Individuals with specialized knowledge should have priority in the relevant positions.
- When recruiting personnel for a university library, especially for an administrative position, it is necessary, in our opinion, to combine an interview (personal and in a working group) with an obligatory small creative task for the candidate and a trial period, to practice requesting recommendations, to consult with administration at the previous place of work, and the end of the term of each contract should be completed with an assessment of the feasibility of retaining one or another employee in the staff of the university library. Creativity, administration and personal qualities, enterprise and initiative, professionalism and competence should be considered and evaluated as criteria.
- It is necessary to establish close contact with other departments like information technology, human resource management to think over the possibilities of training personnel specifically for university libraries to develop and approve practice-oriented topics for master's and dissertation research; to involve practitioners in teaching work, in reviewing educational and methodological manuals.
- It is worthwhile to think more seriously about the formation of a reserve of leading personnel in higher educational institutions. Early identification of people with high potential and suitable for leadership work will help, in our opinion, to avoid two dangers: the first is organizational inertia, i.e. excessively long delay in one post; second, too fast advancement (when leadership positions are occupied by young people who have not yet gained work experience). We believe that the future head of the university library should be, first of all, a practitioner, should "mature" in the library, in a series of operational work. A special methodology that can be developed by the UGC or ILA to identify people with the appropriate intellectual, psychological and organizational abilities necessary for leadership work.
- It is necessary to think about the system of training potential management personnel with the help of institutions who are specialists in human resource management like IIM, etc.
- Strive for professionalism. A professional must know professional literature, read monographs in his specialty, be interested in the experience (forms, methods, technology, labor organization) of other libraries. True professionalism is acquired only as a result of communication with colleagues, visiting libraries. And many of our librarians cannot boast of this, many of them have never been to other libraries, have never gone to scientific and practical conferences of either national or international levels, have not written articles in professional journals, have not made reports, and do not strive for this. But nobody should give us a job or a promotion. We must ourselves find and discover in ourselves the qualities that make us special, different from others, to be professionals.

Conclusion

So, the level of professional competence of librarians is becoming one of the determining factors in creating a new type of library that meets the constantly changing needs not only of today, but also of the future information society. It is impossible to disagree with Sukiasyan (2008) that we need to "seriously change the system of our ideas about how to solve the personnel problem in the future. To change something in our life, we need to think about radical solutions. Think today and not put off until tomorrow".

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COVID PANDEMIC IMPLICATIONS FOR LIBRARY MANAGEMENT: A CASE STUDY OF MADRAS SCHOOL OF ECONOMICS (MSE), CHENNAI (INDIA)

Dr. K. Baskar[1]

Introduction

In the recent months all over the globe has been witnessing much panic and discussions are going on the medical emergency caused by the deadly disease namely Corona virus what is termed as "COVID - 19". The first case of the COVID 19 was reported on December 8, 2019 in Wuhan, China but no action was taken till 14 January 2020. Since then, a large number of countries were affected by the dangerous disease. India saw its first coronavirus case on January 30, 2020 according to WHO. Since then there is an exponential growth in the notification of positive cases on this virus, although the governments, both at central and state levels, are taking curative and preventive measures in controlling and minimizing the effect of this virus. It is evident that its arrival is changing and influencing everything in all spheres of life and education is not an exception. The news, both print and electronic media, is full of stories about the need to reduce social contact and stay at home is a safe means. The widespread of this deadly disease has necessitated the governments to take certain strict measures to prevent its further spreading. The measures include closing of all educational institutions including libraries, airports, rail and road transports, restricting on the social gatherings and propagating to observe social distancing and restricting of certain services by the governments (**Ramesh Babu, 2020).**

Impact of Covid 19 on Education

India's education system is impaired, and students are unable to follow their regular academic routines. *"The spread of COVID-19 has forced many educational institutions across the globe to close campuses. India has over 37 million students enrolled in higher education. An interruption in the delivery of education could cause long term disruption. The pandemic requires universities to rapidly offer online learning to their students. Fortunately, technology and content are available to help universities transition online quickly and with high quality,"* says Raghav Gupta, Managing Director (India and APAC), Coursera **(The New Indian Express, dated 21st March 2020).** The Pandemic has also altered the educational practices, say a pedagogical shift from face-to-face to total online learning at higher education context. The effect of this situation has led to online teaching and learning.

Scope of this paper

The scope of this paper covers a brief note on the genesis and development of Madras School of Economics (MSE) (**Baskar, 2015**) Chennai. An over view of library collections and services of MSE are provided This paper concentrates on the implications of this virus on the educational activities both teaching, learning and research in the Madras School of Economics Chennai. Also discusses the implications on library management in the aspects such as financial, human resources management, provision of library services and information resources building. The provision of library functions and services during Covid pandemic period to the faculty

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and students are explained. With the impact of this peculiar situation, the lessons learnt by the library staff that has influenced in the management of library has been outlined. Finally based on the experiences of the pandemic environment, certain suggestions and recommendations are provided for the betterment of library operations with reference to Madras School of Economics, Chennai.

Madras School of Economics (MSE) and Its Library : A Brief note

The Madras School of Economics came into existence in 1995, thanks to the vision and efforts of some leading academicians, industrialists and financial institutions in India. The primary objective was to create a center that would nurture quality teaching and research programs in economics. Within a short span of time, it has realized this objective and is today counted among the premier institutes for higher education and research in economics in India.. The Institute aims to be a leading research library in the fields of Economics, Econometrics, Mathematical Economics, Macroeconomics, Microeconomics, International economics, financial economics, Capital Markets, Environmental Economics, Energy Economics and Agricultural Economics.

The MSE library is rapidly building up to be one of the leading professional research and reference libraries in Chennai. All bibliographic details of books, journals, reports and CD-ROM databases are accessible through the campus-wide Ethernet network from a dedicated OPAC server. The Library has 12740 Books which include 1017 books purchased through Central University of Tamil Nadu,Tiruvarur;5884 reports;1500 theses;2772 Back Volumes;295 Compact Discs;3337 Working Papers;134 Occasional Papers;739 Monographs and 807 Discussion Papers. The Library has OPAC (Online Public Access Catalogue) facility to cater to the information requirements of the users. Library is automated by using the "LIBSYS" Library Software Package. Electronic Journals in Economics, Environment Finance, Actuarial Science and the like are made available through our Subscription to JSTOR, India Stat.com, CMIE- Prowess, J Gate, Economic and Political Weekly CD Rom Databases, World Bank -e-library, National Family Health Survey, National Sample Survey unit records data . Bibliographic details of books, journals, reports and CDROM databases are accessible through a campus-wide network. The Library subscribes EPW(print and on-line) and twenty four Print journals through Sage Publications(with Campus wide on-Line access).Online Public Access Catalogue has been installed in the Library for the benefit of general users. An in-house "Digital Library is being developed which is accessible via internet for internal users. The Digital Library has 5643 documents and has a search facility for fields such as Author, Year, Title, Subject and the like. MSE library has been included in the IMF Depository Library Programme

How the MSE Library functioned and rendered services to the users during COVID 19 period?

The first impact of Covid 19 was the immediate closure of the library for the direct / physical use of the sources. But at the same time, library staff provided alternative or reduced services to the students and faculty. Of course most of the students in the campus left for their home towns.However the faculty used the library resources mostly the e-resources. Despite the hindrances faced by the library staff, yet played a vital in keeping the user community about the availability of both the printed and e-resources through the e-mail service. MSE adopted a digital approach to instruction and student learning, dramatically transitioning traditional in-person classroom instruction to predominantly distance learning where teaching is provided remotely on digital platforms. Accordingly, the faculty and students were provided external links to the e-resources both subscribed and open access sources.

Links provided for the E-resources during COVID-19 pandemic period

The MSE library has provided links to the e-resources for the benefit of the users during the Covid-19 pandemic period. Some of the screen shots showing the links to the resources are provided as follows:

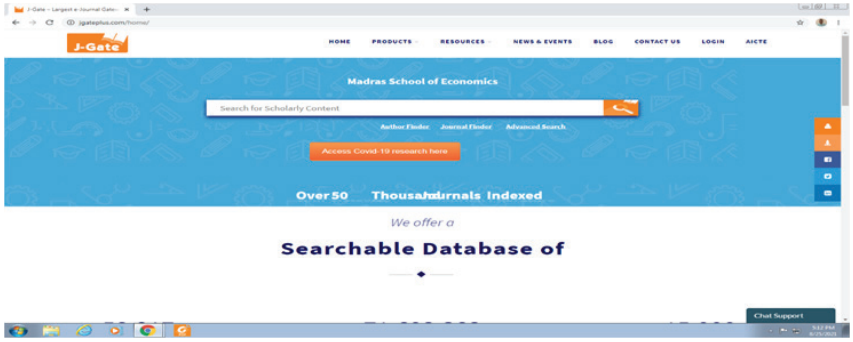

Fig.1 Opening screen of MSE Library access to J-Gate

Fig. 2 Screen shot of access to JSTOR sources by the MSE

Fig. 3 Screen shot of access to SAGE journals by the MSE

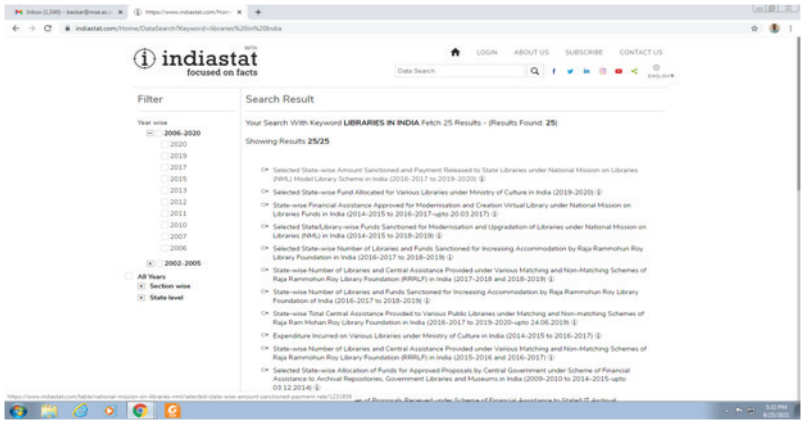

Fig. 4. Screen shot of access to indiastat sources by the MSE

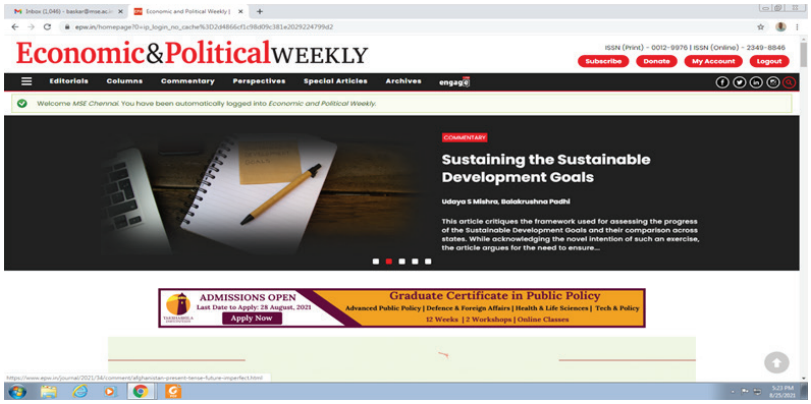

Fig. 5 Screen shot of access to E&PW by the MSE

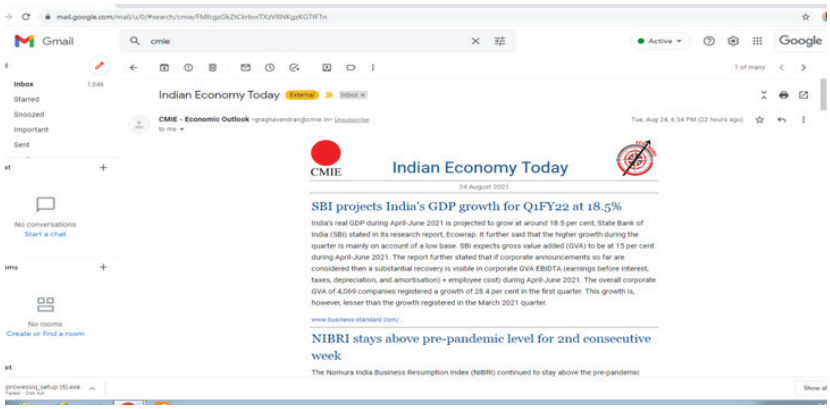

Fig 6 Screen shot of access to India Economy Today journal by the MSE

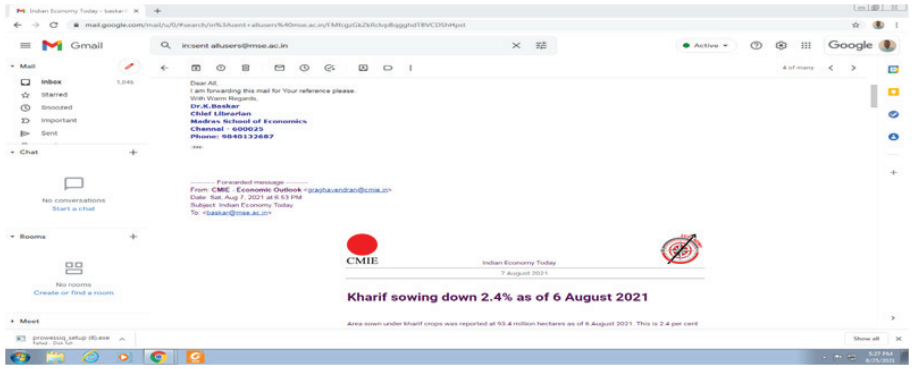

Fig. 7 Screen showing article alert service

List of SAGE Journals Subscribed by the MSE

SAGE Journals: journals.sagepub.com

- Asia Pacific Journal of Management Research and Innovation.
- Asian Journal of Management Cases.
- Business perspective and Research.
- Emerging Economy Studies.
- Foreign Trade Review.
- Global Business Review.
- Global Journal of Emerging Market Economies.
- IIM Kozhikode Society and Management Review.
- Indian Journal of Corporate Governance.
- Indian Journal of Human Development.
- International Journal of Rural Management.
- Jindal Journal of Business Research.
- Journal of Emerging Market Finance.
- Journal of Health Management.
- Journal of Inter Disciplinary Economics.
- Journal of South Asian Development.
- Management and Labour Studies.
- Margin-Journal of Applied Economic Research.
- Metamorphosis A journal of Management Research.
- South Asia Economic Journal.
- South Asian Journal of Business and Management cases.
- South Asian Journal of Macro Economics and Public Finance.
- Vikalpa Journal.
- Vision.

Subject Gateways on Economics

MSE library organized myriad online resources to assist selected user communities, again based upon areas of study through the development of subject gateways or portals. Subject gateways are online services and sites that provide searchable and browsable catalogues of Internet-based resources. The gateways typically focus on a related set of academic subject areas. These sources are online and often linked up with other relevant and related sites for more

information on the same area. The primary service of subject gateways is to provide description of high-quality information resources (Baskar and Ramesh Babu, 2017). Examples of Subject gateways in Economics are given in Fig. 8 & 9.

Fig. 8 http://www.isec.ac.in/onlineresources.htm

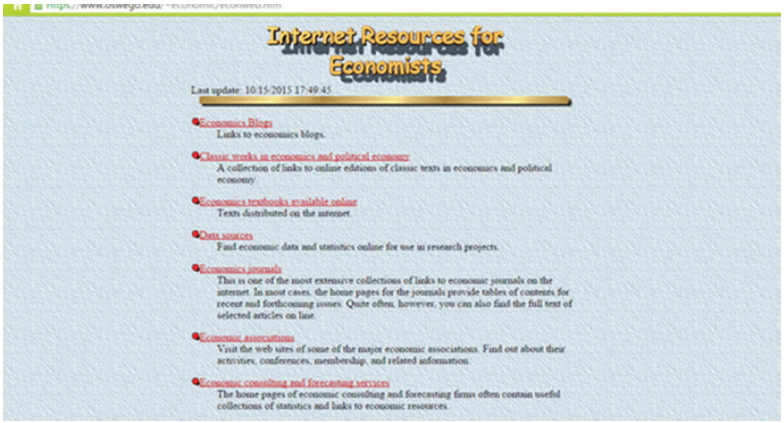

Fig. 9 https://www.oswego.edu/~economic/econweb.htm

Subject Gateways are needed to improve the effectiveness of Internet searching. Gateways, in every discipline and subjects help the users in Academic Libraries where the thrust is on cutting edge technologies. They serve as a ready reference tool. It is hoped that this compilation will be useful to the Economics teaching and research needs**.**

COVID 19 Implications for the Library management

The COVID-19 crisis might change the world and global outlook. It may also teach us about how education needs to change to be able to better prepare our young learners for what the future might hold. There is a reduction in the funding for the library budgets to procure both

printed and e-resources. In turn there is a low or no collection development and the staff faced difficulties in the management of collections including the relegation of the unused books or unwanted ones.

The impact of COVID -19 has impacted the educational activities on the following aspects **(Ramesh Babu, 2020):**

- The coronavirus pandemic has changed how millions around the globe are educated.
- New solutions for education at all levels could bring much needed innovation.
- Given the digital divide, new shifts in education approaches could widen equality gaps.
- The information transmission and role of libraries will be much reformed to provide virtual learning environments
- COVID-19 has turned as a catalyst for educational institutions to look for innovative solutions in a relatively short period of time.
- This kind of disruption due to coronavirus can give educators scope and time to rethink the sector.
- Technology has stepped into the breach, and will continue to play a key role in educating future generations.

Challenges

MSE Library facing very different situations, from broadly maintaining a full service to complete closure. It has been working hard to provide access to collections and services remotely. It was found that there exists a major increase in interest in digital resources. Beyond this, there are many great freely available resources available with educational materials – notably Open Education Resources Commons, which provides access to materials curated by a team of library staff. Many rural students lack the internet connections or hardware to learn remotely. Lack of access to technology or fast, reliable internet access can prevent students in rural areas and from disadvantaged families and having good internet connectivity is an obstacle to continued learning, especially for students from disadvantaged families.

Suggestions for better Library Management

UGC through its letter No. F.No, 1-14/2020 (website) dated 25th March 2020 has issued a circular with a subject entitled " *Let COVID 19 not stop you from learning- ICT initiatives of MHRD and UGC"* and listed some of the e-resources which the academic community use and benefit of them. The e-resources are as follows:

- SWAYAM on-line courses
- UG/PG MOOCs
- E-PG Pathasala
- E-content courseware in UG subjects
- SWAYAMPRABHA
- CEC-UGC You Tube channel
- National Digital Library
- Shodhganga
- E-Shodh Sindhu
- Vidwan

It is hoped that the above resources and initiatives by the UGC which cover a wide range of subjects and courses which have been prepared by the experts would benefit the academic

community at this point of pandemic times.

Conclusion

The outbreak of Coronavirus has reminded us that change is inevitable. Students need to make the most of the uncertainty that prevails and use this time to prepare for exams or take up online courses, that may help them in their future. The overall quality of services depends on the skills, knowledge and experience, attitude of the library staff. They have to undergo necessary training to update themselves and serve the users in a better way with the impact of Covid 19 pandemic environment. Sharpening the staff skills, adopting technologies and implementing the same are an added value to the LIS profession and also to the organization. In the present situation, MSE library is transforming from traditional to modern with emerging trends and technologies. It is an opportunity for all of us to change ourselves on par with the changing world and serve the library patrons.

Acknowledgement

The author expresses his gratitude to **Dr. B Ramesh Babu**, Professor (Retd.), Department of Library and Information Science, University of Madras, Chennai for the guidance, help and encouragement in the preparation of this article and provision of necessary references and literature.

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A COMPARATIVE ANALYSIS OF GLOBAL INTELLECTUAL PROPERTY REGIME, PATENT, AND COPYRIGHT WITH INDIAN INTELLECTUAL PROPERTY REGIME, PATENT, AND COPYRIGHT

Dr. V. Ramya[1]

Introduction

"Intellectual property" is discussed as the creation of one's own mind, such as discoveries; "*literary*", imaginative, arty works; "*symbols and designs*", names, diagrams, or images used for trade-related purposes. IP is backed up by legal sanctions i.e., legally safeguarded for example through patents, trademarks, and copyrights which allows people to gain recognition for financial benefit and help them to prosper for their own invention or creation (Jajpura, 2017). This paper will solely highlight the two types of Intellectual property i.e., copyrights and patents which are legally operational in India, and will draw a comparison between the "*international intellectual property regime*" and the "*Indian intellectual property regime*". Intellectual property is very important as safeguarding the same is vital to foster innovation. Without the protection of one's own innovative ideas, creations, individuals won't be able to enjoy the benefits of their inventions. Likewise, the artist or creator would not be fully rewarded for their creations and as a result, cultural exuberance would suffer. Intellectual Property Rights are legal devices used to promote and encourage industrial development and economic growth by the government. Despite the various international measures taken to protect Intellectual Property Rights, many developed and developing countries are facing challenges to safeguard such rights in the 21st century. IP and its protection are understood and safeguarded in different ways in contemporary "*national economies*". In some countries, the protection level concerning IPR is noteworthy and it never causes any legitimate or socio-economic complications and it is believed to be a vital factor of progress and development on the other hand legal enforcement and protection of IPR is unrecognized or consciously overlooked in other countries. One of the most vital objectives of the study is to draw comparison between the *"international intellectual property regime"* with that of India with a prime focus on two categories of IPR i.e., copyrights and patents.

Intellectual property rights – Systems in India

"*The National Intellectual Rights Policy*" was formulated after rigorous stakeholder discussion with almost three hundred organizations and individuals and various government departments of India. The policy was approved by the government on 12th May 2016. It is a visionary document which incorporates and gathers all IPRs to a single platform, taking all interconnectedness within the IP ecosystem of India into consideration, which intends to form and exploit synergism between various types of IP, concerned statutes, and agencies. It acts as set of instructions and guidelines on the IPR regime in India by guaranteeing that the *"IP"* regime is characterized by a determination of objectives and direction. The NIPRP of India aims to spread consciousness about IPRs as a "*marketable financial asset and economic tool*" and to ensure "*monetization of India's frugal engineering strength*". It also focuses to balance the interest of right owners with the huge public interest. It tries to place India as an economy favourable to novelty and allows to channelize the fortes of several shareholders. The NIPRP of India aims to

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present a robust and foreseeable IP regime which has a transparent, service-based and stable IPR administration to invigorate individuality and artistry before the world. The NIPRP is entitled to be reassessed every five years, for regular assessments by Committee under Secretary, Department for Industrial Property and Promotion (DIPP).

Copyrights

Copyright can define as the lawful and authorized right of the owner of their intellectual property. It means that the owners or creators of products and anyone authorized by only the creators or owners are the ones with the sole right to recreate the work or reproduce the product. India is a co-signer of the *"Berne Convention on copyright"*. The "*Copyright Act of 1957*", is the governing law for *"copyright protection"* in India. Copyright policy in India was shifted to "*India's Ministry of Commerce and Industry*" in 2016. Now IPRs are regulated by the DIPP. In India, piracy of software, games, music, movies through internet are an issue, as so is unauthorized copying of books. Generally, copyrights safeguard two types of rights: economic rights and moral rights. To safeguard against infringers and prove ownership, the creator is required to register their copyright. Though in maximum cases *"copyright registration"* is not mandatory to uphold a "*copyright infringement claim*" in India. Some remedies against copyright infringement are mentioned under "*The Copyright Act, 1957*". They are as follows:

Civil redress: Under *"Section 55 of The Copyright Act, 1957"*, the owner of the copyright will be entitled to all the civil remedies by way of *"injunction, damages, & accounts",* when and if copyright in any his work or product has been infringed upon.

Criminal redress: Under the provision mentioned in *"Section 63 of The Copyright Act, 1957"*, if the *"copyright"* owner takes measures against the infringer, the infringer may be subjected to at least imprisonment of six months, which may be extended up to 3 years and with a penalty of Rs. 50,000, which may also increase up to Rs. 2 lakhs (Srivastava, 2020).

Patents

"The Indian Patents Act of 1970", and the "Patents Rules of 1972", was enforced on "20th April 1972", which replaced the "Indian Patents and Designs Act of 1911". In India "Patents Act of 1970", "2003 Patent Rules" , and the "2016 Patent Amendment Rules" govern the law related to patents. The registrar of the patent under the "Controller General of Patents, Designs, and Trade Marks", is the regulatory authority for patents, which is associated with "India's Ministry of Commerce and Industry". In India, the tenure of Patents is legitimate for a span of twenty years starting from the application filing date, and which is subjected to a yearly recommencement fee. The principle upon which the Indian patent law is based is the first-to-file principle i.e., for example, if more than one individual applies for a patent based on identical creation, the patent will be awarded to the one who first filed the application. In order to strengthen its "Patent Law" and to join in union with the contemporary world, India became signatories to numerous international agreements and treaties and along with that India also became a associate of the "Trade Related Intellectual Property Rights System" (TRIPS) (Dalmia, 2017). As India was a signatory to TRIPS, it was India's contractual commitment to amend its existing "Patent Act" in order to conform with the provision of TRIPS. By 1st January 1995, India had to comply with the first set of requirements to protect it until India starts granting product patents. With all the necessary amendments Indian Patents Act came into force on 26th March 1999. The amendments are as follows:

- To file applications for patent in the sphere of *"drugs"*, *"medicines"*, and *"agro-chemicals" "Section 5(2)"* was introduced.
- Through *"Chapter IVA"*, the stipulated condition of *"Exclusive Marketing Rights"* (EMR) was introduced. Thus, providing pipeline protection for pharmaceutical and agrochemical manufacturers.
- *"Section 39"* from the Act was deleted, thereby allowing the Indian residents to file the application for within and outside of India at the same time.
- *"Chapter II A"* was included in the *"Indian Patent Rules"* to deal with worldwide applications under Patent Cooperation Treaty (PCT). In 2002, a 2nd phase was also introduced by the *"Patents Amendment Act 2002"*, which came into force on *"20th May 2003"*. The primary features of the Amendment Act are:
- The initial tenure of a patent was 14years which was increased up to 20 years. The difference between the word of a *"drug/food patent"* and another patent was also omitted in this amendment.
- The scope of an *"invention"* under the Patents Act was also changed and it was made according to the provisions of the TRIPS agreement.
- *A deferred examination system* was introduced
- "*Section 39*" was reinstated thereby limiting the residents of India to apply overseas without preceding permission or filing first in India.

The final and third phase of "amendment" to the "Patents Act, 1970" came through the "Patents Amendment ordinance of 2004", which was later replaced by "Patent Amendment Act 2005" and "Patents Amendment Rules 2006" with immediate effect from "1st January 2005". India met with all the necessary international requirements under the TRIPS, with its third amendment. The vital achievements of these amendments are:

- Omission of *"Section 5"*, gave rise to the beginning of the *"product patent regime"* in India.
- Eradication of *"Exclusive Marketing Rights"* (EMR).

Comparative study of International and Indian IPR

China and India

India has been associated with "*World Trade Organization*" as a member since 1995 and China since 2001. The WTO's membership necessitates member-nations to enforce *"IP laws"* whose effect is at par with basic standards. Therefore, there is ought to be handful of contrasting characteristics between Indian and Chinese laws. China and India both the countries are co-signers to the *"Berne Convention on Copyright"*. In China, copyright laws are governed and regulated by the *"Chinese 1990 copyright law"*, which was amended in the year 2001, and *"copyright regulations of 2002"* (Yu, 2018). It is not mandatory to register copyright both in India and China. Online piracy of music, games, films, and software is a huge issue for both countries.

The principle on which both the Indian and *"Chinese Patent law"* operationalizes is the "*first-to-file principle"* i.e., if more than one individual applies for a patent on an identical creation, the patent will be awarded to the one who first filed the application. The tenure of validity of patents in both countries is twenty years.

It is true to say that both India and China have set-up rights that correspond to Western and American legal systems. Both the countries are signatories to the same international

agreements. But the primary problem with IPR in contemporary times is the inadequacy of proper implementation of this law (Bochańczyk-kupka, 2016). Intellectual property rights are not respected by enterprises of both China and India, their government, or even common people, and this behaviour is partly explained by history as well as culture. The prerequisites of protecting IPR comes from human rights and liberties and it is not straightaway related to economic advancement and progress. So proper enforcement of these rights in countries like India and China is extremely necessary to avoid vices like corruption and piracy.

UK AND INDIA

About the subject matter of copyright, the findings are significantly similar to the national laws governing copyright in the UK as well as in India. The law governing the copyright laws in the UK is the *"Copyright, Designs, and Patents Act"* (CDP Act) of 1988, and the act governing the copyright law in India is, Indian Copyright Act of 1957. In the light of being signatories to treaties, UK is a signatory to Treaty of Beijing that deals with the performers' IP rights in audio-visual acts, whereas India is yet to be a party of the treaty.

Proceeding to the subject of Patent, in the UK the Act governing laws and regulations in the UK is the Patents Act of 1977 which stipulates the requirements to obtain a patent and elaborates the remedies for patent infringement whereas, in India, the *"Patent's Act of 1970"*, *"Patent Rules of 2003"* and *"Patent Amendment Rules"* (2016) governs the law relating to patents (Sahoo, 2021). Both India and UK are the contractual parties to the *"Patent Cooperation Treaty"* (PCT) and thus, they enjoy the right of protection for a creation alongside in respective contracting parties by filing an *"international patent application"*.

U.S. and India

Both the countries i.e., both India and the US are significantly similar when it comes to the national policy governing copyright laws. Both the countries observe the tenet of 'originality' while granting the protection of copyright to "*original literary, dramatic, musical or artistic works*". The *"Copyright Act"* governing the copyright laws and regulations in the USA is the "*Copyright Act of 1976"* and whilst the Act governing the laws and regulations concerning copyright in India is the "*Copyright Act of 1957"*. A significant difference observed in the Indian and U.S.A.'s copyright regime is that India does not necessitates the registration of copyright for its protection whereas the system in the USA demands the registration of copyright. The numbers are increasingly escalating concerning the uncertified broadcasting of sports in both countries which is subjected to irrecoverable losses to the entities owning exclusivity of such broadcasting events (Sahoo, 2021).

In India, there is an absence of ability to apply copyright to live sports and absence of ISP liability is quite dangerous for the sports industry which is prospective to progress millions as revenue whereas the USA with the initiation of prioritizing resources and organization for IP Act equip the officials of USA to terminate the procedure of domain names with the help of ex-parte orders. To curtail operation of pirated websites, the USA enforced the PRO-IP Act, which worked well for them.

Concerning the subject matter of the Patent, the "Indian Patent statute" stands apart from the widespread exceptions of law and public order, injury to animals and morality, plants and humans also incorporate the elimination of- materials formed by chemical processes, materials produced for the use as medicine or drugs or food, methods of horticulture and agriculture and

any procedure for the therapy of humans, plant life and animals. Nevertheless, the USA varies from such a position except for humans. Although, the patent right vested by such bestowment is parallel to the developed world nations, still not similar. The *"process patent"* in India is only used for safeguarding the process but in the USA a product manufactured from a patented process is also entitled to such rights.

With technological advancements and advancements in the field of artificial intelligence, numerous inventors and creators seem to be interested in the US rather than India because of "*Section 3 (k) of the Indian Patents Act*" that limits the patentability unless they incorporate a technical application. However, US *"Patent Law"* permits a bigger gamut of software patents.

Conclusion

Intellectual property legislation in India, covers almost every important aspect of the protection of IP. In recent years, primarily after India consented to the (WTO) in 1995 the regulations concerning various forms of *"intellectual property"* have been either revised or reissued. The Indian IP law is detailed and usually comparable with Western Intellectual Property Protection laws, however, there are still serious issues over IP enforcement in India. One significant cause of concern in the enforcement of IP in India is an administrative delay, with piling up of cases in both criminal and civil courts which implies that the cases can continue to run for a time span of five years or even more. There is also an absence of transparency, mainly at the regional level. Every Inventors, creator, and entrepreneur should take responsibility for their own IP protection. Numerous businesses depend on the integrity of their IP, and it can often be one of their most valuable assets. So, the protection of intellectual properties should be given proper attention by the owner as well as administration in order to increase its impact and efficiency.

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SERVICE QUALITY OF MEASURING IN LIBRARIES

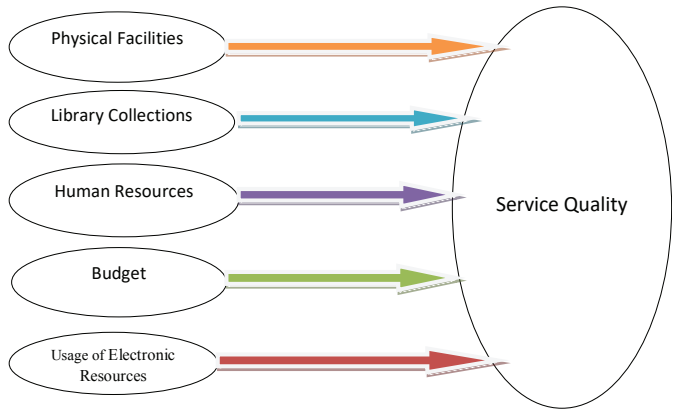
R.Saravanan[1] Dr.B.Sivakumar[2]

Introduction

In a highly competitive environment, the services of libraries should be delivered according to the right time in the right manner for their users. Good service to users is one of the primary goals for libraries. Libraries have to develop a quality culture and there by ensure quality in each and every product and service. There is providing quality services in the library for, such as sufficient collections of resources, sufficient staffs, allocation budget, Library Building space, Working Timing, and usage of electronic resources to be major factors of quality of library services.

Libraries and educational institutions having the responsibility of providing information and services thereby empowering society with knowledgeable manpower the social, cultural, and educational progress of the country library service has a major role Intellectual development of the nation is possible one of the efficient and effective library services. It is natural that only satisfied users come back to the library. We can only understand library user's satisfaction through surveys. This survey evaluates to strive to evaluate the services and address the needs of users adequately.

The Proposed Model for Service Quality of Libraries



Concept of services quality in library

In this era of global competition, service quality has become the topmost priority for every organization. Every institution wants to provide quality service to its users. The library services have changed very fast in the last twenty years. There are number of tools available to measure service quality. Some of the important tools discussed here are WEBQUAL, LIBQUAL

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and SERVQUAL. All these are focused on measuring service quality on the basis of users' perceptions. They have formed certain quality dimensions and assessed the services in terms of these dimensions. User satisfaction is the basic criteria of measuring service quality. A service is said to be quality service only if it can satisfy the user's needs.

Webqual

This is a tool used to measure website quality. It can be used in libraries also to evaluate the quality of library websites. The quality is measured on the basis of customer's perceptions and further changes are made to make it more users friendly. In the beginning webqual is used to measure the quality of e-commerce websites later its application extended to evaluation of other websites also.

Webqual is an instrument for assessing the usability, information, and service interaction quality of websites particularly those offering e-commerce facilities. The Webqual instruments are being developed by the management schools at the university of bath and the University of East Anglia by Stuart Barnes and Richard Vidgen. (www.webqual.co.uk). There have been different dimensions used for measuring quality of service. Loiacono Watson and Goodhue (2002) discussed about 7 dimensions of Webqual. They are

Ease of understanding: It shows the easiness of the website to read and understand by the users.
Response time: Measures how much time is taken to execute in action library and information Services for all
Functional fit to task: It measures whether the site is able to meet users needs and expectations.
Trust : This site keeps the it measures how effectively privacy of users and to what extend the information is secure.
Visual appeal : It measures appearance of the website , site design , service quality, etc
Emotional Appeal : The user while using the website measures intensity of involvement.

Information Quality

It is the quality of the information supplied by the site whether it is accurate, current and relevant.

Webqual contains an instruction page that opens a separate web browser window with qualities to be assessed. The users have to rate their perceptions in a five point scale to indicate the performance of a particular website. Gradually different versions of webqual are developed 1.0 is an effective tool in evaluating information quality of a websites but it lacksthe element of interaction quality. The quality of websites depends to a great extend upon how effectively it interacts with its is users therefore webqual 2.0 is devoped with interaction quality it is 3.0 and 4.0 etc are developed with further advancements.

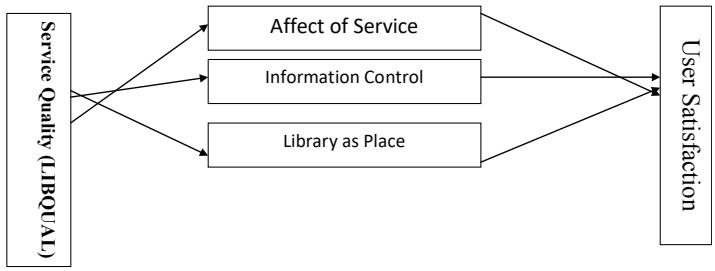
Webqual is a management tool and can be used for assessing the quality of a product orprocess or service from the voice of customers. Only customers can give appropritate judgment about quality. Webqual follow this method and evaluate websites on the basis of responses from the users. It was developed to give a shape to customer's perception about website quality.

Libqual

Libqual is a web-based survey offered by the association of research libraries (ARL) in collaboration with texas and A&M University Libraries that helps libraries assess and improve library services, change organizational culture, and market the library. LIBQUAL is based on SERVQUAL the survey instrument measures library users' minimum, perceived, and desired levels of service quality across three dimensions they are
Affect of service, Information control, and Library as place.

The library administrators have successfully used libqual survey data to indentify best practices, analyze deficits, and effectively allocate resources. LIBQUAL gives library users a chance to tell you where your services need improvement so we can respond to and better manage their expectations. Institutional data and reports enable you to assess whether your library services are meeting user expectations and develop services that better meet those expectations. Users and staff were asked to evaluate their library and on the basis of such evaluation, necessary actions are taken to improve the quality of library services. It also helps to maintain healthy relationship between users and staff. Such survey helps to identify best practices for providing quality services in libraries. (www.LibQual.Org).

The Proposed Model for Service Quality of LIBQUAL



The libqual instrument identifies three customer perceptions current, optimal, and minimal service levels. The relative ranking of the current perceived level to the minimal and optimal levels constructs gaps which serve as the basis for service quality analysis between minimal and optimal expectations is a user defined zone of to clearance. Zone of tolerance is the area between a customer's adequate service level and desired service level. This design will permit analysis of gaps between expectations, perception, and minimum acceptance level of service (www.libQual. Org).

Dimensions of LibQual: In LibQual service quality is measured the three basis of dimensions.

Affect of Service

- This dimension includes 9 items measuring the efficiency and competency of library staff while handling with the users.

Library as a Place

- It includes 5 items measuring the convenience of library as a place.

Information Control

- Measuring the adequacy of the library collection and also it measures how effectively the

library provides access to its collections by the users themselves.

SERVQUAL

Servqual is a survey instrument developed by Parasuraman, Zeithaml, and Berry in 1985 and 1988, 1991 1994 it was modified. The initial stage developed with 10 dimensions after extensive research reduced to five.

The SERVQUAL Five Dimensions are:

Tangibles, Reliability, Responsiveness, Empathy and Assurance

Tangibles: It measures those things which are tangible in nature such as physical facilities, equipments and personnel.

Reliability: Dependably and accurately measures the ability of the staff to provide services.

Responsiveness: The staff's willingness to help the users and provide adequate services

Empathy: This is measures in the staff provision of individual care and attention to user provide adequate.

Assurance: It shows the knowledge and courtesy of employees and their ability to inspire trust and confidence.

Shoeb and Ahmed (2009) discussed the following three levels of services that users were considered while evaluating the service quality of libraries

1. Minium level of service
2. Expected level of services
3. Perceived level of service.

The Minimum service means the minimum level of services that the users consider adequate or sufficient for them though it is not equal to the level of their expectations; expected or desired service means the level of service that users expect from the library and perception or actual service means the actual service provided by the library from the perceptions of the users.

Conclusion

The trends now totally changed in the libraries due to vide impact of ICT, Important of online mode every employee of libraries has the responsibility of providing quality services to the users. Now the users are demanding quality services particularly in electronic or digital form Therefore continuous training of human resources is required to keep them up to the changing demands of today's digital environment. The users are so informed and want their desired information quickly and pinpointetly therefore each and every employee of libraries need continually review the emerging technology effective plans to improve the working climate in order to achieve the desirable quality.

SECTION VII

LIS PROFESSIONALS SKILLS AND COMPETENCIES

Invited Paper

THE COVID PANDEMIC AS CRISIS AND CATALYST: FUTURE ROLES, SKILLS AND TASKS OF INFORMATION PROFESSIONALS

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Introduction

Challenges resulting from the COVID pandemic

The COVID pandemic has led to a dramatic crisis for many sectors of society. In addition to the threat to the health and the well-being of all, there are also many other consequences. Lockdowns and limitations of social contact have been the most visible and notable effect. Restrictions of personal meetings were the most serious limitation for libraries and other information centers. There was a need for unseen physical restrictions. Academic libraries were also affected by the extension of online teaching in higher education. The increase of online classes resulted in a need for the dissemination of digital material.

It is difficult to find another crisis which brought such dramatic changes for library routine work in such a short time. The necessity to rapidly adapt to the situation and create new ways to serve clients comes at a time of change and development in libraries.

Furthermore, the pandemic has led to a change of information behaviour and of the information demand of citizens. People permanently required information regarding new restrictions and changing rules. They were frightened about health and vaccine issues and showed great interest in much more information. These changing patterns were visible not only in social network platforms but also amongst information professionals. Unfortunately, the crisis has also led to a rise of false and biased information. An enormous demand for high-quality information has become obvious.

Many libraries are re-thinking their traditional role. They consider themselves much less an institution for keeping and indexing material but rather, strive for becoming service centers for supporting information work. The changing attitude toward users and the trend of digitalization in the entire society are the main drivers of this potential ongoing shift in the field. Many of the new considerations follow the trend and lines of the demands during the COVID crisis. Many library and information (LIS) professionals perceive that the crisis is accelerating several of these existing trends.

This paper summarizes several scientific lines of development, which appear to be related to these trends. First, the concrete effects of the crisis on libraries are revised. Then a section sheds light on the demands of citizens during the crisis. The selection of information products and documents are of special interest leading to quality issues of information products and content. They are a major concern during the crisis, something which has led to a surge of misinformation. Information professionals are skilled in selecting authoritative information. However, they need to

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be aware of the new developments in automatic quality assessment in order to use tools adequately and integrate them into their processes. The following section deals with information literacy. The concept needs to be reframed under these new conditions. Advanced tools for information centers are needed so that the challenges of information overload and widespread misinformation can be properly dealt with. These include artificial intelligence tools e.g. for content rating and recommendation. A further section summarizes consequences for LIS degree programs and briefly revisits recent innovation in the education domain.

Immediate effects of the COVID crisis

The lockdowns have led to the closing of libraries as physical spaces in many places. This was the most immediate effect of the crisis on libraries and on other information services. Needless to say, this inability to offer physical services led to a push of digital services. This chapter briefly shows some exemplary research which discusses consequences of the COVID crisis. An overview for the EU is provided by Sobral et al. (2021).

National lockdowns forced libraries to close. Many public libraries have reacted by flexibility. For Italy, agility and an expansion of existing digital strategies has been observed (Mercurio 2020). Another analysis for Italy shows how they focused on how to support information supply on COVID-19 considering these circumstances (Ponzani & Maiello 2020).

Libraries had to adapt and several case studies document some efforts, e.g. one for a library in the US (Mehta & Wang 2020). During the COVID crisis, access to digital resources, issues related to online education and digital literacy of clients have been a focus for libraries (Martzoukou 2021). Bangani has analyzed the role of library professionals for fighting misinformation around COVID (Bangani 2021). For the example of South Africa, the author shows how academic libraries contribute to the dissemination of quality information and shows the resources they use. For the case of India, Chakraborty and colleagues also explored the role of libraries. They analyzed the material on COVID published by libraries on their websites and found that they emphasize the reliability of information (Chakraborty et al. 2020).

Academic libraries are confronted with the amount of digital teaching at their institutions. Most universities have switched to some online teaching mode (Czerniewicz et al. 2019) and the involvement of libraries varies greatly. The role of the teaching personnel has been researched in several studies and their perception of the online education has been assessed. For one university in the USA, the perceived stress of faculty was emphasized (Chierichetti & Backer 2021). Work pressure and concerns regarding the own well-being dominated. Online teaching in general was perceived positively, but strong worries remained as far as testing and engagement of students. Faculty used opportunities offered for training for using digital tools (Chierichetti & Backer 2021).

The perception by students has also been analyzed. Most students seem to prefer face-to-face teaching and their performance and satisfaction depends much on their self-efficacy and motivation. Their ease of use of the technology also plays a relevant role (Aguilera-Hermida 2020). However, the satisfaction with online classes is not below that of regular classes, as Baber showed in a comparison study between India and South-Korea during the first year of the crisis (Baber 2020).

Online working and digital learning are core activities of higher education institutions which libraries need to support. Lectures are frequently video recorded and are delivered by

learning management systems to students for asynchronous learning. In the study about a particular American university, the authors found that over 90% of the teachers used online video conferences and over 70% video tutorials (Chierichetti & Backer 2021). These recordings are educational resources and pose several challenges for information dissemination. On the one hand, recordings need to be created first. In particular, teaching staff who had little exposure to the use of videos (or other electronic teaching assets) needs support for creating adequate material and managing access to them. In a case study for the University of Barcelona, the difficulties for faculty were carefully analyzed. Questions from faculty members which reached an expert offering his advice to teaching staff, formed a pool of issues. Some of the teaching staff members were also interviewed (Boté-Vericad 2021). It was obvious that many technical, didactic and practical questions were limiting the production. These issues were mostly not perceived as separate problems but mixed ones. Any technological support and any recommendation for tools need to be accompanied by methodological and pedagogical advice (Boté-Vericad 2021).

On the other hand, the recordings are records or documents which should be stored and made accessible. They could be combined with other electronic resources. However, common practice seems to be that they are not typically available outside the learning management systems. The involvement of information specialists seems to be limited. Few systems allow secure citations of even parts of a video. An exception is the AV portal of the TIB (https://av.tib.eu).

Currently, portals for open educational resources (OER) are created and many commercial systems for courses are available (e.g. Udemy, Coursera). Nevertheless, it remains difficult for students to find adequate courses and more support is necessary (Anderson & Leachman 2019, McGowan 2019).

Overall, the services discussed above seem to find little use in common teaching practices at universities. Especially, OER represent a great resource for many students and teachers; therefore, they could be exploited for improving education (Abeywardena et al. 2021).

Currently, the limitations and barriers for acceptance need to be explored in more detail. One effort within the EU is the project Digital Education for Crisis Situations (DECriS, https://decris.ffos.hr).

Information demand during the COVID crisis

Disasters and crises always change human information behavior, no matter whether they are natural or human made. The information consumption due to needs of people is growing. In our times, especially digital information is of great importance when seeking relevant information during a crisis. Questions in connection with the provision of information during the COVID-19 pandemic are of genuinely interdisciplinary nature. Numerous disciplines are necessary to approach them. In addition to LIS, this includes, for example, linguistics, media studies, public health, but also technical disciplines such as data science. The response of libraries in particular in providing genuine information has been noted above (see also Martzoukou 2021, Bangani 2021).

In Italy, the scientists Rovetta and Bhagavathula (2020) analyzed the search query behavior with Google Trends in regard to the so-called infodemics. As a result, four infodemic attitude groups were built. The most frequent searches in the query logs were related to disinfectants, face masks, health news and COVID-19 symptoms. There were regional variations regarding search term use and the spread of misinformation according to Rovetta and Bhagavathula (2020).

A study on information behavior in Germany was able to demonstrate the general increase in media use during the pandemic (Dreisiebner et al. 2021). The data collected from April 2020 to May 2020 in an online survey and during interviews focused on the selection of information sources and the criteria both during the pandemic and before. The results also show a change in the consumption of information in terms of quantity and quality of the participants respectively. It was found that traditional media plays an important role, but that most users had already came into contact with incorrect information on different channels. Many public and official information providers are represented on social media, and are there next to content which has been generated by users (Dreisiebner et al. 2021).

The most widely used media are public television, and both international and local printed and online newspapers. The most remarkable change in the level of use in pre-crisis times was seen in the increased use of information pages by public organizations. Many participants were regularly confronted with false news and reacted differently to them. Several of the interviewees stated that they became more aware of the issues of false information during the COVID-19 crisis. The majority of the participants was satisfied with the information received during the crisis.

Although the satisfaction with the information supply was high during the crisis and a shift in the usage intervals from irregular to regular was evident, participants in the study also reported a feeling of information overload. This resulted in reduced media usage (Dreisiebner et al. 2021).

Quality of Information and its Assessment

The creation of misinformation and its diffusion are serious problems for society and especially during crises. There are many different forms of problematic forms of information (Bawden & Robinson 2009) and it is often distributed due to economic interests. In particular during a health crisis, which requires appropriate behavior of the citizens, it is crucial that correct information is spread not to delay reactions. The Corona crisis has seen much misinformation and the challenge and efforts to fight it.

Accepting social media as a preferred source for COVID-19 information, people are more likely to believe in conspiracy theories. In believing these conspiracy theories, individuals tend to adhere less to COVID-19 specific health-protective behaviors (Allington et al. 2020). On the contrary, a study conducted in China found a positive relationship between the consumption of digital media such as social media, mobile social networking apps, online news media, and social live streaming with preventive behavior such as washing hands. Digital media was used to educate citizens about preventive behavior to control the situation (Li 2020).

However, the quality of information products available should be considered from a broader perspective and should also include recent technological solutions. Many definitions for the quality of information products have been discussed in the literature. The user interface and the content are inseparable on the Web and as a consequence, their evaluation cannot always be separated easily. As a consequence, content and interface are usually considered to form two aspects of quality and they are jointly assessed for Web pages. A helpful meta model for quality definitions is provided by Huang et al. (1999) and is shown in the table below.

Research has also focused on the automatic quality assessment. Most authors agree that an objective notion of quality cannot be found. Nevertheless, quality can be treated as independent of relevance. Relevance describes the situational value of e.g. a result in a search setting. Quality describes aspects to products independent of any current information need.

Table 1. Categories of information quality (IQ) (Huang et al. 1999)

IQ Category	IQ Dimensions
Intrinsic IQ	Accuracy, objectivity, believability, reputation
Contextual IQ	Relevancy, value-added, timeliness, completeness, amount of information
Representational IQ	Interpretability, ease of understanding, concise representation, consistent representation
Accessibility IQ	Access, security

Link analysis is the approach most frequently discussed for automatic quality assessment in information retrieval (Mandl & Womser-Hacker 2015). Link analysis applies well-known measures from bibliometrics to the Web. The number of references to a scientific paper has been used as an indicator for its quality. For the Web, the number of links to a Web page has been exploited as the main indicator for the quality of that particular page.

Many lists of criteria for the quality of Web pages have been developed from the perspective of library and information science. They contain criteria at the meta data level and high-level definitions of quality. These criteria are typically also used in information literacy education. They are not always available for automatic assessment. These lists were intended to support the user during quality decision processes (e.g. Becks 1997). From the standpoint of automatic quality assessment, however, these lists are of little help. Their criteria are often vague and it is often not clear whether a rule indicates high or low quality.

Design aspects have also been brought into the automatic assessment of quality. In an interesting study, six features of Web pages were manually derived and compared to usage data. The initial hypotheses was, that pages which follow popular Web design guidelines might attract more viewers than other pages. The judges looked for the dominant color, the presence of advertisement, logos, animations and frames and the frequency of links and graphics. Some of the features were better predictors for the high usage of the pages than others (Chakrabarti et al. 2002). These results indicate that atomic features which can be extracted automatically may be useful for the quality assessment.

Machine learning approaches are identified as the most promising methods to determine the quality of Web pages. Features for the most appropriate characterization of e.g. Web pages need to be found for such models. In a study, Mandl developed an experimental quality-oriented search engine comprising a holistic definition of quality including content as well as design features (Mandl 2006). This quality model was developed based on human judgments about quality taken from a large link collection (clearing house, web catalogue). The model was integrated into a meta search engine which assesses the quality of all results at run time. Evaluation results showed that quality-based rankings lead to better results concerning the perceived quality of Web pages presented in the result set (Mandl 2006).

Recent research is focusing on text features to model quality aspects of content. Especially deep learning has been applied for the realization of this task. Based on text messages, aggressive messages in social networks have been identified. Due to the large amount of online hate, it is not possible to solely manually monitor message streams for illegal or inappropriate content. Rule based systems and simple lexical applications which check for suspicious keywords are not able to solve this task, due to the complexity of language. In order to train machine learning systems

for this task, benchmarks of data need to be provided (Modha et al. 2020). Based on that, systems learn from examples. The same is done for the truthfulness of messages. Collections of claims or news reports which are either right or wrong are also assembled into benchmark collections (Nakov et al. 2021). Systems are then trained to identify fake news based on examples applying advanced machine learning methods like deep learning (Modha et al. 2021).

Information literacy in the light of new developments

The concept of information literacy refers to a "set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" (ACRL 2016). There is no definition that is commonly agreed upon and a study has shown that experts in the field support different conceptualizations of information literacy (Griesbaum et al. 2021).

Various studies have identified fundamental deficits in IL skills of students and called for intensified Information literacy training. The training of clients has been a traditional task of libraries. Student often have a different perception about information literacy than academics. In particular they do not consider all part of typical information literacy education as relevant for themselves. (Kuttkat et al. 2021). The trainings are often moving online and need to be adopted to specific target groups regarding content as well as delivery format.

Obviously, LIS professionals need excellent information literacy skills and should have further skills. LIS professionals as experts needs to understand and shape the digital environment for the users. They should understand advanced interfaces for digital libraries (e.g. Heinz et al. 2003). They should have control of modern AI tools like recommenders or systems which lead to a personalized experience with search services (e.g. Mandl & Womser-Hacker 2004).

The section above showed the potential of rating tools which deliver automatic quality ratings of content. The amount of information is growing. Meanwhile, computers can generate texts themselves (Gatt & Krahmer 2018) and it becomes harder and harder to distinguish human and computer written texts. For example, online reviews or posts on social media platforms might not all be genuine. Users will need more orientation and tools to find reliable reviews.

Rating tools will become integral part of information services in the coming decades. Users develop their mental models of artificial intelligence tools which might not always be correct. Professionals need to be able to understand AI and machine learning, explain decisions and educate about their use. Machine learning is a technology based on approximation and a small amount of errors is typical. The tools might not include all features that a user considers relevant and expects to be included for decision making. Often machine learning tools reinforces biases e.g. for popular content. All of this can lead to issues in acceptance and adoption.

In addition, these tools have effects on the perception of users that are not expected. LIS professionals should be prepared for them and able to find solutions. For example, a study showed the so-called Implied Truth Effect. When warnings were given for a subset of fake news headlines and others were left unchecked, this increased the perceived truth of headlines without warnings. Although the warnings were shown to be effective, they stimulate trust for un-labelled items which is misleading and potentially dangerous (Pennycook et al. 2020).

Consequences for LIS education

Information services and organizations are undergoing changes as societies are developing into information societies. The global crisis caused by COVID has accelerated several developments. Both companies and people's private life rely more and more on digitally available information. A trend in society which has been driven by technology. As shown above, the access to the growing amount of knowledge requires additional skills for LIS professionals. They are confronted with many challenges related to the growth of knowledge. Only a few of them can be mentioned here (see also Krtalić & Mandl 2019).

- Diversity of sources: data gains importance compared to other digital sources and especially compared to physical collections. The diversity includes several other aspects which information professionals need to consider: among them are languages, quality and formats.
- Specialization of domains: information management requires special domain knowledge including for information professionals. The continuing specialization of science poses new challenges for LIS education (e.g. Robati & Yusuf, 2016).
- Diversity of consumers of information: the internationalization of science and the business world requires more international thinking when providing access to information. The demand to serve academically and socially heterogeneous groups is permanently increasing.
- Technology-supported learning is a trend in society. There is large potential for offering meaningful online digital learning experiences, which can be more socially inclusive, more individualized, more flexible and more specialized. The information manager has a dual role when it comes to e-learning. Professionals should be able to learn about new developments and access to content for other learners should be made available.

The above should lead to the question on how the LIS community is reacting to these great changes. How are they reflected in the curricula of schools? There are many current virulent trends, which can be observed in LIS education as the result of the developments sketched above. The future of LIS education and current trends have frequently been discussed. Most authors favor the role of IT and digital aspects in LIS degrees.

Education on technologies requires the active application of systems by students and as such, goes side by side with the discussion of the more active role presented above. Within LIS programs, the need to include more ICT skills has been discussed intensively. Many have argued for integrating more technological skills (e.g. Mole et al., 2016). The need to integrate more ICT has also been noted during the specific situation in India (Ramasamy, 2017) and South Africa Raju (2013).

Data Curation is certainly another growing area in the LIS profession. Data curation supports the entire life cycle of research. Research information systems and research infrastructures have been developed and can strengthen the productivity of researchers. They provide data as well as adequate tools for processing it. For this task, librarians need to focus additionally on data in various forms. There is a growing demand for re-use of data and for scientific communication beyond texts. Apart from the research context, data curation and digital curation are in general of core value to all areas of information institutions, allowing for long-term access and use of digital content (Corrado & Moulaison Sandy, 2017). New terms for professionals managing these issues have been developed, e.g. Data Librarian, Data Services Specialist, and E-Science Librarian.

It is nevertheless crucial to maintain the core of the discipline, and adhere to the traditional competences of LIS professionals. These need to be brought to the next generations. The LIS profession needs to embrace the digital world but it should not transform into a pure IT domain.

Audunson has made a strong case for the need for multi-disciplinarity in LIS education as professionals need to enable access to knowledge in many disciplines (Audunson, 2018). Ramasamy has noted the relevance of a global view for LIS education in India (Ramasamy, 2017).

LIS education needs to attract students from different domains and needs to enable a smooth entry into LIS topics. These students can bring in additional perspectives and can become information professionals for the domain that they had previously studied. Recent studies show that this is difficult even within the European Higher Education Area (EHEA) and the issue has been addressed with an intensive teaching event (Bosančić et al. 2017).

Conclusions

The COVID crisis has led to an increased pressure toward digital solutions. Remote clients and students have demanded guidance, services and information. Libraries have often needed to improvise and have often been successful. In the future, citizens will continue to ask for such services and the expectations for professional services will continue to grow.

Even if some AI tools may seem out of scope for libraries today, they will continue to shape the next generation of information services. Libraries will need to embrace such technology and make good use of it. Professionals who were trained recently will still need to continuously update their skills in order to meet the requirements of future complex digital environments for information services. Education will have to stay tuned in order to catch up with many developments. Still, the core of the profession needs to be safeguarded and information professionals need to be aware of their competitive advantage.

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A STUDY OF SCHOOL LIBRARIAN'S ATTRIBUTES AT PRIMARY SCHOOL LIBRARIES IN THAILAND UNDER THE COVID-19 PANDEMIC

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Introduction

Since the pandemic of COVID-19, many sectors in Thailand have to transform the working platform to be compatible with a new normal situation. Education sectors transform learning platforms to be online for reducing the spread of COVID-19. The Basic Education office also sets rules and regulations in lessening the spread by having onsite learning and blended learning. Teachers must provide self-study materials and introduce learning activities through online platforms to facilitate students (Office of the Basic Education Commission, Ministry of Education, 2021).

Schools all over Thailand must follow the regulations and employ education innovation in the learning process to fit with the situation. The change above affects learners and teachers regarding digital literacy, how to use technology in learning, and how to develop digital materials. In addition, school libraries must transform their support to be suitable with online learning platforms. Therefore, teacher librarians have to prepare a digital library for the circumstance. Unfortunately, the teachers also have various workloads apart from managing the library; furthermore, some teacher-librarians lacked knowledge of library management, causing poor management (Suwannapha, 2005).

The researchers aimed to examine the workloads and competencies in library management of teacher-librarians from the mentioned above. Besides, the researchers would like to explore the smart library management needs at the primary school level. The findings would be guidelines for school administrators and other stakeholders in developing plans to promote a digital library where teachers and learners are able to access all library materials and provide workshops for teacher-librarians to operate digital libraries.

Objectives

The study aimed to explore workloads, competencies, and difficulties in managing school libraries of teacher librarians or school librarians during COVID-19.

Methodology

The study employed survey research in questionnaires to collect the data from teacher-librarians or school librarians in Thailand. Four hundred surveys were distributed, and 281 were returned (70.25%). Thus, 50.43 percent of the overall returned questionnaires were from the Northeast, 24.79 percent were from the North, and 8.97 percent were from the South.

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To develop the questionnaire, the researchers employed concepts regarding the roles and responsibilities of teacher librarians and divided it into four competencies aspects: learning resource management, school collection management, service management, and community collaboration. The questionnaire included multiple choices, ranking, and a 3-scale rating. The aim of this survey was to examine teacher librarians' competencies and situations in managing the school library. The questionnaire was approved content validity by three librarian experts and reliability by 30 school librarians from non-basic education affiliates, for example, demonstration schools and private schools. The questionnaire's reliability was 0.87 of Cronbach's Alpha Coefficient; as a result, the questionnaire was reliable to use in collecting data.

To analyze the data, the researchers employed descriptive statistics: frequency, percentage, average, standard deviation, and Spearman's correlation coefficient to manage the ranking data.

Results

The analysis of teacher librarians or school librarians' attributes of the Offices of Primary Educational Service Area. Two hundred thirty-six of the teacher-librarians or school librarians were female (84%), and 45 were male (16%). In addition, 195 or 69.4 percent of the target group graduated with bachelor's degrees, and 1 or 0.4 percent graduated with doctoral degrees. In addition, 67 or 23.8 percent and 61 or 21.7 percent of the target group graduated from Thai language and Library and Information Science respectively. Other informants graduated in various majors, for instance, educational administration, computer science, music, science, mathematics, social studies, English language, or physical science. These might affect library management in primary schools. The target group had librarian experiences of less than five years (51.71%). Therefore, it could be implied that most of the teacher librarians were new graduates and had limited work experience.

The analysis of the workloads. Two hundred thirty-nine or 85.1 percent of the target group illustrated that the first rank was teaching load. They had to teach one to eight subjects, and it depended on the number of teachers in each school. The second rank was library workload, with 101 or 35.9 percent of the target informants. Moreover, they had to do other workloads, for example, administration, documentation, or academic activities. Thus, it shows that there are other tasks besides library management, as in Table 1. The workload correlation between library management and the first workload is correlated, as in Table 2.

Table 1 Workload rank of teacher librarians

Workload	1st		2nd		3rd		4th	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
Teaching	239	85.1	29	10.3	4	1.4	2	0.7
School administration	8	2.8	47	16.7	17	6	20	7.1
Library service	27	9.6	101	35.9	74	26.3	51	18.1
Documentation	3	1.1	38	13.5	78	27.8	51	18.1
Quality Assurance	–	–	33	11.7	31	11	45	16
Research	1	0.4	7	2.5	20	7.1	20	7.1
Community collaboration			5	1.8	14	5	29	10.3
Academic activities	3	1.1	21	7.5	43	15.3	63	22.4
Total	281	100	281	100	281	100	281	100

Table 2 Correlation between library management and the first workload of teacher librarians Directional Measures

Directional Measures

			Value	Asymptotic Standard Error[a]	Approximate T[b]	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	0.165	0.05	3.115	0.002
		Rank1 Dependent	0.116	0.037	3.115	0.002
		exp Dependent	0.283	0.085	3.115	0.002

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Impacts of the COVID-19 pandemic on teacher librarians' competencies in library management. Hundred fifty-five or 54.4 percent of the participants mentioned that they lacked ideas regarding reading activities during COVID-19. In contrast, 152 or 54.1 percent of them illustrated that lacking IT knowledge in library management was crucial. Furthermore, 132 or 47 percent stated that general library management was the second concern. Last, 93 or 33.1 percent of them said that collection management had less impact on them during the COVID-19 situation.

Difficulties of the library work. Most teacher-librarians experienced difficulties at a moderate level. The first problem was insufficient budget in ordering books and educational materials ($\bar{x}$ = 2.32). Other difficulties were lacking books and educational materials ($\bar{x}$ = 2.28), lacking library materials ($\bar{x}$ = 2.26), doing other workloads causing insufficient time to manage library ($\bar{x}$ = 2.22), limited use of reading space due to COVID-19 ($\bar{x}$ = 2.18), lacking cooperation from students in books and materials care ($\bar{x}$ = 2.10), lacking interest from students in using libraries ($\bar{x}$ = 2.05), and lacking knowledge of library management ($\bar{x}$ = 2.01).

Discussion

According to the results, only one-fifth of the teacher librarians in this study were graduated in library science. It might be in regard to qualifications that basic education office requires only bachelor in education. As a result, graduates with a Bachelor of Arts in Library science could not apply for school librarians. Another turning point was the lack of school subject teachers. Primary schools preferred applicants who had an educational background than library science.

Consequently, teachers assigned to work as librarians had limited knowledge in library management, or librarians sometimes were assigned to teach and manage the library. This is a long-term difficulty found everywhere; according to the study of Techamanee, Sirichote, & Tuamsuk (1986), Kalayanamitra (1987), and Sue-utitkul (1994), most teacher-librarians had limited competencies to manage libraries, and they had teaching loads as the priority. Thus, it caused a lack of effectiveness in library management.

COVID-19 affects school library management gradually since schools must transform learning platforms to be online. Most school libraries were temporarily closed both onsite and online due to a lack of infrastructure and teacher librarians' competencies.

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SKILLS FOR INFORMATION PROFESSIONALS DURING THE COVID-19 ERA: A REVIEW OF THE LITERATURE

Jutatip Chanlun[1]

Introduction

COVID-19 pandemic or Coronavirus disease 2019 firstly started in wildlife market or South China Seaboard Market in Wuhan, Hubei, China in December, 2019. The epidemic spread to many areas. The COVID-19 caused patients severe pneumonia or death. The virus has person-to-person transmission by coughing, sneezing or contacting with patient's discharge. The virus spread rapidly and caused countless cases and deaths before spreading out to all regions around the world. At present, the epidemic situation is still ongoing and infections and deaths still happen every day (World Health Organization, 2020).

In the early stages of the COVID- 19 epidemic, the national governments ensured the effective public health surveillance. Worldwide countries ordered people to stay at home, closed schools and working offices. The public events, domestic and international travel were prohibited. These issues caused people spend harder life greatly with unprecedented impacts around the world. (Benita, 2021, p.1). The unexpected pandemic made people's way of life in society changed greatly in no time. Educational institutions, schools, universities and other organizations had to close. All measures were enforced to ensure people safety. During the lockdown period, worldwide educational institutions and agencies changed their traditional methods to internet-based teaching and working (Ishtiaq, Sehar & Shahid, 2020, p. 2).

Worldwide libraries and all types of information service centers were also affected by the COVID-19 epidemic situation, the libraries had to change their ways to cope with situations such as university libraries, an important source of knowledge for educational institutions, faculties, staffs, students as well as people. All of them were interested in information service in the library for different benefits and purposes. Many higher education institutions' libraries had basic electronic and digital information services.

During the epidemic situation of Covid- 19, even users couldn't visit the library physically but they still need the library information. For this reason, libraries had to adjust themselves in terms of work processes. The online-based system became primary procedure. Their personnel had to develop information technology skills to support the operations. In term of service, the libraries had to adjust the procedure from the print resources to more digital resources. Their personnel should be able to instruct users to access digital information through an online format, produce video clips for social media or make documents for publishing in their library websites. In addition, the libraries should be creative and develop new digital information services to meet user's information needs (IFLA, 2020; Lakaphun, 2021, pp. 65 - 66). Likewise, the school libraries had adapted themselves and service model of digital learning resources and provided online learning skills development assistance to teachers and students. For example, in Malaysia, social media had been used to promote reading (IFLA, 2020). According to the

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survey of UK public libraries personnel's work and the situation, it was found that public libraries adapted themselves to provide services to people and communities as before. The key points included digital skill development, digital information services including communicating with online users (Peachey, 2020).

In terms of the special libraries, they made a self-adjustment in both work and service aspects like other libraries. For example, in a health science libraries, the librarians learnt how to use online communication programs in order to provide their users an answer and research services. They worked on online-based procedure throughout the day as well as providing how to access to online databases PUBMED and give program tutorial EndNOTE (Mi & others, 2020, p. 332).

According to the situation, the information professionals and those working in libraries and information service centers had to adapt themselves urgently to develop all qualities and key skills to cope with the situations timely. This study addresses key issues related to work adaptation, key skills for work, skills development needs, and related equipment support needs of informaticians and library personnel during the COVID-19 epidemic.

Objective of the study

To study the concept of working model development, skill development needs and work support for informaticians and library personnel during the COVID-19 epidemic from 2020-2021.

Research Methodology

This research studied papers published during the outbreak of COVID-19 between 2020 to 2021 from the online academic database. The content analysis method was adopted to identify the results of issues related to the purposes.

Study Results

The studies on related documents and researches with analytical method can be summarized as follows:

1. Working Model

The information professionals and those working in libraries or information services centers have been affected by the COVID-19 epidemic like personnel in other organizations. Accordingly, their working model are required to be changed to online platform. The study found that the informaticians and library personnel had to adjust their working model to 3 online formats:

Information Service

Document Delivery to Fulfil User Requirement

During the COVID- 19 outbreak, the users still had a big demand for books or documents from libraries. Particularly, most university libraries had to provide a variety of information services, so the libraries offered the book delivery according to user requirements for different programs (Ishtiaq, Sehar & Shahid, 2020, p.13). Likewise, the Office of Academic Resources, Chulalongkorn University in Thailand organized a book borrowing service under the project "Delivery Service to Fight COVID-19" which offered the book borrowing service for university students, faculty members and researchers through e-mail. The borrowed book would be delivered via express mail (EMS) with excluded overdue fines and extended return date for all books (Chula Library, 2020 ; Youngsukying, 2020, p.83).

Digital Information Service

Worldwide libraries had developed and digitized their information format for quick and convenient access to users such as National Library of Morocco who offered free e-books, New York Public Library who created an online book club, Aarhus public libraries in Denmark who provided information services through their website, Granby Library in Quebec, Canada who focuses on providing users learning and new skill development for users (IFLA, 2020). In Thailand, Ramkhamhaeng University Library also surveyed the needs of users during the COVID-19 outbreak and found that most users had a need for digital information accessed by online systems such as tutorial video, e-book, exam repository in PDF format. These requirements forced the library to adjust its service model and develop services to fulfil users requirement (Lakaphun, 2021). These adaptations also included the information services concerning research and information about COVID - 19 from key agencies like World Health Organization, PUBMED's new researches compiled and published through health sciences libraries in the United States as well as e-books and interesting information resources for further research (Mi & others, 2020).

3) Online Reference and Research Service

Libraries still provided the reference and research service as usual, but change the communication method to the online channel to facilitate users in researching information. The online reference and research service model was a virtual reference through key communication tools including 1) E-mail 2) Voice Over Internet Protocol (VoIP) such as Google Hangout, WhatsApp, etc. 3) Instant Messaging (IM) such as AOL, Morris Messenger, Yahoo, WeChat, etc. and 4) Social media such as Facebook, Twitter, etc. (Abubakar, 2021). For example, a university library in Sindh, Pakistan contacted and interacted with the library members to provide reference service, announce important news or new services to members through the mobile and website chat apps such as Facebook, Skype, LinkedIn, Instagram, Messengers. Email and other management systems were used to facilitate members as well (Ishtiaq, Sehar & Shahid, 2020, p.14).

4) Online User Guide

In addition to information services, the libraries still provided user guide to teach users online information as well as techniques for access to resources and development of skill required for use of digital resources. The instruction topics included information perception skills, online database searching, using EndNote, basic resources and library services recommendation, etc. and programs used in teaching such as Moodle, Zoom, WebEx, Blackboard, etc. (Ibacache , Koob & Vance, 2021). For example, a health sciences library in Belgium provided online training to researchers on the topic of searching and analyzing search results as well as teaching information perception skills to students who required online practice (Pauwels & others, 2020).

1.2 Library Operational Technique or Full-Time Tasks

Although their works were adapted to an online format, but the library technical back-office continued to carry out such as information resources development, cataloging and classification, digital collection development and information technology. Personnel who were responsible for these routine tasks still worked normally but needed to adjust their approach to suit the current situation. For example, the development of information resources proposed list of books and selected books with an electronic form and purchased books through online publishers. The newly acquired information resources focused on digital media with valid

copyright (EBSCO, 2020 ; Nath, 2021). The information resource cataloging relied on the online exchange of information with other agencies instead of making the list themselves such as building cooperation of the United States library networks led by the Library of Congress which provided assistance to the cataloging of information materials for libraries (Jones & others, 2020).

1.3 Office Works

All office works including general affairs, meeting and planning, internal and external communication still continued as usual. All staffs needed to perform their duty as same as normal situation but needed to adjust the format to online platform or a combination between working at the office and working from home (Youngsukying, 2020). The communication for the operation performed through the online programs. According to the study, it was found that the programs implemented in each area were different such as Zoom, MS Team, Google Meet, etc. The office documents were digitalized into the format that could be sent via office automation or email quickly.

According to the study on adaptation to deal with the online work situation, there were 3 groups of communication programs as shown in Table 1.

Table 1 Programs for Instruction, References / Consultation / Research Support and Communication

Instruction	References / Consultation / Research Support	Communication
Blackboard	Ask a Librarian via	Email
Canvas	Lib Answers	Google Hangouts
e - Space	Chat	LibCal
Google Sites	Email	Message (Texting)
LibGuide	Google Hangout Meet	Microsoft Team
Moodle	Institutional Repository	Slack
Panopto	LibCal	Phone
SubjectPlus	Microsoft Team	WebEx
WebEx	Phon	WebChat
Zoom	WebEx	Zoom
	WeChat	
	Zoom	

Note: From Four health science librarians' experiences: How they responded to the COVID-19 pandemic crisis. by Mi, M., Zhang, Y., Wu, L., & Wu, W. (2020), *College & Research Libraries News*, 81(7), 331.

2. Skills and Requirements for Work Support

The epidemic situation forced all library staffs to adapt and develop their own skills to cope with the change. The required things included a personal skill for online work and tool support from their agency as follows:

2.1 Digital Skills Requirements

Those working in libraries and information service centers needed to develop themselves

to ensure they worked in changing contexts effectively. The indispensable skills were skills to use digital device, communication apps and networks to access and manage information (UNESCO, 2018). All libraries required personnel with interdisciplinary knowledge and experience including librarian core knowledge, information technology, research and education (De Meulemeester, et al., 2018) such as educational technology skills so that they could use and allocate the platforms to users. Furthermore, it was found that the library staffs needed to learn essential skills for working from home, online working, using software for communication at work, developing knowledge of online service management or digital context delivery, development of knowledge and skills in the digital collection and online services including providing knowledge and information of COVID-19 prevention through online channels (Youngsukying , 2020).

Conclusion

The COVID-19 outbreak forced many people to leave their office or comfortable work environment and accept the change that no one couldn't avoid. Likewise, the library personnel also needed to adjust themselves and work methods. All types of worldwide libraries adapted quickly to be able to serve the information service to users timely. The physical adaptation measures were employed to close the library or enforce more safety measures such as social distancing, temperature checks before entering the service, etc. The active adaptation also took place with the delivery service for books or information materials according to user needs. The digital adaptation was done to provide the references, consultation, research supports including online information perception tutorials. Additionally, the library personnel adapted themselves to work online, although they still lacked skills for this new type of work, but they made an effort to learn and practice to improve themselves until they could work effectively. The COVID-19 situation still spread to all over the world like the libraries still continue to provide information services to users all the time. The library personnel and professional information institutes need to continuously develop their knowledge and skills for working both now and in the future.

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LIFE HISTORY STUDIES ON LIBRARIAN ROLE AS THE CHANGE AGENT

Gani Nur Pramudyo[1] **Laksmi**[2]

Introduction

This study aims to reveal the meaning of the librarian's role as a change agent according to Ajeng's life and their contribution as a librarian. The Librarian profession is a social phenomenon that shows this profession is less familiar in Indonesia and considered a bookkeeper. Lack of librarian position awareness in society and theoretical awareness that this profession develops society to be smart people and creates anxiety for stakeholders. Individual knowledge and experience create awareness and a new perspective on librarian roles.

The roles as a change agent appear in different situations contextually. The study performed by Fatma and Laksmi shows Ariyo storyteller's strategy to change young people to like storytelling activities (Fatma and Laksmi, 2019). He started from the first step, evoke needs change to keeping suitable changes according to mutual trust. Several other studies are more inclined to discuss librarians' changing roles as skilled intermediaries to ensure available sources for user needs, a blended librarian in the academic community, a research collaborator. In this study, the change agent concept was discussed through experience and knowledge of the Ajeng librarian as a change agent by looking at change agents' characteristics.

Method

The study employed a qualitative approach to the life history analysis method. The purpose of life history is to present a person's subjective view of the life he lives in his word (Musarrofa, 2019). The person chosen in this study is having strength optimism, proven by the successes achieved in the field, monumental work, impact on society, and being recognized by society (Shodiq 2014). Furthermore, life history is the result of interaction between writer and storyteller. The study performs data collection from 1 May to 31 May 2020. Data collection was performed by in-depth interviews, observation, and document analysis. The informants consisted of Ajeng, Dewi (Ajeng colleague), and Yeni (Ajeng student). Analysis technique was performed by coding and interpreting the story to find contextual meaning.

Results and Discussion

Ajeng life as a librarian

At first, Ajeng became a librarian due to placement and did not have a library science background, which made her work hard and learn a lot. Ajeng works at the library because there was no other choice, and has to perform earnestly and wholeheartedly. She was worked and placed in Universitas Brawijaya Library (UB Library) in 1983. In 1991, she got official duties in the School of Information Library and Archives Study at the University of New South Wales, England, to explore library science's postgraduate study In 1993, she returned to Indonesia and placed UB postgraduate library. In 1997, she became Head of UB Library at once developed

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Malang City Library, UB Medical Faculty Library at RSSA. She also developed a digital library in collaboration with Engineering Faculty students, such as Inlib, Intouch, Lentera.

She got several achievements such as Certificate of Honor for the President of the Republic of Indonesia, Satyalancana Karya Satya 10 Years in 2000, and E-Content Award 2nd winner from Research and Technology for Digital Libraries in 2003. In 2008, she was assigned to be the Head of Academic Administration and Student Affairs in UB. She became head of UB Library in 2012, and not later. She was appointed Deputy of the National Library of Indonesia in 2012. After retiring from his formal position, she teaches as an extraordinary lecturer in the Department of Library Science, Faculty of Administrative Science, Universitas Brawijaya (Department of Library Science FAS UB), and Department of Secretariat, Expertise Field of Library and Archives, Vocational Program UB. In addition, she is active as a consultant in several communities in Malang Raya and East Java.

Strategy of change

Mobilizing the Young Generation

Ajeng is close to young people, especially UB Students. Mobilizing the young generation for her is not difficult to work. She has long been in universities and strengthened by his role as the Department of Library Science FAS UB founding, established in 2011, and became the first Deputy of National Library of Indonesia from the academic library. She gets along easily with the young generation because she is hemophily with them, not patronizing, and full of empathy.

She is close to students through her works such as education and training teaching materials of library management (The first book), and she is creatively exploring information in Soekarno's works. Even had worked at the National Library of Indonesia, she returned to UB for teaching again to serve the community. Considering the salary may not be comparable. However, she has motivating to teach. She teaches Library Science at UB. She teaches to transfer their knowledge to the young generation and to give motivation for future librarian candidates. During the Covid-19 pandemic, she also teaches through online learning methods.

Librarians teach what they know and transferring to the learner. Ajeng learns more about managing collections from her teacher, who librarian and boss. Furthermore, what Ajeng got in the past was transferring to the young generation. Transfer Not only library science knowledge and experience but also give motivation for the young generation.

Mobilizing the community

To mobilize the community, Ajeng is active as a consultant in The Forum Communication of Community Reading Gardens (FKTBM) Malang Raya, The Forum of Indonesian Academic Library (FPPTI) East Java, and the Steering committee in Conference of Digital Library Indonesia (KPDI). She also became an influencer through their social media homepage. In addition, she involves creating and developing Indonesian Book Corrector (KABI) to review books published by the community and promote them. As a consultant and influencer, she behaves hemophily, empathy, openness, and keeping good relations and trust (Fatma and Laksmi, 2019).

Librarians can give influence society using their social media. Librarian social media must reflect their profession as professional librarians. Librarian as influencers reflected on action taken by Ajeng on writing each post on their social media such a Facebook. She always tries to write a post that reflected their profession as a librarian. She gives an example of activities that she

usually performs during the Covid-19 pandemic, such as staying at home, working from home, and learning from home.

Giving Education on Hoax prevention

Librarians can contribute to fighting the spread of hoaxes through user (community) education. During the Covid-19 pandemic, there is much invalid information, sourceless and even misleading. Librarians can perform virtual information literacy. Thus, society can prevent hoaxes. In performing librarian roles as Hoax prevention during the Covid-19 pandemic, Ajeng educates society to filter each received information and check their validity and source. Her approach in society refers to an equal position, openness, proximity, and mutual trust.

Giving thought

Librarians as change agent help implementing social change in society. The librarian must be active, creative, and innovative, thus giving useful contributions to society. Ajeng involves in giving thought to FKTBM, FPPTI, and KPDI as a consultant. Furthermore, Ajeng, with the librarian community, publisher, book distributor, and the member created KABI that has purposes of reviewing, publishing, promoting, and lifting Indonesian books. In communicating with forum members, she used an educational magister background and works experience as a deputy. Their credibility allows her opinion to be a useful recommendation for the forum.

Analysis librarian role as a change agent

Librarian as a change agent performs their duties and responsibilities and have responsibilities to contribute to society. Librarians encourage society to change towards a better direction through ideas and innovation according to their knowledge, expertise, and experience. The librarian roles as change agent perform by Ajeng refer to librarian roles such as librarian as a teacher, influencer, hoax prevention, and giving thought

As a teacher, Ajeng transferred their knowledge, expertise, and experience to the young generation. She also gives motivation and spirit to the young generation on equality and keeping proximity. As an influencer, she performs user education through their post and shapes professional librarian characters through social media. Their knowledge, expertise, and experience influence society through social media in a better direction. As hoax prevention, she gives education for society to filter invalid sources and information. As a change agent, she contributes through their action and thought in FKTBM, FPPTI, and KPDI as a consultant. Furthermore, she involves in build and develop KABI as the community to develop books in Indonesia.

Conclusion

Librarian work performs by Ajeng looks very varied and tends to interact more with users. The work makes it possible as a change agent, which essentially changes society, both from young people and adults, to be more developed. Her success as a change agent is due to she has characteristics of change agents such as hemophily, empathy, openness, proximity with user and library partners. Ajeng performs professional responsibilities and serves the community, and role as teacher, influencer, hoax prevention, giving a thought.

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DIGITAL LITERACY SKILLS AND COMPETENCIES AMONG THE LIBRARY AND INFORMATION SCIENCE STUDENTS AND RESEARCH SCHOLARS, UNIVERSITY OF DELHI DURING THE COVID PANDEMIC TIME: A STUDY

Nidhi * Margam Madhusudhan[1]**

Introduction

A time span of almost two years and the world is still fighting against the deadliest pandemic in the history. But none of the pandemic so far caused this much of paradigm shift. India reported its first COVID cases in Kerala on January 7, 2020, since then the country underwent a series of lockdowns and partial lockdowns to avert the further of spread of COVID-19. COVID-19 is a mysterious virus much information still remains undiscovered. Its unique characters and ability to spread rapidly has affected the various spheres of life drastically.

COVID-19 affected life from every aspects leaving no exception to educational institutions also. The wild proliferation of COVID-19 caused turmoil to all the educational institutes and its activities all round the world. The outbreak proposed a challenge for educational institutions to continue the learning with the help information and communication technology (ICT) and to save the previous year of students. The overnight radical change in education from physical classrooms to virtual classroom was possible with the help of telecommunication which turned out to be the salvation in the COVID age. "The COVID-19 pandemic has created an unpredictable situation for many Higher Education institutions across the globe, as online learning and blended or hybrid provision (drawing on both physical and virtual learning) have now become rapidly the new education reality, based on the anticipation that, at least for the near future, fewer students are likely to be present fully on-campus" (Martzoukou , 2020). Overnight students were introduced to the new normal where physical interaction was took over by virtual existence, lectures were shifted from physical classrooms to virtual classrooms. COVID hampered every aspect of college life, both from the learner to the instructor's end.

Telecommunication acted as the knight in shining armor to rescue world from the aftermath of the global pandemic. For example work from home, online groceries shopping, e-yoga sessions and many more concepts came into picture during the outrage of the pandemic to limit the crowd and lower down the COVID graph. In India, the concepts of work from home or online educations via virtual classrooms were till date only in black and white.

The change was expected to come after five to six years, the radical changes hit India before the expected time span. The world perceive the importance of digital literacy and in India, a major digital gap was identified during the COVID era. The forced changed of virtual existence left India with a major question of eradication of digital gap and making the population accomplished with the digital literacy.

Digital Literacy and its importance

Digital literacy is seen as product of information literacy and digital era, 21st century, which is on gadgets rather than paper, hence one possessing the digital literacy automatically becomes

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essential part of life. According to American Library Association (2019) Digital Literacy is "*the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills".*

"Digital competences is a complex umbrella concept that relates to the development of an number of competence areas, including information and data literacy, communication and collaboration, media literacy, creating online content, online safety and digital wellbeing as well as problem-solving, critical thinking and innovation with online tools and technologies" (Martzoukou , 2020). "Digital competences encompass not only information and communication tools and technology related skills but also attitudes and behavior that relates to the online information and communication environment, which address responsible, ethical and safe use and dissemination of information, as well as developing creative and innovative approaches when using digital media for learning, work and everyday life societal participation to fulfil personal, social or commercial goals" (Carretero et al., 2017; Laurillard et al., 2016).

The current generation no doubt is born with the silver spoon of digital literacy in their mouth. A five year old kid may be a swift learner of the latest technology and gadgets, thus embracing the e-education mode in the COVID era was a keen task for them. From teenagers to population in 20's also were also gratified with the radical shift, however not being present physically on campus affected the population emotionally. The sudden shift to virtual classrooms and concept of e learning, engaging themselves on different platforms and modes of e-learning was not at all a herculean task for this part of population. The amicable relation of this generation with the modern gadgets and technologies make them a quick adaptors of various and latest developed Information and Communication Technology (ICT).

World is approaching to the era of 'being paperless' which clarifies that future lies on smartphones, tablets, laptops, online platforms, virtual learning and a long queue continues hence, the current and coming generation needs to pull their socks up and become 'digital native'. Being just information literate won't help any community to survive the coming digital age. Everything round the world can be controlled with the help of digital gadgets, from controlling the screen of your smart watch to controlling the server of the larger network, all a person need to learn is just handling every form of digital tool. The future requires the person with the latest digital inclusion thus there would be a sharp decline in the population possessing no or least digital literacy skills.

Scope and Objectives of the study

The study focuses to assess the use of digital literacy skills and competencies possessed by the students of department of Library and Information Science (LIS), University of Delhi. The study aims to identify the digital skills and competencies during the Pandemic among the future library science students as they are the heir of future LIS field. The study would describe the shift of e-learning during the pandemic and its effect on the students. The following are the major objective of the paper:

i. To know the use of digital tools by the LIS students for various purposes during the pandemic time.
ii. To identify the use of digital tools for online education and higher education.
iii. To identify the benefits and problems face while using the digital tools
iv. To identify the use of digital devices in accessing library resources.
v. To identify the advantages and problems associated with online library services.

Methodology

A structured questionnaire with different types of dichotomous and multiple choice questions was prepared with the help goggle forms and distributed online to collect the data. The online questionnaires were circulated among 146 students, and 133 responded, eliciting 91.09 per cent. The questionnaire consisted of 10 questions and the responses of these 10 questions are analyzed with the help of tables and graphs.

Findings and Discussions

Demographic details

Current generation is quite addictive to digital tools and gadgets. Table 1 shows that the people of different age groups used digital tools for various activities in the pandemic time. The age of respondents covered in this study is divided into 3 categories, viz., below 25 years, 26-30 years and above 30 years. The respondents from the age group of 26-30 years and below 25 years is similar (45.1 per cent) and very low per cent of respondents fall in the category of above 30 years (9.8 per cent). Table 1 reveals the course wise distribution of the LIS students. Out of the total respondents 45.1 per cent are from M.LISc followed by B.LISc 33.3 per cent. The percentage of M.Phil. research scholars is 9.8 followed by the Ph.D. research scholars 12 per cent. Table 1 also depicts that female percentage outnumber the male percentage in the Department of LIS, University of Delhi.

Table 1: Demographics

Status	Number (%)
Gender	
Female	69 (48.1)
Male	64 (51.9)
Age distribution	
Below 25	60 (45.1)
26-30	60 (45.1)
Above 30 years	13 (9.8)
Course distribution	
BLISc	44 (33.1)
MLISc	60 (45.1)
M.Phil.	13 (9.8)
Ph.D.	16 (12)

Use of Digital tools and their frequency

Development and involvement of ICT tools in everyday activities have increased our dependency on digital tools. During the COVID-19 pandemic time, there was an increase in rate of use of these digital tools. Digital tools become an indispensable part of student's life. These digital devices help students to continue their academic without any disturbances.

Table 2 shows that the most used digital device by the students is mobile phones viz., 92.5 per cent followed by laptops 63.9 per cent. Tabs were the least used digital devices by the students. Ease of use and handy quality of mobile makes it stand at the top of the table. Considering the use of digital devices it is important to take account of time spent on these devices. Table 2 shows that

mobiles phones are used by the most students daily for 3-4 hours. 44 students use their mobiles for more than four hours. Only 3 students use their mobile for less one hour. Laptops use is little less by the students. 44 students use laptops for 3-4 hours while 14 students use laptops for less than one hour. Tabs are the least preferred devices by the students and their usage is also comparatively low. 30 students use tabs for less than one hour.

Table 2: Use of digital Devices and Frequency of use

Particulars	Number (%)
Use of Digital devices	
Mobiles	123 (92.5)
Laptops/ PCs	85 (63.9)
Tabs	20 (15)
Frequency of Use	
Mobile	
Less than one hour	3
One- two hours	28
Three- four hours	56
More than four hours	44
Laptops/PCs	
Less than one hour	14
One- two hours	44
Three- four hours	39
More than four hours	20
Tabs	
Less than one hour	30
One- two hours	8
Three- four hours	1
More than four hours	4

Purpose of Using Digital devices

Digital devices experienced hike in their use, it is important to consider the purposes for which they were used by the LIS students. Use of digital devices help students to learn, create and communicate in the era of telecommunication. Digital devices helped students to continue their academics and online learning. Many activities shifted from physical to virtual platforms.

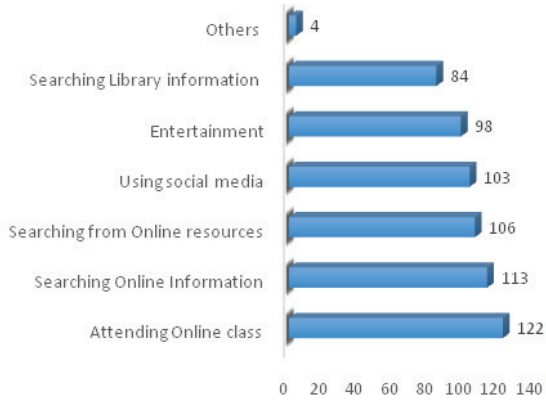

Figure 3: Purposes of using digital devices

Figure 3 represents that most students used digital devices for the purpose of attending online classes (91.7 per cent). The shift to virtual classroom was the reason for highest number of percentage to this category. 85 per cent of students used digital devices for searching information online followed by 79.6 per cent used for the purpose of searching information online. 63.2 per cent of students used devices for the purpose of searching library information.

Virtual class rooms

It's been almost two years that educational intuitions have ceased their door for the physical appearance of the students. The dynamic physical teaching ecosystem of the Universities or Higher educational institutions have been vandalize by the outbreak of the COVID-19. COVID-19 left the educational sector with no other options but to embrace the system of distance learning.

Educational institutions underwent digital transformation overnight. The sector relied upon the various collaborative platforms such as zoom, Ms-Teams, goggle classrooms and many more to ensure continuous dissemination of education. The changes were so instantaneous and momentous proposing new challenges not only for students but for the teachers as well.

Table 4: Virtual Online classes

Particulars	Number (%)
Online Classes	
Yes	126 (97.4)
No	07 (5.3)
Video Conferencing Platform	
Zoom	124 (96.1)
Google meet	113 (87.4)
Google classroom	29 (22.5)
Webex	25 (19.4)
Ms-teams	18 (14)
Others	01 (0.8)

Table 4 represents that 97.4 per cent students attended online classes and zoom (96.1 per cent) is recorded as the most populous collaborative platform to attend classes online. 87.6 per cent of students used google meet for attending online class followed by google classroom 22.5 per cent. Ms-teams (14 per cent) is the least preferred platform for attending online class. The open access availability of the zoom and ease of use made it convenient for the students and teachers to prefer this over others. Google meet (87.6%) also was popularly used by the students.

6.4.1 Benefits and problems of Online Classes

Online classes was executed at such a mass level for the first time. Prior this MOOCs and SYAMs are available, but the emergence of COVID-19 made a big change in the online classes. Online classes provide students with a flexible system and saved students from travelling. Online classes ensure the regular classes of the students with the help of ICT tools.

Table 5 highlights the benefits gained by the respondents during this turmoil. The sudden 'new normal' resulted in a confusion state where some were satisfied with the online learning and on contrary they were obstruction also.

Table 5 Benefits from Online learning/ Digital learning

S.no.	Benefits	Number of Response	Percentage of responses
1	Save time and cost of traveling	101	75.9
2	Flexible system	76	57.1
3	Learned about various collaborative tools and forums	66	49.6
4	Enhanced internet research skills and competencies	87	65.4
5	Enhanced digital information literacy and competencies	77	57.9
6	Record of teaching contents and class for future use and revision	75	56.4
7	Easy to assign a task to assign assignment and their submission	66	49.6
8	Easy access to national and international resource person for guest classes	66	49.6
	Others	1	0.8

Table 5 clearly reveals that major benefits of online classes respondents experience that is was cost and time saving (75.9%) followed by Flexible system (57.1%). The figure shows that in the difficult times of corona online learning system helped them to stay away from travelling and also online learning brought flexibility in the system. Physical classes once left cannot be reverted, however online learning system provided the students with the facility of recording and saving of lectures for their references. In the world of internet and digital gadgets, the shift in the education resulted hike of digital literacy skills and internet skills of students. There were many students who were still afraid of incorporating internet into their studies, the system drag out fears of the students.

Table 6 shows about the challenges respondents faced during the online learning. Still a part of student's population is present in India which is not equipped well with the digital gadgets or internet resulting in the major challenge faced by the students. Use of different collaborative forums by different instructor was also a major challenges proposed by the system.

Table 6: Problem faced by users during online learning

S.no.	Problems	Number of Response	Percentage of responses
1	Unstable internet connection/ Wifi with limited usage	81	60.9
2	Challenging to locate appropriate information online	68	51.1
3	Difficulty in log in to different forums	59	44.4
4	Too much off information to learn	55	41.4
5	Unavailability of devices/ equipment required for online learning	51	38.3
6	Costly internet	48	36.1
7	Others	1	0.8

Table 6 reveals that for sure internet has invaded life in metropolitan cities but in smaller cities and town a consistent connection with decent speed is a problem. Internet gives away a lot of information to read, which may create a sense of confusion of among the users.

Library services

As quoted by Dr. S Radhakrishnan "Library is the heart of an Institution". When it comes to academic institutions library plays a crucial role as they are nurturing the future of any country within them. Pandemic created an ordeal situation for the libraries. But the advent of digital technologies helped library and its professionals to ensure the uninterrupted duty of serving the society. The outburst of the COVID-19 provide libraries an oppurnities to reinvent and refashion its traditional services. The primary focus of the libraries became to provide their patrons with the digital libraries services with the help of ICT tools. Majority of libraries gave their patrons 'the remote logging services' which acted most crucial services for the users. Libraries included COVID related resources for their users and the list of services continued. When university libraries closed their physical services, they immediately opened their digital communications, collaborations, and creative activity to provide services in ways as novel as the virus that forced them into it (Temiz and Salelkar, 2020)

Table 7 reveals that most of the population access their remote logging service provided by the library to ensure the continuous use of library. Remote logging service allows the users to access library resources from anywhere anytime. The Delhi University Library System (DULS) library provided the patrons with the users and name password which they could use while availing the services. Table 7 also shows the most used databases by the students to search online information. Table 8 represents the most used databases by students and research scholars of the University of Delhi during the pandemic. The table shows that students were keenly interested in using EMERALD (90.2%) followed by LISA (78.9%). J-stor (62.4%) and ELSEVIER (46.6%) were also used by the scholar for authentic information. Famous databases like DOAJ and web of science or google scholar gained a low reference from students.

Table 5 also reveals the kind of services provided by the DULS system. No one saw the pandemic coming, so it was never sure for much time physical gate of libraries would be closed. That is why library completely shifted to online services and serve their patron. Maximum services were shifted to online mode and tried to satisfy the patrons. Table 5 shows that major service used by the respondents was access to the e-subscribed journals 84.3 per cent followed by access to e-books 76.9 per cent. Journals being primary sources of information are mostly preferred by the students of higher education. Also, the concept of online publishing act as a catalyst for increased use of this services. Online open access resources (76 per cent) also gain lime light during the time of COVID. Remote access to database (63.6 per cent) and past exam papers (43.8per cent)

were services used by the students The workload increased on library professionals, could be the possible reason that chat services with library professional and e-document delivery (17.4 per cent) were least utilized by the library.

Table 5: Online Library services

Particulars	Number (%)
Remote logging services	
Yes	118 (88.7)
No	15 (11.3)
LIS Resources	
EMERALD	120 (90.2)
LISA	105 (78.4)
Jstor	83 (62.4)
LISTA	78 (58.6)
Elsevier	62 (46.6)
Taylor & Francis	47 (35.4)
DOAJ	46 (34.6)
Others	09 (0.16)
Services by DULS	
Remote access to subscribed e–journals	102(84.3)
Remote access to subscribed e–books	93 (76.9)
Open Access e–resources	92 (76.0)
Remote access to databases (Bibliographic & Full text)	77 (63.6)
Past examination papers	53 (43.8)
Remote access to e–newspapers and magazines	41 (33.9)
Online Library orientation / Information Literacy programme	40 (33.3)
Mobile based library services	37 (30.6)
Resources related to COVID–19	37 (30.6)
E–document delivery service	21 (17.4)

Benefits and problems of services of Delhi University Library system (DULS)

Table 9 and 10 reveals the benefits and problems respondents faced during availing the online library services in the COVID-19 pandemic time.

Table 10 : Benefits respondents experienced by the respondents.

S.No.	Benefits	Number of Response	Percentage of responses
1	Free access to Library e–resources	118	88.7
2	Save the traveling time and health	100	75.2
3	Enhanced digital literacy skills	81	60.9
4	Using library resources round the Clock	75	56.4
5	Wide access to e–resources (both subscribed and open access)	72	54.1
6	Promote paperless work in libraries	65	48.9
7	Never hampered learning due to COVID situation	56	42.1
8	Use of social media tools for disseminating information	52	39.1
9	Notification through websites and e–mails	45	33.8
10	Any other	1	0.18

Table 10 shows that most respondents were gratified that they had access to library resources and material. Digitalization of library material is not a new concept for library but COVID-19 gave a pace to the process of digitalization. Many libraries digitize their resources so that physical closure could not affect accessibility of the documents. Use of Internet and digital gadgets, resulted in the increased digital skills and competencies of the students. Libraries even used SNS for circulation of information to their patrons. The COVID-19 situation provides the library to waive off their traditional services and embrace the changes.

Table 11: Hindrances while accessing DULS services

S.No.	Hindrances	Number of Response	Percentage of responses
1	Wi–Fi /Limited mobile internet connection	81	60.9
2	Unable to focus on the mobile screen	75	56.4
3	Remote access portal login problem	62	46.6
4	Unavailability of required resources	50	37.6
5	Lack of time to access e–resources	47	35.3
6	Unable to download Large size of files	44	33.1
7	Lack of digital skills	28	22.1
10	Any other	1	0.8

Table 11 clearly shows that availability of internet is the major problem faced by the patron of the libraries. Patrons were depend upon remote access services however, due to technical issues, the patron could not sign in to the portal. Also many a times the resources required by the patrons were not present in the digitized collection. Access of these online service via mobile was also challenge for few respondents.

Conclusion

The exponential growth of ICT have unknowingly incorporated the disguised digital skills among the population. But these disguised digital skills and competencies helped the population to sustain during the pandemic time. The radical shift of physical system to virtual world have only been coped up by the students with the help digital skills. But the overnight shift resulted in the increases in the digital competencies of the students. The world realizes the importance of being digitally inclusion. COVID-19 came with the threat of affecting the educational sector adversely. The pandemic made us realize the urgent need of improving and incorporating digital skills of not just students but teachers, professionals and the society.

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SECTION VIII

USER STUDIES & INFORMATION LITERACY

AWARENESS AND PERCEPTIONS TOWARDS PLAGIARISM AMONG FACULTY MEMBERS IN ARYA P.G. COLLEGE PANIPAT (HARYANA): A STUDY

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Introduction

Plagiarism is a very serious issue especially in the digital age of information revolution where the Intellectual assets of others can easily be used by the simple click of a mouse. But the phenomenon that 'Life by itself searches the way of Living' is the best example of introduction of plagiarism checking and preventing mechanism to protect intellectual assets. (Rai,Singh and Bakshi, 2016).

What is Plagiarism?

Plagiarism is one form of academic dishonesty. Different authors and experts defined plagiarism in different way. Plagiarism is developed as a form of stealing or copyright infringement.The Compact Oxford English Dictionary (2009) defines plagiarism as the act of "taking the work or idea of someone else and pass it off as one's own" (Quoted in Clough 2003, 2). It is the misinterpretation of attribution towards authorship. It is the state of an idea/ article/ report conceived/ authored by the one author is being credited to another author. It is the form of an intellectual theft of original works (music, ideas, quotes, words, and someone understanding). This kind of an activity undervalues the currency and nascence of original idea/ thought and weakens the whole generation of human thought process and there by the society.

Plagiarism and Copyright

Plagiarism and Copyright are not the same they are totally different concepts. But both terms may be applied to a particular act/ misdeed. An infringement of copyright is a violation of the rights of a copyright holder when his/her copyrighted material is used without the consent of the copyright holder. Whereas, plagiarism is the unearned increment to the author who does Plagiaries, and the reputation that the plagiarizing author achieved through false claims of authorship.

Types of plagiarism

Different authors have categorized plagiarism in different ways. According to More and Shelar (2011) Plagiarism have been categorized into three categories:

- Written plagiarism
- Oral plagiarism
- Internet or online plagiarism

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Plagiarism detection software

Plagiarism detection software are playing very important role to identify the quality of research. Plagiarism detection software are open source and some are important plagiarism detection softwares are given below:

1. "Copytracker"
2. "Dupli checker"
3. "VIPER"
4. "EVE2"
5. "See sources"
6. "The plagiarism checker"
7. "Paper rater"
8. "Cite Plag"
9. "Copy scope"
10. "Turnitin"
11. "iThenticate"
12. "URKUND (Ouriginal)"

Objectives

This study attempts to interpret awareness and perceptions towards plagiarism among faculty members in Arya P.G. College Panipat (Haryana).

The specific objectives are:

1. To examine the level of awareness among faculty members towards Plagiarism in Arya P.G. College Panipat.
2. To know the attitudes and perceptions of faculty members towards plagiarism
3. To find out their familiarity with citing methods and reference styles among the faculty members
4. To explore the main factors which lead respondents towards plagiarism while writing a thesis/ research paper

Research Methodology:

A structured online questionnaire was designed in google form to collect the data. The online link was shared with all faculty members in official whatsapp group. The population of the present study encompasses faculty members in Arya P.G. College Panipat (Haryana). The collected data was analysed with the help of excel.

Data analysis & interpretation

Table-1 Gender wise responses

S. No.	Gender	Frequency	Percent
1	Male	23	35.09
2	Female	41	64.01
Total		**64**	**100**

Table 1 shows the gender wise responses of the respondents, the results reveal that the majority of the respondents are female i.e. 41 (64.1%) followed by male respondents i.e. 23 (35.9%).

Table-2 Age-wise distribution of the Respondents

S. No.	Age	Number of the Respondents	Percent
1	20–25 Year	8	12.5
2	26–30 Year	14	21.87
4	31–35 Year	15	23.43
5	36–40 Year	16	25
6	41– 45 Year	4	6.25
7	46–50 Year	3	4.68
8	More than 50 Year	4	6.25
	Total	64	100

Table 2 shows that majority of the respondents i.e. 25% belongs from the age group of 36-40 years, followed by 23.43% respondents which belongs to the age group of 31-35 years, 21.87% belong from the age group of 26-30 years only and 12.50% respondents belong to 20-25 years of age group.

Table-3 Background Status of the Respondents

S. No.	Status	Frequency	Percent
1	Rural	48	75
2	Urban	16	25
Total		64	100

Table 3 shows that majority of the respondents i.e. 75% belong from rural background while 25% are from urban background.

Table-4 Awareness about Plagiarism among respondents

S.No.	Statement	Yes	No	Total	Total %
1	Are you aware about the UGC Plagiarism Regulations Policy?	50 (78.13%)	14 (21.87%)	64	100
2	Are you aware about plagiarism detection software?	50 (78.13%)	14 (21.87%)	64	100
3	If you writes other work as your own then it is plagiarism	55 (85.93%)	9 (14.7%)	64	100
4	Writing words or idea from others written matter without giving credit to him/her is plagiarism	57 (89.06%)	7 (10.94%)	64	100
5	Have you listened the word plagiarism before this questionnaire	62 (96.88%)	2 (3.12%)	64	100
6	Writing wrong information about the source of a quotation is plagiarism	36 (56.25%)	28 (43.75%)	64	100
7	Writing the words differently but copying the sentence structure of a source without giving credit to that source is plagiarism	53 (82.81%)	11 (17.19%)	64	100
8	if majority of your work is copied from a source, whether you give credit or not to that source, is plagiarism	60 (93.75%)	4 (6.25%)	64	100

Table-4 shows that majority of the respondents i.e. 78.13% are aware about the UGC plagiarism regulations policy and plagiarism detection software while 21.87 are not aware with the statement. Most of the respondents i.e. 85.95% know that writing by copying one's work is plagiarism while only 14.7% respondents given negative responses. Majority of the respondents i.e. 89.6% considered that writing and copying anyone ideas without giving credit to her is plagiarism while only 10.75% respondents given negative responses.

Majority of the respondents i.e. 96.88% were know about plagiarism before this questionnaire and 3.12% were unknown about the same. 56.25% respondents considered that

writing wrong information about the source of a quotation is plagiarism while 43.75% respondents given negative responses. Majority of the respondents i.e. 93.75% considered that most of the work are copied form a source, whether it's credited to the source or no it is plagiarism and only 6.25% has negative responses.

Table -5 Responses of the respondents about plagiarism

S.No.	Statements	Strongly Agree	Agree	Strongly Disagree	Disagree	Total	Total %
1	Plagiarism is a crime in Academics	32 (50%)	26 (40.62%)	–	6 (9.38%)	64	100
2	Plagiarism is an act of lack of honesty and integrity	29 –45.32%	32 –50%	3 –4.68%	–	64	100
3	Plagiarism is an act done because of Laziness	13 –20.31%	37 –57.82%	–	14 –21.87%	64	100
4	There is nothing wrong in doing plagiarism	1 –1.57%	7 –10.94%	18 –28.12%	38 –59.37%	64	100
5	Plagiarism shows your smartness	3 –4.68%	13 –20.31%	16 –25%	32 –50%	64	100
6	Everyone is doing lagiarism, so it is not wrong	19 –29.68%	7 –10.94%	2 –3.13%	36 –56.25%	64	100
7	Plagiarism does not affect the morals	3 –4.68%	4 –6.26%	18 –28.12%	39 –60.94%	64	100

Table -5 shows that majority of the respondents i.e. 50% are strongly agree with the statement **"plagiarism is a crime in academics",** followed by 40.62% respondents which is agree and only 9.38% respondents are disagree with the statement.

Majority of the respondents are agree with the statement **"Plagiarism is an act of lack of honesty and integrity". Results of the study shows that majority of the respondents are aware about plagiarism.**

Table -6 Respondents perception towards Plagiarism

S.No.	Statement	Agree	Disagaree	Total	Total %
1.	Most of the research scholars copy others' work I am also following the same	8 (12.5%)	56 (87.50%)	64	100
2.	Plagiarism is necessary if there is a deadline to submit a paper/ research report.	20 (31.25%)	44 (68.75%)	64	100
3.	Plagiarism is justified if some portion of the paper is plagiarized from a quality journal article since it has scientific value.	34 (53.12%)	30 (46.88%)	64	100
4.	Plagiarism is necessary due to engaging in important work.	20 (31.25%)	44 (68.75%)	64	100
5.	Copying methodology from other thesis is justifiable because the methodology always remains same	33 (51.56%)	31 (48.44%)	64	100
6.	If anyone plagiarize one's own data, it is not punishable because it is not harmful	43 (67.18%)	21 (32.82%)	64	100
7.	Without coping others work nobody can write a paper or thesis	20 (31.25%)	44 (68.75%)	64	100
8.	No one checks and detect the copied material	10 (15.62%)	54 (84.38%)	64	100

9.	Coping and pasting from the internet is easier than writing own sentences	46 (71.88%)	18 (28.12%)	64	100
10.	Plagiarism is not a very bad act	21 (32.82%)	43 (67.18%)	64	100
11.	If any one of my colleague permits me to copy from his/her paper. I am not doing anything wrong.	21 (32.82%)	43 (67.18%)	64	100
12.	The name of the writer who plagiarize in his/her paper or thesis should not be disclosed to the academic community	26 (40.62%)	38 (59.38%)	64	100
13.	Sometimes it is difficult to avoid using other people's work without citing them	44 (68.75%)	20 (31.25%)	64	100

Table 6 reveals about the perception of respondents towards plagiarism. The results of the study depicts that majority of the respondents are **disagree** with the statement mentioned at sr. no. 1 & 2, 4, 7, 8,10,11, 12 and majority of the respondents are agree with the statement mentioned at 3,5,6,9 and 13.

Table 7: Respondents responses towards Plagiarism

S.No.	Statements	True	False	Total	Total %
1	If, anyone caught in plagiarism he/she will be punished	54 (84.37)	10 (15.63)	64	100
2	Self plagiarism is also punishable	28 (43.75)	36 (56.25)	64	100

Table-7 shows that majority of the respondents i.e. 78.13% considered that plagiarism should be punishable while 15.63% has negative responses. Majority of the respondents 56.25% believed that copy own work is not plagiarism while 43.75 are negative in the same.

Table -8: Respondents responses towards the plagiarism statement

S.No.	Statement	Yes	No	Total	Total %
1	Plagiarism can spoil the career of anyone	49 (76.56)	15 (23.44)	64	100
2	A person can lose his/her job due to indulging in plagiarism	48 (75)	16 (25)	64	100
3	Urkund (ouriginal) is the tool to measure the plagiarism	55 (85.93)	9 (14.07)	64	100

Table-8 shows that majority of the respondents i.e. 76.56% considered that plagiarism should be punishable while 23.44% has negative responses. Most of the respondents i.e. 75% considered that indulged in plagiarism person can lose his job while 25% % has negative responses. Most of the respondents i.e. 85.93% aware about Urkund as a tool of measurement of plagiarism.

Finding of the study

Based on the findings, some major findings are summarized as given below:

- Majority of the respondents are female i.e. 64.1%.
- Majority of the respondents i.e. 78.13% are aware about the UGC plagiarism regulations policy and plagiarism detection software
- Majority of the respondents i.e. 96.88% are known about plagiarism before this questionnaire.
- Majority of the respondents i.e. 93.75% considered that most of the work is copied form a source.
- Majority of the respondents i.e. 78.13% considered that plagiarism should be punishable.
- Majority of the respondents i.e. 85.93% are aware about Plagiarism detection software i.e. Urkund (original) software.

Conclusion

Present study was conducted on awareness and perceptions towards plagiarism among faculty members of Arya P.G. College Panipat. The findings of the study highlighted that majority of the respondents are female with contribution of 64.1% and 35.9% are male. Majority of the respondents 75% belong from rural background and majority of the respondents i.e. 25% belong from the age group of 36-40 years. Majority of the respondents i.e. 50% considered that plagiarism is a crime in academics. There are 96.88 %of respondents are aware of the word plagiarism. Majority of the respondents i.e. 89.6% considered that writing and copying anyone ideas without giving credit to his/her is plagiarism. The study conclude that teachers of Arya College Panipat should need to study about plagiarism in depth because they have basic knowledge but they need to be more careful for their research work to avoid plagiarism.

Recommendations based on findings:

- College Library should organize a seminar/workshop on plagiarism for faculty members.
- College Library should conduct a workshop on citation style/reference tools for citing the references properly.
- College Library may conduct orientation program on UGC Plagiarism Regulations Policy.

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ATTITUDE TOWARDS MOOCS AMONG COLLEGE STUDENTS IN TAMIL NADU

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Introduction

Students were unable to access the regular classroom during the Covid 19 pandemic and subsequent lockdown. It has contributed to the creation of new technological means, such as MOOCs, to introduce the skills and techniques of learning observed in modern scientific research, thus allowing learners to gain a foothold in the competitive world (Alhazzani, 2020).

MOOCs can have a major impact on education. There are several platforms on which MOOCs are offered, Coursera, Udemy, EdX and Udacity to name a few.Implementation of any technology based educational reform requires consultation with previous experiences of others in this field, exchanging experiences with specialists and interested parties, and encouraging partnership and cooperation between the public and private sectors in the areas of e-learning and distance learning world (Alhazzani, 2020).

MOOCs : Concept

The concept of MOOC developed in 2008. In 2011, Sebastian Thrun and other colleagues at Stanford University offered a free academic course on artificial intelligence to provide learning opportunity for anyone interested in AI. 160,000 participants from 190 countries enrolled in that course and a similar level of interest followed in the MOOCs subsequently developed by many other universities and educational institutions. Waldrop (2013) noted that in less than two years, 62 educational institutions launched 328 open online courses, in which 2.9 million students from 220 countries enrolled.

MOOCs provide a platform for free online courses for large numbers of people from all over the world, where the subject is discussed and pre-recorded by educational experts. The latter provides educational materials, text, sound, and video. They use social networking pages (Twitter, Facebook, and blogs) to share experiences and learn from others. This collaborative learning distinguishes MOOCs from other educational platforms. It can offer a more participatory and interactive experience than other means.

Cole and Timmerman (2015) conducted a study to explore what students think about MOOCs. They concluded that MOOCs have many advantages and hence researchers should focus more on who should be benefitted by MOOCs and how they should be served. According to Bonk and Reynolds (1997), online learning must be able to create new challenges for the learner in turn enhancing their thinking and enabling them to link various information to create new leaning experiences.

MOOCs are effective in learning as they employ user interaction to ensure students' participation and long-lasting retention, providing feedback so that a learner's progress can be monitored and evaluated. The importance of MOOCs is that they provide the experience of open-

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ended online courses which have enabled participants from different countries to join international universities and benefit from their unique programs and courses. Students found MOOCs to be flexible and that helps to cater to their needs (Cripps, 2014).

Experts had predicted that MOOCs will help to make high quality education more accessible and reduce the substantial costs of higher education (Carey, 2012; Lewin, 2012). MOOCs have also been proven to improve the communication skills among learners, especially in English, by increasing community engagement and knowledge exchange (Daradoumis et al., 2013). MOOCs can help in increasing the equity between teacher and learner, and thereby increasing the equality between underserved communities and educational resources (McGreal, 2013).

Bralić & Divjak (2018) have described MOOCs as being effective in replacing traditional classrooms due to their wide variety, large quantity, practical implementation, attractive design, and immediate availability, some components, and content. Wider access and high levels of instructor expertise are the major strengths of MOOCs (Cole & Timmerman, 2015)

MOOCs can aid learners in developing their own ideas, expressing themselves, and improving their communication skills, thereby eliminating limitations placed on them by traditional face to face classroom model (Levy & Schrire, 2012; Walker, 2013; Mee et al. 2016; Yunus, 2018; Sun et al., 2019). Wang et al. (2019) identified in lack of social presence, interaction, and support as three main factors undermining students' engagement with MOOCs.

Need and Significance of the Study

Research has suggested that MOOCs are enabling innovation, engagement and equity in higher education**.** However, it is important to know how the college students in Tamil Nadu are approaching online education, specifically MOOCs. This data can help the professionals in library and information professionals to take steps to impart knowledge and awareness on this area.

Objective

The present study aims to find out the attitude of college students towards MOOCs, whether the students have attended MOOCs, their online behaviour, and the factors that promote or prevent the access of MOOCs and the sources of information with regard to MOOCs.

Method

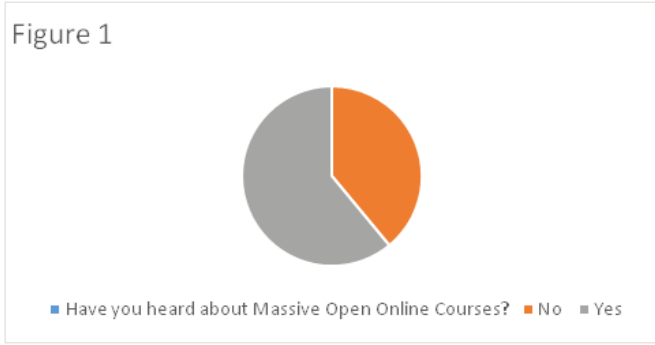
Participants

The sampling method used was convenient sampling. A sample of 201 students from four colleges, and two universities in Chennai participated in the study. The recruitment of the samples and the study's procedure was in accordance with ethical requirements. The sample constituted of 142 females and 59 males. There were 105 postgraduate students and 96 undergraduate students. The age of the participants ranged from 18 to 22 years. Data was collected using Google Forms.

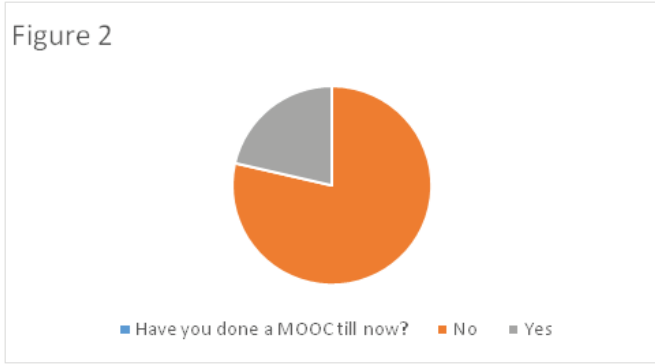
Measure

The researcher used a self-developed set of questions that included socio demographic information, information regarding online behaviour and data related to their awareness level and attitude towards MOOCs.

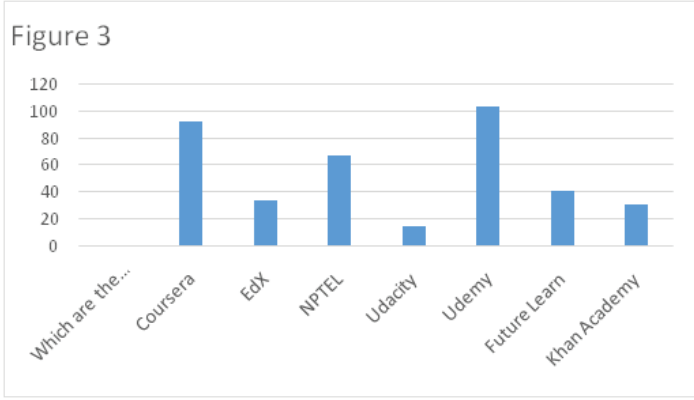
Results & Discussion



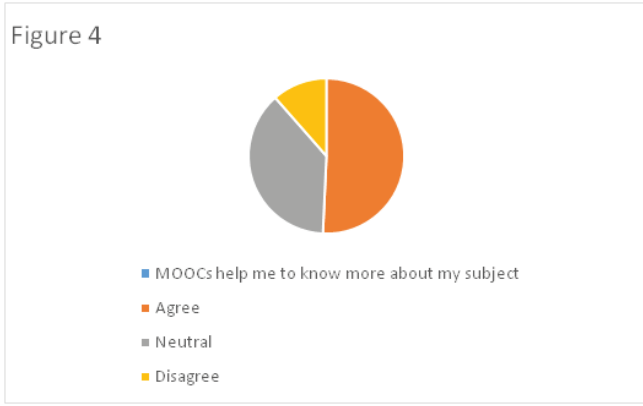
Out of the 201 participants, only 122 students (61%) had heard about MOOCs when they were participating in the study.



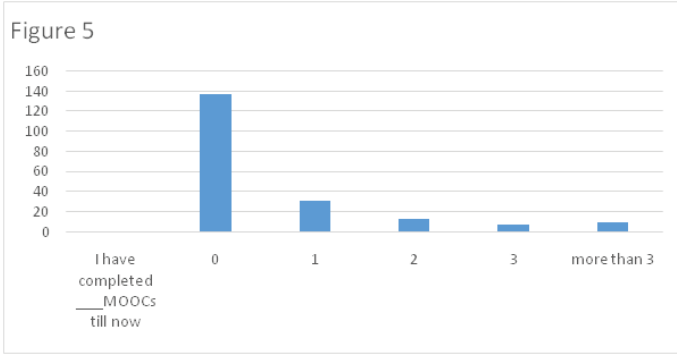
Out of the 201 participants only 43 students (21%) had done a MOOC. The rest of the students had never done a MOOC till now.



The researcher also wanted to know the awareness the students had about the platforms that offer MOOCs. The most popular platform was Udemy (51.7%) followed by Coursera (46.2%).

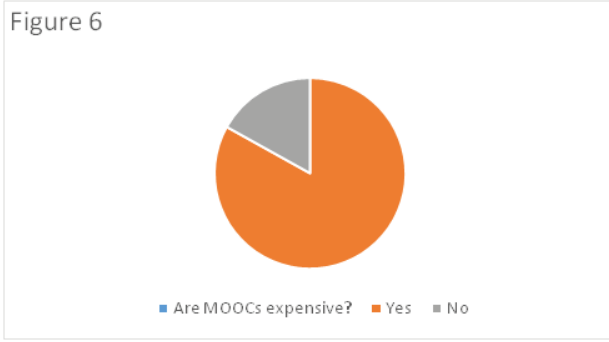


From the above figure it is evident that 51% of the students believe that MOOCs help them to know more about their own subject.



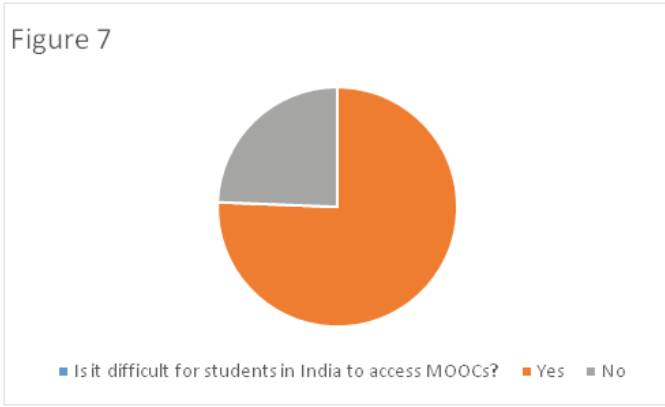
From the above figure it can be seen that 68% of the students had never completed a MOOC till date. It can be seen that there is a sizeable gap between awareness of benefit of MOOCs and the actual participation.

The further items attempt to identify the reason behind this gap between the level of awareness and the participation.



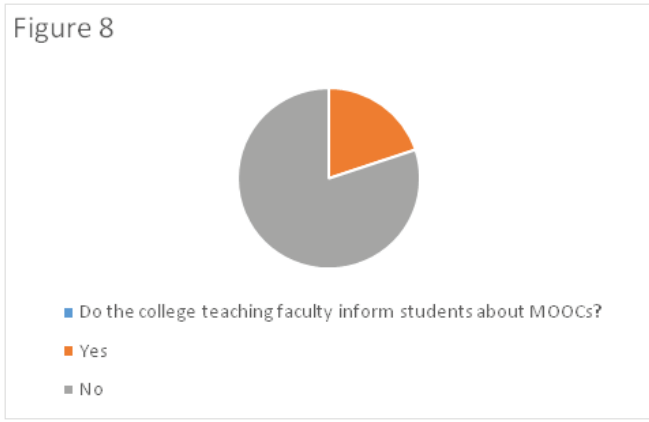
The above figure shows that 83% of the students feel that MOOCs are expensive.

Figure 7



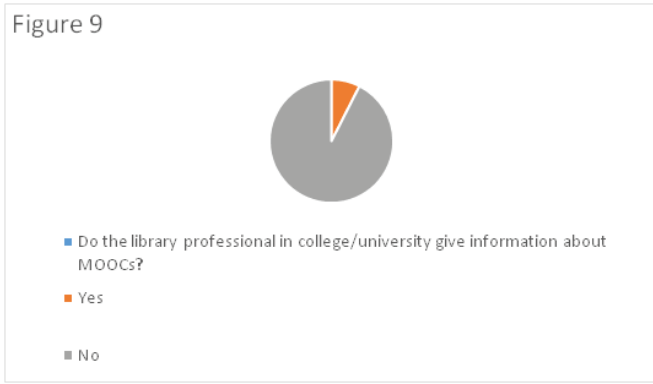
76% students believe that Indian students will find it difficult to access MOOCs

Figure 8



80% of the students were not informed by their teacher about the benefits or they were not even given an introduction to MOOCs by their teachers.

Figure 9



Among the participants, 93% of the students were not given any information about MOOCs by the library professionals in their college or university.

Conclusion

Information is a basic requirement for any human being and specifically for students. The information can be about many aspects including various sources, media literacy, web literacy and network literacy. Librarians have to play a major role in imparting information to students to make them informed citizens (Kumar, Ganta & Babu, 2021). The study found that student s perceive MOOCs as expensive and inaccessible by Indian students. Students should be given awareness about low cost or free open online courses. In this Covid era, the librarians should focus on imparting knowledge about the various ways in which knowledge can be gained of which MOOCs is a major method. Librarians should focus on educating the students and other library users on such matters.

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MAPPING PATRON'S ATTITUDE TOWARDS INFORMATION TECHNOLOGY APPLICATION IN UNIVERSITY LIBRARIES: AN ANALYTICAL STUDY OF TWO UNIVERSITY LIBRARIES OF NORTH-INDIA REGION

Tarvinder Singh[1] **Prof. Jagtar Singh[2]**

Introduction

The role of university libraries in the 21st Century is not merely confined to collecting, storing and disseminating information but it is more evolving about becoming spaces of social learning and spaces where knowledge is created and shared. With technology in place, there is spurring innovation in academic libraries especially the university libraries as they are adapting to accommodate new applications of information technology for learning, research and information. As a result, we can witness the university libraries in India to experiment with emerging social, mobile and dynamic technologies to develop a comparatively robust and more responsive information base for providing user-centric services.

The information technology (IT) applications are not the only factor that have impacted the service delivery in libraries, but the evolving shape of pedagogy in higher education has also been one of the key reasons for the changes in service pattern of libraries. There is a growing demand for providing research centric services, i.e. developing academic writing skills of researcher, preparing research assignments, research project management and doing effective review of literature. All these activities highly demand the setting-up of academic skill zones in library premises which are usually equipped with highly sophisticated technological tools. Thus, the demand for more technology has further forced the library leaders to reflect on how the users actually make the most suitable use of these technological tools.

Statement of the Problem

There is an ongoing change in university libraries as new technological applications are being adopted and used in libraries with the passing of each day. These technological applications put a tremendous burden on the budget of a library. The case of Himachal Pradesh University, Shimla and Punjabi University Patiala is not an exception. The libraries in both the universities are endeavouring to provide best services using modern day technological infrastructure. This has further forced the library authorities to reflect on how the end users perceive and use these technologies. Therefore, it becomes pertinent to know the attitude of patrons towards prevailing information technologies in libraries.

The following objectives were formulated to carry out the present study:

- To find out the attitude of patrons towards information technology application in university libraries.

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- To ascertain whether there is difference in the attitude of patrons as per gender.
- To assess whether there is difference in the attitude of patrons with regard to their category.
- To inspect whether there is difference in the attitude of patrons with regards to their age-group.

Research Methodology

The library patrons of two universities, namely Himachal Pradesh University, Shimla (HPU) and Punjabi University, Patiala (PUP) were subjects of present study. In order to assess the attitude of patrons towards information technology application in libraries, a sample of three user categories which include PG Students, Research Scholars and Faculty members was taken from the faculties of Social Sciences and Sciences of the two reputed universities of north India. The lead author collected the data as part of his PhD research. A structured questionnaire was distributed based on random sampling among 200 participants in each university. In response, 391 valid questionnaires (97.75%) were received back from the library users of HPU and PUP. The scoring of the statements was done on reverse rating scale viz. 1 score strongly favoring the statement and 5 score strongly rejecting the statement.

Data Analysis and Interpretation

In order to analyze the collected data, descriptive statistical method using the Statistical Package for Social Sciences (SPSS) software was used. To understand the attitude of patrons towards information technology application, statistical techniques such as simple percentage, Chi-square test, Kruskal-Wallis test and Mann-Whitney U test were used to interpret the collected data. The output of question statements in standard cross-tabulation table is described in the following sections:

Demographics of the participants

The demographic descriptions presented in the table 1 include gender, category, qualification, age-group, university, faculty and the department respectively. The study reveals that the numbers of female participants (59.10%) were more than the male participants (40.90%). Majority of the participation was of P.G. Students (63.20%) followed by Research Scholars (23.00%) and Faculty Members (13.80%). For age, the majority participation was in the age-group of below 25 years (67.80%), followed by 20.50% falling in the age-group of 26-35 years, and least number of participation (4.60%) from the age-group of 46-55 years. Of the total population, 48.80% participants were from HPU and 51.20% from PUP. Similarly, 49.60% respondents belonged to the Faculty of Social Sciences whereas 50.40% were from the Faculty of Sciences.

Table- 1: Demographic descriptions of the participants

Category	Specifics	N	%age
Gender	Male	160	40.90%
	Female	231	59.10%
Category	P.G. Students	247	63.20%
	Research Scholars	90	23.00%
	Faculty members	54	13.80%

Qualification	Bachelor	247	63.20%
	Master	90	23.00%
	PhD	54	13.80%
Age	Below 25 years	265	67.80%
	26 - 35 years	80	20.50%
	36 - 45 years	21	5.40%
	46 - 55 years	18	4.60%
University	HPU	191	48.80%
	PUP	200	51.20%
Faculty	Faculty of Social Sciences	194	49.60%
	Faculty of Sciences	197	50.40%
Department	Chemistry	40	10.20%
	Economics	40	10.20%
	Geography	39	10.00%
	History	40	10.20%
	Mathematics	40	10.20%
	Physics	39	10.00%
	Political Sc.	40	10.20%
	Psychology	34	8.70%
	Public Admin.	40	10.20%
	Statistics	39	10.00%

The figure 1 describes in precise the gender, category, qualification, and age-group of survey participants. Apart from this, the figure also specifies the respective university, faculty of affiliation in respective university and department of the patrons.

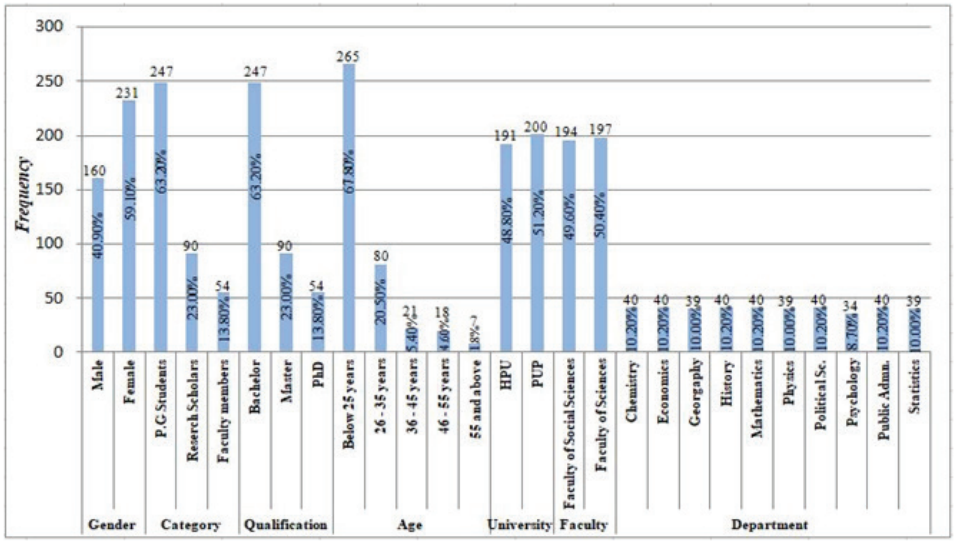

Figure- 1: Demographics of the participants

5.2 Analysis of question statements 1 - 4: mapping the attitude of patrons as per university and faculty

The question statements 1 to 2 of the survey were formulated based on three-point Likert Scale whereas statements 3 to 4 were formulated based on two-point Likert Scale method. For mapping the attitude of patrons and understand the significance of relationship as per university and faculty, question statements 1 to 4 were analyzed using the Pearson Chi-square statistical method.

Table- 2: Frequency distribution

Statement	Response	N	%age
1– Do you feel that people are masters and technology is a tool?	Yes	287	73.40%
	No	61	15.60%
	No opinion	43	11.00%
2– Do you think that libraries should adopt new technology as quickly as possible?	Yes	351	89.80%
	No	23	5.90%
	No opinion	17	4.30%
3–Were you involved in the decision–making of information technology (IT) application in your library?	Yes	121	30.90%
	No	270	69.10%
4– Have you received any training in use of technology to access information?	Yes	108	27.60%
	No	283	72.40%

The frequency distribution of subjects described in the table 2 above precisely describes that majority of the patrons (73.4%) felt that technology is merely a tool which people use/operate as masters. Almost ninety percent (89.8%) users felt that libraries should adopt new technology as quickly as possible. The survey reveals that majority of the patrons (69.1%) were not involved in the decision-making of information technology (IT) application in libraries. Mere 27.6% patrons received training in using technology to access the desired information.

5.2.1 Mapping the patron attitude as per university

In order to assess the attitude, the views of patrons were analyzed as per the university of affiliation:

Table- 3: Comparison of responses with respect to university

Statement	Response	University				Chi-square (p-value) N=391
		HPU		PUP		
		N	%age	N	%age	
1- Do you feel that people are masters and technology is a tool?	Yes	143	74.90%	144	72.00%	χ^2 at 2 df
	No	27	14.10%	34	17.00%	0.623
	No opinion	21	11.00%	22	11.00%	-0.732
2- Do you think that libraries should adopt new technology as quickly as possible?	Yes	173	90.60%	178	89.00%	χ^2 at 2 df
	No	13	6.80%	10	5.00%	3.139
	No opinion	5	2.60%	12	6.00%	-0.208
3-Were you involved in the decision-making of information technology (IT) application in your library?	Yes	55	28.80%	66	33.00%	χ^2 at 1 df 0.808
	No	136	71.20%	134	67.00%	-0.369
4- Have you received any training in use of technology to access information?	Yes	47	24.60%	61	30.50%	χ^2 at 1 df 1.693
	No	144	75.40%	139	69.50%	-0.193

Majority of the patrons in HPU (74.9%) and PUP (72.0%) responded (with *p*-value = 0.73) that people were masters and technology was a tool to accomplish the tasks. The patrons further replied (with *p*-value > 0.05) that libraries should adopt new technologies as quickly as they can afford to. Majority of the patrons (with *p*-value = 0.36) were not involved in the decision-making process of IT application in their respective university library. Merely 24.6% patrons in HPU and 30.5% in PUP received training in using technology to find information.

The Chi-square analysis in table 3 further made it clear that there was no significant difference in the views of patrons with regard to survey statements 1 to 4.

5.2.2 Mapping the patron attitude as per faculty

In order to gain more insight of patron's attitude, their responses were further analyzed as per faculty:

Table- 4: Comparison of responses as per faculty

Statement	Response	Faculty				Chi-square (*p*-value)
		Faculty of Social Sciences		Faculty of Sciences		
		N	%age	N	%age	N=391
1- Do you feel that people are masters and technology is a tool?	Yes	132	68.00%	155	78.70%	χ^2 at 2 df
	No	36	18.60%	25	12.70%	5.688
	No opinion	26	13.40%	17	8.60%	-0.058
2- Do you think that libraries should adopt new technology as quickly as possible?	Yes	169	87.10%	182	92.40%	χ^2 at 2 df
	No	17	8.80%	6	3.00%	5.778
	No opinion	8	4.10%	9	4.60%	-0.056
3-Were you involved in the decision-making of information technology (IT) application in your library?	Yes	69	35.60%	52	26.40%	χ^2 at 1 df 3.847
	No	125	64.40%	145	73.60%	-0.05
4- Have you received any training in use of technology to access information?	Yes	64	33.00%	44	22.30%	χ^2 at 1 df 5.55
	No	130	67.00%	153	77.70%	(0.018**)

** significant at .01 level

The Chi-square analysis in table 4 precisely reveals that there is no significant difference in the views of patrons with regards to IT application in libraries.

Majority of the patrons in the Faculty of Social Sciences (68.0%) and Faculty of Sciences (78.7%) indicate (with p-value = 0.06) that technology is just a tool and people are its masters. They further feel that libraries should adopt new technology (with p-value > 0.05) as quickly as possible. Majority of the patrons in both the faculties were not involved in the decision-making of IT application. Although, there was a slight difference in the view of patron with regard to provision of training in using technology, but majority of the patrons replied that they did not receive training in using technology for finding information.

5.3 Analysis of question statements 5 - 13: mapping the attitude of patrons as per gender, category and age-group. In order to map the attitude of patrons towards information technology application in libraries, question statements 5 to 13 designed on five-point Likert Scale method were further analyzed.

5.3.1 Mapping the patron attitude as per gender

In order to assess how the male and female patrons react to the application of information technology application in university libraries in north India, the gender-wise responses were further analyzed:

Table- 5: Mann-Whitney U test comparing the ranks with respect to gender

Statements	Gender	N	Mean Rank	Sum of Ranks	Mann Whitney U Test Results
5– How confident do you feel about using IT in your university library?	Male	160	186.26	29801	U = 16921.000
	Female	231	202.75	46835	z = –1.555
	Total	391			p = .120
6– How helpful do you find computerization of library to be in your assignments?	Male	160	193.79	31006	U = 18126.000
	Female	231	197.53	45630	z = –.354
	Total	391			p = .723
7– Computerization in library has made my library dependent work:	Male	160	195.68	31308	U = 18428.000
	Female	231	196.23	45328	z = –.050
	Total	391			p = .960
8– When I have an opportunity to learn a new technology I:	Male	160	202.31	32369	U = 17471.000
	Female	231	191.63	44267	z = –1.569
	Total	391			p = .117
9– Do you think users must be given instructions in using new IT systems?	Male	160	207.2	33152.5	U = 16687.500
	Female	231	188.24	43483.5	z = –1.809
	Total	391			p = .070
10– Has the training you received in using technology for finding information been:	Male	160	194.77	31163.5	U = 18283.500
	Female	231	196.85	45472.5	z = –.189
	Total	391			p = .850
11– How would you rate the pace at which your library is progressing towards automation:	Male	160	190.86	30537.5	U = 17657.500
	Female	231	199.56	46098.5	z = –.787
	Total	391			p = .431
12– Do you think that each year IT application offers more efficient ways to carry out library operations?	Male	160	193.18	30908	U = 18028.000
	Female	231	197.96	45728	z = –.463
	Total	391			p = .644
13– Whether you support IT application as more useful for developing university libraries in India?	Male	160	187.46	29994	U = 17114.000
	Female	231	201.91	46642	z = –1.401
	Total	391			p = .161

Answer codes to statement– 5: Very confident (i), Confident (ii), Undecided (iii), Less confident (iv), Not confident (v)
Answer codes to statement– 6: Very helpful (i), helpful (ii), Undecided (iii), Less helpful (iv), Barrier (v)
Answer codes to statement– 7: More accurate (i), Just accurate (ii), Undecided (iii), Less accurate (iv), Same as before (v)
Answer codes to statement– 8: Feel excited (i), Feel uncomfortable (ii), Feel helpless (iii), No impact (iv), No reaction (v)
Answer codes to statement– 9: Fully agree (i), Agree (ii), Undecided (iii), Partially agree (iv), Not agree (v)
Answer codes to statement– 10: Excellent (i), Very good (ii), Moderately good (iii), Poor (iv), Very poor (v)
Answer codes to statement– 11: Very fast (i), Fast (ii), Just right (iii), Slow (iv), Very slow (v)
Answer codes to statement– 12: Strongly agree (i), Agree (ii), Don't know (iii),Disagree (iv), Strongly disagree (v)

Answer codes to statement– 13: Strongly support (i), Support (ii), Don't know (iii), Oppose (iv), Strongly oppose (v)

Table 5 shows the results of Mann-Whitney U test that examined the attitude of patrons as per gender. The analysis revealed that both male and female patrons were confident about using IT in the library (U = 16921.000, p > 0.05) and there was no significant difference in their attitude towards IT application in university libraries. Both male and female patrons opined that computerization of libraries was helpful ((U = 18126.000, p = 0.72) in completing the assignments and it had further made their library dependent work more accurate (U = 18428.000, p > 0.05). The patrons felt excited (U = 17471.000, p = 0.11) upon getting a chance to learn a new technology. They were fully agreed (U = 16687.500, p > 0.05) that users must be given training in using new IT systems. The patrons replied that the training which they received in using technology for finding the desired information was very good (U = 18283.500, p = 0.85). The patrons felt that the pace at which their university library was progressing towards automation was 'just right' (U = 17657.500, p > 0.05). Majority of the patrons in both the genders agreed that each year IT application offered more efficient ways (U = 18028.000, p = 0.64) to carry out library operations. The results further reveal that majority of the users supported IT application as more useful tool (U = 17114.000, p > 0.05) for developing university libraries in the country.The Mann-Whitney U test results in the table precisely reveal that there is no significant difference in the attitude of male and female patrons towards IT application in libraries.

Mapping the patron attitude as per category

In order to assess how the library patrons falling in various categories react to the application of information technology in libraries, the views of respondents were further analyzed as per category:

Table- 6: Kruskal-Wallis test comparing the ranks with respect to category

Statements	Category	N	Mean Rank	Klusker Wallis Test Results
5– How confident do you feel about using IT in your university library?	P.G Students	247	207.65	Chi–square = 10.588
	Research Scholars	90	185.51	df = 2
	Faculty members	54	160.19	Asymp. Sig.= .005**
	Total	391		
6– How helpful do you find computerization of library to be in your assignments?	P.G Students	247	199.99	Chi–square = 1.169
	Research Scholars	90	186.53	df = 2
	Faculty members	54	193.52	Asymp. Sig.= .557
	Total	391		
7– Computerization in library has made my library dependent work:	P.G Students	247	201.55	Chi–square = 2.599
	Research Scholars	90	180.23	df = 2
	Faculty members	54	196.88	Asymp. Sig.= .273
	Total	391		
8– When I have an opportunity to learn a new technology I:	P.G Students	247	190.86	Chi–square = 5.705
	Research Scholars	90	199.31	df = 2
	Faculty members	54	213.97	Asymp. Sig.= .058
	Total	391		

9– Do you think users must be given instructions in using new IT systems?	P.G Students	247	197.05	Chi–square = .427
	Research Scholars	90	190.28	df = 2
	Faculty members	54	200.74	Asymp. Sig.= .808
	Total	391		
10– Has the training you received in using technology for finding information been	P.G Students	247	189.7	Chi–square = 3.587
	Research Scholars	90	199.01	df = 2
	Faculty members	54	219.8	Asymp. Sig.= .166
	Total	391		
11– How would you rate the pace at which your library is progressing towards automation	P.G Students	247	187.34	Chi–square = 4.518
	Research Scholars	90	213.71	df = 2
	Faculty members	54	206.09	Asymp. Sig.= .104
	Total	391		
12– Do you think that each year IT application offers more efficient ways to carry out library operations?	P.G Students	247	198.09	Chi–square = .996
	Research Scholars	90	197.88	df = 2
	Faculty members	54	183.33	Asymp. Sig.= .608
	Total	391		
13– Whether you support IT application as more useful for developing university libraries in India?	P.G Students	247	197.76	Chi–square = 2.316
	Research Scholars	90	183.58	df = 2
	Faculty members	54	208.67	Asymp. Sig.= .314
	Total	391		
** significant at .01 level				

Answer codes to statement– 5: Very confident (i), Confident (ii), Undecided (iii), Less confident (iv), Not confident (v)
Answer codes to statement– 6: Very helpful (i), helpful (ii), Undecided (iii), Less helpful (iv), Barrier (v)
Answer codes to statement– 7: More accurate (i), Just accurate (ii), Undecided (iii), Less accurate (iv), Same as before (v)
Answer codes to statement– 8: Feel excited (i), Feel uncomfortable (ii), Feel helpless (iii), No impact (iv), No reaction (v)
Answer codes to statement– 9: Fully agree (i), Agree (ii), Undecided (iii), Partially agree (iv), Not agree (v)
Answer codes to statement– 10: Excellent (i), Very good (ii), Moderately good (iii), Poor (iv), Very poor (v)
Answer codes to statement– 11: Very fast (i), Fast (ii), Just right (iii), Slow (iv), Very slow (v)
Answer codes to statement– 12: Strongly agree (i), Agree (ii), Don't know (iii),Disagree (iv), Strongly disagree (v)
Answer codes to statement– 13: Strongly support (i), Support (ii), Don't know (iii), Oppose (iv), Strongly oppose (v)

Table 6 depicts the result of Kruskal-Wallis test that was used to assess the attitude of patrons as per category. Majority of the patrons irrespective of their category, i.e. PG Students, Research Scholars and Faculty members opine that computerization of library was helpful to them ($\chi 2$ (2) = 1.169, p = .55) in conducting assignments. They further replied that computerization of libraries had made their library dependent work more accurate ($\chi 2$ (2) = 2.599, p = .27). Majority of the patrons in all categories felt excited ($\chi 2$ (2) = 5.705, p = .06) upon getting a chance to learn a new technology. They further thought that they must be given instructions ($\chi 2$ (2) = .427, p = .80) in using new IT systems. The patrons replied that the training they received in using technology for searching information was 'very good' ($\chi 2$ (2) = 3.587, p = .16). Although, the results of Kruskal-Wallis test that examined the attitude of patrons with respect to the level of confidence about using IT in the library based on the user category showed a slight difference in the attitude ($\chi 2$ (2) = .427, $p \leq .01$). However, majority of the patrons in all user categories responded that they

were confident to use IT in the library.

5.3.2 Mapping the patron attitude as per category

In order to have a better understanding of the patrons' attitude towards information technology application in libraries, the responses of participants were further analyzed as per age-group:

Table- 7: Kruskal-Wallis test comparing the ranks with respect to age-group

Statements	Age–group	N	Mean Rank	Klusker Wallis Test Results
5– How confident do you feel about using IT in your university library?	Below 25 years	265	206.62	Chi–square = 9.832
	26 – 35 years	80	176.08	df = 4
	36 – 45 years	21	176.83	Asymp. Sig.= .043*
	46 – 55 years	18	174.86	
	55 and above	7	133.64	
	Total	391		
6– How helpful do you find computerization of library to be in your assignments?	Below 25 years	265	199.85	Chi–square = 4.546
	26 – 35 years	80	176.46	df = 4
	36 – 45 years	21	213.67	Asymp. Sig.= .337
	46 – 55 years	18	193.33	
	55 and above	7	227.29	
	Total	391		
7– Computerization in library has made my library dependent work:	Below 25 years	265	198.32	Chi–square = 3.602
	26 – 35 years	80	186.13	df = 4
	36 – 45 years	21	174.79	Asymp. Sig.= .463
	46 – 55 years	18	210	
	55 and above	7	248.71	
	Total	391		
8– When I have an opportunity to learn a new technology I:	Below 25 years	265	189.59	Chi–square = 10.449
	26 – 35 years	80	202.22	df = 4
	36 – 45 years	21	219.55	Asymp. Sig.= .034*
	46 – 55 years	18	223.03	
	55 and above	7	227.43	
	Total	391		
9– Do you think users must be given instructions in using new IT systems?	Below 25 years	265	196.29	Chi–square = 2.784
	26 – 35 years	80	190.64	df = 4
	36 – 45 years	21	189.17	Asymp. Sig.= .595
	46 – 55 years	18	231.5	
	55 and above	7	175.57	
	Total	391		
10– Has the training you received in using technology for finding information been	Below 25 years	265	192.17	Chi–square = 17.364
	26 – 35 years	80	184.64	df = 4
	36 – 45 years	21	230.29	Asymp. Sig.= .002**
	46 – 55 years	18	284.11	
	55 and above	7	141.57	
	Total	391		

11– How would you rate the pace at which your library is progressing towards automation	Below 25 years	265	195.32	Chi–square = 5.391
	26 – 35 years	80	184.48	df = 4
	36 – 45 years	21	245.24	Asymp. Sig.= .249
	46 – 55 years	18	196	
	55 and above	7	205.71	
	Total	391		
12– Do you think that each year IT application offers more efficient ways to carry out library operations?	Below 25 years	265	198.45	Chi–square = 2.030
	26 – 35 years	80	194.62	df = 4
	36 – 45 years	21	195.83	Asymp. Sig.= .730
	46 – 55 years	18	163.94	
	55 and above	7	202	
	Total	391		
13– Whether you support IT application as more useful for developing university libraries in India?	Below 25 years	265	193.84	Chi–square = .795
	26 – 35 years	80	198.87	df = 4
	36 – 45 years	21	209.5	Asymp. Sig.= .939
	46 – 55 years	18	204.11	
	55 and above	7	183.5	
	Total	391		

Answer codes to statement– 5: Very confident (i), Confident (ii), Undecided (iii), Less confident (iv), Not confident (v)
Answer codes to statement– 6: Very helpful (i), helpful (ii), Undecided (iii), Less helpful (iv), Barrier (v)
Answer codes to statement– 7: More accurate (i), Just accurate (ii), Undecided (iii), Less accurate (iv), Same as before (v)
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Answer codes to statement– 11: Very fast (i), Fast (ii), Just right (iii), Slow (iv), Very slow (v)
Answer codes to statement– 12: Strongly agree (i), Agree (ii), Don't know (iii),Disagree (iv), Strongly disagree (v)
Answer codes to statement– 13: Strongly support (i), Support (ii), Don't know (iii), Oppose (iv), Strongly oppose (v)

The results of Kruskal-Wallis test given in the table 7 precisely reveal that there is no significant difference in the attitude of patron towards IT application in university libraries as per the age. Majority of the patrons in all age-groups thought that computerization of library operations was helpful ($\chi2$ (4) = 4.546, p = .33) to them as it had made their library dependent work output more accurate ($\chi2$ (4) = 3.602, p > 0.05). Similar to this, majority of the patrons believe that they must be given instructions ($\chi2$ (4) = 2.784, p = .59) in using new IT systems. Majority of the patrons in all age-groups replied that their university library was progressing towards automation ($\chi2$ (4) = 5.391, p = .24) at a right pace. Irrespective of their age-group, majority patrons agreed that year on year IT application offered more efficient ways ($\chi2$ (4) = 2.030, p > 0.05) to carry out library operations and they supported the application of IT as more useful ($\chi2$ (4) = .795, p = .93) for developing university libraries.

The Kruskal-Wallis test results carried out to map the patron attitude showed a very slight difference in their attitude with regard to level of confidence about using IT ($\chi2$ (4) = 9.832, p ≤ .05) in the library and their preference to learn a new technology ($\chi2$ (4) = 10.449, p = .03) upon getting a chance. Similarly, there was a slight difference in the attitude with respect to the quality of training ($\chi2$ (4) = 17.364, p ≤ .01) that they received in using IT systems in library. However, the patrons replied in positive as majority of them were confident in using new IT systems and

they were keen to learn new technology upon getting a chance. The majority patrons rated the quality of library training as 'very good.'

6. Findings and Discussion

The findings of survey reveal that there is a positive attitude among the library patrons of HPU and PUP towards information technology application in libraries. Majority of the patrons irrespective of gender, user category and age-group believe that technology is merely a tool and people are its masters. A similar view is also supported by Ekmekci and Arda (Ekmekci & Arda, 2020) who consider technological artifacts as mere tools that may be operated by humans for various purposes and ends. Conceiving the importance of technology in libraries, the patrons assert that libraries should incorporate new technology as quickly as possible. The survey reveals that majority of the patrons in both universities were not a party in the decision-making process of IT application. Statham and Bravo advocate that a careful planning and continued feedback is instrumental in introducing new technology (Statham & Bravo, 1990). It is further shocking to know that a few training avenues were available to train the patrons in using technology for finding resources. Garrod feels that training is a starting point in learning new technology and acquiring skills and to acquire skill users need guidance, tuition, training and ongoing support (Garrod, 2001).

The survey further reveals that majority of the patrons were confident about using IT in their respective university library. The patrons believe that computerization of library operation was helpful to them in completing information and research related assignments and computerization in library has made their library dependent work accurate than before. The patrons feel excited upon getting a chance to learn a new technology. They further agreed that users must be given instruction in using new IT systems. The patrons rate the quality of library training in using technology for finding information as 'very good.' They further expressed that their university library was progressing towards automation at a right pace. The patrons feel agreed that IT application offers more efficient ways to carry our library operation after each passing year and that is why they see IT as a useful tool for developing university libraries in India.

7. Conclusions and Recommendations

The applications of information technology have metamorphosed the operations of libraries taking their services and resources to the technological devices available with the patrons. However, incorporating and implementing latest technological advancements involves huge financial investment and lot of managerial efforts. Therefore, in order to gauge the success rate of technological advancement and achieve cost-benefit analysis, doing an assessment on the perceived use and level of satisfaction from the patrons' point of view becomes essential. The survey reveals that there is a positive attitude among the patron towards information technology application in university libraries and there is no significant difference in the views of patrons with regard to their gender, category and age-group. Based on the findings of the survey, we offer to specify the below recommendations:

- The involvement of more end-users in the decision-making of IT application will help library authorities in selecting more suitable IT tools.
- Library authorities should strive to provide more training avenues to train patrons in using latest technological tools for finding information.
- Patrons' feedback on the relevance and effectiveness of existing technology will be instrumental in bringing transparency for future IT incorporation and investment.

- A constructive attitude among the stakeholders is a prerequisite for a positive attitude amongst the patrons.

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SECOND FOREIGN LANGUAGE LEARNERS AND THE IMPORTANCE OF DIGITAL LITERACY INCLUSION: GURU EXPERIENCES

C. Mallawaarachchi [1]

Introduction

Nowadays one of the most common words is 'digital'. The digital becomes a needed vocabulary, very often, despite literate or illiterate. Therefore, the intangible ideas on digital can be seen broadly: Digital Competence (DC) and Digital Literacy (DL). Digital Competence, user's perspective, European Commission (2006) defines as 'the confident and critical use of basic skills in the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet. While Digital Literacy, Bawden (2008) explains as 'the ability to read, write and use technological devices; understanding of the digital creation pathways, sources and resources; the ability to assemble knowledge from multiple sources; the ability to learn independently, as well as to exhibit good behaviour in a digital environment'.

Digital Competence and Digital Literacy, widely used around the world by individuals, became one of the essential components in Information Literacy of contemporary society. Contemporary society consume more and more digital commodities therefore, the basic knowledge and skills of digital literacy are vital for them. While, consuming digital commodities such as e-resources, e-services, and e-facilities, the capabilities, and capacities of skills and knowledge have to be enhanced. For skills and knowledge enhancement in digital literacy usage, English (2016) emphasizes an integral element of contemporary society.

The majority of consumers who engage with digital commodities are lacking in required skills and knowledge to receive maximum benefits from digital resources. However, it is very important and necessitates enhancing the skills of individuals to gain benefits from digital resources. Increasing and developing knowledge to use digital resources by assigning specific tasks to perform well without any hesitations will be a great opportunity for individuals. Creating of such opportunities to engage with digital tasks by the individuals, Hall, Nix, and Baker (2013) point that can gain diverse knowledge both online as well as off-line. The importance of diverse knowledge in digital literacy, Kivunja (2015) emphasis as the digital divide and cultural enclaves lead to illiterate individuals and society. Educating individuals on the importance of digital literacy can able to build a digital inclusion society. Van (2006) urges that creating an equal opportunity for all then can increase digital equity and digital inclusion regardless of the domain that individuals engage in which is vital in e-education and e-lifelong learning.

Need for the study

E-education and e-lifelong learning is a fully participatory process with a mentor, a learner, and e-content. E-content and digital inclusion are now some of the fundamental requirements in e-education and e-lifelong learning. In a digitizing world, the learner who cannot read digital

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content and cannot write on a digital platform will face new forms of marginalization. Steve (2018) urges currently ten percent (10%) of the world's population has difficulties engaging with digital learning environments and platforms. Sokolowsky (2019) explains the carefully designed digital content can help a learner to engage with advanced digital content. The learner's low digital literacy level and very limited technology skills may welcome to work in digital learning spaces. National Digital Inclusion Institute (2019) highlights the mentor and the learner until critically understand problems and opportunities in the digital inclusion both in teaching and learning environments, the digital competence increased. In a digital inclusion society that the importance of digital competence well taken into consideration to build digital-friendly individuals and society. Digital competence leads the learner to build digital confidence, critical and responsible use of digital content, and engagement with them for active e-learning and e-participation. But, Sokolowsky (2019) criticizes digital exclusion from learning applications and platforms marginalized equal digital benefits for the learner.An equal digital benefit for the learner, Steve (2018) refers to the activities necessary to ensure that leaner have the Internet-enabled digital content that meets his or her needs; digital content engagements; digital learning assistance and support; encourage self-sufficiency, and e-participation and e-collaboration. Knowing the ongoing developments of digital literacy, this research has set as the research problems: why digital literacy is important in learning? and how digital literacy inclusion is impacted in learning of the second language?

Scope

This study aims to discover: the awareness of the concept of digital literacy, skills, and knowledge having to use e-resources, learning experiences in e-services, e-resources, and e-facilities, engaging experiences in digital contents, and experience in peer-review in digital contents.

Methodology

Data from the sample selected were collected through an online questionnaire. The questionnaire was sent to Sri Lankan students who learned the Chinese Language as the Second Foreign Language. The course was designed with digital resources and delivered on an online platform. The total number of questionnaires was sent to One Hundred and Thirteen (113) students. The responded number was considered as the research population and data was analysed by using descriptive statistics.

Results and Discussion

Gender, age, and length of experience of engaging in digital literacy

The highest percentage of responses were males (48%) and age groups were 19-29 (18.4%), 30-39 (7.43%), and 40-49 (4.16%). The length of experience of engaging in digital resources and services were four (4), three (3), and one (1) years respectively.

Awareness in Digital Literacy

As shown in Table 1, 7.96% of respondents were answered that students have very advanced awareness in Digital Literacy while only 32 respondents were having fair awareness which was nearly twenty-nine percentages (28.31%). However, it is significant that the majority of the respondents were shown that no awareness of digital literacy which was fifty-four percent (54%).

Table 1. Awareness in Digital Literacy

Digital Literacy Level	Frequency	Percentage
Advanced Knowledge	09	7.96%
Fair Knowledge	32	28.31%
Basic Knowledge	11	9.73%
No Experience	61	54%

The Skills and Knowledge of Using e-resources

It was important to see that no professional skills and knowledge of using e-resources from the majority of respondents. Also, students who have studied in Bachelor Degrees and Postgraduates were almost having a similar level of skills and knowledge of using e-resources as depicted in

Figure 1.

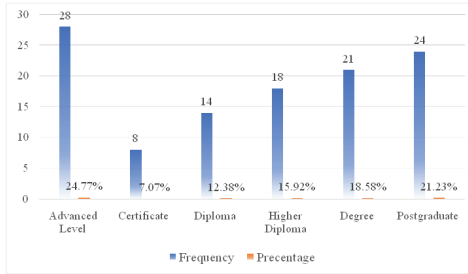

Figure 1. Skills and Knowledge of using e-resources

Learning Experiences in e-services, e-resources and e-facilities

Data were shown that either government schools or government universities were far behind the private universities in digital literary inclusion in education which was 2.65% and 7.96% respectively. However, digital literacy inclusion in private universities is comparatively very high even than the workplaces which are nearly 47%.as shown in Figure 2.

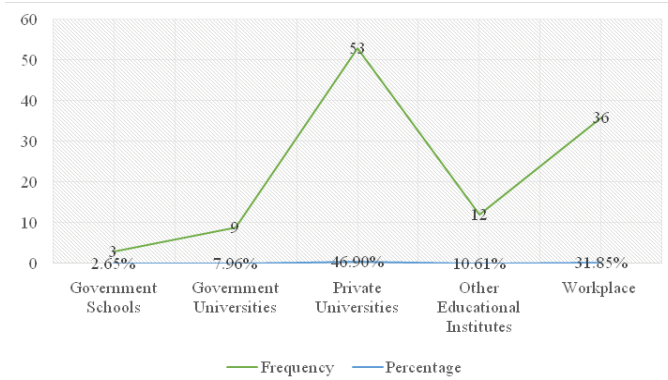

Figure 2. Learning Experience in e-services, e-resources and e-facilities

Engaging Experiences in Digital Contents

As presented in Table 2,2.65% of respondents did not have any engaging experiences in digital contents in government schools or government universities.

Table 2. Engaging Experience in Digital Contents

Engaging Experience	Frequency	%
Government School	3	2.65 %
Government Universities	3	2.65 %
Private Universities	69	61.06 %
Other Educational Institutes	16	14.15 %
Workplace	22	19.46 %

Experience in peer-review in Digital Contents.

As shown in Figure 3,78% of respondents did not have experience in peer-review of digital content. In contrast, having experience in peer-review was less than 8%.

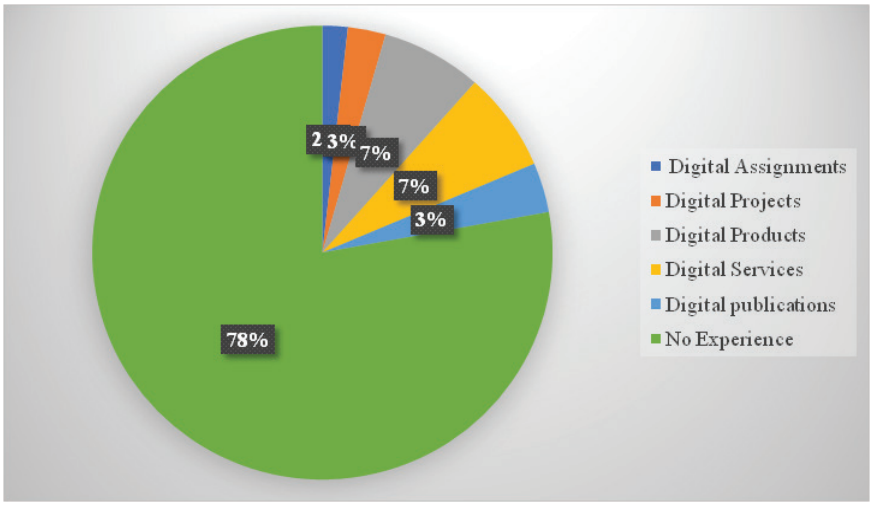

Figure 5. Experience in peer-review in Digital Content

Conclusion

The average learners of the second language in the world, Steve (2018) are digital literacy exclusion while a majority of the second language learners in Sri Lanka are the same. The highest number of the respondents are moderately digital literacy inclusion however, wide-ranging is exclusion. Also, it is noteworthy that almost one-third of second foreign language learners did not have either awareness in digital literacy or peer-review experiences in digital content. It has reflected that immediate action should be taken to educate the second foreign language learners of the importance of digital literacy in their language learning process. Also, it is vital to evaluate whether course contents are enriching enough to create opportunities in the digital literacy inclusion process. Consequently, it should be noted that the digital literacy

inclusion of the Chinese Language learners' profiles of Sri Lanka is not satisfactory, Ferrari (2013) says in most the countries in the world. However, the majority of learners are shown very enthusiasm in engaging in digital content and gain lengthy experiences in interacting with peer-learners. Therefore, the research stimulates the importance of digital literacy inclusion for second foreign language learning and teaching process with proper digital concept planning and evaluation interventions.

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SECTION IX

LIS EDUCATION, RESEARCH & METRIC STUDIES

CASES OF INFORMATION SCIENCE EDUCATION TRANSFORMATION IN THAILAND IN RESPONSE TO THE DIGITAL DISRUPTION

Kanyarat Kwiecien[1] Siwanath Nanthapichai Kulthida Tuamsuk[2]

Introduction

Disruptive technology has affected working practices, processes, and behaviors of people in the present. That is, technological advancements have altered life, working practices, and business operations. Due to the emergence of new technology which has changed traditional working practices, the fields of business and education need to transform themselves into digital organizations in order to keep pace with the changing conditions. Consequently, workers in organizations who must adapt themselves to improve their knowledge and abilities in order to stay abreast of ever-changing technology.

The world's dynamic of change resulting from disruptive technology has affected working practices in industry, agriculture, and overall economy. As a consequence, Thailand has prepared itself for the entry into digital economy with sustainability and equality by giving precedence to the use of information and communication technology (ICT) for the country's development. To achieve that, it has established the 20-Year National Strategy (2018-2037) plan with a vision that "Thailand becomes a developed country with security, prosperity, and sustainability in accordance with the Sufficiency Economy Philosophy." It has also determined four key national strategies, including human capital, infrastructure, e-government, and business and industry, with the aim to move toward development of knowledge-based economy and society for sustainable growth; specifically, it intends to increase public access to information technology, to promote public access and use of information, to strengthen the roles of the ICT industry in the country's economic system, and to raise its ICT readiness to developed countries. Apart from that, the Thai government has set a Thailand 4.0 policy which aims to drive traditional economy to value-based economy. Its underling mechanism lies in propelling the country's target industries by building on five first S-curve industries and promoting five new S-curve industries as follows: (1) Robotics Industry; (2) Aviation and Logistics Industry; (3) Biofuels and Biochemical Industry; (4) Digital Industry; and (5) Medical Hub Industry. (OpenDevelopmentMekong, 2018 ; True digital, 2020).

Such changes in both technology and development of digital economy have resulted in the needs for manpower with remarkable abilities in information management and knowledge of digital ecosystem for knowledge management or dissemination of created information to suit each group of information users. With that manpower, it will provide benefits to economy, society, culture, and security of the country as well as open up an opportunity to develop the country's competitive potential.

Currently, there is an array of instructional management which aims at producing manpower with knowledge of and abilities in information management. In general, instruction in Library Science and Information Science in Thailand can be summarized into four categories of programs. The first type of the program is those which are oriented to delivering education in

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Library Science to produce teacher-librarians. Therefore, the obtained degrees are Bachelor of Education or Bachelor of Arts; these programs are typically offered at Rajabhat universities

which focus on producing manpower in response to the needs of communities. The second one include programs which focus on offering education in Information Science. They are usually available in universities which aim to produce manpower with abilities in integrating library science with information technology; simply speaking, they intend to produce manpower with knowledge of information and abilities to work in a digital environment. The example of these programs is Bachelor of Information Science at Khon Kaen University or Suranaree University of Technology. The third type includes programs which place emphasis on education in Information and Digital Media Management, such as Bachelor of Information Science in Digital Information and Media Management (DIMM), and Digital Content and Media (DCM) at Walailak Universtiy. The last type of program is interdisciplinary programs which integrate Library Science with other disciplines. The example of these programs is Bachelor of Arts, an interdisciplinary program between Library Science and English which is aimed at producing teacher-librarians with abilities in library management and teaching or working in other disciplines.

As has been discussed, disruptive technology has affected working practices or processes of people in the present day. What's more, the on-going pandemic of COVID-19 has produced certain effects and caused profound changes in instruction, working practices and daily life. Hence, this paper aims to analyze programs and present guidelines on curriculum development and transformation of instruction and graduate production in response to changing social conditions caused by disruptive technology, which has in turn resulted in changes in information professionals' competencies. The results of this study could provide education institutions with a guideline and an alternative to instruction in Information Science or relevant disciplines to correspond to the changing social condition.

Purpose of the Study

The present study aims to analyze the principles for curriculum design and development of Bachelor and Master of Information Science Programs at Khon Kaen University and Digital Content and Media (DCM) Program at Walailak University.

Research Methodology

This study adopted a content analysis method by analyzing and the data collected from program specifications of both Bachelor and Master of Information Science Programs at Khon Kaen University and Digital Content and Media (DCM) Program at Walailak University, given that the programs offered by both institutions are accredited by the Office of the Higher Education Commission as a New-Breed Graduate Program. The programs have changed the concept of educational management by providing education in concert with establishments with the aim of producing new graduates ready to work in line with the digital industry and disruptive technology as well as to support competency development of information professionals in the 21st century. The process of curriculum design and development was analyzed based on the conceptual framework as shown below.

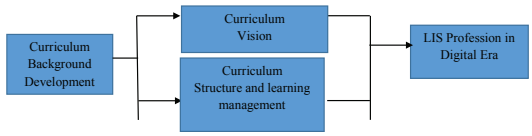

Figure 1. Conceptual framework of curriculum analysis

Results of the Study

1. **Curriculum Background development**: Regarding curriculum management at both undergraduate and graduate levels, the results showed that the curriculum design and development derived from relevant educational situations and contexts. There were two factors influencing curriculum revision described below.

Factors related to economic situations or development: The results demonstrated that the curriculums aimed to be responsive to the following aspects: 1) Thailand's 20-Year National Strategy (2018-2037) which primarily demands workers with high competencies in digital technology (OpenDevelopmentMekong, 2018); 2) the Digital Development Plan for Economy and Society (True digital, 2020); 3) Term of Reference (TOR) of the Project on Producing a New Generation of Graduates and Manpower with Competencies to Respond to the Production Sector Based on Thailand's Higher Education Reform Policy (Office of the Higher Education Commission, 2019); 4) consumer insights from students and graduates in Information Science Program and private sector/business entrepreneurs' views; 5) Khon Kaen University's Strategic Plan for Administration (2020-2023); and 6) Excellent BiS Programs of the iSchool Organization, together with Thailand's Digital Government Development Plan. The results helped formulate a conceptual framework for curriculum revision and development of Bachelor of Information Science Program (Revised Curriculum 2019). Particularly, curriculums ought to place emphasis on producing a new generation of graduates with high competencies in response to the needs of the digital industry in compliance with the International Standard Industrial Classification of All Economic Activities (ISIC-BOT): Section J Information and communication, especially the digital content or digital data analysis business. The output from instruction based on the programs is professionals with high competencies in information management and analysis.

Factors related to social and cultural development: It was found that the programs were influenced by changes in population structure, e.g., the growth in the aging population, a decline in the working-age population, economic prosperity concentration in urban areas, and the growing gap between the wealthy and the impoverished. Among those changes, the rising number of the aging population, together with a decrease in the school-age and working-age population, produced directed effects on education institutions. As a consequence, those institutions had to revise their curriculums; specifically, the curriculums were designed and developed to prepare manpower, to strengthen competencies of people of all ages, and to raise the quality of human capital by improving people in accordance to ages, needs of labor market, and essential life skills in the 21st century. Moreover, the curriculums should be flexible and diverse as well as strengthen knowledge across different disciplines, reduce boundaries between faculties, and facilitate ubiquitous learning. In addition, they placed emphasis on fact-based learning, place-based learning, and research and academic services with well-defined benefits. The curriculums gave precedence to collaboration with private, industrial and concerned sectors, together with public-private collaboration in area-based development using work integrated learning (WIL) in real situations from establishments and communities. Finally, they were oriented to experience integrated learning, along with integration of life skills of digital society with professional skills.

- **Curriculum Vision**: When factors influencing curriculum design and development were analyzed, the curriculums established their philosophies in producing graduates. It was found that the philosophy of Bachelor of Information Science Program at Khon Kaen University was "To produce graduates as professionals with high competencies in

information management and analysis and as a new generation of graduates with work readiness skills in accordance with the needs of labor market in the digital industry", while that of Walailak University was "To produce graduates with abilities and competencies in information and media management in digital organizations; three main elements are focused, namely digital information management, digital information technology, and digital media management, to prepare graduates for working in digital organizations". It can be noticed that the philosophical statements of both curriculums were similar; that is, they aim to produce graduates in the field of information science who are ready to work in digital organizations.

As regards the graduate programs, the results revealed that the program in Management of Information Technology at Walailak University's philosophical statement entailed producing graduates with theoretical and practical knowledge and expertise in technology management, together with abilities to use appropriate information technology for administration and development of information technology innovation for the benefits of organizations at local and national levels. In the meantime, Master of Information Science Program at Khon Kaen University aims to produce graduates with advanced competencies in information management and digital ecosystem by providing a set of courses that integrate modern knowledge and skills needed and necessary for information work. The program covers important aspects of academic content, systems, technology, law, ethics, dissemination, and utilization in line with the changing work environment caused by disruptive technology and new normal. It can be observed that the philosophies of both programs aim at applications of knowledge of information science in diverse dimensions in order to enable graduates to work in the digital environment and create innovation through research.

- **Curriculum Structure and Learning Management**: Concerning the curriculum structure redesigned in coherence with the economic and social conditions, it was found that the undergraduate curriculums were restructured, so they consisted of general education, specific modules, and work integrated learning.

General Education courses: It is stipulated that every bachelor's degree program in Thailand implements General Education courses as fundamental courses to build a solid foundation of general knowledge for students. The courses consisted of three-course categories. *1) Language courses*: both curriculums required that students in the program improve Thai and English language skills. Khon Kaen University also added a third language selection in order to enable students to possess multilingual communication skills. *2) Humanities and Social Sciences courses* are to help students to be well-informed about the current social circumstances. The Master of Information Science Program offered by Khon Kaen University, therefore, required students to take courses related to Leadership and Management, Cross-cultural Literacy and Community-based Learning, while that offered by Walailak University laid greater emphasis on learning about being Thai and global citizens as well as improving critical thinking skills to equip students with societal readiness. *3) Science and Mathematics courses*: both undergraduate programs aimed at preparing students for learning and seeking knowledge. Thus, Khon Kaen University requires students to take a course in Learning Skills and Creative Entrepreneurs. This is in accordance with Walailak University's program which attempted to prepare students through these courses, namely Knowledge Inquiry and Research Methods, Environmental Conservation and Global Warming, Innovation and Entrepreneurship, and Information Technology in Digital Era. In graduate programs students were not obliged to enroll in General Education courses.

Specific modules: In terms of the curriculum structure analysis of all four curriculums, the results pointed out that course-based instruction was shifted to modular-based instruction integrating relevant holistic knowledge in order that students were equipped with knowledge, skills, and personal traits for any particular issues. Hence, the modular-based instruction was consistent with the curriculum's philosophy which emphasized competency-based learning. The modules can be distinguished into a compulsory module and an elective module. Walailak University offered six core modules, namely namely Digital Literacy (DL), Knowledge Organization System (KOS), Digital Content Creation (DCC), Digital Information Services (DIS), Digital Collection Management (DCM), Digital Content Entrepreneurship (DCE). On the other hand, Khon Kaen University offered four core modules, including Information and Knowledge Acquisition (IKA), Information and Knowledge Organization (IKO), Data and Information Analytics (DIA), and Digital Services (DS). The elective modules of the two curriculums can be seen differently based on the focus of each institution. In particular, the elective modules taught at Walailak University were oriented to media production, information management, and tourism. Contrarily, Khon Kaen University focused on producing graduates with knowledge and expertise in the field of information such as Knowledge Management, Digital Content Creation, and Cultural Heritage Information Management. Since the instruction of both institutions emphasized the use of competency-based learning, each module was designed to enable students to learn theories from lecturers and acquire experience from real establishments. Students would be able to apply knowledge and skills learned in the information science field to conduct projects on problems encountered as assigned by establishments. Moreover, Master of Information Science Programs offered by both institutions focused on being interdisciplinary to keep pace with advances in information science, to integrate its own science with other disciplines, and to learn from practical experiences.

Work Integrated Learning: It was discovered that both programs required students to work at establishments. Specifically, they must work as a full-time employee for two semesters or 7-8 months; this would allow them to acquire knowledge and skills from establishments and to prepare them to work in real settings after graduation.

In case of Master of Information Science Programs, instruction was changed to be modular-based in order to transfer knowledge between undergraduate and graduate courses. Thus, modules of both graduate and undergraduate programs were similar. However, they differed in that the graduate programs laid emphasis on information management in different aspects as well as enhanced research knowledge and skills to enable them to conduct a thesis.

In addition, owing to an increase in the aging population and a drop in the school-age and working-age population, the population structure has changed, thereby leading to a continuous decrease in graduate students. In case of graduate programs, instruction was changed to be more flexible to align with the university's vision of being a world-leading research and development university. Additionally, strategies for education transformation were determined. That is, curriculum development, along with implementation of new instructional methods, was required. Apart from that, there must be the opening of new programs in response to lifelong learning, and short-term non-degree programs for reskilling and upskilling must be offered so as to enhance competencies of various target groups, in addition to degree programs. Lastly, students in short-term programs were allowed to accumulate credits to obtain degrees in relevant programs if the minimum requirement of credits is met.

Conclusion and Discussion

The analysis of Bachelor and Master of Information Science Programs of Khon Kaen University and Walailak University showed that instruction in the fields of Library Science and Information Science in Thailand has been changed rapidly. More specifically, the programs aim to produce graduates with expertise and competencies in information and information technology in response to the needs of the digital industry which is rapidly growing in Thailand. Consequently, education institutions offering such programs may be concerned with the effect of instructional changes on information professions as well as teachers' readiness to learn and adapt themselves in this disruptive technology age. Regardless of that, considering the definition of Information Science, the field itself is associated with three aspects, including information, people, and information technology. Thus, both Bachelor and Master of Information Science Programs still adhere to such a definition, so they aim to produce information professionals with knowledge and expertise in information to provide services based on individual needs and to use information technology to transfer knowledge.

In addition, with changes in the population structure, instruction should be more flexible; it should focus on enhancing information competencies of various target groups, offer non-degree reskilling and upskilling programs, and provide degree programs in which students are allowed to accumulate credits to obtain the degrees.

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COMPARING *JISTAP* TO SIMILAR LIS JOURNALS PUBLISHED IN ASIA: AUTHORSHIP AND TOPICS

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Introduction

Published by the Korea Institute of Science and Technology Information (KISTI), the *Journal of Information Science Theory and Practice* (*JISTaP*) is a prestigious international journal in information science. *JISTaP*, like many other journals in the field of library and information science (LIS), has a broad scope and publishes articles that reflect a wide range of perspectives and approaches to various areas of information science theory, application, and practice (*JISTaP* Homepage, n.d.). It is helpful to compare *JISTaP* with other LIS journals published in Asia to determine its characteristics.

Unlike in Western countries, relatively few LIS journals are published in Asian countries. According to the 2020 SCImago Country and Journal Ranking (SJR) index, only 12 international LIS journals are published in Asian countries. Oh, et al. (2019) pointed out that there is a lack of studies on the topics of research published in non-Western international LIS journals. Identifying commonly published topics in journals comparable to *JISTaP* would be helpful for understanding the characteristics of Asian journals and common research topics in Asian countries.

In this study, we analyzed author keywords to investigate commonly researched topic areas. Author keywords have been effectively used in the past to identify unique characteristics of journals (Kim, 2017; Faust, 2018; Li, 2018). We also examined country-focused studies, defined as studies researching subjects within the context of particular countries. Articles that mention country names in the bibliographic entries can be assumed to be country-focused studies. Because authors often focus on particular countries, country names may appear in different bibliographic entries. In this study, we only focused on articles containing country names in the title keywords or author keywords because the topics of such articles are likely to be limited to the country names that appear in these bibliographic entries. In the past, country-focused studies have been examined on the basis of citation counts (Abramo et al., 2016; Brunauer & Scherg, 2019). Examining country-focused studies of journals published in Asia may reveal additional characteristics of research topics in this area.

There have been several bibliometric analyses of LIS journals published in Asian countries (Brahma & Verma. 2019; Garg et al., 2020; Nath & Jana, 2020; Osunkentan et al., 2021). However, these studies focused on slightly different aspects of bibliometrics, such as productivity, growth patterns, and collaboration patterns. Prieto-Gutierrez and Segado-Boj (2019) conducted a bibliometric analysis of the *Annals of Library and Information Studies* (*ALIS*). They compared the journal to the leading LIS journals in Asia and worldwide (from 2011 to 2017) and found a lower internationalization of *ALIS*. Considering the lack of studies on *JISTaP*, this study aimed

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to compare JISTaP with other international LIS journals in terms of authorship and topics and provide insight into LIS journals published in Asian countries.

Methods

A bibliometric approach was used to conduct this study. From the 12 LIS journals published in Asia, we selected those that had similar characteristics in terms of their scope. The *Pakistan Journal of Information Management and Libraries* was excluded from the sample because this journal was not covered in 2020. *Library and Information Science* and *the Journal of Library and Information Studies* were also excluded because of the relatively small number of articles published. The journals finally selected for the comparison were the *Malaysian Journal of Library and Information Science* (*MJLIS*), *DESIDOC Journal of Library and Information Technology* (*DJLIT*), *ALIS*, and *JISTaP*.

The details of the selected journals can be found in Table 1. The research data on *JISTaP* was obtained from the *JISTaP* website. Because Scopus coverage of *JISTaP* only began in 2017, not all bibliographic records were available from Scopus. Therefore, these records were manually collected from published articles available on the *JISTaP* website (http://www.*JISTaP*.org). The other three journals compared were indexed before 2017. Thus, bibliographic records for these journals were obtained from Scopus for the period from 2013 to August 2021. For comparison, Asian LIS journals that published a comparable number of documents between 2013 and August 2021 were downloaded from Scopus.

The Scopus coverage years of the studied journals were very short. Except for *MJLIS*, Scopus has only begun to include these journals in the last decade. *MJLIS* is indexed in both the Web of Science SSCI Index and Scopus, whereas the other journals are indexed only by Scopus. *MJLIS* has the most years of extended coverage and the highest h-index (24). *JISTaP* ranks 4th in terms of h-index. However, the h-index is contingent on the age of the journal because it takes into account both citations and published documents.

Table 1. *JISTaP* and Other Similar LIS Journals Published in Asia

Rank (H Index)	Title	SJR Quartile	H index	Total Docs. (2020)	Country	Coverage
1	Malaysian Journal of Library and Information Science (MJLIS)	Q2	24	20	Malaysia	1996–2020
2	DESIDOC Journal of Library and Information Technology (DJLIT)	Q1	13	53	India	2012–2020
3	Annals of Library and Information Studies (ALIS)	Q2	13	27	India	2011–2020
4	Journal of Information Science Theory and Practice (JISTaP)	Q3	5	24	South Korea	2017–2020

Country of Authorship

We first examined the countries of the authors who contributed to the Asian LIS journals. Table 2 shows the frequency counts of the first authors' country names. Only the first authors were considered because the countries of the coauthors were missing or difficult to determine from the authorship information. In *JISTaP*, authors from South Korea contributed the most (20.8%), and authors from India contributed the second most (18.0%). Authors from Malaysia contributed the

most to *MJLIS* (38.8%), and authors from India contributed the most to *DJLIT* (82.0%) and *ALIS* (76.8). Unlike authors from most other countries, authors from South Korea contributed mainly to *JISTaP*, and their contributions to other journals did not make the top 10 lists. In contrast, authors from India contributed significantly to all the journals. To a lesser extent, authors from Nigeria also contributed to all the LIS Asian journals listed in this table.

Table 2. Frequency Count of the First Authors' Countries

Rank	JISTaP		MJLIS		DJLIT		ALIS	
	Country	%	Country	%	Country	%	Country	%
1	South Korea	20.80%	Malaysia	38.80%	India	82.00%	India	76.80%
2	India	18.00%	India	12.00%	Nigeria	2.60%	Nigeria	6.00%
3	U.S.	11.20%	China	8.00%	Iran	1.80%	Sri Lanka	4.10%
4	Germany	6.70%	Iran	5.30%	Indonesia	1.80%	Iran	2.20%
5	Nigeria	6.20%	Taiwan	4.70%	U.S.	1.60%	Bangladesh	1.50%
6	Singapore	3.90%	Pakistan	3.80%	Fiji	1.00%	South Africa	1.10%
7	Bangladesh	3.90%	Bangladesh	2.90%	Spain	0.80%	U.S.	0.70%
8	Iran	3.40%	Singapore	2.40%	Saudi Arabia	0.80%	Tanzania	0.70%
9	Thailand	2.80%	Nigeria	2.40%	South Africa	0.60%	Poland	0.70%
10	Malaysia	2.80%	Kuwait	2.20%	Malaysia	0.60%	Japan	0.70%

Common Topics of Papers Published in *JISTaP* and Similar Journals

The top 10 author keywords for these journals are listed in Table 3. As shown, bibliometrics and scientometrics were the most frequently researched topics in total. Each journal has its own set of keywords in this table, which reflect prominent topics that were frequently discussed in each journal. The keywords unique to *JISTaP* are "social media", "topic modeling", and "information needs". The keyword "academic libraries" was frequently mentioned in *MJLIS* (ranked 3rd) and in *DJLIT* (ranked 6th). Keywords unique to ALIS include "Sri Lana", "Sentiment Analysis", "Open Access ", and "KOHA". Keywords such as "India"', "Sri Lanka", and "Malaysia" indicate that authors published country-focused articles in all Asian LIS journals.

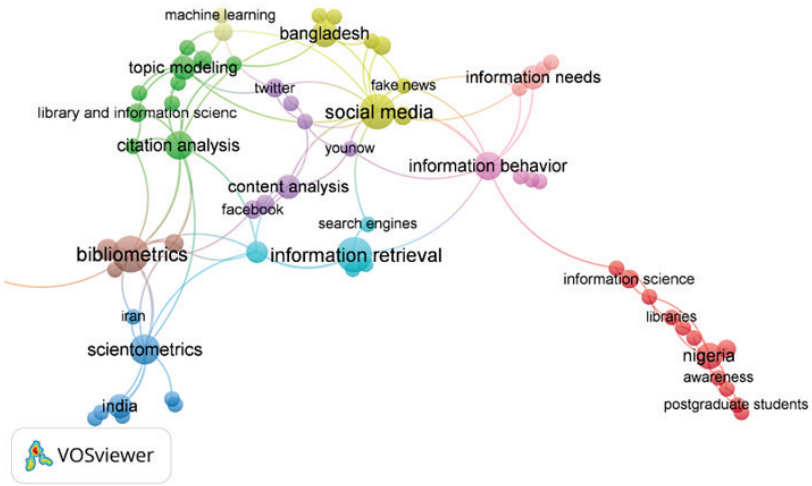
Table 3. Top 10 Author Keywords in the Asian LIS Journals

Rank	JISTaP	MJLIS	DJLIT	ALIS
1	Bibliometrics	Bibliometrics	India	Bibliometrics
2	Social Media	Malaysia	Bibliometrics	Scientometrics
3	Information Retrieval	Academic Libraries	Scientometrics	India
4	Scientometrics	Citation Analysis	E–Resources	Library Services
5	Information Behavior	Scientometrics	Citation Analysis	Sri Lanka
6	Nigeria	Publication Productivity	Academic Libraries	Sentiment Analysis
7	Citation Analysis	Information Literacy	Research Productivity	Open Access
8	Bangladesh	Scholarly Communication	Library Services	KOHA
9	Topic Modeling	Research Productivity	University Libraries	Information Literacy
10	Information Needs	India	Information Retrieval	Citation Analysis

Note: Keywords that are unique to the journal are shaded.

Author keywords were visualized using VOSViewer to represent the topics published in the LIS journals. Figure 1 shows a visualization of keywords of *JISTaP* that occurred two or more times. The three dominant research areas were a) information retrieval, b) bibliometrics, and c) social media. The visualization of keywords of the other three keywords are shown in the appendix, and the topics of the other journals match the keywords identified in Table 3. The charts of the journals' keywords in the appendix show a larger number of keywords because all of these journals consisted of a considerably larger number of keywords than *JISTaP*.

Figure 1. Visualization of Keywords of *JISTaP*



Note. The figure displays keywords with occurrences of ≥2.

Country Focus Studies

Table 4 shows the percentage of country-focused studies by country name. In *JISTaP*, South Korea is the most frequently mentioned country (7.3%), whereas India is the second most frequently mentioned country (6.2%). In comparison, more country-focused papers were published in *DJLIT* (18.8%) and *ALIS* (17.6%), with India being the most frequently mentioned country in these journals. Overall, the most frequently mentioned country name in each journal is that of the country in which the journal is published. In addition, authors from Asian countries contribute the most to these journals. Authors from India and Nigeria contributed to all of these journals, focusing on their country as the research topic.

Table 4. Top 10 Frequently Mentioned Country Names in the Title or Author Keywords

Rank	JISTaP		MJLIS		DJLIT		ALIS	
	%	Country	%	Country	%	Country	%	Country
1	7.30%	South Korea	14.00%	Malaysia	18.80%	India	17.60%	India
2	6.20%	India	4.00%	India	2.40%	Nigeria	5.20%	Nigeria
3	5.10%	Nigeria	2.00%	Pakistan	1.00%	Bangladesh	3.00%	Sri Lanka
4	3.90%	Bangladesh	2.00%	Bangladesh	0.60%	Fiji	1.90%	Bangladesh

5	2.20%	United States	1.80%	Nigeria	0.40%	United States	0.70%	Iran
6	1.10%	Singapore	1.80%	Iran	0.20%	Zambia	0.70%	China
7	1.10%	Iran	1.30%	Taiwan	0.20%	Thailand	0.40%	Turkey
8	0.60%	Vietnam	1.30%	Sri Lanka	0.20%	Sudan	0.40%	Tanzania
9	0.60%	Turkey	1.30%	Singapore	0.20%	Sri Lanka	0.40%	Japan
10	0.60%	Thailand	1.10%	China	0.20%	Spain	0.40%	Indonesia

Discussion and Conclusions

In this study, we compared *JISTaP* with similar international LIS journals published in Asian countries. Each journal that we examined showed some distinctive characteristics in terms of authors' countries. Journals published in India, namely *DJLIT* and *ALIS*, are older than *JISTaP*. However, these journals mostly published articles written by authors from India. Except for *MJLIS*, all the journals examined were listed only in Scopus. It is also possible that authors may consider publishing in Asian journals indexed by the Web of Science less difficult than publishing in other regions of the world. Nonetheless, the results showed that the Asian LIS journals relied on contributions of authors from Asian countries, particularly those countries where the journal is published. At the same time, a considerable proportion of authors tend to submit their articles to international journals published in their own countries or regions.

The result also showed that each journal has a distinctive scope, and the characteristics of journals slightly differ in terms of topical areas of research. Topics about social media were the most common in *JISTaP*, consistent with the research conducted by Li et al. (2019). They pointed out that social media has become one of the important research areas in recent years. However, other journals did not have social media as one of the top 10 most frequently researched topics but had library-related issues as common research subjects. Additionally, many researchers published country-focused studies in the Asian LIS journals. Understandably, the most frequently mentioned countries in these country-focused papers were identical to the countries where the journals are published.

These results suggest that contributions from more diverse countries are needed in all the Asian LIS journals. Publishing international LIS journals would be conducive to promoting the scholarly knowledge of a country. Most authors seem to prefer to publish their articles in international journals where the journal's country is the same as the author's affiliated country. However, relying on local contributions may hinder the development of the journal because authors from other countries may become reluctant to submit their articles for publication. The finding of this study supports the view of Prieto-Gutierrez and Segado-Boj (2019) regarding the need for more internationalization among Asian LIS journals. Soliciting authors from other countries to submit articles for publication may be needed to expand the pool of authors. Such efforts should help promote Asian LIS journals to the rest of the world.

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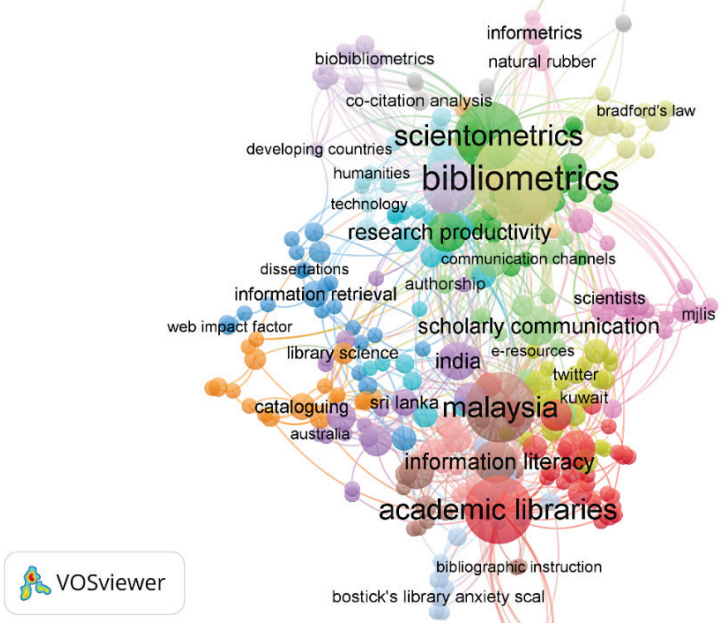
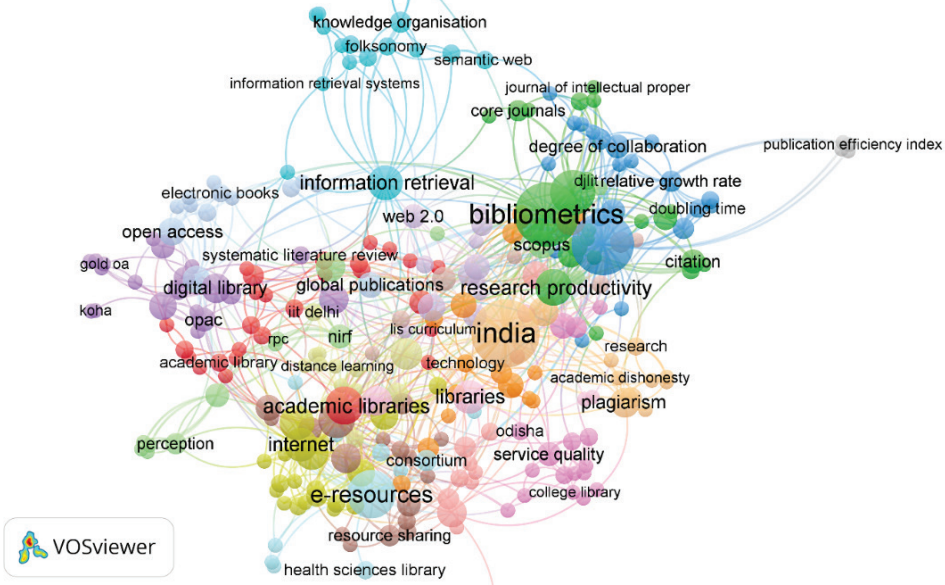
Appendix. Visualization of Keywords of the Similar Journals

Figure 2. Visualization of Keywords of *MJLIS*



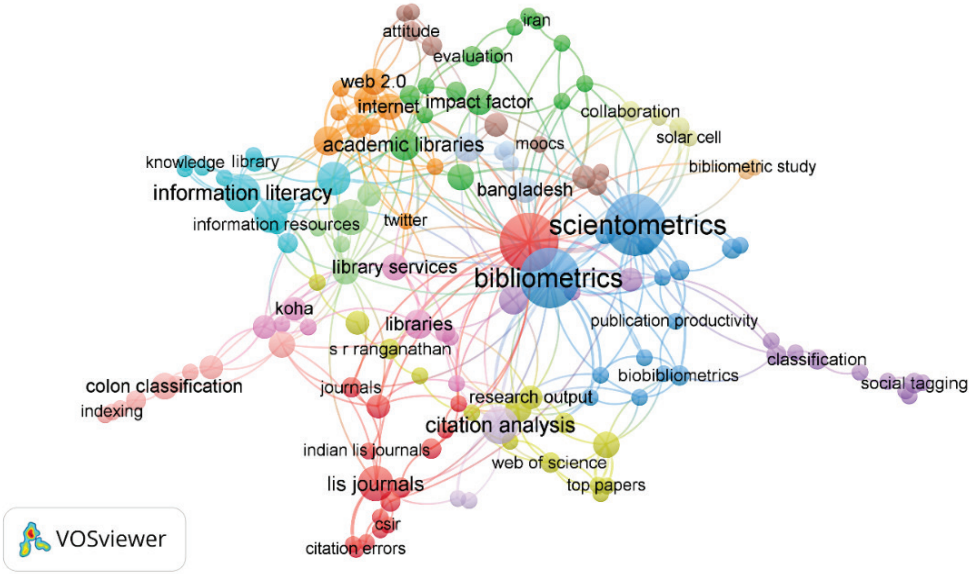
Note. The figure displays keywords with occurrences of ≥2.

Figure 3. Visualization of Keywords of *DJLIT*



Note. The figure displays keywords with occurrences of ≥2.

Figure 4. Visualization of Keywords of *ALIS*



Note. The figure displays keywords with occurrences of ≥2.

LIBRARY HERALD: A BIBLIOMETRIC STUDY (2005-2020)

Juli Devi[1] Dr. K.P. Singh[2]

Introduction

The subject of bibliometrics was first defined by Pritchard in 1968 but it become popular in 1980 as "the application of mathematical and statistical methods to books and other media of communication" (Pritchard, 1981). It is a new branch of information science. Bibliometric is a quantitative evaluation of the publication patterns of all macro and micro communications along with their authorship by mathematical and statistical calculus. (Sengupta,1985). In today's information era Bibliometric study is an emerging thrust area of research in the field of library and information sciences to observe the growth of literature and research trends, this method of study involves quantitative analysis of publications using bibliographic details such as author, title, year of publication, citations, length of pages, publication, etc. This can help to enrich the collection development and betterment of an organization, which is essential for effective and efficient use.

Need for the study

The periodicals are the indicators of literature growth in any field of knowledge. They emerge as the main channel for transmitting knowledge. Due to the escalating cost of the periodicals and lack of adequate library budgets the selection of any particular journal for a library should be done more carefully. Library authorities are forced to reduce the number of journal subscriptions. Bibliometric analysis has many applications in the Library and Information science filed in identifying the research trends in the subject, core journals, etc. and thereby framing new subscription policy for tomorrow. These studies will be helpful for librarians to plan a better collection development (Thanuskodi, 2011)

Library herald journal

Library herald is one of the famous library science journal in India, it was first published in April 1958 by Delhi Library Association. Library Herald published in a quarterly peer-reviewed journal, it includes research reports, memorial lectures, reviews of important Indian and foreign publications. Special issues on various facets of Library and Information Science are also published from time to time. Published quarterly in march, June, September and December every year.

Objective of the study

- To find out year wise distribution of articles.
- To determine the authorship pattern of published articles.
- To identify the most prolific author and their affiliation.
- To find out author productivity of published articles.
- To find out geographical distribution of articles.
- To identify the most prolific institutions.
- To calculate the degree of collaboration.

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2 Professor , DLISc., University of Delhi

Methodology

The present study covers the articles published in Library Herald journal from 2005 to 2015. A total 459 research publication of library herald journal has been used for bibliometric study. The publication data is taken from the journal itself, the articles will be accessed in electronic form from the

https://www.indianjournals.com/Mobile/JournalDetails.aspx?target=journal&ccode=lh&paid=Tru e&type=browse. The data have been tabulated and analysed in Excel sheet to meet the objectives mentioned above. After evaluation of data , data has been interpreted for giving examination, findings, suggestion with respect the advancement and development of library herald journal.

Discussion and interpretations

Table No. 1 Year wise distribution of articles

Year	Vol. no.	Issue 1	Issue 2	Issue 3	Issue 4	Percentage
2005	43	9	7	–	–	3.42%
2006	44	9	8	7	8	6.85%
2007	45	9	10	7	9	7.49%
2008	46	5	8	4	5	4.71%
2009	47	6	6	6	10	5.99%
2010	48	7	7	6	8	5.99%
2011	49	8	8	7	4	5.78%
2012	50	7	6	10	7	6.42%
2013	51	6	7	5	6	5.13%
2014	52	6	8	5	7	5.56%
2015	53	10	9	7	9	7.49%
2016	54	9	8	7	9	7.06%
2017	55	8	7	10	9	7.28%
2018	56	10	10	7	10	7.92%
2019	57	8	7	10	7	6.85%
2020	58	10	10		8	5.99%
TOTAL		127	126	98	116	467 (100%)

Table 1 shows the number of contribution made in library herald journal during the period study. It is found that total 467 articles are published in library herald journal during 2005 – 2020. Highest number 37 (7.92%) articles are published in vol. no. 56 in the year 2018 and lowest number 16 (3.42%) articles are published in vol no. 43 in the year 2005.

Table No.2 Year wise Authorship Pattern of Articles

Year	Vol. No.	Single author	Two author	Three author	Four author	Five author	Total
2005	43	13	3 (6)	–	–	–	16
2006	44	13	14 (28)	3 (9)	–	–	30
2007	45	21	10 (20)	4 (12)	–	–	35
2008	46	8	11 (22)	3 (9)			22

2009	47	17	8 (16)	3 (9)			28
2010	48	13	12 (24)	3 (9)			28
2011	49	14	7 (14)	5 (15)			26
2012	50	22	6 (12)	1 (3)	1 (4)		30
2013	51	10	7 (14)	6(18)		1 (5)	24
2014	52	12	12 (24)	2 (6)			26
2015	53	19	12 (24)	4 (12)			35
2016	54	12	15 (30)	5 (15)		1 (5)	33
2017	55	23	8 (16)	3 (9)			34
2018	56	18	13 (26)	3 (9)	3 (12)		37
2019	57	10	20 (40)			2 (10)	32
2020	58	18	7 (14)	3 (9)			28
Total		243	165(330)	48 (144)	4 (16)	4 (20)	464 (753)

Table no. 2 shows the year wise authorship pattern of articles published during the period of study and found that the total number of authors is 753, in which 330 are two authored publications, 243 are single authored publications, 144 are three authors publications, 16 are four authors publications and 20 are five authors publications. Maximum number of authors published their article in the year 2018 i.e. 37 and minimum in the year 2005 i.e. 16 and minimum number of authors published their article in the year 2005.

Table no.3 shows the most Prolific authors, contributions and their affiliations. Total 459 articles are published during the period of study (2005-2020). This table shows top 10 authors contributing the maximum number of articles in libary herald journal. Results of study found that Dr. K.P Singh from University of Delhi and Nosrat Riahinia from Tarbiat Moallem University, Tehran both topped the list of contributors 25(3.41%) followed by C.P.Vashishth with 14 (1.91%) articles.

Table No.3 Prolific authors, contributions and their affiliations

S.No.	Author	Affiliation	No. of Articles	Total (%)
1	K.P Singh	Associate Professor, Dept. of LIS University of Delhi.	25	3.32%
2	Nosrat Riahinia	Tarbiat Moallem University, Tehran, Iran	25	3.32%
3	C.P.Vashishth	Registrar, Delhi Library Association, Ranganathan Bhawan, Delhi–110007.	14	1.85%
4	B.K.Sen	Bibliometrics Expert Committee, Department of Science and Technology, Government of India, New Delhi	9	1.19%
5	K.C.Garg	CSIR–National Institute of Science, Technology and Development Studies (CSIR–NISTADS), New Delhi	8	1.06%
6	Jeevan V K J	Indira Gandhi National Open University, Maidan Garhi, New Delhi	6	0.79%
7	Jnanendra Narayan Singh	Treasurer, DLA & Librarian, Dyal Singh College Evening, University of Delhi	6	0.79%
8	Zandian Fatemeh	Tarbiat Modares University, Tehran, Iran.	5	0.66%
9	B S Biradar	Department of Library & Information Science, Kuvempu University, Shimoga, Karnataka.	5	0.66%
10	Archana Shukla	Assistant Professor, Library and Information Science, School of Social Sciences, Indira Gandhi National Open University, New Delhi	5	0.66%
		Total	753	100%

Table No. 4 Geographical Distribution of Articles (country wise)

Country	No. of Contributions	No. of Contributors	Percentage of contributions
India	410	619	87.79%
Iran	28	76	5.99%
Nigeria	17	35	3.64%
Bangladesh	2	6	0.42%
Nepal	2	4	0.42%
USA	2	4	0.42%
Italy	1	2	0.42%
London	1	2	0.42%
Spain	1	2	0.42%
Malaysia	1	1	0.21%
Paris	1	1	0.21%
Brazil	1	1	0.21%
Total	467	753	100%

Table No. 5 Author Productivity

Author Productivity					
S.No	Year of Publication	Number of Publication	Number of Authors	Average Publication Per Author (AAPP)	Productivity per year
1	2005	16	19	1.18	0.84
2	2006	32	49	1.53	0.65
3	2007	35	53	1.51	0.66
4	2008	22	40	1.81	0.55
5	2009	28	42	1.5	0.66
6	2010	28	46	1.64	0.6
7	2011	27	43	1.59	0.62
8	2012	30	41	1.36	0.73
9	2013	24	47	1.95	0.51
10	2014	26	42	1.61	0.61
11	2015	35	55	1.57	0.63
12	2016	33	62	1.87	0.53
13	2017	34	48	1.41	0.7
14	2018	37	65	1.75	0.56
15	2019	32	60	1.87	0.53
16	2020	28	41	1.46	0.68
Total		467	753	1.61	0.62

Table 5 shows the geographical distribution of articles (country wise), it was found that out of total contribution 467 during period of study, India acquired the top position with 410 contributions (87.79%) followed by Iran with 28 (5.99%) contributions and Nigeria with 17

(3.64%) contribution only. It appears that the coverage of Library Herald is not very broad and its scope is confined to the Indian continent only.

***Average Authors per paper (AAPP) = Number of authors / Number of papers**
***Productivity per author = Number of papers / Number of authors**

Table 6 shows the data related to author productivity, which shows that the total average number of author per paper **is 1.61** and the average productivity per author is **0.62**. The highest number of author productivity i.e., 47(1.95) were published in the year 2013.

Table No. 6 Institution-wise contribution of Articles

S.No.	Name of institution	No. of contributions	Percentage
1	University of Delhi	98	20.98%
2	Kharazmi University Tehran, Iran	30	6.42%
3	Taribiat Moalem University Tehran	20	4.28%
4	Indira Gandhi National Open University	18	3.85%
5	North Eastern Hill University, Shiliong	15	3.21%
6	DLA	15	3.21%
7	Kuvempu University, Shimoga	11	2.35%
8	Tata Institute of Social Sciences	11	2.35%
9	Guru Nanak Dev University, Amritsar	10	2.14%
10	Cochin University of Science and Technology	8	1.73%
TOTAL		467	100%

Table no. 7 Degree of collaboration

S. No.	Year	Single authored paper (Ns)	Double authored paper (Nm)	Total (Ns+Nm)	Degree of Collaboration
1	2005	13	6	19	0
2	2006	13	37	50	0.04
3	2007	21	32	53	0.04
4	2008	8	31	39	0.04
5	2009	17	25	42	0.03
6	2010	13	33	46	0.04
7	2011	14	29	43	0.03
8	2012	22	19	41	0.02
9	2013	10	37	47	0.04
10	2014	12	30	42	0.03
11	2015	19	36	55	0.04
12	2016	12	50	62	0.06
13	2017	23	25	48	0.03
14	2018	18	47	65	0.06
15	2019	10	50	60	0.06
16	2020	18	23	41	0.03
Total		243	510	753	0.59

Table 7 present the top 10 institution -wise contribution of articles during the period of

study from 2005–2020 on library herald journal total 753 institutions has contributed by various universities, colleges and R&D organizations in the world. Through this table it is cognizable that University of Delhi has contributed almost one fourth of the articles i.e. 98 (20.98%) out of 467 publications are on the top position followed by Kharazmi University Tehran, Iran with 30 (6.42%) articles, followed by Taribiat Moalem University Tehran contributed 20 (4.28%) on third.

The above table shows the details about the degree of collaboration. Degree of collaboration is a prominent area of research in bibliometric study which indicates tends in single and joint authorship during 2005-2020, as shown in above table the degree of collaboration ranges from 0.00 to 0.06 and the average degree of collaboration is 0.59.

Conclusion

The present study observes that total 467 publications contributed in Library herald journal during the period of study i.e., 2005-2020. Results of the study shows a trend of growth in contributions published during study and found that the highest number of contribution of paper 37 (7.92%) were found in vol. no. 56 in the year 2018 while the lowest 16 (3.42%) in the year 2005. The maximum number of contribution were received from two authors with 330 (43.82%) publications followed by single author with 243(32.27%). Out of 467 contributions, India acquired the top position with 410 contributions (87.79%), it appears that the coverage of Library Herald is not very broad and its scope is confined to the Indian continent only. Both K.P Singh and Nosrat Riahinia has contributed the highest number of articles with 25 (23.14%). The study further reveals that the average number of author per paper **is 1.61** and the average productivity per author is **0.62**. The highest number of author productivity i.e., 47(1.95) were published in the year 2013. University of Delhi has contributed almost one fifth of the articles i.e. 98 (20.98%) out of 467 publications are on the top position followed by Kharazmi University Tehran, Iran with 30 (6.42%) articles. Degree of collaboration ranges from 0.00 to 0.06 and the average degree of collaboration found is **0.59.**

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REFLECTIONS TO RESEARCH PRODUCTIVITY OF KURKSHETRA UNIVERSITY KURUKSHETRA, HARYANA (INDIA) FROM 2011-2020: A BIBLIOMETRIC ANALYSIS

Dr. Seema Parmar[1] Prof. Balwan Singh[2] Ms. Dinesh Kumari[3]

Introduction

Today's society is the information society and there is a great and urgent need for easy access and information availability. Already established information or knowledge leads to generate new knowledge, theories, information, etc. Information is a vibrant and endless resource which has impact on all arena of life. The literature growth, interdisciplinary subjective approach and specializations in research have posed many problems in front of researchers and as well as librarians to recognize the useful collection of literature and other materials. It has become a mandate for librarians to recognize the nature of any subject content used by the researchers.

Bibliometric studies help the LIS professionals to showcase the latest trends of any subject or literature. These kinds of studies are useful for many universities and academic institutions to appear in top list of research rankings based on their record of research output. Not the benefit of these studies goes to merely the institutions but students, teachers, researchers, stakeholders and government too. To assess the scientific performance of any Institution, individual or source, bibliometric or scientometric methods are among the most important measurements of scientific literature.

Objectives

The main objective of this study is to reflect the research performance of Kurukshetra University Kurrukshetra (KUK) during 2011-2020 based on its publications output as indexed in Scopus database. In particular, the study is carried out with following objectives:

- To reflect the total research output of KUK;
- To assess the number of cited articles out of total published articles of KUK;
- To recognize the authors who contributed more in research output;
- To be familiar with the top subject categories for publications; and
- To make out the preferred journals for publications.

Methodology

The present study is restricted to Research productivity of Kurukshetra University, Haryana State of India only. For the present study data was extracted from Scopus database -a popular largest abstracting and citation database of peer-reviewed scientific literature. Various filters have been applied before extraction and entering data in a MS-excel sheet and then analyzed to obtain relevant findings.

1. *Assistant Librarian, Nehru Library, CCS Haryana Agricultural University, Hisar*
2. *University Librarian, Nehru Library, CCS Haryana Agricultural University, Hisar*
3. *Research Scholar, Deptt. of Lib. & Inf. Sc.,MDU, Rohtak(Haryana), India*

Analysis and Results

Table 1 Type of documents produced Research output in KUK

Doc Type	Total Publication (TP)	Percentage (%)
Article	2390	75.47
Conference Paper	517	16.32
Review	129	4.07
Book Chapter	82	2.59
Book	12	0.38
Editorial	10	0.32
Erratum	9	0.28
Letter	6	0.19
Note	6	0.19
Data Paper	3	0.09
Short Survey	1	0.03
Undefined	2	0.06
Total	3167	100.00

Type of publications preferred by authors of KUK

In table 1 Research contribution of KUK appears in eleven different document types and a few papers are found unidentified. This output consists of 2390 Research Articles (75.47 % share), 517 Conference Paper (16.32 % share), 129 Review (4.07 % share), 82 Book Chapter (2.59 % share), 12 books (0.38 %) 10 editorials (0.32%) 9 erratum (0.28%), etc.

Table 2 Year-wise research contribution of KUK

Year	TP (N=5832)	%	Growth Rate	TC	ACPP
2011	334	10.55		5012	15.01
2012	343	10.83	9	3886	11.33
2013	315	9.95	–28	4155	13.19
2014	275	8.68	–40	2908	10.57
2015	302	9.54	27	2795	9.25
2016	301	9.5	–1	2521	8.38
2017	283	8.94	–18	1902	6.72
2018	280	8.84	–3	1386	4.95
2019	398	12.57	118	1172	2.94
2020	336	10.61	–62	739	2.2
Total	3167	–54.30%		26476	8.36

Research output of KUK during 2011-2020

Table 2 shows the year wise research contribution of KUK. The university's research output in terms of publications was more than three thousand (3167) during a span of 10 years. It is very apparent from the table that not more increase and decrease in publications during the decade. The research output is almost similar with a little increase and decrease. Publication output range falls between 8 percent and 12 percent every year. Maximum growth rate was marked in the year

2019 thus it can be said that more research productivity was made in the year 2019 (398 articles). It was followed by 2012 (343 papers) while less productivity can be seen in the year 2014 (275 papers). Highest growth rate can be seen in the year 2019 (118 articles) very distantly followed by 2015 (27 articles).

Highest Citations received to the year 2011 (5012) while the lowest citations to the year 2020 (739) that is very much logical. Citations from the latest year to start year can be seen increasing by every year except the year 2012.

Table 3 Subject-wise distribution of research output of KUK

S. No.	Subject–Categories	TP
1.	Chemistry	590
2.	Biochemistry, Genetics and Molecular Biology	445
3.	Computer Science	382
4.	Agricultural and Biological Sciences	338
5.	Chemical Engineering	196
6.	Earth and Planetary Sciences	168
7.	Business, Management and Accounting	96
8.	Economics, Econometrics and Finance	42
9.	Decision Sciences	30
10.	Arts and Humanities	28
	Total	2315 (–73.09%)

Subject wise contribution of KUK

"Scopus classifies the different subject categories for the indexed articles. The papers published by KUK can be divided into different subject categories as shown in Table 3. A paper may appear in more than one subject category so the total number of articles exceeds in all subject categories".

Table 4 Top collaborating countries with KUK

S. No.	Country	TP (N=3167)	% of collaboration
2	United States	51	1.61
3	Malaysia	42	1.33
4	Saudi Arabia	33	1.04
5	Egypt	28	0.88
6	Denmark	27	0.85
7	Italy	26	0.82
8	Spain	21	0.66
9	Czech Republic	19	0.6
10	South Africa	16	0.51
11	South Korea	16	0.51

More than seventy percent of total publications appeared in the top ten subjects during the decade. Highest publications were contributed in the subject category chemistry (590) followed by Biochemistry, Genetics and Molecular Biology (445). In Computer Science and Agricultural and

Biological Sciences, more than 300 publications were contributed while in Chemical Engineering and Earth and Planetary Sciences more than 100 publications were contributed.

Collaboration at National and International Level

It is clear from the table that KUK at International Level had highest collaboration with United States in publication of research output papers (51 papers) followed by Malaysia (42) and Saudi Arabia (33). With Egypt 28 papers, Denmark (27), Italy (26), Spain (21) were contributed. More than 16 papers were produced with Czech Republic, South Africa and South Korea.

Table 5 Top Sources for Publication

S. No.	Name of Journal	TP	% (N=448)	% (N=3167)
1	AIP Conference Proceedings	167	37.28	5.27
2	Journal of Molecular Liquids	44	9.82	1.39
3	Annals of Biology	40	8.93	1.26
4	Medicinal Chemistry Research	38	8.48	1.2
5	Advances In Intelligent Systems And Computing	32	7.14	1.01
6	Materials Physics and Mechanics	31	6.92	0.98
7	Journal of Solid Mechanics	29	6.47	0.92
8	European Journal of Medicinal Chemistry	23	5.13	0.73
9	International Journal of Pharmacy And Pharmaceutical Sciences	23	5.13	0.73
10	Natural Hazards	21	4.69	0.66
		448		14.15

Top journals preferred for publications

Table 5 presents the status of top 10 journals which had published 14.15% % share of total publications of CCSHAU (3167 papers) during 10 years. AIP Conference Proceedings were most

Table 6 Most prolific authors of KUK

S. No.	Author	TP (N=3167)	TC	Total Contribution of all years	Cited by documents	h–index
1	Kumar, R.	194	3199	388	1617	25
2	Pal, A.	93	4246	232	2271	33
3	Kashyap, M.K.	77	515	82	407	12
4	Sharma, P.K.	65	2161	112	1590	26
5	Tripathi, C.C.	63	512	76	431	13
6	Kumar, D.	59	4086	472	3249	31
7	Aggarwal, S.	58	723	72	557	14
8	Sharma, A.	57	800	122	577	15
9	Sharma, C.	56	1793	83	1611	22
10	Kumar, D.	55	816	109	748	14
	Total	777 (–24.53%)	18851	1748		

preferred source for publications from KUK during a span of 10 years as it shares of publication of top ten journals is 37.28 %. It was distantly followed by Journal of Molecular Liquids with share of 9.82 % publications of total top journals. Two journals published more than 8 percent share of publications while other five journals among top ten contributed more than 5% publications of KUK. One journal namely Natural Hazards contributed little less than 5 percent of share among top ten journals.

Table 6 presents the list of top ten productive authors of KUK and their citation impact during period of ten years. These 10 authors contributed 777 papers which is 24.53 % share of cumulative total research output made during ten years. More research output was contributed by Kumar, R (194 Papers) followed by Pal A (93 papers) and Kashyap, M.K. (77 papers). Sharma, P.K. and Tripathi, C.C. contributed more than 60 papers each while other five authors contributed more than 50 papers each. Among all top ten authors, PAL, A had highest H-Index followed by Kumar D.

Summary and Conclusion

Research output of an institute indicates towards its excellence. In the present study research contribution of KUK one of the leading and oldest university of Haryana state has been demonstrated in terms of number of publications and citations, subject categories of publications, preferred journals for publication and most prolific authors. Research output of KUK in terms of publications has been more than three thousand (3167) during a span of 10 years; Maximum growth rate was marked in the year 2019; Highest Citations was recorded in the year 2011 (5012) while the lowest citations in 2020 (739); More than seventy percent of total publications appeared in the top ten subjects; Highest publications were contributed the subject category chemistry (590) followed by Biochemistry, Genetics and Molecular Biology (445);

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A STUDY ON SCIENTOMETRIC PROFILES OF TAMIL NADU AGRICULTURAL UNIVERSITY

S. Louies[1] Dr K Kaliyaperumal[2]

Introduction

The Tamil Nadu Agricultural University (TNAU) had its genesis from establishment of an Agricultural School at Saidapet, Madras, Tamil Nadu, as early as 1868 and it was later relocated at Coimbatore in 1920. It was affiliated to Madras University. TNAU assumes full responsibilities is of Agricultural Education and Research and support the State Agricultural Deptartment by delivering research products. Till 1946, the Agricultural College and Research Institute Coimbatore, was the only institute for Agricultural Education for the whole of south India. In 1958, it was recognised as a post-graduate centre leading to Masters and Doctoral degrees. The Agricultural college and Research Institute, Madurai was established in 1965. These two colleges formed the nucleus of the Tamil Nadu Agricultural University while it was established in 1971. The prime purpose of the TNAU is to transform lives to farmers through broad based quality education offering in agriculture and technology including horticulture and forestry and to provide need based technologies to the stake holders which are sustaining environments and economics locally, regionally and globally. Due to its academic and research performances, it has secured 40th rank in the NIRF 2020 ranking list.

Objectives of the study

The specific objectives of the present study addresses the following aspects

- Form of publications
- Growth rate of publications
- Highly prolific authors
- Highly collaborative countries
- Highly research areas
- Highly collaborative institutes
- Most preferred source titles for publication
- High productive subject areas

Methodology

The data for the present study was retrieved from web of science database which is published by Thomson Reuters. This is the one of the largest established and best known bibliographic database for science, social science, arts and humanities and its covers more than 90 million records referencing 256 disciplines of journals, conference materials and technical reports dating from 1900. A Total of 688 records were downloaded from the web of science database during 2011-2020 using search terms namely 'Tamil Nadu Agricultural University' in 'Organization field' and analysed by using the spreadsheet application as per the objectives of the study.

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Table 1: Forms of publications

S.No	Forms of publications	No of publications	Percentage
1.	Journal articles	647	94.04
2.	Review	21	3.05
3.	News items	12	1.75
4.	Editorial materials	6	0.88
5.	Corrections	1	0.14
6.	Letters	1	0.14
Total		688	100

The table 1 reveals that the major source of publications covered by Web of Science database on Tamil Nadu Agricultural University research is Journal articles with 647 publications (94.04%) followed by Review with 21 publications (3.05%). News Items ranks the third position with 12 publications (1.75%). Editorial materials with 6 publications (0.88%), corrections with 1 publication (0.14%) and Letters with 1 publication (0.14%) as seen in the table. The results indicate that the research outputs of the study are mostly published in the form of Journal articles.

Growth of publications

Table 2: Growth of publications

Sl. No	Year	No. of Publications	Percentage
1.	2011	41	5.96
2.	2012	49	7.12
3.	2013	58	8.43
4.	2014	68	9.89
5.	2015	73	10.61
6.	2016	77	11.19
7.	2017	76	11.05
8.	2018	68	9.89
9.	2019	87	12.64
10.	2020	91	13.22
Total		**688**	**100**

The table 2 reveals that during the period of 2011-2020, a total of 688 publications were published and the highest number of publications is 91 (13.22%) was published in 2020. The lowest publications of 41 (5.96%) are published in 2011. The average number of publications published per year was 68.8. There is increasing of publications year after year except in 2017 and 2018 as illustrated in table 2. The reason for that publications are not published more in the year 2017 and 2018.

Relative Growth Rate (RGR) and Doubling Time (DT)

The Relative Growth Rate (RGR) is the increase in number of articles or pages per unit of time. This definition derived from the definition of relative growth rates in the study of growth analysis in the publication productivity of Tamil Nadu Agricultural University. The mean relative growth rate(R) over the specific period of interval can be calculated from the following equation. Relative growth rate (RGR)

1-2R=Log w_2- Log w_1/T2-T1
Where as
1-2R - Mean relative growth rate over the specific period of interval
Log w_1 - Log of Initial number of articles
Log w_2 - Log of final number of articles after a specific period of interval
T2-T1 - The unit difference between the initial time and the final time
The year can be taken here as the unit of time.
Doubling Time(DT) = 0.693/R

Table for Relative Growth Rate (RGR) and Doubling Time (DT) of publications

Year	No. of Publications	Cumulative Total	w_1	w_2	RGR	DT
2011	41	41	–	3.7	–	–
2012	49	90	3.7	4.5	0.79	0.9
2013	58	148	4.5	5	0.51	1.4
2014	68	216	5	5.4	0.37	1.9
2015	73	289	5.4	5.7	0.29	2.4
2016	77	366	5.7	5.9	0.23	3
2017	76	442	5.9	6.1	0.19	3.6
2018	68	510	6.1	6.2	0.14	5
2019	87	597	6.2	6.4	0.16	4.3
2020	91	688	6.4	6.5	0.14	5

The year wise RGR is found to be in the range of 0.79 to 0.16 year wise calculation of RGR reveals that it has gradually decreased from 2012 to 2018. The highest value 0.79 corresponds to the year 2011, whereas the lowest value 0.14 for the year 2018.

Doubling time too has a trend similar to that RGR. A year wise increase seen during the periods of the study, the DT has shown a year wise increase from 0.88 to 4.33.

Figure 1 Relative growth rates for research output

4.3 Most prolific authors

Table 3: Identification of most prolific Authors

Si. No	Author	Deptartment	No. of publications
1.	Paramasivam M	Dept. of Agricultural Entomology	31 (4.50%)
2.	Karthikeyan G	Dept. of Plant Pathology	26(3.77%)
3.	Raguchander T	Dept. of Plant Pathology	22(3.19%)
4	Mohankumar S	Dept. of Plant Biotechnology	21(3.05%)
5	Anandan R	Dept. of Agricultural Microbiology	20(2.90%)
6	Nakeeran S	Dept. of Plant Pathology	20(2.90%)
7	Muthurajan R	Dept. of Plant Biotechnology	19(2.76%)
8	Raveendran M	Center for Plant Molecular Biology and Biotechnology	19(2.76%)
9	Subramanian K S	Res, Tamil Nadu Agricultural University	19(2.76%)
10	Balachandar D	Dept. of Agricultural Microbiology	18(2.61%)

Table 3 presents the rank list the authors who have contributed more than 15 articles. Paramasivam M Dept. of Agricultural Entomology is the most productive author with 31 (4.50%) publications followed by karthikeyan G Dept. of plant pathology with 26 (3.77%) publications, Raghuchander T Dept. of plant pathology with 22 (3.19%) publications, Mohan Kumar S, Dept. of plant Biotechnology with 21 (3.05%) publications. Anandan R, Dept. of Agricultural Microbiology and Nakkeeran S, Dept. of Plant Pathology with 20(2.90%) publications respectively, Muthurajan R, Dept. of plant Biotechnology, Raveendran M, centre for Plant Molecular Biology and Biotechnology and Subramanian K S, Res. Tamil Nadu Agricultural University with 19 (2.76%) publications respectively. Balachandar D, Dept. of Agricultural Microbiology with 18 (2.61%) publications.

4.4 Highly Collaborative Institutes

Table 4 Highly collaborative institutes

Rank	Institutions	No of Publications	Percentage
1	Tamil Nadu Agricultural University	688	100
2	Indian Council of Agricultural Research	27	3.92
3	Kansas State University	27	3.92
4	INT Crops Res Inst semi Arid	25	3.63
5	Indian Agri Res Insti	22	3.19
6	Univ Agri sci	19	2.76
7	Int Rice Res inst	16	2.32
8	Punjab Agri Univ	11	1.59
9	Agr coll Res inst	9	1.3
10	ICAR cent plantat Crops Res Insti	9	1.3

The Table 4 provides the types of institutional collaboration in Tamil Nadu Agricultural University. It is found that 688 records of the contributions are from Tamil Nadu Agricultural University followed by Indian Council of Agricultural Research (ICAR) with 27 (3.92%) publications, Kansas State University with 27 (3.92%) publications, INT. Crops Res Inst semi Arid with 25 (3.63%) publications, Indian Agri Res Inst with 22 (3.19%) publications, Univ Agri sci with 19 (2.76%) publications, Int Rice Res inst with 16 (2.32%) publications, Punjab Agr University with 11 (1.59%) publications, Agr coll Res inst and ICAR cent plantat Crops Res Insti with 9 (1.30%) publications respectively. It has been found that top 10 institutions are taken for the study with their publications.

International Research Collaboration

Table 5 International Research Collaboration

Rank	Country	Publications	Percentage
1	India	688	100
2	USA	62	9.01
3	South Korea	33	4.79
4	Canada	30	4.36
5	Australia	26	3.77
6	Philippines	21	3.05

7	Japan	13	1.88
8	Singapore	12	1.74
9	Germany	11	1.59
10	Peoples R China	8	1.16

The table 5 provides the types of International Research Collaboration in Tamil Nadu Agricultural University in India with 688 publications. Top 10 International Research Collaborations are taken for the study. However, internationally USA topped the list with highest share with 62 (9.01%) Publications and followed by South Korea share with 33 (4.79%) publications, Canada share of 30(4.36%) publications, Australia share with 26 (3.77%) publications, Philippines share with 21 (3.05%) publications, Japan with 13 (1.88%) share of publications, Singapore share with 12 (1.74%) publications, Germany share with 11 (1.59%) publications and Peoples R China with 8 (1.16%) share of publications.

Most preferred source titles

Table 6 source title of publications

Rank	Source Title	No. of Publications	Percentage
1	Indian Journal of Agricultural Sciences	30	4.36
2	Current Science	18	2.61
3	Frontiers in Plant Science	14	2.03
4	Communications in Soil Science and Plant Analysis	12	1.74
5	Plant Diseases	12	1.74
6	Crop Protection	11	1.59
7	Journal of Environmental Biology	11	1.59
8	European Journal of Plant Pathology	10	1.45
9	Journal of Plant Nutrition	10	1.45
10	Scientia Horticulture	10	1.45

The publication share of most productive source titles (≥30 publications) in given in table 6. It reveals that Indian Journal of Agricultural Sciences the list with the highest number of publications 30(4.36%) followed by Current science with a share of 18 (2.61%) publications. Frontiers in Plant Science occupies third position with 14 (2.03%) publications. The fourth source title is communications in Soil Science and Plant Analysis with 12 (1.74%) Share of publications, plant disease occupies with 12 (1.74%) publications, Crop Protection and Journal of Environmental Biology share with 11 (1.59%) publications respectively. European Journal of Plant Pathology, Journal of Plant Nutrition and Scientia Horticulture share with 10 (1.45%) publications respectively.

High Productivity Subject Areas

Table 6 High Productivity Subject areas

Rank	Subject	No. of Articles	Percentage
1	Plant Sciences	175	25.43
2	Agricultural Agronomy	129	18.75
3	Environmental Ecology	95	13.8

4	Entomology Pest Control	48	6.97
5	Food Science and Nutrition	40	5.81
6	Microbiology	37	5.37
7	Animal Plant Science	29	4.21
8	Multidisciplinary	25	3.63
9	Biology	21	3.05
10	Pharmacology Toxicology	17	2.47

Table 7 shows high productivity subjects which are contributing more than 15 articles. It is found that plant sciences has highest number of articles with 175 (25.43%) followed by Agricultural Agronomy contributing 129 (18.75%) articles. Environmental Ecology occupies the third position with 95 (13.80%) articles. The fourth place articles belongs to the subject Entomology Pest Control with 48 (6.97%) articles. Food Science and Nutrition with 40 (5.81%) articles, Microbiology shared articles with 37 (5.37%), Animal Plant Science with 29 (4.21%) articles, Multidisciplinary subjects occupies 25 (3.63%) articles, Biology with 21 (3.05%) articles and Pharmacology Toxicology contributing articles with 17(2.47%).

High Productivity Research Areas

Table 8 High Productivity Research Areas

Rank	Research Areas	No. of Articles	Percentage
1	Plant Sciences	175	25.43
2	Agriculture	136	19.76
3	Environmental Science Ecology	98	14.24
4	Life Science Biomedicine other topics	50	7.26
5	Entomology	48	6.97
6	Nutrition Dietetics	42	6.1
7	Food Science And Technology	40	5.81
8	Engineering	38	5.52
9	Microbiology	37	5.37
10	Biochemistry And Molecular Biology	26	3.77

Table 8 shows that Research areas which are contributing more than 25 articles. It is found that Research areas of Plant Science has highest number of articles with 175 (25.43%) articles followed by Agriculture contributing with 136 (19.76%) articles. Environmental Science Ecology occupies third position with 98 (14.24%) articles. The fourth place of articles belonged to Life Sciences Biomedicine other topics with 50 (7.26%). Entomology shared with 48 (6.97%) articles, Nutrition Dietetics with 42 (6.10 %) articles, Food Science and Technology with 40(5.81%) articles, Engineering contributes 38 (5.52%) articles, Microbiology with 37(5.37%) articles and Biochemistry and Molecular Biology with 26 (3.77%) articles.

Conclusion

The present paper has attempted to highlight the growth and development of research productivity of Tamil Nadu Agricultural University. A total of 688 publications were published during 2011-2020 and the average number of publications per year was 69. During the study period there was increasing trend in the growth of publications productivity except in the year 2017 and 2018. Apart from India, USA topped list with highest collaborative share 62 (9.01%) of publications. South Korea with 33 (4.79%) share of publications followed by Canada 30 (4.36%) share of publications. Indian Council of Agricultural Research (ICAR) with 27 (3.92%) publications and followed by Kansas State University with 27 (3.92%) publications, INT. Crops Res inst semi Arid with 25 (3.63%) publications. The most preference journal for publications were Indian Journal of Agricultural sciences with 30(4.36%) publications, current science with 18 (2.61%) publications and Frontiers of Plant Science with 14 (2.03%) publications.

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RESEARCH PRODUCTIVITY OF MAHARSHI DAYANAND UNIVERSITY (MDU): A QUANTITATIVE APPROACH

Dinesh Kumari[1] Neelam Malik[2] Seema Parmar[3]

Introduction

Research is the art of scientific investigation which helps to build knowledge. It is an original addition to the available knowledge for further advancement . In higher education system, It is evident that recognition and acknowledgment are influenced by research. India is increasingly valuing the evaluation and ranking of higher educational systems. Top ranking of higher education institutions show that research output and impact play an important role in the overall performance evaluation of an institutions. Research is considered as one of the main indicators to rate higher education institutions. Publications reflect the research activities of an institution and can be used to help to get a better idea of the institution's research productivity.

In today's world, universities must have credibility.It is becoming more important to identify, review,monitor, and measure the university's research output. One of the most widely used tools for identifying, collating, measuring, analysing, and reviewing the research productivity of individuals or groups, institutions, countries, or organisations, is bibliometrics. Bibliometrics allows for comparisons of research productivity between individuals, groups, institutions, and countries. Many bibliometric and scientific studies have been done to evaluate the research productivity of different disciplines and institutions. Therefore, the current study has been conducted to find out the research output or latest publishing trends of Maharshi Dayanand University, Rohtak through some bibliometric indicators.

Bibliometrics

The word 'Bibliometric' was coined by Pritchard in 1969. It is a combination of two words 'biblio' and 'metrics'. The word 'biblio' is derived from a Latin and Greek Word combination 'biblion', which means book, paper. On the other side the word 'metrics' refers 'measurement'. Bibliometrics is statistical analysis of written publication, such as books or articles. It is a type of research method used in library and information science. Some definitions used for 'Bibliometrics 'are as under:

According to Bellis (2009) "Bibliometric is a set of methods to quantitatively analyze scientific and technological literature."According to Potter (1981) bibliometrics is "the study and the measurement of the publication pattern of all forms of written communication and their author." Pritchard (1969) defined it as "the application of mathematics and statistical methods to books and other media of communication".

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Maharshi Dayanand Univesity, Rohtak

Maharshi Dayanand University is a National Assessment and Accreditation Council (NAAC) accrediated 'A'+ grade university, located at Rohtak in the state of Haryana. It was established in 1976 as a residential University. In 1977, It was rechristened as Maharshi Dayanand University after the name of a great visionary and social reformer,Maharshi Dayanand. In 1978, University became an affiliating university and in 1979, it secured recognition from UGC. It has 38 departments to offer educational and research programmes.About 263 academic institutions/ colleges are affiliated to this university.Beside, university offers academic programmes through distance mode also.

Objectives

The study has been conducted with taking following objectives in to consideration;

- to identify the form-wise research output of MDU;
- to identify the yearwise research productivity of MDU;
- to identify the most prolific authors of MDU;
- to identify top ten prefrred sources for publications by MDU
- to identify top ten most cited publications of MDU.

Methodolgy

In this present study, research output of Maharshi Dayanand University from 2011 to 2020 has been analyzed. The data has been extracted from the largest abstracting and citation database of peer- reviewed literature which is Scopus database. The data was extracted from the Scopus in August 2021 using the strings "Maharshi Dayanand University" and afterwards followed a few filters. The data was shifted to MS-Excel for analysis and presented in tabular form for further interpretations.The study is limited to the Scopus database covering a ten years study period.

Data Analysis

Type of publications of MDU during 2011-2020

The table 1 explored that different type of publications are preferred by authors of MDU during the study period. It is apparent that majority of literature was published in form of articles (71.31%) followed by review (11.26%), conference paper (10.17%) and book chapters (4.44%). Other publications were least appeared like editorial , book, letter, data paper, note , survey etc.

Table 1 Types of publications

S.No	Document Type	Publications	%
1	Article	2426	71.31
2	Review	383	11.26
3	Conference Paper	346	10.17
4	Book Chapter	151	4.44
5	Editorial	34	1
6	Book	28	0.82
7	Letter	11	0.32
8	Data Paper	8	0.24
9	Erratum	8	0.24
10	Note	5	0.15

11	Short Survey	1	0.03
12	Undefined	1	0.03
	Total	**3402**	**100**

Yearly research productivity of MDU

Table 2 depicts the year wise distribution of MDU publications during the period 2011-2020.Table shows that a total of 3402 records of MDU were observed in Scopus database during the study period . It is very clear from the table that most productive year has been 2020 (15.20%) followed by 2019 (15.14%). The table clearly shows that there is an increasing trend in research productivity of MDU.Table shows that total citation per paper is highest in the year 2011. It shows that the old publications received more citations rather than new publications.

Table 2 Year wise distribution of papers/citations

Year	Publications	%	Total Citation	%	TCPP
2011	199	5.85	4245	12.72	21.33
2012	257	7.55	3914	11.73	15.23
2013	294	8.64	4372	13.1	14.87
2014	281	8.26	2964	8.88	10.55
2015	276	8.11	2794	8.37	10.12
2016	349	10.3	3746	11.22	10.73
2017	345	10.1	3379	10.12	9.79
2018	369	10.9	3152	9.44	8.54
2019	515	15.1	2876	8.62	5.58
2020	517	15.2	1936	5.8	3.74
Total	3402	100	33378	100	

Most prolific authors

Table 3Most prolific authors in terms of research publications

S.No.	Most Prolific Authors	Publications
1	Pundir, C.S.	169
2	Shukla, P.	148
3	Narasimhan, B.	126
4	Gill, S.S.	96
5	Khatkar, S.P.	90
6	Taxak, V.B.	86
7	Dureja, H.	80
8	Chugh, R.	64
9	Narang, J.	63
10	Chhillar, A.K.	60
11	Yadav, J.P.	60
12	Singh, D.	59
13	Tuteja, N.	55

14	Singh, B.	53
15	Chauhan, N.	50
	Total	**1259 (37 %)**

The list of fifteen top authors who gave highest contribution during the period 2011-2020 is given in Table 3. In terms of number of publications, Pundir, C.S. is most productive author with 169 publications followed by Shukla, P. with 148 publications . It is also noticed that these fifteen authors collectively produced 37 percent research output of total publications of MDU .

Top ten preferred sources of MDU

Table 4 lists the top ten sources which are preferred by MDU authors and made highest contribution in terms of research output during 2011-2020. These top ten sources together produced around 8.96% of the total research output. The *Aip Conference Proceedings* contributed highest research output (42) among top ten preferred sources of MDU followed *by Communication And Computing Systems Proceedings of The 2nd International Conference On Communication And Computing Systems Icccs 2018* with 38 publications. It is also found that three sources at position 8th , 9th and 10th produced equal share of research output (23 each).

Table 4 Top ten source of MDU

S. No	Source/Journal	Publications
1	Aip Conference Proceedings	42
2	Communication And Computing Systems Proceedings Of The 2nd International Conference On Communication And Computing Systems Icccs 2018	38
3	International Journal of Biological Macromolecules	37
4	International Journal of Pharmacy And Pharmaceutical Sciences	34
5	Journal of Materials Science Materials In Electronics	34
6	Medicinal Chemistry Research	27
7	BMC Chemistry	24
8	Annals of Biology	23
9	Ceramics International	23
10	Process Biochemistry	23
	Total	**305 (89.6%)**

Top cited papers of MDU during 2011-2020

Top 10 highly cited papers of MDU during 2011-2020 are listed in table 5.The paper titled *"Nanostructured graphene/Fe3O4 incorporated polyaniline as a high performance shield against electromagnetic pollution"* authored by Singh, K. et al. published in the year 2013 received highest number of citations and the paper at 10th position in receiving highest citations authored by Chauhan, N. & Pundir, C.S. , published in the year 2011 received 151 citations.

Table 5 Top cited papers

Authors	Title	Year	Cited by
Singh, K., Ohlan, A., Pham, V.H., Balasubramaniyan, R.B., Varshney, S., Jang, J., Hur, S.H., Choi, W.M., Kumar, M., Dhawan, S.K., Kong, B.–S., Chung, J.S.	"Nanostructured graphene/Fe3O4 incorporated polyaniline as a high performance shield against electromagnetic pollution"	2013	413
Gill, S.S., Anjum, N.A., Hasanuzzaman, M., Gill, R., Trivedi, D.K., Ahmad, I., Pereira, E., Tuteja, N.	"Glutathione and glutathione reductase: A boon in disguise for plant abiotic stress defense operations"	2013	237
Gill, S.S., Tuteja, N.	"Cadmium stress tolerance in crop plants: Probing the role of sulfur"	2011	225
Singh, L.P., Gill, S.S., Tuteja, N.	"Unraveling the role of fungal symbionts in plant abiotic stress tolerance"	2011	213
Pundir, C.S., Chauhan, N.	"Acetylcholinesterase inhibition–based biosensors for pesticide determination: A review"	2012	186
Dhankhar, R., Hooda, A.	"Fungal biosorption–an alternative to meet the challenges of heavy metal pollution in aqueous solutions"	2011	176
Narang, R., Narasimhan, B., Sharma, S.	"A review on biological activities and chemical synthesis of hydrazide derivatives"	2012	159
Dahiya, D.K., Renuka, Puniya, M., Shandilya, U.K., Dhewa, T., Kumar, N., Kumar, S., Puniya, A.K., Shukla, P.	"Gut microbiota modulation and its relationship with obesity using prebiotic fibers and probiotics: A review"	2017	152
Narasimhan, B., Sharma, D., Kumar, P.	"Benzimidazole: A medicinally important heterocyclic moiety"	2012	152
Chauhan, N., Pundir, C.S.	"An amperometric biosensor based on acetylcholinesterase immobilized onto iron oxide nanoparticles/multi–walled carbon nanotubes modified gold electrode for measurement of organophosphorus insecticides"	2011	151
		Total	2064

Conclusion

In the present study, the analysis of 3402 records of Maharshi Dayanand University found that there is an increasing growth trend of research publication during the ten years (2011-2020).The document-wise analysis clearly shows that articles which are the units of journals are most preferred form by MDU authors.The study indicates that largest number of articles were published in *AIP conference proceedings* which indicates that authors of MDU preferred conference participation during the study period.Among the most prolific authors,C.S. Pundir observed as top author with the highest number of publications.The paper with joint authorship entitled "Nanostructured graphene/Fe3O4 incorporated polyaniline as a high performance shield against electromagnetic pollution" published in 2013 observed as the most cited paper with 413 citations.

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WEBSITES OF LAW COLLEGES IN TAMILNADU: A WEBOMETRIC ANALYSIS

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1. Introduction

Webometrics science measures the number of matric aspects by measuring the World Wide Web and trying to gain knowledge about the structure and usage patterns of the World Wide Web. According to Bjorneborn & Ingwersen (2003) Webometrics studies the quantitative aspects of the construction and usage of information resources structures and technologies on web drawing in bibliometrics and information manner. The term Webometrics was first composed by Almind & Ingwersen (1997). Present study has selected 13 numbers of law colleges websites and analysed in different aspects regarding the CPR score, Spam score, Domain authority, Page authority, Trust flow, Citation flow, External back links, Edu back lines, Topic value, Indexed urls, Global rank .This study will help the law colleges in Tamilnadu to improve their websites qualities in future regarding the above aspects for better services.

2. Objective of the study

Following objectives have framed for the study:

- To find out the number of web page of law colleges websites of Tamilnadu;
- To analysed the External back links and Edu back links pages of law colleges websites of Tamilnadu;
- To analyse the domains & page authority of selected websites;
- To find out the global rank of the law colleges websites of Tamilnadu and
- To find out the trust flow and citation flow of the law colleges websites of Tamilnadu.

3. Methodology

This study has collected all metric aspect about websites of the law colleges of Tamilnadu likeDomain authority, Page authority, CPR score, Spam score,Global rank,External back links, Edu back links,Trust flow, Citation flow,Topic value, Indexed urls. The present study has been done by using Webometrics methods.The following methodology has been adopted in this study. The data were collected from August 2021 and analyzed by using the MS- excel sheet. This study considered the 13 law colleges' websites in Tamilnadu and online searching for each domain has been carried out to collect the required data using different tools.For this study there are a number of search engines with other tools were used to collect data according to the need and applicability of the research objectives. The data for the websites of law colleges in Tamilnadu was collected by using the following search engine and other web clawers. http://checkpagerank.net using search engines Domain authority, Page authority,CPR score, Spam score,Global rank,External back links, Edu back links,Trust flow, Citation flow, Topic value, Indexed urls.

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Data Analysis and Interpretation

It is observed from the table 1 that there are 13 law colleges in Tamil Nadu which ware established after 1891s. Among all 6 colleges were established between 1891 and 2000 and 7 colleges ware established between 2001 and 2018.

Table 1: List of LCTN Website, Districts and Establishment

Sl. No	Name of the Law Colleges in Tamil Nadu	URLs	District	Establishment
1	Chennai Dr. Ambedkar Government Law College, Pattarai Perambudur,	http://glcppr.ac.in/	Thiruvallur	1891
2	Chennai Dr. Ambedkar Government Law College, Pudupakkam,	http://glcpkm.ac.in/	Kancheepuram	1891
3	Government Law College, Madurai	http://glcmadurai.ac.in/	Madurai	1979
4	Government Law College, Trichy	http://glctry.ac.in/	Trichy	1979
5	Government Law College, Coimbatore	https://glccbe.ac.in/	Coimbatore	1979
6	Central Law College, Salem	http://centrallawcollege.com/law/	Salem	1984
7	Government Law College, Tirunelveli	http://glctvl.ac.in/	Tirunelveli	1996
8	Government Law College, Chengalpattu	http://glccgl.ac.in/	Chengalpattu	2004
9	Government Law College, Vellore	http://glcvellore.ac.in/	Vellore	2008
10	Government Law College, Dharmapuri	http://glcdpi.ac.in/	Dharmapuri	2017
11	Government Law College, Ramanathapuram	http://glcrmd.ac.in/	Ramanathapuram	2017
12	Government Law College, Villupuram	http://glcvpm.ac.in/	Villupuram	2017
13	Saraswathy Law College, Tindivanam	http://saraswathylawcollege.com/	Villupuram	2018

Table 2: shows the general information about the websites of LCTN under the Ministry of Culture which includes domain authority and page authority. Domain authority is a measure of the power of a domain name. It predicts the root domain ranking potential in search engines based on an algorithmic combination of all link metrics. It showed that the domain authority of the Government Law College, Trichy 22 (13.02%) was the highest, and Saraswathy Law College; Tindivanam1(0.59%) which was the lowest.

Table 2: Quantum of LCTN websites by domain authority, page authority using http://checkpagerank.net

Sl. No	Name of the Law Colleges in Tamil Nadu	Domain Authority (%)	Page Authority (%)
1	Chennai Dr. Ambedkar Government Law College, Pattarai Perambudur,	5(2.96%)	4(2.30%)
2	Chennai Dr. Ambedkar Government Law College, Pudupakkam,	14(8.28%)	12(7.60%)
3	Government Law College, Madurai	16(9.47%)	22(12.64%)
4	Government Law College, Trichy	22(13.02%)	3(1.72%)
5	Government Law College, Coimbatore	21(12.43%)	26(14.94%)
6	Government Law College, Tirunelveli	18(10.65%)	18(10.34%)
7	Government Law College, Chengalpattu	20(11.83%)	22(12.64%)
8	Government Law College, Vellore	15(8.88%)	19(10.92%)

9	Government Law College, Dharmapuri	4(2.37%)	5(2.87%)
10	Government Law College, Ramanathapuram	4(2.37%)	5(2.87%)
11	Government Law College, Villupuram	8(4.73%)	9(5.17%)
12	Central Law College, Salem	21(12.43%)	21(12.07%)
13	Saraswathy Law College, Tindivanam	1(0.59%)	8(4.60%)
Total		169(100)	174(100)

Page Authority: High page authority score means which page has the potential to rank well in search engine results, algorithmic combination of all link metrics. It showed that the page authority of the Government Law College, Coimbatore 26 (14.94%) was the highest, and Government Law College; Trichy 3 (1.72%) which was the lowest.

Table 3: Quantum of LCTN websites by CPR score and Spam score using http://checkpagerank.net

Sl.No	Name of the Law Colleges in Tamil Nadu	CPR Score (%)	Spam Score (%)
1	Chennai Dr. Ambedkar Government Law College, Pattarai Perambudur,	1.5/10	Jun–18
2	Chennai Dr. Ambedkar Government Law College, Pudupakkam,	1.4/10	Feb–18
3	Government Law College, Madurai	2.1/10	Apr–18
4	Government Law College, Trichy	2.7/10	Jun–18
5	Government Law College, Coimbatore	2.5/10	May–18
6	Government Law College, Tirunelveli	1.9/10	May–18
7	Government Law College, Chengalpattu	2.3/10	May–18
8	Government Law College, Vellore	1.8/10	Apr–18
9	Government Law College, Dharmapuri	1.3/10	Apr–18
10	Government Law College, Ramanathapuram	0.5/10	Jun–18
11	Government Law College, Villupuram	1.9/10	May–18
12	Central Law College, Salem	2.3/10	Oct–18
13	Saraswathy Law College, Tindivanam	0.5/10	May–18

Table 3: illustrates general information about the websites of LCTN under the Ministry of Culture which includes CPR score and Spam score-

CPR score: CPR score means Core Page Review CPR sound a bit harsh (and maybe a little cheesy) but the truth is the without asking these questions about your websites main pages, you don't know if they are getting you as much business as they should be. So in the CPR vein (pun entirely intended), review your main page and bring your website back to life. It showed that the CPR score of Government Law College, Trichy (2.7/10) was the highest, andGovernment Law College, Ramanathapuram and Saraswathy Law College, Tindivanam (0.5/10) which was the lowest.

Spam score: The spam score represents the percentage of sites with similar features wave found to be penalized or banned by Google spam score is based on our machine learning model which identified 27 common features among the millions of banned or penalized sites in the data we fed it. Let's start with a video that goes through everything you need to know about spam score, and how to use it when building links. It shows that the spam score ofCentral Law College, Salem (10/18) was the highest, andChennai Dr. Ambedkar Government Law College, Pudupakkam (2/18) which was the lowest.

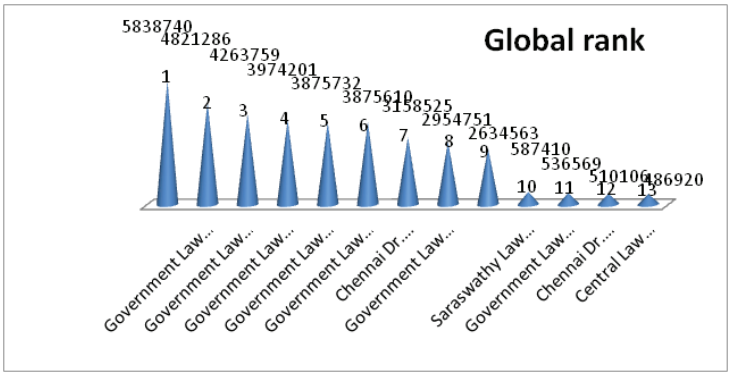

Figure 1: Quantum of LCTN websites by global rank using http://checkpagerank.net

Figure 1: shows general information about the websites of TNLC under the Ministry of Culture which includes global rank.

Global rank: Global rank means a traffic rank that is updated daily. A site ranking is based on a combined measure of unique visitors and page views. If your sites metrics are certified, you can display global and country ranks for your site based on certified site metrics instead of metrics estimated from our data panel. It showed that the global rank of the government law college, Coimbatore is the first rank (5838740). And Central Law College Salem (486920) last global rank in LCTN respectively.

Table 4: present general information about the websites of LCTN under the Ministry of Culture which includes External back links and Edu back links.

External Back links: An External back links means is a good amount of quality back links, one can not only attract a remarkable number of visitors to their website but also can improve their websites ranking. It showed that the External back links of the Chennai Dr. Ambedkar Government Law College, Pudupakkam 80 (16.26%) was the highest, and Government Law College, Dharmapuri, Government Law College, Ramanathapuram and Saraswathy Law College, Tindivanam 2 (0.41%) which was the lowest.

Edu Back links: Edu back links are on Edu domains. These domains are reserved solely for higher education facilities such as universities.Edu domains are available worldwide. It showed that the Edu Back links of the Chennai Dr. Ambedkar Government Law College, Pudupakkam 6 (6.98%) was the highest, and Saraswathy Law College Tindivanam (0) which was the lowest.

Table 4: Quantum of LCTN websites by External back links and Edu back links using http://checkpagerank.net

Sl.No	Name of the Law Colleges in Tamil Nadu	External Back links (%)	Edu Back links (%)
1	Chennai Dr. Ambedkar Government Law College, Pattarai Perambudur,	5(1.02%)	2(2.33%)
2	Chennai Dr. Ambedkar Government Law College, Pudupakkam,	80(16.26%)	6(6.98%)
3	Government Law College, Madurai	59(11.99%)	4(4.65%)
4	Government Law College, Trichy	67(13.62%)	4(4.65%)

5	Government Law College, Coimbatore	71(14.43%)	4(4.65%)
6	Government Law College, Tirunelveli	77(15.65%)	47(54.65%)
7	Government Law College, Chengalpattu	41(8.33%)	4(4.65%)
8	Government Law College, Vellore	31(6.30%)	4(4.65%)
9	Government Law College, Dharmapuri	2(0.41%)	2(2.33%)
10	Government Law College, Ramanathapuram	2(0.41%)	2(2.33%)
11	Government Law College, Villupuram	17(3.46%)	2(2.33%)
12	Central Law College, Salem	38(7.72%)	5(5.81%)
13	Saraswathy Law College, Tindivanam	2(0.41%)	0
Total		492 (100)	86(100)

Table 5 indicates general information about the websites of LCTN under the Ministry of Culture which includes Trust Flow and Citation Flow

Trust Flow: Trust flow means is a number predicting how trust worthy a page is based on how trust worthy sites tends to link to trust worthy neighbours. It showed that the trust flow of the Central Law College, Salem 69 (46.62%) was the highest, and Government Law College, Madurai,Government Law College, Coimbatore,Government Law College, Tirunelveli,Government Law College, Vellore and Saraswathy Law College, Tindivanam 1 (0.68%) are the lowest.

Table 5: Quantum of LCTN websites by Trust Flowand Citation Flow using http://checkpagerank.net

Sl.No	Name of the Law Colleges in Tamil Nadu	Trust Flow (%)	Citation Flow (%)
1	Chennai Dr. Ambedkar Government Law College, Pattarai Perambudur,	59 – 39.86%	8 – 4.79%
2	Chennai Dr. Ambedkar Government Law College, Pudupakkam,	2 –1.35%	8 – 4.79%
3	Government Law College, Madurai	1(0.68%)	16(9.58%)
4	Government Law College, Trichy	3(2.03%)	28(16.77%)
5	Government Law College, Coimbatore	1(0.68%)	18(10.78%)
6	Government Law College, Tirunelveli	1(0.68%)	15(8.98%)
7	Government Law College, Chengalpattu	3(2.03%)	15(8.98%)
8	Government Law College, Vellore	1(0.68%)	16(9.58%)
9	Government Law College, Dharmapuri	3(2.03%)	7(4.19%)
10	Government Law College, Ramanathapuram	2(1.35%)	8(4.79%)
11	Government Law College, Villupuram	2(1.35%)	11(6.59%)
12	Central Law College, Salem	69(46.62%)	14(8.38%)
13	Saraswathy Law College, Tindivanam	1(0.68%)	3(1.80%)
	Total	148 (100)	167(100)

Citation flow: Citation flow means a number of predicting how influential a URL might be based on how many sites link to it. It showed that the citation flow of the Government Law College, Trichy 28 (16.77%) was the highest, and Saraswathy Law College Tindivanam 3 (1.80%) which was the lowest.

Table 6 presents general information about the websites of LCTN under the Ministry of Culture which includes Topic Value and Indexed URLs

Topic Value: Atopic value (ethics) can be defined as broad preferences concerning appropriate courses of actions or actions or outcomes as such; values reflect a person's sense of right and wrong or what ought to be. It showed that the topic value of the Chennai Dr. Ambedkar Government Law College, Pattarai Perambudur 5 (17.24%) was the highest, and Saraswathy Law College; Tindivanam (0) which was the lowest.

Indexed URLs: Indexed URLs means a matter of great concern as if URLs are not indexed then it's probably that wont and traffic from Google and if you wish to get them indexed then change the setting of you site from hosting service and from webmaster tools and if you wish have some good alternative for this then Google it .it showed that the Indexed URLs of the Central Law College, Salem 660 (42.97%) was the highest, and Saraswathy Law College, Tindivanam 2 (0.13%) which was the lowest.

Table 6: Quantum of LCTN websites by Topic Value and Indexed URLs using http://checkpagerank.net

Sl.No	Name of the Law Colleges in Tamil Nadu	Topic Value (%)	Indexed URLs (%)
1	Chennai Dr. Ambedkar Government Law College, Pattarai Perambudur,	5 (17.24%)	56 (3.65%)
2	Chennai Dr. Ambedkar Government Law College, Pudupakkam,	2 (6.90%)	100 (6.51%)
3	Government Law College, Madurai	1 (3.45%)	145 (9.44%)
4	Government Law College, Trichy	3 (10.34%)	139 (9.05%)
5	Government Law College, Coimbatore	1 (3.45%)	81 (5.27%)
6	Government Law College, Tirunelveli	1 (3.45%)	100 (6.51%)
7	Government Law College, Chengalpattu	3 (10.34%)	62 (4.04%)
8	Government Law College, Vellore	1 (3.45%)	59 (3.84%)
9	Government Law College, Dharmapuri	4 (13.79%)	21 (1.37%)
10	Government Law College, Ramanathapuram	2 (6.90%)	16 (1.04%)
11	Government Law College, Villupuram	3 (10.34%)	95 (6.18%)
12	Central Law College, Salem	3 (10.34%)	660 (42.97%)
13	Saraswathy Law College, Tindivanam	0	2(0.13%)
Total		29 (100)	1536 (100)

Major Findings and Conclusion

The study has selected utmost 13 law colleges in Tamilnadu websites and analysed the different aspects regarding the CPR score, Spam score, Domain authority, Page authority, Trust flow ,Citation flow, External backlinks, Edu backlinks, Topic value, Indexed urls, Global rank etc. The study found that, Government Law College, Trichy 22 (13.02%) has the highest Domain authority out of all 13 sites, Saraswathy Law College; Tindivanam 1 (0.59%) has the lowestDomain authority. i.e. Government Law College, Coimbatore 26 (14.94%)has the highest page authority out of all 13 sites, Government Law College; Trichy 3 (1.72%)has the lowest page authority. Study also found that CPR score Government Law College, Trichy (2.7/10) has the highestout of all 13 sites, Government Law College, Ramanathapuram and Saraswathy Law College; Tindivanam (0.5/10) has the lowest CPR score. i.e. spam score Central Law College,

Salem (10/18) has the highestout of all 13 sites, Chennai Dr. Ambedkar Government Law College, Pudupakkam (2/18) has the lowestspam score.i.e.Global rank of the government law college, Coimbatore first the list LCTN (5838740) global rank with collegesout of all 13 sites. Central Law College, Salem (486920) last global rank (Fig.1). i.e. External back links of the Chennai Dr. Ambedkar Government Law College, Pudupakkam80(16.26%)has the highestout of all 13 sites, Government Law College, Dharmapuri, Government Law College, Ramanathapuram and Saraswathy Law College; Tindivanam 2 (0.41%) has the lowestExternal back links. i.e.Edu Back links of the Chennai Dr. Ambedkar Government Law College, Pudupakkam 6(6.98%)has the highestout of all 13 sites, Saraswathy Law College Tindivanam (0) has the lowestEdu Back links. i.e.trust flow of the Central Law College, Salem 69 (46.62%)has the highest outof all 13 sites, i.e. citation flow of the Government Law College, Trichy 28 (16.77%) has the highest out of all 13 sites, i.e.topic value of the Chennai Dr. Ambedkar Government Law College, Pattarai Perambudur 5 (17.24%) has the highest out of all 13 sites, Saraswathy Law College; Tindivanam (0)has the lowesttopic value. i.e. Indexed URLs of the Central Law College, Salem 660 (42.97%) has the highest out of all 13 sites, Saraswathy Law College, Tindivanam 2 (0.13%) has the lowest Indexed URLs. This study will help to understand the law colleges in tamilnadu websites quality, global rank, external back links and quantitative aspects of the construction and soon.

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MAPPING OF RESEARCH PRODUCTIVITY ON GREEN BUILDING: A BIBLIOMETRIC STUDY

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Introduction

Simply, Bibliometric is application of statistics which is used for data analysis. Alan Pritchard had used the word 'Bibliometric' for the first time in 1969. Bibliometric help us in the studies of the annual growth of literature in any area, measure the productivity of authors and journals. It also provides quantitative evolution of publication patterns of all types of macro and micro subjects. This paper attempt a Bibliometric study in the field of Green Building during the period from 2012 to 2021. In the present era, everyone is talking about 'Going Green' and 'Green Initiatives' and follow along with 'Green movement' because we are facing problem obtaining the basic needs for living such as pure water, air. It is just like Green constructions or sustainability in a building and promotes judicial use of resources. By Green Building we mean a building that reduces the wastage of material and resources and hence creates a positive impact on the ecosystem by promoting the use of Green architecture and renewable energy resources. Under green architecture and sustainability the parameters need to be considered is building orientation, active and passive, Architecture design, Green vegetation, hydrology, smart building technology, under renewable energy resources the parameters need to be considered is water harvesting system, solar energy, wind energy and natural environment. It improves the quality of human's life as it saves and preserves natural resources and hence contributes to keeping the environment clean. It uses non- toxic materials for construction that maintains the level of air quality. It holds up ecosystems by promoting the efficient use of energy, water and other resources.

Research Methodology

In this study, the Scopus database is considered for data collection. TITLE-ABS-KEY (green AND building) AND PUBYEAR > 2011 AND PUBYEAR < 2022 used in one query. Total 18428 literatures are retrieved for this study which is indexed in Scopus database during the year 2012 to 09 August 2021. MS Excel is used to analyze the knowledge graph of dominant authors, subjects and journals.

Objectives

1. To find out the year wise distribution in Green Building literature.
2. To find out most productive authors and journals.
3. To identify the language and subject wise distribution.
4. To identify the ranking of countries in Green Building literature.
5. To examine the highly cited articles in the field of Green Building.
6. To examine the visualization of keywords occurrence in the publication of Green Building.

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Analysis Of Data:

In research process, the analysis of data is initially one of the significant steps of research. There are total 18428 records have been found from Scopus database published on Green Building during the year 2012 to August 2021. Data is interpreted and calculate with the help of MS-Excel.

Year wise distribution

Year wise distribution of publication on Green Building has been presented in table-1

Table-1 Year wise distribution of publication

S.No	Year	Number of Publication
1	2021	1711
2	2020	2557
3	2019	2491
4	2018	2242
5	2017	1908
6	2016	1609
7	2015	1444
8	2014	1594
9	2013	1488
10	2012	1384

Table-1 shows the number of articles that are published in year wise. The most productive year is recognized 2020 with 2557(13.87%) and least the number of publications 1384 (7.51%) in 2012. The number of publication has been decreased during the year 2021 to 2020.

Table-2 Top Most Productive Authors

Top ten most productive authors of the literature of Green Building during the study year from 2012 to 2021 are given in table.2. It is identified that total 160 authors around the globe have contributed in Green Building.

Table-2 Top ten P roductive Authors

S.No.	Author Name	Number of Publication
1	Gou, Z.	38
2	Tam, V.W.Y.	32
3	Cabeza, L.F.	30
4	Zuo, J.	28
5	Pérez, G.	27
6	Jim, C.Y.	24
7	Lin, B.	23
8	Schettini, E.	22
9	Vox, G.	22
10	Al-Ghamdi, S.G.	21

Z.Gou is the most productive author with 38 articles followed by V.M.Y Tam published 32 articles ranked in second place. L.F. Cabeza published 30 articles and ranked third place and other author ranked with their number of publication.

Table-3 Top Most Productive journals

Most productive journals are based on number of publication in Green Building during the study period. It is observed that retrieved papers were published in 160 journals. Only top ten journals are presented in table-3.

Table-3 Top Most Productive Journals

S.No.	Journal	Number of Publication
1	Iop Conference Series Earth And Environmental Science	572
2	Sustainability Switzerland	416
3	Applied Mechanics And Materials	414
4	Advanced Materials Research	359
5	Iop Conference Series Materials Science And Engineering	332
6	Journal Of Cleaner Production	297
7	Energy And Buildings	252
8	Building And Environment	237
9	E3s Web Of Conferences	198
10	Procedia Engineering	157

The table 3 and figure shows the top most ten journals with their percentage of the total number of articles. Total 160 journals have been observed for the output of 8271 articles. It is found that Iop Conference Series Earth and Environmental Science with 572 (6.91%) the most productive journal followed by Sustainability Switzerland with 416(5.02%) articles, Applied Mechanics And Materials with 359(5%) articles. Iop Conference Series Earth and Environmental Science found top most journal in the field of Green Building.

Table-4 Language wise distribution

Table-4 Language wise distribution

S.No.	Language	Number Of Publication
1	English	17799
2	Chinese	405
3	Spanish	54
4	German	50
5	Italian	31
6	Russian	30
7	Japanese	27
8	French	23
9	Portuguese	19
10	Croatian	10

Language wise distribution of publication literature published literature in the field of Green Building during the study period 2012-2021. It is observed that Green Building literature published in 30 languages, top ten are presented in Table-4.

Table-4 shows that the maximum number of articles published in English language with 17799 followed by Chinese language with 405 articles, Spanish language published 54 articles followed by German with 50 articles during the study period and rest of ublications are published in other languages.

Table-.5 Subject wise distribution

Subject wise distribution based on the literature published in Green Building during the study year from 2012-2021. It is identified that 25 subjects published articles in the field of Green Building only top ten subjects are presented in table-5.

Table-5. Subject wise distribution

S.No.	Subject Area	Number of Publication
1	Engineering	8155
2	Environmental Science	5147
3	Energy	3225
4	Social Sciences	3116
5	Computer Science	2182
6	Materials Science	2172
7	Earth and Planetary Sciences	1678
8	Business, Management and Accounting	1344
9	Chemistry	1336
10	Physics and Astronomy	1106

Table-5 displays the dominant subjects which are published articles on Green Building. Maximum numbers of 8155 (23.07%) articles have been published under Engineering subject followed by Environmental Science with 5147 (14.56%) followed by Energy Subject with 3225 (9.12%). So this study found that Engineering is dominant subject during the study period.

Table.6 Most Productive Countries

Ranking of countries based on literature published in Green Building during the study year from 2012-2021. Total 151 countries published literature in Green Building only top ten are presented in table-5.6.

Table-6 Top ten most productive countries

S.No.	Country	Number of Publication
1	China	4034
2	United States	2772
3	United Kingdom	1095
4	Italy	1008
5	India	1001

6	Australia	798
7	Malaysia	787
8	Germany	632
9	Canada	525
10	Spain	497

Table-5.6 shows that China is ranked in first place with 4034 articles followed by United States published 2772 articles which placed in second rank, United Kingdom published 1095 articles which placed in third place, Italy published 1008 articles which placed in fourth place . India is in Fifth place with 1001 articles during the study period.

5 Highly cited Articles

Table-5.7 shows the only top five highly cited articles in the field of Green Building during the study year. It is observed that *Conversion of biomass to selected chemical products* was highly cited articles with 1679 citations followed by *Zr-based metal-organic frameworks: Design, synthesis, structure, and applications* with 1174 citations.

Table-7 Top Five Highly Cited Articles

Sl. No.	Title	Authors	Cited by
1	Conversion of biomass to selected chemical products	Gallezot P.	1679
2	Zr–based metal–organic frameworks: Design, synthesis, structure, and applications	Bai Y., Dou Y., Xie L.–H., Rutledge W., Li J.–R., Zhou H.–C.	1174
3	A survey on smart grid communication infrastructures: Motivations, requirements and challenges	Yan Y., Qian Y., Sharif H., Tipper D.	826
4	A review on simulation–based optimization methods applied to building performance analysis	Nguyen A.–T., Reiter S., Rigo P.	699
5	Green building research–current status and future agenda: A review	Zuo J., Zhao Z.–Y.	500

Figure-1 Visualization of author Keywords Clustering analysis

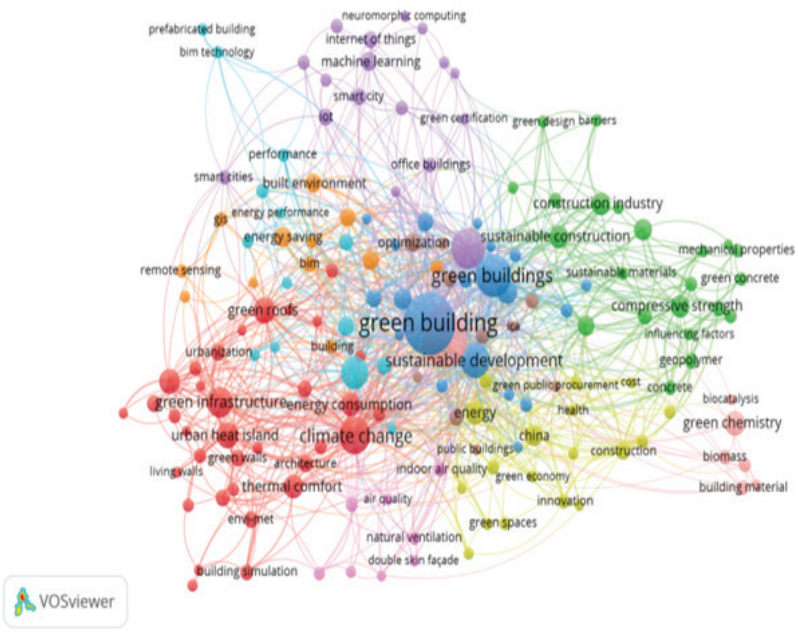

Figure-1 represents the network utilization of author keywords used in publications on Green Building. The map is created with VOSviewer. It is showing the density of the frequently used key terms in Green Building articles. Ten clusters used in this visualization various colors show the various keywords represents research area. A total of 2000 records were taken, however only 163 records meet the threshold for visualization mapping. The minimum number of occurrences of keyword was considered at 5. The number of keywords can be seen by the size of the circle, bigger the circles, larger number of the publication used these keywords. In this map the Green Building circle is bigger it means this term used in maximum times which is followed by Sustainable development.

Findings & Conclusion

This paper draws the knowledge graph of Green Building research from 2012 to 2021 by using the visualization technique such as VOSviewer and MS Excel for data analysis. Green Building and Sustainable development are identified, top most keywords which is used in the field of Green Building. In country wise ranking China is on top most country which placed in first rank with 4034 articles followed by United States with 2772 publications. Engineering subject is in top with 23 % articles published followed by Environmental Science with 14 % publication during the study period. In this study maximum number of articles published in English language with 17799 articles followed by Chinese language with 405 articles. Maximum of 572 papers have been published under the Iop conferences series Earth and Environmental Science journal as on top followed by 416 papers in Sustainability Switzerland. Z Gou is most productive author with 38 articles followed by V.W.Y Tam with 32 publications. The finding of present study describes the importance of Bibliometric method to illustrate global research output on Green Building.

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SUPREME COURT JUDGMENTS ON MEDICAL NEGLIGENCE: A JURIMETRICS ANALYSIS

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Introduction

Medical profession is one of the oldest – profession and most humanitarian one. Doctors give life to the persons who are suffering from various diseases and injuries. That's why peoples consider Doctors are as visible Gods.

The prime object of the medical profession is to render service to mankind with full respect for the dignity of a man. A doctor has a duty to use necessary skill, care, judgement and attention in the treatment of his patient. Any failure to exercise the above-mentioned duty would lead to action for medical negligence. (Cox, 2001) "Medical negligence is the breach of duty owed by a doctor to his patient to exercise reasonable care and skill, which results in some physical, mental or a financial disability*"*.

(Deshpande, 2013) "Medical negligence can be punished with compensation or imprisonment as it can be considered both a civil or criminal wrong, depending on its gravity"

The Supreme Court of India is the highest court in India in hierarchy. It is regarded as the guardian of the fundamental rights of the people of India and is the highest Court of appeal in all civil and criminal matters. The Judgments are given by judges who are experts in the field of law with standing experience in bar and bench.

The Judgments are the major source of legal information, Because Indian Judicial system is based on the Latin maxim: "**Stare Decisis et Non Queita Movere",** stand by what has been decided and do not unsettle the established.

(Garner, 2001) Jurimetrics is the application of quantitative methods, especially probability and statistics, to law. this study of Jurimetrics method is aimed to the judgments of the Hon'ble supreme court of India on the topic of medical negligence covering the period of 72 years (1950 to 2021).

This research works aims to find out the most relevant and highly cited judgement in medical negligence.

Objectives of the study

- To find out the Year wise distribution of the Judgements and growth pattern on medical negligence
- To find out the most influential judge on medical negligence
- To find out the Subject wise decisions on medical negligence
- To find out the most cited and influential Judgements
- To analysis the keywords of the judgements on medical negligence

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Materials and Methods

The data of this study is judgments of the Supreme Court of India on medical negligence from the manupatra India legal database. Totally 447 judgments are retrieved for the period of 72 years (1950 – 2021).

Results

Block - wise distribution of judgements

Table1 & figure 1 shows the block wise distribution of judgements in medical negligence during the year 1950 – 2021. Totally 447 judgements for the 72 years with an average of 63.8 judgements per block year were decided by the Supreme Court of India. There is an Increasing trend of judgements observed in medical negligence.

Sl.No	Block Years	Judgments	% Of 474	Cumulative Growth	Annual Growth Rate
1	1950-1959	4	0.84	4	
2	1960-1969	16	3.37	20	300
3	1970-1979	12	2.53	32	-25
4	1980-1989	17	3.58	49	41.66667
5	1990-1999	52	10.97	101	205.8824
6	2000-2009	118	24.89	219	126.9231
7	2010-2021	255	53.79	474	

Table 1: Block -Wise Distribution of Judgements

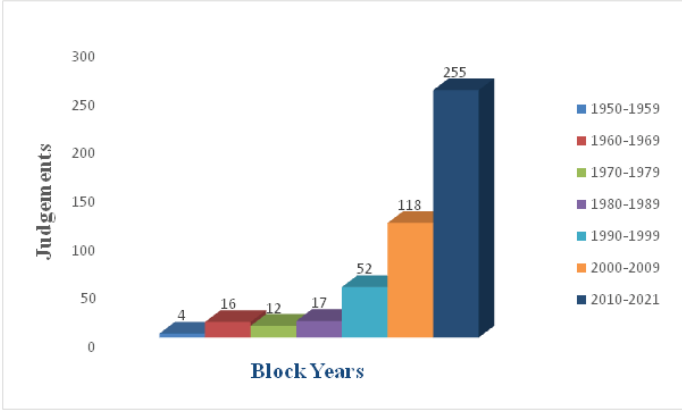


Figure. 1: Block -Wise Distribution of Judgements

Most influential judges

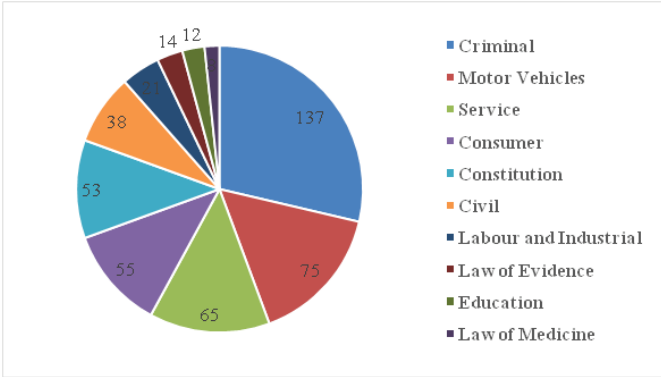
A total of 100 Judges have delivered judgement on the topic of medical negligence in the supreme court of India. Table 2 depicts the top 10 Judges who have delivered judgments. Hon'ble Justice G.S. Singhvi has delivered 29 (6.5%) judgements and occupied first position, Hon'ble Justice D.Y. Chandrachud has second position with 28 judgements followed a by Hon'ble Justice S.B. Sinha with 27 (6.0%) and Hon'ble Justice Arijit Pasayat with 25 (5.6%) respectively.

Name of the Judge	No. of Judgements	% of 447
G.S. Singhvi	29	6.5
D.Y. Chandrachud	28	6.3
S.B. Sinha	27	6.0
Arijit Pasayat	25	5.6
A.M. Khanwilkar	24	5.4
Dipak Misra	24	5.4
V. Gopala Gowda	17	3.8
Arun Mishra	14	3.1
P. Sathasivam	14	3.1
T.S. Thakur	14	3.1

Table No. 2: Most influential judges

Subject wise decisions on medical negligence

There were 35 categories of subjects in medical negligence judgements. Figure 2 displays the top 10 Subjects. The Subject "Criminal law" has occupied first position with 137 judgments as Indian Penal Code is applicable in cases of death of a patient while undergoing treatment. it means most of the cases are registered under Indian Penal Code. The remaining cases fall under "Motor Vehicles" (75) "Service" (65) and "Consumer" (55) which were under category of Civil law.



Most cited and influential Judgements

Table 3 describes the top10 most cited and influential Judgements on medical negligence. The case *Indian Medical Association vs V.P. Shantha & Ors on 13 November, 1995* has received 387 citations with first position, *Jacob Mathew vs State of Punjab & Anr on 5 August, 2005* case had 315 citations and occupied second position followed by *Nizam'S Institute Of Medical ... vs Prasanth S.Dhananka & Ors on 14 May, 2009* and Cadila Healthcare Limited vs Cadila Pharmaceuticals Limited on 26 March, 2001 had received 279:265 citations respectively.

Table 3: Most cited and influential Judgements

Case	Hon'ble Judges	No. of Citation
Indian Medical Association vs V.P. Shantha & Ors on 13 November, 1995	Kuldip Singh, S.C. Agrawal and B.L. Hansaria, JJ.	387
Jacob Mathew vs State of Punjab & Anr on 5 August, 2005	R.C. Lahoti, C.J., G.P. Mathur and P.K. Balasubramanyan, JJ.	315
Nizam'S Institute Of Medical ... vs Prasanth S.Dhananka & Ors on 14 May, 2009	B.N. Agrawal, Harjit Singh Bedi, G.S. Singhvi	279
Cadila Healthcare Limited vs Cadila Pharmaceuticals Limited on 26 March, 2001	B.N.Kripal, Doraswamy Raju, British Kumar	265
Kavita vs Deepak and Ors on 22 August, 2012	G.S. Singhvi, Sudhansu Jyoti Mukhopadhaya	154
Dr. J.J. Merchant & Ors vs Shrinath Chaturvedi on 12 August, 2002	M.B. Shah, Bisheshwar Prasad Singh, H.K. Sema.	131
Laxman Balkrishna Joshi vs Trimbak Bapu Godbole and Anr on 2 May, 1968	Shelat, J.M.	101
Martin F. D' Souza vs Mohd. Ishfaq on 17 February, 2009	Markandey Katju, R.M. Lodha	90
Achutrao Haribhau Khodwa vs State of Maharashtra and Ors on 20 February, 1996	Kirpal B.N.	88
Takhaji Hiraji vs Thakore Kubersing Chamansing & ... on 2 May, 2001	R.C. Lahoti, Doraiswamy Raju	86

Keywords of the judgements

There were 100 keywords found in the judgments. The Characteristics of Keywords can be measured by Yule and Herdan (1964) formula. This characteristic is an indication of the size of the vocabulary in a corpus. It can be calculated as follows

$$k = \frac{\sum r.n_r}{(\sum r.n_r)2}$$

The table 4 displays the top 20 keywords in the judgments. The key word “Negligence” has occupied first rank with frequency (n) 245 and k value 15.68, “Compensation” got second rank with frequency (n) 189 and k value 9.72. The Third position is occupied by the key word “Grant” with frequency (n) 122 and k value 6.20.

Table 4: Keywords of the judgements

Keywords	Frequency- (n)	Rank - (r)	K
Negligence	245	1	15.68
Compensation	189	2	9.72
Grant	122	3	6.2
Accident	116	4	4.92
Hospital	107	5	3.88
Discharge	103	6	3.18
Damage	99	7	2.66
Information	99	8	2.33
Claim	96	9	2.05
Constitution of India	85	10	1.78
Award	79	11	1.61
Date Of	78	12	1.51
Interest	77	13	1.43
Death	73	14	1.35
Pass	68	15	1.29
Claimant	67	16	1.25
Jurisdiction	67	17	1.22
Motor Accident	67	18	1.2
Dispute	61	19	1.16

Major findings and conclusion

- ✓ Increasing trend of Judgements observed in medical negligence indicates that the negligent treatment of a patient by a doctor is increasing in the country.
- ✓ Out of 447
- ✓ judgments, "Criminal law had 137 judgments, by applying Section 304 and 304-A of Indian Penal Code in case of death of a patient during treatment. It displays the greatest number of cases registered under Indian Penal Code.
- ✓ The study found that the Judgements that have been delivered recently have hardly been cited yet and the number of citations increases over time as older judgments. *Indian Medical Association vs V.P. Shantha & Ors on 13 November, 1995* was the highly cited judgment in medical negligence during the study period.

This article is the initial stage of Jurimetrics study. The study helps to know the judgement pattern of medical negligence in supreme court of India and also to find the Most cited and influential Judgements which helps the legal professionals. This article may motivate further studies in Jurimetrics and related concepts. Hence the findings of this study will create an opportunity for new research areas in Jurimetrics.

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SECTION X

INFORMATION SEEKING BEHAVIOUR

INFORMATION SEEKING BEHAVIOR OF LAW STUDENTS: A STUDY OF LAW UNIVERSITIES BASED IN DELHI

Aman Verma[1]

Introduction

The phrase "searching for information" is a description of how people search for, analyze, choose and utilise information. The information may interact with various individuals, analogue tools and computer-based information systems while seeking for fresh information [1]. The search for information is a process in which people work to develop and perhaps change their level of knowledge. It is also a key cognitive function in terms of learning and solving problems, sometimes considered to be a "higher cognitive process." [2] The behavior has an effect from many variables and is one of the most significant fields of study in library user studies. "The behavior of information seeking" is distinct from the current "information need". The "need of information,"[3] in the perspective of the experience person, is a subjective, relative term and is described as "the awareness of uncertainty"[4]. The "need for information"

Informal information seeking behaviour

Informal information seeking behaviour is a broad term that refers to a series of activities that a person engages in order to express their information requirements, seek out information, access and choose that information, and ultimately use that information in order to fulfil those information requirements. There are a number of factors that may affect the information seeking behaviour of an individual or of a group of individuals. The goal is to gain an understanding of the purpose for which information is required, the environment in which the user operates, the user's skills in identifying the necessary information, the channels and sources preferred for acquiring information, and the obstacles to information acquisition and dissemination.

In a range of ways, users may search for information such as book reading and browsing, abstracts consulting and indexing journals, contacting their colleagues and acquaintances, seeking information from library and information centers, participating in seminars, webinars, conferences, etc. Studies on how a user searches for his or her information can assist the library authorities efficiently arrange their acquisition programmes and deliver the necessary services. Librarians and information scientists have an active focus on information seeking behaviour. It comes from the conditions and a range of sources. Acknowledgement of some need recognized by librarians, who want formal systems, such as bookkeepers, the online services of information centers or some other individual information to meet perceived requirements. The behaviour of seeking for information comprises measures or techniques to locate information. This recognizes certain need felt by the user who as a result asks for a library and information system or some other person to comply with his requirements for information. The field consists of research which looks at who needs information and why it is possible to identify and satisfy their requirements. The behaviour of seeking information is therefore about building relationships with people, information and an order system to get the greatest results.

T. D. Wilson's issue solving model is founded on the idea that a person needs information

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before one can achieve an understanding of his or her behaviour in search of information. His model covers the environment in which a need for information is to be discovered, obstacles between that need and the behaviour seeking information and the behaviour seeking information itself. The desire for information in this instance is "a subjective experience" and can only be disclosed via the behaviour of the process of seeking for information. Wilson's model indicates that during the process, the needy encountered three types of obstacles, including personal, social and environmental obstacles, while other scientists reported "interventional variables," including personal, demographic, social, environmental, economic and source characteristics. [5]

Information needs of Law students

The issue of researching information seeking behaviour, according to [5], begins with defining the notion of 'information need,' which has proven problematic owing to the subjective character of needs, which may be perceived or exist only in the mind of the individual who is in need. Because need cannot be directly seen, this experience can only be found through inference from behaviour or through the accounts of the individual in need who has had the experience. Bumkrant describes the subjective nature of need as "a cognitive representation of a future objective that is sought." Despite the subjective nature of need, several kinds of requirements have been identified via deduction and reporting. As an example, Morgan and King argue in [5] that needs are derived from three types of motivations: physiological motivations (hunger and thirst), unlearned motivations (such as curiosity and sensory stimulation), and social motivations (such as the desire for affiliation, approval, or status, or aggression). Law students' information requirements and seeking attitudes may be influenced by the notion of motivation, which may be used since it can be assumed that law students have information demands for cognitive, emotional, or physiological reasons. Those requirements are the driving force behind their information to learn about law school admissions, preparation for exams and seeking assignments in order to graduate from law school and go on to become successful lawyer. In the context of law students, the students' particular requirements for information emerge throughout their legal study. [6] Identifying the following four elements of information requirements relating to education for 'law' students:

- Current information on research findings on law emanating from conferences, seminars, and workshops
- Information pertaining to the pursuit of creative ideas or the acquisition of exploratory information in order to excite students' interest.
- Information on current affairs and general knowledge
- Information required for (legal) administration.

Research Objectives

This research aims to investigate information patterns in digital settings for students seeking the behaviour of law information:

- To examine the Information seeking behavior of Law students in different Universities of Delhi.
- To find out the awareness and use of library resources by the Law students.
- To Identify the Problems of Law students in Libraries in accessing Legal Information
- To find out awareness of the library services.
- To know the level of Information literacy among Law students.

Methodology

This will be a descriptive survey research systematically explaining the behavioral patterns of the Law students with respect to the use of legal information sources in the different Universities of Delhi. As many comparable researches have done previously, this technique has also been utilized for data gathering via questionnaire-based survey methodology. This technique is also favored since it was cheaper for a dispersed population and less time demanding. A well structure questionnaires consisting of 82 questions were prepared using Google forms due to the ongoing pandemic situation. The link of questionnaires survey were sent using email, whatsapp, and text messages to the three different category of student's i.e LLB, LLM, P.HD of different Universities of Delhi. 100 filled responses were returned back by the users with the overall response rate being 91%. By using statistical techniques, data gathered have been analysed, categorized and tabulated.

Data Analysis

4.1 Demographic distribution of the Respondents

Universities	Frequency	Percent
Indian LAW Institute	23	23%
Jamia Millia Islamia	12	12%
National LAW University Delhi	25	25%
University of Delhi	40	40%
Designation		
L.L.B	56	56%
L.L.M	35	35%
P.HD	9	9%
Age Group		
20-30	92	92%
30-40	8	8%

The above table shows the demographic data of the respondents. The majority of the respondents in the study was the age range of 20 to 30 years and was holding the designation of LLM and LLB with 91 percent.

Visits to Library

Visit to library	Daily	Fortnightly	Monthly	Occasionaly	Rarely	Twice a week	Weekly
Indian LAW Institute	16	0	0	1	0	6	0
Jamia Millia Islamia	4	0	1	4	1	1	1
National LAW University Delhi	13	2	0	0	1	3	6
University of Delhi	10	3	1	3	0	14	9

The data in the table 4.2 shows that majority of LAW discipline students of various Universities of Delhi visit library on daily basis (43%), followed by twice a week (24%), weekly (16%), occasionally (8%), fortnightly (5%), rarely (2%) and monthly (2%). Since the majority of the students visit library on daily basis, this shows that library is the first priority for students for their information seeking.

Sources used to access information

Most students across the globe tend to utilize information in electronic format. This assumption was tested by the students in their chosen method of access. The goal was to discover whether and how frequently students of law use library information resources.

Formal sources used to access Information					
		N	Percent	Valid Percent	Cumulative Percent
Valid	Bibliography, indexing and abstracting sources	9	9	9	9
	Book reviews in newspapers/periodicals	10	10	10	19
	Current accession list of the library	11	11	11	30
	Internet (online databases)	33	33	33	63
	Journals(Print and Electronic)	24	24	24	87
	Library catalogue/OPAC	13	13	13	100
	Total	100	100	100	

The table 4.3 shows that majority of LAW discipline students of different Universities prefer to use internet (online database) (33%), journals (24%), books (21%), OPAC (13%), and bibliographic abstracting (9%). This implies that the choice of the majority of respondents is Internet. The majority of respondents wanted to get information using both print and electronic sources in the law library. The electronic materials accessible in the legal library, which comprised primarily of CD-ROMs, have been noticed in the absence of networked computers. In general, print formats still appeared to be the favorite's format, but the absence of available Internet connections may also be a factor in electronic sources' preferences.

Tools used to access Information

	N	Percent	Valid Percent	Cumulative N
Academic websites	30	30	30	30
Bibliographies	5	5	5	35
Library Catalogue	14	14	14	49
Online Public access Catalogue (OPAC)	25	25	25	74
References from the Books/Journals	26	26	26	100
Total	100	100	100	

Table 4.4 indicates the data related to the tools that are used by different students for accessing information. The table shows that the majority of the respondents use academic websites (30%) for accessing the information followed by references from the books/journals (26%), OPAC (25%), Library catalogue (14%) and bibliographies (5%).

Uses of internet facilities for accessing Information

	N	Percent	Valid Percent	Cumulative N
At least once a fortnight	3	3	3	3
At least once a month	2	2	2	5
At least once a week	8	8	8	13
Daily	70	70	70	83
Twice in a week	17	17	17	100
Total	100	100	100	

Table 4.5 above shows the data related to the uses of internet facilities for accessing information. The table indicates that the majority of the respondents (70%) uses internet facilities daily followed by twice in a week (17%), At least once a week (8%), once a month (2%) and once a fortnight (3%) for accessing information.

Location used avail internet facility to access information

This section presents the location the students prefer to use internet facility for accessing information.

	N	Percent	Valid Percent	Cumulative %
Department Library/Lab	29	29	29	29
Department Library/Lab;Home	13	13	13	42
Department Library/Lab;Home;University Computer Centre	2	2	2	44
Department Library/Lab;Internet Cafe	1	1	1	45
Department Library/Lab;University Computer Centre	3	3	3	48
Department Library/Lab;University Computer Centre;Internet Café	1	1	1	49
Home	38	38	38	87
Home;Internet Cafe	2	2	2	89
Home;University Computer Centre	1	1	1	90
University Computer Centre	9	9	9	99
University Computer Centre;Internet Cafe	1	1	1	100
Total	100	100	100	

The major findings from the table 4.6 indicates that the majority of the respondents prefer to avail the internet from home followed by the departmental library, university computer centre and internet café.

Importance of E- resources in LIS education

Why do you think E–resources is important in LIS education					
		N	Percent	Valid Percent	Cumulative %
Valid	Access to a wider range of information	34	34	34	34
	Access to current up–to–date information	20	20	20	54
	Easier access to information	10	10	10	64
	Easier access to information; Improved academic performance as a result of access to quality information	1	1	1	65
	Faster access to information	24	24	24	89
	Improved academic performance as a result of access to quality information	11	11	11	100
	Total	100	100	100	

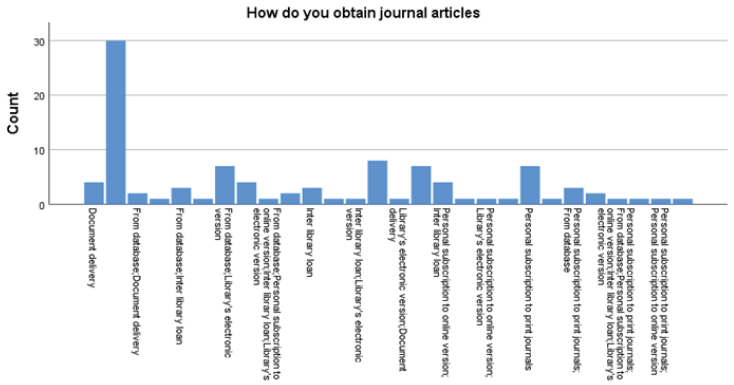
The statistics on the significance of e-resources in LIS education are shown in Table 4.7. The majority of those interviewed (34%) believe e-resources provided access to a broader variety of information followed by quicker access to data (24%), access to up-to-date information (20%), better academic achievement due to quality access (11%), and information; More easy access in LIS education to information (10%).

4.8 E-resources popularity among the students

	N	Percent	Valid Percent	Cumulative %
E-books	20	20	20	20
E-journals	20	20	20	40
Online Databases	31	31	31	72
Storage Database	28	28	28	100
Total	100	100	100	

The data in table 5.8 shows the e-sources that are mostly referred by the students. The majority of respondents (31%) said that they will refer the online databases followed by Storage databases (28%), E-books (20%) and E-journals (20%).

4.9 Method of accessing journal article by law students



The data from the above figure represent the method of accessing journal article. The above figure represent that the majority of the respondents access journal articles from the databases followed by document delivery, personal subscription to print journals, library electronic version document delivery and Inter library loan.

4.10 Law Databases awareness

	Frequency	Percent	Cumulative Percent
Lexis Nexis; Manupatra; AIRonline; ilslaw,edu; SCConline; Westlawindia; IPC	48	48	48
Law finder live; Advocate khoj; Heinonline; Annual Reviews; SAGE HSS	36	36	36
Others	16	16	100
Total	100	100	

The above table 4.9 shows the data related to the awareness of law databases amongst the Law students. The data shows that the 48% respondents are aware of law databases such as Lexis Nexis; Manupatra; AIRonline; ilslaw,edu; SCConline; Westlawindia and IPC while rest of them were aware of Law finder live; Advocate khoj; Heinonline; Annual Reviews; SAGE HSS.

Challenges faced in accessing information

This section presents the various challenges faced by the students in accessing the information at library or online databases.

	N	Percent	Valid Percent	Cumulative %
Distance problem	6	6	6	6
Financial problem	1	1	1	7
Information is too vast	18	18	18	25
Information scattered in too many sources/forms	40	40	40	65
Lack of time	14	14	14	79
Library staff is not helpful	3	3	3	82
Library used are lack of useful resources	17	17	17	99
Total	100	100	100	

Table 4.10 indicates that the majority of the students (40%) faced the challenges in accessing information because of the data being scattered in too many sources followed by information in too vast (18%), lack of useful resources in Universities library database (17%), lack of time (14%), library staff is not helpful (3%) and distance & financial problem (7%). From the above finding it can be said that the majority of the respondents faces the challenges of data scattering in different sources.

Availability of ICTs and Digital Information Resources in the Law Library

Awareness of their presence and the information they may provide must exist to use information sources. A majority of 86 percent said they knew about the presence of ICTs and e-resources. A tiny number of pupils, however, claimed to be ignorant of ICTs and electronic resources, although 2 percent did not reply. This result shows that ICTs and their associated digital information resources are successfully distributed or their access is limited to users of the library. The Internet and a photocopying machine were the ICTs that were found to be accessible at the law library. The usage of the ICTs was still very high, with 53% of users accessing the internet and 3% using the photocopying machine. This result indicates that the academic pursuit of law students does not include ICTs, digital information and ICT resources and the use of the law library. It also shows that it does not necessarily mean using ICT infrastructure and the digital resources accessible.

Suggestions on How Challenges Can Be Addressed

Suggestions on how to solve the problems were advised to submit. In order to increase the accessibility of ICTs, the government and university management should intervene; the e-library should be made available and accessible to all students; internet service provider networks need to be improved; government needs to increase power; the stand-in generator needs to be provided for power failures; The electricity generator needs to be supplied; The last question was if the use of ICTs in the library had altered the patterns the responder was looking for. 73 interviewers said that the use of ICT has created so many changes in the patterns of information seeking. The reasons they provided included: improving the knowledge seeking information of respondents; helping ICTs locate information outside the library; downloading and printing information; and ICTs generally facilitated quicker and more efficiently accessing information. One person expressed

the group's sentiment by saying, "The ICT library is superb." But 12 respondents thought there was no difference from the ISB amongst the various ICTs. Although many respondents acknowledged their using the Internet for information purposes, just a handful reported that there was no change whatsoever in the way they looked for information using the accessible legal library ICTs. Although available information and communication technologies (i.e. computer machine, internet café, and cellular phone) outside of the law library environment, using internet seems to be a very expensive practice for most students, and many respondents have thought that no significant change had been made to the way in which they searched for me. ICT resources seem to be helpful.

Conclusion

The article finds that law students at different institutions in Delhi are well equipped to utilize a library of law and are able to use the electronic information resources accessible for their studies. The study also reveals that the majority of the respondents use databases to access the journal articles and were mostly familiar with almost all the popular law databases i.e. lexis Nexis, Manupatra etc. Although it may be used, its inaccessibility and lack of suitable electronic databases are hindered within the legal library. The lack of Internet connection and the frequent power outages, as well as inadequate computers in the law library impede the efficient installation and use of the electronic library system in the law library.

It proposes that the Central and State government and the university management team give sufficient funding for e-library upgrades, including the purchase of additional computers, the improvement of Internet connectivity, the upgrading of available broadband, assistance with subscriptions to law databases, and the provision of a constant electricity power supply through the use of a standby power generator.

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INFORMATION USE BEHAVIOR IN SPECIAL LIBRARIES

Rashmi Parekh[1]

Introduction

Since the existence of human kind, some-how the ways are sought to communicate and spread the information they have. The best example is that when the language and linguistics were not found, when the human was even not known to speak the words, he has find out the ways to communicate with signs, to disseminate the information he has, with the signs, to express the knowledge what he has, with the expressions and body language. So, this is the genetic characteristic of human nature to get informed and to communicate information. During this pandemic, when the traditional ways of information seeking and providing, were affected, the basic human instinct helped the community to find out new ways to deal with information.

In past, in the age of *Satyayug*, *Shatavdhan* was one of the achievements. *Shatavdhan* means to hit a hundred targets at a time.

At present, librarians should have to achieve this goal. To establish a system in the library set up, to provide information to many users from different locations at a time simultaneously with proficiency and accuracy. It's a big challenge for librarians. Digital library is the most popular word in the field of library and information science. E-Library and virtual library are also the terms which have expanded the horizons of libraries. Now, the libraries have opened the doors, and services are provided without the walls. To provide pinpointed information to the right user at right time, at right place and in right format is the work expected from library community. Specifically, in the field of special libraries, systematic, Analytic, Filtered, timely information is the essence of library services.

The Covid 19 pandemic has affected every sector of life. The pandemic has compelled the library and information managers and policy makers to rethink about the ways of providing services to the users. Mostly, the library services are shifted from offline to online. Where and when possible, access is provided offline and online simultaneously during and post pandemic.

This paper is aimed to provide an overview of information use behavior. Further, it will provide a theoretical module for **user survey unit** in special libraries to investigate user behavior & user needs.

Exploratory research Method is adopted for this work. The literature related to the topic is reviewed and primary and secondary sources of information have been consulted. Researchers use exploratory research when trying to gain familiarity with an existing phenomenon and acquire new insight into it to form a more precise problem. It begins based on a general idea and the outcomes of the research are used to find out related issues with the topic of the research. (www.formpl.us/blog)

Special Library

In view of Dr. Ranganathan, Some libraries are organized to serve the needs of specialist readers of different kinds. Such a library is called a special library. In a special library, the readers

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are restricted in quality and number. The reading materials too are restricted in subject coverage, standard, and number. The mode of service also is specialized in its nature. It is essentially a Service Library. (Ranganathan, 1994, p.102)

Nagar explains special library as

This class of libraries is one of the finest, richest and most important in India. It is due to these libraries that India has received an honored place in the intellectual world of today. They have served as great centers of learning and research. Though the total number of these libraries is shown merely as fifty-two, yet their value to the national welfare is immeasurable. All the advances made by India in Biological Sciences, the Humanities and the Social Sciences owe much to these special libraries. They are the kinds India should be proud of. (Nagar, 1957. p.29)

Special libraries are the libraries which provide specialized services; serve a particular clientele; or have special collections. They are the libraries where the users, content and materials are specific. The information need of the users of special library is quite different from other libraries. To manage the special library requires specific qualifications and skills in LIS (Library and Information Science) professionals. They provide a client focused library and information services. Special library staff obtains, organize and provide access to selected relevant, current and authoritative information sources for their organization. Special library staff uses information resources and technology to facilitate effective and efficient client access to information that supports the goals and business of the organization. A special library is not usually open to the public for use. Special libraries often have a more specific clientele than libraries in traditional educational or public settings, and deal with more specialized kinds of information. They are developed to support the mission of their sponsoring organization and their collections and services are more targeted and specific to the needs of their clientele. In short, the library dealing with special organization, special collection, specific subjects or specific clientele is categorized under special library. It is a need of the hour to provide the services virtually. During the pandemic and post pandemic, libraries are required to manage virtually. The users are also demanding the information at their place, easily accessible, with the device they have. The LIS professionals are required the skills of not only the librarianship but also have the knowledge to utilize IT (Information Technology) and ICT (Information and Communication Technology) tools to serve the user community.

Information use behavior of a user of special library

Information need, information seeking, information use and application in the requirement are the main components of overall Information use behavior of a user.

The Information, Information seeking, Collection of information, information use – is the cycle which finally, converts in to knowledge and the cycle again generates the information. Mostly, when a person approaches a special library, he has a specific search in his mind. His information need is a mature need. A person seeks the information, collects the information, uses in his work and generates the knowledge in respective field. This knowledge he expresses and the same becomes information for other person. Again the cycle starts. This is the continuous process. LIS professionals are required to establish a system in library to analyze the user behavior and understand user expectations. By taking initiative, analyzing user behavior, establishing a proper network of services librarian can save the time of users. Specifically, in special libraries like research libraries save the most valuable time of researchers and scientists.

Why to investigate the information use behavior in special library

Mostly, the special libraries are dealing with specific field of knowledge and the most important thing is to save the time of a researcher or a scientist or a special clientele. The investigation will help

- To gain a better understanding of where they find their particular information
- To get understandings which kind of information they are seeking?
- To determine if library instruction had any impact on the types of sources used by them.
- To extend library services
- To make the library staff more user friendly.
- To form a road path to analyze the user behavior.
- To develop a library system based on this analysis.
- To give users a chance to tell where library services need improvement
- To respond to & better manage user expectations
- Some users are interested in development of library collection & services. To find out such users & get their valuable suggestions

There should be a **user survey unit** in special libraries to investigate user behavior & user needs.

Requirements for user survey unit

The library is the most widely-used source of information available to literate societies. Librarians must be aware of the kind of information being sought and how it can be obtained. Because of the rapidly escalating cost of purchasing and archiving print journals and electronic Media, the library has the duty to provide and maintain efficient services (Pareek and Rana, 2013, 3).

In this post pandemic era, the information seeking behavior of a user is totally changed. Now, the libraries are compelled to be changed radically. LIS community is required to understand the information need and find out new formats of services. Mostly, the user is not visiting the library and libraries are managed remotely. The information need in this period has changed its perspectives. The information sources and resources where information is sought have changed totally. In this modern age, information is considered a driving force, and the need for it remains unchanged during this crisis. (Varghese, 2020, 2)The culture of work from home is developed due to imposed lockdowns partially or fully, worldwide. It has changed the habits of information seeking. The information is required now 24*7 and at the place of user accessible with the device they have like Desk top, Laptop, Mobile phones or tablets etc.

The Library and information service providers are required to identify the information seeking behavior of the user. For providing user based services or the user-centric services library professionals are required to understand the user needs and requirements (Dahibhate and others, 2010, 496). It is very difficult for LIS professionals to identify the user need- what, where and how the information is required by a specific user. The user survey unit established in special library will help to identify the information use behavior.

User Survey Unit requires the following components.

Library staffing

The librarians are pressurized by management to increase the number of users. They should convince the management to increase library staff accordingly. Some ratio should be decided in advance at the time of establishment of library. There should be efficient & sufficient staff in special libraries. And the staff should be well aware of latest technology & latest trends of LIS.

Staff training

The staff of special library should be given proper training for user survey. Some tools are:

- Brochure of FAQs to new employee
- Video tape orientation
- Slide show
- Brochure explaining library databases, system & services
- Over view of organizational goals
- Purpose to investigate information seeking behavior

Technological facilities

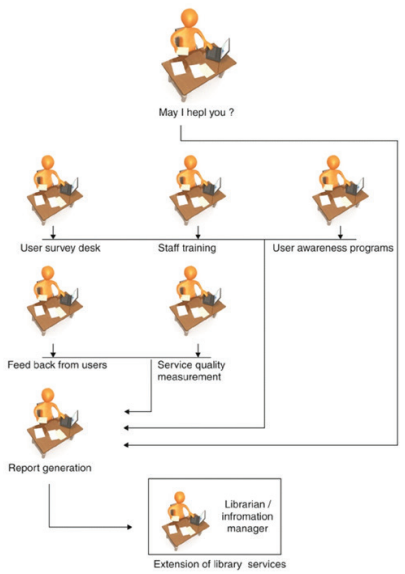
The unit should be provided computers with latest technologies with internet facilities.

Sufficient Space

A specific space should be provided to the unit to work without any disturbance and work for user interface.

User survey unit

This survey unit will work physically or virtually or simultaneously as per the requirement of the specific library.



To analyze user information seeking behavior, the library should establish a User survey unit in its premises consisting of:

Help Desk

There will be a help desk near by the entrance of library. The person sitting here will greet the visitor with warmth & create a friendly atmosphere for him. He will guide him to the right direction. He will give the primary information & list of library services.The person deputed here should have better understanding of organizational goals & user needs. He will make the library atmosphere user friendly.

In these post pandemic times, this may work virtually. Assistance of any machine or artificial intelligence (AI) or any single toll free number may be provided for user guidance at this very first stage to observe the behavior of user.

User survey desk

A person deputed here will be well equipped with a computer & internet facilities. By asking some simple questions, he will get the primary idea about user's information need. He will also observe the behavior of a user, where he finds the information & library instruction had any impact on the types of sources used by him.

The unit will remain up to date with user survey measurements, user survey software available online & suitable with library establishment. The unit will collect the information in PC & create a report daily, weekly or monthly as per the setup of library & send it to report generation section. The librarian will re-engineer library services & will reestablish library set up to keep pace with changing information needs of users.Online survey software are already available in market. This section will be well aware of it & acquire the same for survey purpose.

Library staff training

The main thing during the training is the attitude of staff to users. It must be user friendly. A user is the most important visitor on our premises/on our websites/web pages/blogs. He is not dependent on us. We are dependent on him. He is not an interruption in our work; he is the purpose of it. He is not an outsider; he is a part of our business. We are not doing a favor by serving him, he is giving an opportunity to serve him. The user should feel free to ask anything. He should feel the library as it one's own. All are the views should be included in staff trainings.

User awareness programs

The unit will conduct user awareness programs regularly. Information literacy seminars should also been organized for users. Users should be informed about library services: which are free & which are paid services.

Feedback from users

The unit will get feedback from the user by asking simple questions. For example,

- Is the library atmosphere pleasant & welcoming?
- Is library staff friendly to you?
- Do you think the services provided in library are sufficient?
- Which kind of services you think the library should provide?
- Is the library quite competent to satisfy your information need?

- Are the library resources sufficient?
- Which kind of resources you utilize?
- Which kind of resources is not available in library?
- Are library services satisfactory for you?
- Which is the easiest way for you to get information in library?
- Your valuable suggestions for advancement of library services
- Expectations from library

Service quality measurement

Special libraries are very much expected to provide quality services. The unit will obtain the opinions of users about library service quality. There is some software available already in market like LibQUAL, TQL etc. LibQUAL is a suite of services that libraries use to solicit, track, understand, and act upon user's opinions of service quality. These services are offered to the library community by the association of Research Libraries. With the help of these types of software, unit will conduct online surveys for quality measurement of library services.

Report generation

All departments of the unit will prepare the reports & send to this section. The section will prepare the final report & submit it to librarian periodically.

Extension of library services

On the basis of the reports librarian will re-engineer the library services centering users' expectations & will make available maximum resources for users to satisfy user needs at the highest extent.

Library services

We all are aware of some traditional library services like Reference & referral service, Abstract, CAS, SDI, Translation, Indexing, and Documentation etc.

It is now not a matter of discussion-the traditional library services & IT based services. It is the topic that should be discussed is only research & research. & find out new services which should be provided to users for advancement of knowledge. To find out new ways to cater the user the information he wanted. With traditional services, libraries are now required to provide online services to users.

Library services should be provided in such a way that user can meet his information need by the way or the other. Variety of services should be offered to the users.

Library sources & resources

Special library should make easily available the resources for its users online & off line

Journals

It is not possible for everyone to subscribe to all online journals. & in this age of knowledge development it is very much essential to keep in touch with the latest knowledge developments in the respective field. It is only possible by accessing subject journals which should be accessible for library users.

When we search anything on DOAJ (Directory of Open Access Journals), we get a list of journals available online in specific subject. But it is very much difficult for a user to subscribe to all relevant journals to get latest articles. Library should purchase & make online journals

available for its users.

Library should actively fulfill the journal custom content consortia by joining hands with other institutions or associations dealing with same discipline.

Open Access Resources

Library should provide online resources viz. Dictionary, Encyclopedia, Thesaurus, search engines, J-gate, Special Databases etc.

Multi Media Unit

There should be a multimedia unit to get the relevant articles, presentations, lectures conference proceedings available on CDs or DVDs, in digital formats.

Institutional Repositories

It is must for SL in this age of digital library. The conference proceedings, annual reports, Thesis & Dissertations, In house journals should be available as ready reference in IR by negotiating with other national & international library with specific subject. Librarian should convince the authors to authorize to use their work for advancement of knowledge and provide access to the users.

Web based resources

In this age of Web 2.0, library should provide a web based interface to the in house resources & hyperlink to all the full-text e-journals, e-databases, e-subject collections and publisher's cumulative collections.

Filtration of information

In this age of information explosion, when a user search a specific word on internet, he gets lots of information from which, get specific information is very much time consuming & it is also a tedious work. Only librarian can help him to get rid of this tedious work. Library will provide filtered, pinpointed, analyzed, systematic information to the user at his desk if required.

User Satisfaction Index

To form a user satisfaction Index, Some measurements/components should be taken in consideration depending on the type of special library.

The information

The information, user got is relevant, timely, pinpointed, filtered, accurate, current, updated and in the format as required.

For example, if the library is dealing with defense sector, then authenticity & confidentiality is the main component of the information. If it is working with science then the latest information & 24*7 availability is important. If we think about medical library, then current awareness is highly important. If it is a law library then ready reference information packets are more desirable. To form a user satisfaction index, all these things should be given proper weightage.

The users

How many users approached library? From them how many users got the information? At which extent he is satisfied? Is it o.k., Medium or excellent? All the factors should be considered.

Staff approaches to users

Is the staff user friendly? The user feels free to ask any thing, anytime, anywhere?

Library resources: Sufficient?

User satisfaction Index will also help the librarians of Special library to reform the library services.

Conclusion

To prove the role of LIS professionals in research works, to prove the importance of LIS professionals even in this Google era, LIS community have already started to rethink about the services provided by the libraries. First step to this new post pandemic era is to identify the information use behavior of the user. The professionals should follow the mission 'Library anywhere Every Way'. To provide the information to the user, based on personal preferences, at his location, at accurate time is the basic work of library professional in this pandemic times.

The **user survey unit** will provide a clear vision about user behavior & user needs in special libraries. The LIS professionals can re-engineer library services with the help of this unit. The readily available information packets may be prepared to deliver at any time for specialized users.

It will not be surprising that this type of readily available, easily accessible **information packets** will be most popular in user community, like ready-to-cook food packets, specifically, in special libraries. After all, it will **'Save the time of users'**. For example, it will save the time of researcher in research libraries. The time of a researcher/scientist is highly valuable than any other matter. LIS community is now required to rethink about this type of services. The most popular lines in social Medias among LIS community is, 'Google will give hundreds of answers of a question, and a librarian will give the perfect one.'

And to achieve this goal, investigate information use behavior during and after this pandemic is an important tool for LIS community.

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INFORMATION-SEEKING BEHAVIOUR ONLINE MOTORBIKE TAXI DRIVERS (GO-JEK) IN BANDAR LAMPUNG

Katrin Setio [1] **Devi Laksmi[2]**

Introduction

Information is a basic human need regardless of class or social status. Each individual has different way of meeting their information needs (Yusup, et.al., 2016). There are several factors that influence the need for information, including the type of profession (Yusup & Subekti: 2010). Information provides convenience for every individual in carrying out their activities in various professions, including online motorbike taxi service providers.

Being one of the largest companies that provide online transportation services in Indonesia, Go-Jek has more than 20 services available in 50 cities in Indonesia (Eman, et.al., 2017). In the practice of online motorbike taxi services (Go-Jek), drivers need information on providing excellent service to customers and maintaining partnership relations with Go-Jek. The process of finding information effectively and efficiently is crucial for drivers to fulfill their information needs, drivers will seek for information that relevant to their needs. Information-seeking activities are carried out continuously by drivers because each individual will seek new information to increase their knowledge and understanding in an effort to provide excellent service to customers.

Regarding to information seeking behavior, there has been a previous study that examined the information seeking behavior of Machete Craftsmen in Kampung Galonggong Tasikmalaya by Gumilar, et. al. (2016). In the study, it was explained that information was needed by machete craftsmen to make product innovations that were realized in increasing the diversity of machete motifs and for analyzing the data, the research has used the theory of Kuhlthau. The results obtained from the 6 processes that exist in the Kuhlthau theory, only 5 stages are carried out by the machete craftsmen, namely the information search process through the Initiation, Selection, Exploration, Collection, and Search Closure. No details explanation for the process that was missing from the stages.

In contrast to the previous study, this research focuses on the information-seeking behavior of Go-Jek drivers in fulfilling their information needs to maintain the performance of drivers in providing excellent service to consumers and establishing good relationships with partners (Go-Jek). Based on the research background described above, the researcher formulated the research question "How is the information-seeking behavior of online motorbike taxi drivers in Bandar Lampung?". This case study research will discuss the information seeking behavior of drivers and show the effect of type of work (including relationships with partners and consumers) on information-seeking behavior.

Theoretical Review

Information-Seeking Behavior

Wilson (2000) defines information search behavior as a 'micro-level behavior' used by information seekers in interacting with all types of information systems. This activity consists of all interaction with the system, both at the level of human interaction with a computer or at the intellectual level (for example, adopting a boolean search strategy), which will also involve mental actions, such as assessing data relevance or information taken. Humans need information to solve problems that occur in their lives. This need encourages information search behavior to get relevant sources. In the process of searching information, Ellis (1997) divides eight categories in information search behavior, here is the description:

1. Starting: User activities in starting to find information.
2. Chaining: Make a small note to help search for information
3. Browsing: Search for information with semi-structured information to get the information needed.
4. Differentiating: Stage When User Information Choose a source of information that is relevant to its needs.
5. Monitoring: Monitor the latest information, maintain information on information.
6. Extracting: retrieve information that suits your needs in certain information sources.
7. Verifying: check the accuracy of the information obtained.
8. Ending: End of information search.

Online-based Transportation

Indonesia has experienced several changes in terms of transportation. The most recent is an online-based transport modes. Pratama (2016) defines online transportation as internet-based transportation services for the transaction process. The mechanism in the practice of online transportation services has three main parts, namely: application providers, drivers, and customers. Application providers have a key role in the operation of transportation services because they are mediators between drivers and customers. In addition, the application provider is also the holder of control over the partnership, including providing the conditions that must be met to become a driver (Anggraini: 2013).

Method

Descriptive qualitative with case study approach was used on this research which aims to describe and explain the information-seeking behavior of Go-Jek drivers in the Bandar Lampung, Indonesia. Based on data Go-Jek started operating in Lampung in April 2017 (duajurai.co, 2019). The exact number of drivers is not known due to the lack of information from Go-Jek itself. This research was studied qualitatively to find out the information-seeking behavior of the drivers by conducting in-depth interviews to four informants were selected by purposive sampling. In addition, observation also conducted on the Facebook group account "KORAN GOJEK dan GRABBIKE BANDAR LAMPUNG (Keluhan Drivers & Customers)" to observe the exchange of information that occurs between drivers. This observation is limited done through social media (internet) due to the pandemic of Covid-19 which made direct observation impossible

to do. Before interviewing the informants, the researcher made observations on the Go-Jek website (driver.go-jek.com) to see the regulations set by the company, assuming that it would affect the information seeking behavior of drivers. The researcher also conducted a literature study to triangulate the theory so that the possibility of the research being biased is small. Data analysis techniques will be carried out with data reduction, categorization, classification, data presentation, and conclusions (Moleong: 2011). The justification for choosing the locus of this research is the occurrence of two conflicts between the driver and Go-Jek due to a violation of the existing agreement. The conflict resulted in the closure of the branch office in Bandar Lampung in September 2019 (regional.kompas.com, 2019). This is a rare case, because in other areas there is no such case.

Data

The results of initial observation which aims to understand the regulations set by GoJek on the driver.go-jek.com page, it found there are some regulations called the 3 Pillars of TarTibJek with the jargon of PA'DIMAN, which are transparent, fair and comfortable (go-jek.com, 2019). The contents herein are the details regarding the sanctions stage and severity of the violation. The maximum number of violations is five times. For the first violation, the driver will be given a warning, the second will be suspended for 30 minutes, then if there are more violations, the daily incentive will be disabled for three days. The next level is the driver will be suspended for 7 days, if the driver violates again, the partnership will be terminated. The aforementioned violations can be monitored from customer complaints, which can be seen from the number of stars received by the driver and additional comments that customers can write through the application. Five stars means that the customer is satisfied with the service provided by the driver. The following are the data from the informants that the researcher managed to collect (the names of the informants used pseudonyms):

1. Suwarno: 45 years old, has partnered with Go-Jek for about 3 years, his last education level is junior high school, making Go-Jek driver his main job.
2. Riana: Age 36, has partnered with Go-Jek for about 2 years, the last education level is high school, making Go-Jek driver her main job.
3. Desi: 21 years old, has partnered with Go-Jek for 9 months, last education level is high school, making Go-Jek driver as a side job
4. Dewa: 21 years old, has partnered with Go-Jek for about 1 year, his last education level is high school (now he is continuing his studies at university), making Go-Jek driver as his side job

The results of interviews with four informants revealed that the information they usually need are:

1. The customer's pick-up and destination area, for this case including the position of the restaurant (Go-Food service).
2. Traffic conditions also the safety of tracks that will be passed by the drivers. Drivers need those information to maintain their accuracy in performing services, also safety for customers and themselves from various forms of obstacles. This includes the possibility of criminal acts because the area passed could be vulnerable areas or rarely passed by other users. In addition, they also hunt for rat-running information to accelerate their trip.
3. Relations with Go-Jek. Based on informants, there is a condition where the driver suddenly

terminates the partnership by Go-Jek without any warning or reprimand from Go-Jek. In this case, the drivers will seek information by asking fellow drivers, as if anyone has experience similar problems.
4. New regulations from Go-Jek or government (eg. spraying disinfectants when the Covid-19 outbreak first occurred for the drivers' motorbike), or "unwritten" regulations such as a ban on picking up customers in certain areas due to ban from thugs or traditional motorbike taxi drivers.
5. Technical problems: driver's account errors so within weeks the drivers do not get orders from customers, Go-Pay cannot be used, etc.

To meet their information needs, some information sources are used by Go-Jek drivers, the source is obtained from:

1. WhatsApp Group (Morotai)
2. Facebook Group (name: KORAN GOJEK & GRABBIKE BANDAR LAMPUNG (Keluhan Driver & Customer)
3. Internet (including google maps)
4. Direct communication (it happens when gathering in an online motorbike taxi shelter or when passing with fellow drivers on the road)
5. Official Website of Go-Jek
6. *Customer Services* Go-Jek (by phone or email)

Discussion

The information seeking behavior of Go-Jek drivers will be analyzed and categorized into eight dimensions, based on the theory of Ellis's information seeking behavior (1997), namely Starting, Chaining, Browsing, Differentiating, Monitoring, Extracting, Verifying, and Ending. It can be concluded that Go-Jek drivers are now starting to become aware that information is available in various sources. Among them are online messaging, social media and the internet. These three sources can be used to meet their information needs for providing services to customers and maintaining relationships with Go-Jek partners, all of which will lead to the welfare of drivers (getting incentives and keeping their jobs/not dropping out partners). The following verbatim were chosen because of their frequency of occurrence:

D1: "Passenger characteristics vary. Some of them are simple and some are fussy. For example, an order has just been received by a driver but the customer asks to pick them up as soon as possible. When on the road they ask to speed up to get to their destination quickly. At that time, I will look for information on the rat-running to other drivers to avoid traffic jams. As we know, Bandar Lampung is a busy city, so traffic jams often occur. I sometimes get confused when serving passengers, should I be fast or just normal. Sometimes when I'm speeding, there are complaints, the result is that I am given one star by consumers. We feel all wrong. When we get one star automatically our performance scores go down."

D2: "Sometimes our account cannot receive orders from consumers for a whole week. It was a strange thing because we felt there was no such case as getting a complaint from a customer. If that's the case, we usually ask other fellow drivers. We used to ask through WhatsApp Groups or direct communication when we passed other drivers. Usually later there will be drivers who will share their experiences for the cause of the driver account error. Sometimes it's the application that has problems, if that's the case, we have to contact Go-Jek's head office. Another way is to ask consumers for help

to give a good review when they can receive orders. Good reviews from consumers will improve our performance value. The result is the orders via the application will start to return to normal."

D: Go-Jek Driver/Informant

Drivers Go-Jek usually join the Morotai WhatsApp group and Facebook Group (KORAN GO-JEK & GRABBIKE BANDAR LAMPUNG (Keluhan Driver & Customers) to exchange information. Some drivers are technology illiterate or do not understand how to use gadgets and social media. According to Suwarno, those drivers will ask for the information needed from fellow drivers at the Go-Jek shelter. Furthermore, the description of the information search process by drivers based on Ellis theory.

Starting is the first stage before conducting information search activities (Ellis, 1997). This phase is associated with the reason someone does a search for information. The example for this stage is the drivers looking information of rat-running to accelerate mobility, in this case their efforts to master the terrain so as to improve the performance and credibility. The drivers expected to get five stars from costumers.

Chaining is the activity of writing the things that are considered necessary before the information-seeking activity (Ellis, 1997). Uniquely, none of the Go-Jek drivers who became informants in this study did this category because they would spontaneously ask questions to the WhatsApp and Facebook groups with a non-formal writing style if they needed information. The example for this case is when the driver gets an order in an area where the route is poorly understood, they will immediately ask WhatsApp or Facebook a question about that route.

Browsing is an information search activity (Ellis, 1997). Go-Jek drivers have six sources, as previously presented. Facebook group members do not necessarily join the WhatsApp group. Some drivers do not join WhatsApp because the latest information is more quickly available on Facebook.

Differentiating is the classification and selection of data that will be used or discarded (Ellis, 1997). The majority of drivers will trust the information obtained on the Facebook group more because of the number of members to see more variants of answers. They will interpret it as the best or valid answer when many members convey the same information.

Monitoring is an activity to monitor or find the latest information (Ellis, 1997). Before getting an order (while waiting), the drivers will open Facebook and WhatsApp Group to see the latest information can be used by them. An example of a case was when there was information about new regulation "disinfectant spraying" for all motorbike Go-Jek Drivers during the first Covid-19 outbreak. Actually, there is a notification of this regulation application, but there are drivers that do not read the information. This information is obtained from other sources (social media).

Extracting is the activity of taking information from a particular source of information (Ellis, 1997). Based on interview, the drivers often ask information in Facebook and WhatsApp Group with same or similar question in order to get relevant information. They will compare the answers of the two sources, which have the same answer quantified. The final result for the information will use because it believes to be valid.

Verifying is done by asking the same question on different platforms (Ellis, 1997). It can be concluded from collected data, if deemed not get a satisfactory answer, the driver will be asked to other sources (eg. contact customer service) or ask the same question to Facebook. Based on observations, information exchange activity on Facebook is very fast, so information will easily be drowned. This resulted in frequent occurrence of the same questions with the answers varied.

In the final stage of information-seeking, ending, drivers will use the information they think is valid (Ellis, 1997). This assumption will exist when other drivers answer their questions with the same format and content. The more drivers that declare the information (eg. encoded information A), the more valid information. That information will be used to fulfill driver needs.

Partnership Regulations and Go-Jek Driver Information-Seeking Behavior

Information-seeking behavior of an individual affected by several factors, one of them is type of work (Yusup, et.al., 2016). Working as an online service provider, Go-Jek drivers have information needs to carry out their activities. The information is usually relating to partnership (with Go-Jek) and customers. First of all, this kind of work requires partnering with a company that owns the online application, in practice, there are several regulations that must be agreed between the two parties. This regulation is closely related to the customer, because the realm of the transportation business sells services. Strict regulations that indirectly require drivers to provide excellent performance in order to get 5 stars so that they can avoid the Go-Jek "ticketing" system which will affect their income and even the continuity of their partnership.

Information will be searched by Go-Jek drivers by relying on six sources, that are social media, WhatsApp groups, Internet (including Google Maps), direct communications, Go-Jek websites, and Go-Jek Customer Services. The diversity of drivers' backgrounds also affects the way they seek information. The majority of drivers seek information through social media, while the minority here are technology illiterate drivers who rely on face-to-face contact (direct communications). This minority driver usually comes from the older age group (above 45 years).

The diverse background of drivers also affects the way and process the validity of a source of information. Case & Given (2016) stated the needs and information-seeking behavior can be influenced by a variety of reasons, such as social background, culture, education, and social environment. In general, information spread across social media and broadcast message cannot be justified. There is a high possibility that the information is a hoax because the original source is unknown. Due to limited knowledge and circumstances, Go-Jek drivers are accustomed to consuming information from social media. They filter the source of information by extracting and verifying. Drivers will interpret the information as valid when many drivers have the same or similar information and understanding. This can be a follow-up study to analyze the information literacy skills of the drivers, the majority of whom only have education up secondary education.

Conclusions

The results showed that of the eight categories of information-seeking behavior proposed by Ellis, there was one category that was not carried out by Go-Jek drivers, namely Chaining. It happens because drivers spontaneously ask for the information they need directly from fellow drivers. There is no intention of formulating keywords in the information search process. The results of this study are similar to previous studies (Gumilar, et.al., 2016). There is one stage that is skipped, not carried out by individual information seekers. It should be underlined that although there are similarities, there are also differences, namely in stages. This is different because the

theory used is different in data analysis. The sources of information they use to fulfill their needs also cannot be proven scientifically. Drivers do the validity of the information contained in their own way. It often found that some drivers were unable to understand questions from other drivers because of unsystematic sentences. It is because the majority of drivers have low levels of formal education and different backgrounds. The literacy level of these drivers can be used for further research. Drivers need the information to maintain performance not to be subject to sanctions from partners (Go-Jek). If their performance drops, they will get penalties in the form of suspension, reduced incentives, and termination of partners.

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TRANSCENDING ROLE OF LIS PROFESSIONALS

(Smart Learning Environment: Role of LIS Professionals)

Kiruthika D[1] Dr. V. Shyam Sundar [2]

Introduction

The entire world is pushed into crisis at this juncture due to the novel Corona virus. Corona virus gets its place of origin from the Wuhan city of China. The World Health Organisation has declared the situation as a health emergency of international concern and also official named the virus which was called as 2019 novel Corona virus initially as Corona virus Disease (Covid-19) on 11th February 2020[3]. The Covid-19 has outbreak the geographical limits and has resulted in more than 4,45,133 deaths in India[4]. Governments of all the countries are taking proactive steps to overcome this pandemic by imposing lockdowns, border closure, quarantines, social distancing, etc. Covid-19 has resulted in economic repercussions across the global to which India is also a victim. Almost all the sectors in India are either shut down or working with the minimal resources and educational sector is not an exception.

The Covid-19 pandemic has disturbed the equilibrium of the society and impacted life in all spheres. Social interactions are restricted to a larger extent by the implementation of extraordinary social distancing and lockdowns. This pandemic has showed a new atmosphere to all of us. It has set new norms and procedures to be followed in our day to day life. Direct communications are replaced with virtual communications. We can witness that with the rise of Covid-19 pandemic, the use of digital platform by various sessions of the society is steadily increasing. Like how a coin has two faces, the Covid-19 pandemic too has two faces. One side, which negatively impacted our life and another face that showed us the new digital environment. It is said that this period is not for the growth or development of the country whereas it is the period for survival. But the development that we are supposed to achieve in next two decades, this pandemic has fast forwarded that development in the last 2 years in terms of digital presence. Thus, rise in pandemic and use or development of digital means of communication is directly proportional.

Significance of Information Literacy

Information is taking a new form each day and is continuously evolving with the changing recent global pandemic. Information literacy is an exercise involving lifelong learning that begins at a younger stage and continues till the end of different phases of life. The teachers are responsible for disseminating knowledge and information through academic programmes. Information literacy is a process through which an individual knows why when information is desired, where information can be found, how it can be evaluated and used in an ethical manner.

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Information literacy is an individual's skill to collect, organize, process and analyse information based on the findings to form informed decisions. Information literacy itself is a collection of a number of other literacy's viz. Media Literacy, Computer Literacy, Information Technology Literacy, Internet Literacy, Digital Literacy, etc. The concept of information literacy emphasizes on resource-based learning rather than text-based learning.

An intricate relationship between technology and literacy exists. Owing to the increased usage of electronic databases/resources and the changes in user behaviour when it comes to searching and using data for learning and study, the idea of information literacy has gained traction. In a digital age, meta-literacy facilitates critical thinking and teamwork, combines various literacies and expands the conventional concept of information literacy. For the new social media age, the concept of information literacy involves a different approach to developing an integrated collection of skills and the confidence that students need to self-assess their abilities. In this modern changing world, information has a very important process. The modern world is information centric and students must be familiar with the information and develop new skills in order to gain knowledge and participate in this highly competitive environment. In this modern changing world, information literacy has become a very important process particularly, at higher education level in the Universities.

Covid-19 push towards smart learning environment

The outspread of Covid-19 pandemic significantly brought havoc on every aspect of human life and one of the major hit was the educational setup around the globe. Education institutions around the globe were shut and the traditional teaching-learning system had to move online. The modern education system at all levels from elementary to higher education is already in an advanced system with well-developed libraries and classes making full use of information communication technology providing information to everyone who is willing to learn and access it. But, the education system was never ready for such as disruption caused by Covid-19 thereby, creating an unparalleled test on education.

There is a paradigm shift that is taking place in the education and information sectors. The education and learning process cannot be put to halt. Necessity is the mother of invention. The teachers and the learners had to work on alternate methods to connect with each other for the purpose of disseminating and gaining knowledge. To cope up with the hurdles put by the pandemic, the sector has taken the Information and Communication technologies (ICT) as its weapon. A new pedagogical approach that is collaborative learning has been adopted which lead to the Smart Learning Environment. Now, the digital platform like Google Meet, Google Classroom, Moodle, Zoom Meeting, Microsoft Teams, etc, has replaced the physical classrooms. Education and learning process continue to stay alive by way of online lectures, online classes, online examinations, use of digital libraries, webinars, MOOCs, etc. Thus, the ICT has supported the Smart Learning Environment.

Covid-19 has trained the stakeholders of the educational sectors with the use of ICT, digital platforms and digital means of communications. Now, educational professionals have gained knowledge and skills in the use of online applications, softwares, online educational management tools and systems, etc. Teachers show more interest in participating in online events likes webinars, e-conferences, virtual faculty development programmes, virtual orientation programmes, etc than before because virtual mode proved to be more convenient and cost effective. But at the same time we cannot deny the fact that mouse touch can never replace the uman touch[1].

Role of LIS Professionals in Boosting Smart Learning Environment:

Libraries play a very significant role in the education and learning process[1]. The present scenario has shifted the class room learning to library learning and mainly digital library learning[2]. The Library and Information Science (LIS) Professionals hold high hand over the information and the use of technologies. They are trained professionals to handle enormous information and proper dissemination of that information at required time. The role of LIS professionals during this pandemic is very crucial for the educational sector. The success of the Smart Learning Environment is determined by the abilities of the LIS professionals to support the system. The traditional role of LIS professionals has been transformed now with the addition of modern digital roles. It is high time for LIS professionals to show up their responsibilities towards the society.

It is said that Librarians are considered to be the Teachers of the Teachers since they provide the relevant teaching materials to the teaching communities and thereby indirectly support the teaching system. Librarians not only provide materials to the teachers but also support the student's community by properly locating the apt books for the students and researchers[3]. The uses of Information and Communication Technologies have completely changed the traditional impression of Libraries which also includes Law Libraries. The method of information or data storage, the retrieval system; the modes of accessing the information, etc have been changed with the entry of ICT into the domain of Library. Because of this changing nature of Libraries, the users look upon the LIS professionals for support.

Law Library users require the guidance and helping hand of the LIS professionals to locate the best online databases and to know different searching techniques to access the best information for the academic purposes. Thus, the foremost role of LIS professionals in supporting the Smart Learning Environment is to be ready in providing the support hand for giving applicable and adequate online data to the users at their own phase.

The LIS professionals must be aware about the list of open access resources that are available for different domain area; analyse the most relevant one in each domain and make it ready with the list so that it can be accessed by the users at free of cost. In case of subscribed resources, the Librarians must provide the access credentials to the users so that they can access from any place at their convenience[4]. Apart from the open access resources and subscribed resources, the LIS professionals must venture upon the latest learning resources that come up and make it readily accessible by the users. The LIS professionals must keep them updated with the change in times so as to provide relevant and up to date information to the users immediately. They need to keep in phase with the changes that take place because of ICT.

The best way of learning is by teaching others. The LIS professionals must come up with organising events like orientation programmes, webinars, conferences, etc for the teaching communities and make the targeted audience aware about the available online resources and the various methods of accessing those databases. They can also train the stakeholders about how to organise a webinar, virtual conferences, how to engage students actively in virtual modes, what

1 Sinha Manoj, "Empowering LIS Professionals and Academic Library Users in a Networked and Digital Environment: A Case Study of Rabindra Library, Assam University, Silchar", January 2015, DOI:10.4018/978-1-4666-7230-7.ch090, ResearchGate, available at: https://www.researchgate.net/publication/272177627_Empowering_LIS_Professionals_and_Academic_Library_Users_in_a_Networked_and_Digital_Environment_A_Case_Study_of_Rabindra_Library_Assam_University_Silchar, accessed on 31 August, 2021.

are the interesting applications available to motivate students in online classes, make them aware about the virtual platforms available to share the teaching materials, etc. Thus, the success of Smart Learning Environment to a greater extent is with the hands of the LIS professionals.

Hurdles before the LIS Professionals:

It is a fact that addition of roles or responsibilities is always aligned with challenges. Once more expectations are placed then it would lead to more pressure and challenges. This is the current scenario with LIS professionals. The increased demands from the student's community and teaching fraternity on the LIS professionals for supporting the Smart Learning Environment is the first hurdle before them. This increased expectations put them to a great challenge.

The changing nature of Libraries necessitates additional skills and abilities from the LIS professionals which form the major challenges before them. The entry of ICT into this domain requires the LIS professionals to possess skills like technical skills and IT skills[1]. Additional challenges are faced by Librarians in the field of Law. There is a need for knowledge in Library Science and Law to be a successful LIS professional in the field of Law.

Another major challenge before the LIS professionals is the support system to aid them to be effective. Proper support from the management is very crucial to make LIS professionals to fulfil the expectations of the students and teaching communities. Adequate training system, man power, machine power, IT support, financial support is required in order to provide the services efficiently and effectively to the end users by the LI S professionals.

Conclusion and Suggestions:

The existing information resources need to be fully utilised by the library users for which a complete awareness as to the resources is foremost required. This can be done only when the LIS professionals are trained enough. The man power development and adequate ICT or technical training is the need of the hour for LIS professionals. The training aspects need to be given more emphases. LIS professionals must be subject to rigorous training in handling computers, information technology, online databases and other online applications so as to enhance their knowledge in the use of ICT in their domain. Training programmes likes webinars, conferences, workshops, etc must be organised to make the LIS professionals fully equipped to support the Smart Learning Environment and give a helping hand to the teaching community.

Special attention is necessary for Law Library. Managing Law Library requires a strong background in law, legal research and with skills of LIS professionals. So emphasis must be given in bringing about a specialised Law Librarianship course that would combine legal information sources and law library management. Thus, the role of LIS professionals during this pandemic is very crucial for the educational sector. The success of the Smart Learning Environment is determined by the abilities of the LIS professionals to support the system.

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REDEFINING THE ROLE OF LIBRARIES AND ICT: A STUDY ON THE REQUIREMENTS OF LAW STUDENTS

Dr P Sakthivel[1]

Introduction

The above statement has become impractical amidst the Covid-19 pandemic. We aspire to return to a full-fledged functioning of library and its allied services in the near future. But the present situation has caused obstacles as well as thrown open possibilities in our conventional way of acquiring knowledge. While the pandemic has compelled each one of us to function in isolation, as a global community, out of no choice, every stakeholder is exploring certain new techniques using the Information and Communication Technology Tools (ICT).

This researcher, as a law teacher, has studied the role of ICT enabled libraries during pandemic and in the post-Pandemic academic life. At a preliminary level, this paper narrates the usage of ICT by legal professionals. More specifically, the paper studies the role of ICT in aiding a variety of users of law libraries. The paper also tries to understand the general role of libraries in assisting the educational institutions in its varied academic activities.

Lawyers, Law Students and ICT

The usage of ICT is not new to law libraries and students. But one needs to take note of the fact that law is a discipline that is heavily reliant on Libraries in all its formats. From students of undergraduate courses to research scholars depend on library sources in their academic pursuit. In fact, independent law libraries of practicing lawyers are very popular in the legal circles. These libraries comprise case laws from 100-year old volumes. Private libraries of practicing lawyers also function as reservoirs of certain commentaries on practice-oriented subjects.

The legal work includes an increasing level of documentation, information processing, storage, arrangement, and retrieval. The day to today requirements of lawyers are not merely information related, but the timeliness or the sense of time. In addition, information accuracy and relevance are very much essential in the legal profession (or, at least, similar to any other profession!) (Owoeye, 2011).

ICT tools are already an integral part of an advocate's professional life. It has been observed in the developing world that most of the lawyers are familiar with Facebook and WhatsApp (Jamshed, 2021) It shows the legal fraternities' familiarity with a few components of communication technology. However, few professionals are reluctant or shy away from technology for various reasons. Such an option to remain an ICT-illiterate has completely vanished after the pandemic.

The introduction of ICT tools for students presupposes the knowledge of faculty members to some extent. As such, faculty members and other research students had a bare minimal ICT knowledge to survive in the academics prior to covid19. Some of this researcher's colleagues in the University were not in favour of typed assignments or use of Power Point Presentation

1 *A library is a place that is a repository of information and gives every citizen equal access to it... It's a community space. It's a place of safety, a haven from the world"*
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(PPT) in the pre covid-19 times (they favoured handwritten assignments). Those faculty members were hesitant to adapt even to simpler classroom tools, usage of gadgets in the classroom such as laptops. However, such a lukewarm approach by the teachers to ICT tools has changed after pandemic. Most of the research and teaching work was assigned and performed from home. Faculty members and researchers were desperate to acquire the ICT knowledge required to adapt themselves to the emerging scenario during the Covid-19. For instance, in India, many ICT related online training programmes for the academics included the usage of video conferencing tools and recording tools such as "Open Broadcaster Software" (OBS). Except for the pandemic, the above said tools might not have been a requirement for the academic community as an essential element. Sparsely used tools such as "Google Classroom" (or similar tools) became acutely essential. The faculty members and students have witnessed first time learning and usage of Google's drive, Docs and slides. Almost the entire academic community has learned to record and disseminate materials through online. The surge in teachers' ICT learning may be understood from the thousands of attendees at the online training programmes organised by the Ramanujan College, Delhi throughout the year 2020 and currently as well.

There has been a very few such ICT training programmes for the Under Graduate and Graduate students of higher education institutions during this pandemic period 2020-21. However, students trained themselves with the assistance of their teachers, peer group and family to utilise the gadgets, apps and software. It has been well researched to reach the conclusion that the current younger generation is capable of adapting to ICT and gadgets better than the previous generations. Similarly, it has been found out that the previous generation has also been capable of coping with the trend and catching up (VOGELS, 2019 (September)).

Lawyers in almost all countries have started using ICT tools from the beginning of the computer era. Although it is stated that legal professionals are slow to adapt to technology, it is found that legal professionals in many countries have been increasingly adapting to technology much prior to the beginning of this century (Owoeye, 2011). The early discussions also pointed out the relevance of law libraries with the increasing ICT usage in legal profession (Danner, 1999). This researcher also came across an interesting article to introduce Artificial Intelligence (AI) to law libraries with an object to further access to justice (Craigle, 2019). In short, we are caught up in a situation to introduce AI to our institutions, and on the other side, we are supposed to serve students who have difficulties to access the internet.

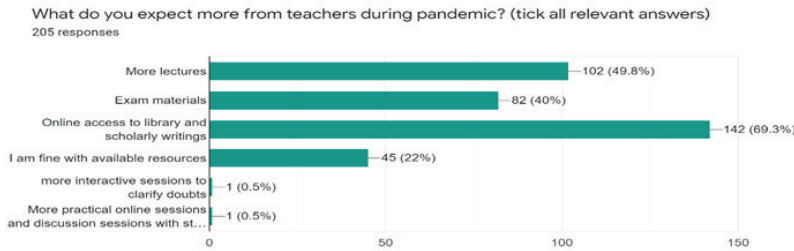
Prior to the pandemic, Lawyers were used to multiple ICT tools such as video conferencing tools, Apps for case laws, E-Books through paid websites and E-libraries. Law students have relied on the paid books (both E-books and print versions). Some practitioners of law might have had certain difficulties in the form of access to technology and materials. The courts in India did not actively function during the early months of Covid-19 pandemic. Thus, the problems of lawyers in accessing online sources were minimal. Whereas, the academic community was bound to introduce the ICT tools due to the continuance of academic activities in the online mode. Somehow, the students were able to access classes and examinations through online mode. However, access to paid websites and resources such as books and materials were hampered due to inabilities from both administration and students. More than paid resources, libraries contributed and are expected to contribute a wider role in propagation of open source materials (Callister, 2021). The relevance of open sources has been debated elsewhere. However, in the Indian context, open source materials can play a vital role to disseminating legal information and knowledge. One could see the support of Librarians of developing world to copy-left movement. (Anyaegbu & Uju Nwamaka Achufusi-Ani, 2013) More than any of the above said obstacles, students were locked

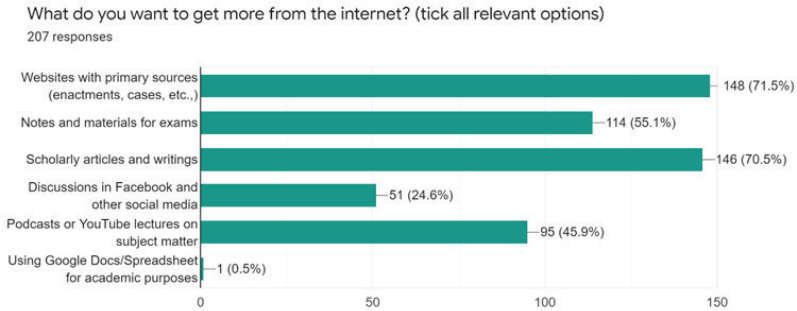
in places where internet access remained severely restricted due to geographical locations and many students were unable to afford the necessary gadgets. Students and faculty members alike were not able to invoke peer group discussions and activities in knowledge sharing.
In the following part, I have attempted to understand the demands and needs of student community in relation to law libraries.

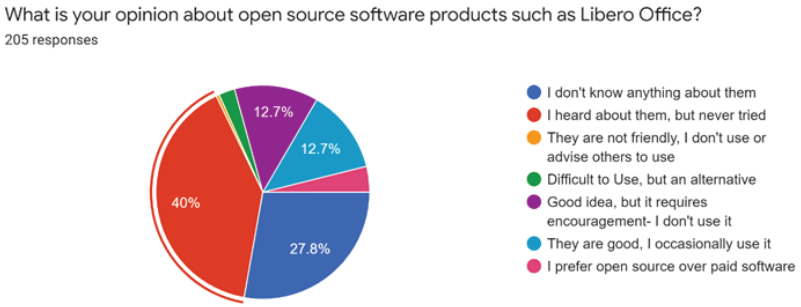
Students' Opinions about ICT and Libraries during Pandemic

Students from different Under Graduate and Post Graduate programmes were interviewed through two different questionnaires. The questions were aimed at understanding students' perception, current usage, obstacles and expectations in relation to ICT tools and libraries. Questions were also aimed at understanding the possibilities and actual usage of open-source software and other such knowledge reservoirs. One set of questions were aimed at the LL.M students of Tamil Nadu Dr Ambedkar Law University. Another set of questions were presented to students (around 200 UG, PG and research) from India and Sri Lanka after a workshop that was organised to train law students on ICT.

The questionnaire which was presented after the workshop provided many interesting findings as to the expectations of students from the library during pandemic. They are presented as follows: The following chart describes the expectations of students from the teachers.







The above results have provided certain interesting insights as to the use of online sources and ICT by students. As we find more students being interested in paid resources, we also see a vast majority of them less concerned about the open sources. Around 67% of them have never tried the open sources. Even those who are aware of it are not keen to know more about those sources.

Students expect more of primary sources and scholarly articles (71%) from the internet. A good percentage of students look for notes and materials (51%). Further, students look for social media resources and audio-visual contents to enhance their knowledge in the subject matter. There is indeed a need for further analysis of available data, and enhanced feedback from the student community to understand their requirements vis a vis their diverse demographics.

On the question of access to online libraries, 70% of students expect the institutions to enhance online access to libraries and paid resources. A good percentage (40%) of students expect the institution to provide exam materials.

In a different questionnaire distributed only to the students of TNDALU LL.M courses, most of the LL.M students (around 160) have responded to an open question on the use of ICT and online legal resources by them during Covid19 pandemic. A large number of them have answered in the affirmative to the question regarding access to resources by mentioning paid websites such as Manupatra, Westlaw and other paid resources. Surprisingly, students were less aware of the All India Reporter (AIR) Café situated inside the university campus and services provided by them. A small percentage of students (around 10%) mentioned the use of free access resources such as Indian Kanoon and other official websites of the Government. The student community are found to be ignorant or harbouring a sense of skepticism over the reliability of the free sources available online.

Findings and Conclusion

From the above said brief-study, the following findings may be drawn: -

1. There seems to be lack of knowledge and question of reliability of online open/free sources. Student community must be informed and made familiarized more about the open sources.

2. Students expectation does not limit itself with online access to most of the paid content through library, but extend to basic materials needed for the exams. However, the study based on demographics of all such requirements need to be undertaken further.

The research has resulted in very interesting inferences from the perspective of students. Students have different set of expectations from the library. While some of them expect access to valuable books, a majority of newly joining law students expect the library to supply study materials. Expectations widely differ for the Post Graduate students who expect valuable journals and E-books.

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IMPORTANCE OF CYBER SECURITY IN INFORMATION TRANSFER

Dr. N. KalaBaskar[1]

Introduction

In this Cyber era, Cyber Space plays a very important role in the process of information transfer. Indeed the Cyber Space facilitates retrieval of documents in response to search queries. The information contained in the Cyber Space is avidly used by the seekers of such information. The role of Cyber Security becomes very important in the process of this information transfer as such.

Information Transfer

In a generic sense Information refers to a processed Data. It is a well-organized and structured Data. It also gives a context for such a Data and there by helps in arriving at a Decision. Information transfer helps to learn different skills and Knowledge with a positive,Negative or a Zero effect depending upon the quest of the User.

Information transfer in Cyber Space

Information transfer in cyber space refers to the transfer of information to the user of cyber space. This process is being made functional with the following query based inbuilt facility available in the cyber space.

- The information in the cyber space is for use.
- Every user of the cyber space and his/her information need.
- Every information available in the cyber space and its seekers.
- Save the time of the users who use the information available in the cyber space.
- The information transfer process in the cyber space is ever growing at an exponential rate.

Information transfer in cyber space helps in providing the right type of information available in cyber space to the right type of user at the right time.

Cyber Crime

During the 10th United Nations Congress on the Prevention of Crime and the Treatment

of offenders, two definitions were developed within a related workshop: Cybercrime in a narrow sense (computer crime) covers:
"*any illegal behaviour directed by means of electronic operations that target the security of computer systems and the data processed by them.*"
Cybercrime in a broader sense (computer-related crimes) covers:
"*any illegal behaviour committed by means of, or in relation to, a computer system or network, including such crimes as illegal possession and offering or distributing information by means of a computer system or network*."

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Internet is the medium for committing cyber crime using

- Computer or network as a tool
- Computer or network as a target
- Purposes incidental to a crime

Cybercrimes may be generally classified as violent cybercrimes and non-violent cybercrimes.

Violent Cyber Crimes include

- Cyber Terrorism
- Cyber Threats
- Cyber Stalking
- Pornography
- Child Pornography
- Hacking
- Command and Control
- Botnets
- Spreading of
- Virus,
- Worms,
- Trojans and
- Malware
- Scareware
- Adware
- Ransomware

Non-violent cybercrimes includes

- Cyber Trespass
- Cyber Theft
- Cyber Fraud
- Password Cracking
- Malware
- Spamming
- Unsolicited mail
- Steganography

Cyber Attacks

Cyber attack depends on different factors

The attack basedon the factors such as increase in population, increase in number of internet users, increase innumber of mobile phone/smart phone users, and also the increase in number of digitaltransaction. The numbers are in millions. Due to anonymity of the internet, many innocentvictims are targeted. The number of attacks on computers is less when compared to the numberof mobile/smart phone users. The attacker target attack on mobile transaction and cause damage to individuals financial resources.

Factors influencing cyber crime

There are several factors that influence the growth of the criminals on the internet and rate of the cyber crime. They include:

- Availability of tools to commit crime
- Unlike traditional crime, there is no need to be present physically in the crime scene
- Anonymity in the internet
- Amount of money spent is less

- Availability of masking tools
- Beyond geographic area – jurisdictional concern of cybercrime
- Lack of awareness among the users of computers systems, networks, and mobile
- devices
- Impact of social media

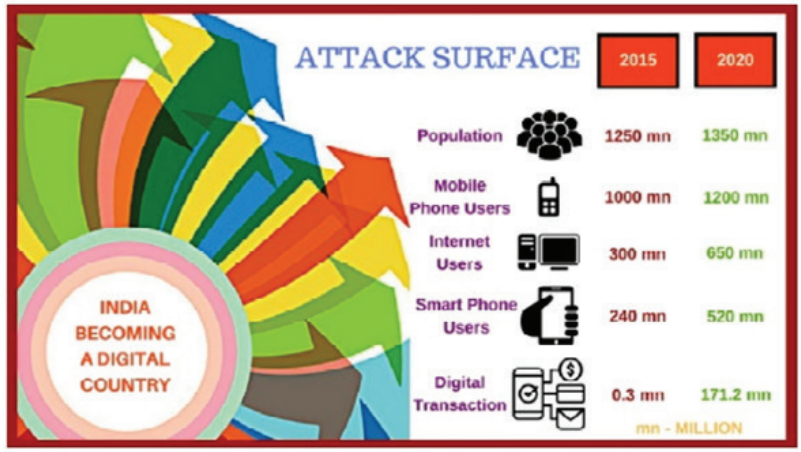

Figure 1: Cyber Attacks Surface

Trends in cyber crime across the world

Trends in cyber crime across the world include:

- Rapidly emerging cyber attack trends have unfortunately become a reality includingthe growth and evolution of ransomware, the use of botnet and automatedorchestrated cyber attacks/crimes within business process and email compromiseattacks in financial markets and other regulated industry segments.
- Ransomware attacks continues to be an integrated attack including socialengineering, automated botnet and physical attacks that evolve into well plannedand orchestrated "cyber-hostage" attacks and situations.
- Multiple terrorist and cyber attacks on public transportation methods were executedsuccessfully between 2016 and 2017. Many ransomware attacks during 2017 werebelieved to be used for reconnaissance to assess and test, reach effectiveness andresponse rates and methods to validate attacks and distribution targets and methods. Many of these attacks are beta tests for new automated exploits utilizing weaponizedNational Security Agency (NSA) Tools and other Artificial Intelligence (AI) code bases.

Cyber Criminal Syndicate

Cyber-criminals, hacktivist (nation-states) and the criminals underground are usingRansomware, Botnet, AI and weaponized automated attacks to gather intelligenceand perform reconnaissance on markets, industries, corporations, governmentsand individuals.

These organizations leverage the intelligence gathered from these beta tests andreconnaissance missions to launch very thoughtful, targeted, and highly orchestrated attacks against executives, high profile media personalities, corporations andorganizations that provide critical infrastructure. These criminal syndicates offer Crime-as a-Service.

- These enhancements can rapidly evolve into a fully functional Cyber-Criminalsyndicate as such. The Figure 1.6 illustrates the evolution of cyber criminal enterprisein the dark web.
- Business process compromiseThese attacks have evolved from basic counterfeiting, coercion, financial and businessfraud, and theft into complex, well planned and orchestrated physical and cyber-attacks thatare used to disrupt business processes, or create counterfeit – fraudulent business processeswithin companies and on the web in order to steal payments, customer-employee-supplier-partnerinformation, or gain access to critical systems or finance and banking accounts. Whilethese attacks are not new, we believe these attacks will expand across industries and marketsegments and will grow exponentially to include online business and brandjacking attacks.With immature online brand and product-service validation and verification processes andstandards in place across websites, exchanges, marketplaces, social media, and ecommerceplatforms, it can be easily demonstrated to set up and launch counterfeit corporate websites,webpages, and social media brands that can be used for brandjacking purposes.According to the recent survey, 2018 report, organizations are concerned about accidental/unintentional data breaches (51%) through user carelessness, negligence or compromisedcredentials as they are from deliberate malicious insiders (47%). This is illustrated in the Figure 2

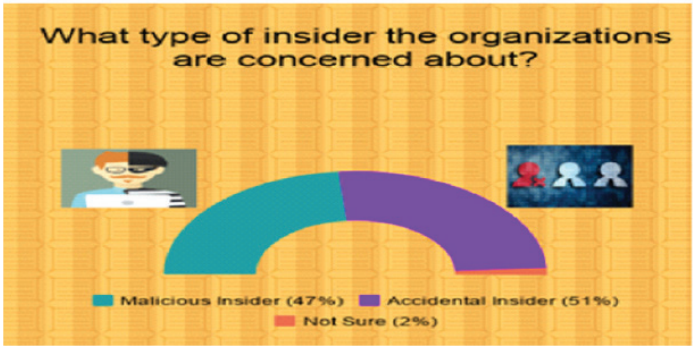

Figure 2: Insider threat

These Cyber-attacks are made by means of the following:

1. Virus
2. Trojans
3. Spyware
4. Ransomware
5. Adware
6. Botnets
7. SQL Injection
8. Phishing

9. Denial of Service
10. Application level attacks

The term "cybercrime" is used to cover a wide variety of criminal conduct. As recognized crimes include a broad range of different offences, it is difficult to develop a typology or classification system for cybercrime. One approach can be found in the Convention on Cybercrime, which distinguishes between four different types of offences:

- Offences against the confidentiality, integrity and availability of computer data andsystems
- Computer-related offences;
- Content-related offences;
- Copyright-related offences.

Offences against the Confidentiality, Integrity and

Availability (CIA Triad) of computer Data and Systems

The type of offences under this category is targeted against one of the three legal principlesof CIA is carried out.

Illegal Access (Hacking, Cracking)

The term Hacking refers to unauthorized access to computer systems. Today this offence has become a mass phenomenon with the evolution of internet. From legal perspective, there is no real difference between "computer hackers" and Computer crackers". In legal context,both the terms are used to describe persons who enter computer systems without right. Themain difference is motive. The term "hacker" is used to describe a person who is exploringdetails of programmable systems without breaking the law. The term cracker is used to describea person who breaks into computer system by violating the law (International TelecommunicationUnion, 2009).

Examples of Hacking include

Breaking the password of a protected website (*Sieber*, 2004); circumventing password

protection on a computer etc. This is achieved by the use of a vulnerable system or by implantinga software to illegally gain password related information to enter into systems/networks; installinga hardware based or a software based key loggers that record every keystroke and as aconsequence obtain passwords of system or networks illegally; sometimes a hackers setupspoofed websites to make users to disclose their passwords. The motivation of Perpetratorsvaries. Some Perpetrators restrict their activity to just circumventing the security measures toprove their abilities and others demonstrate "hacktivism", through political motivation. Theinformation retrieved from crimes is used to commit further crimes such as data espionage,denial of manipulation or denial of service attacks. In most of the cases, illegal access is thefirst step. Quite often tracking the abuse of hacked system, leads to abused systems, and notthe perpetrator, which often cause difficulty for the law enforcement agencies to apprehendthese criminals. The increased number of hacking may be attributed to lack of adequate protectionto computer system; increased number of automated software tools that performs the attackssuch as the botnets in which a single perpetrator can target several computer systems using asingle system.

Data Espionage

In this type of crime, sensitive information stored in computers/networks is being targeted. Vast information pertaining to trade secrets are be accessed illegally by perpetrators. Theavailability of sensitive information makes data espionage, highly fascinating. Various techniquesare being employed by perpetrators to access victims and these include: use of software toscan for ports; use of malwares to circumvent the security measures and social engineeringtechniques – a method that uses non technical means of gathering information involving humaninteraction by tricking people to break normal security procedures.

Data stored on private computers are also increasingly targeted. The data that might bestored in such computers include sensitive information such as bank account details, creditcard information on the system. The gathered information is sold to third party.Data espionage on business secrets is more profitable than private individuals. Thisincludes two approaches: first accessing the computer or data storage device and extractinginformation; second by manipulating the users to disclose the information or passcodes thatenable the attackers to perform such activity. For example 'Phishing' has recently become akey crime committed in cyberspace and describes attempts to fraudulently acquire sensitiveinformation such as PIN numbers, passwords etc by masquerading as a trustworthy person orbusiness/financial institution in a seemingly official electronic communication.

Illegal Interception

In this type of crime, the perpetrators try to intercept communications between users. They may also intercept data that is travelling in the net for example when a user is uploadingdata onto servers or access web based external storage media. The exchange of information isrecorded. Any kind of communication infrastructure might be the target for instance a fixed line/a wireless line or any internet service such as email, chat or Voice over Internet Protocol (VoIP)communication system. With the proliferation of the wireless technology, hotels, restaurantsand the like offers internet access through wireless access points, the perpetrators, might usethese access points and trap the data exchange from any location. Further, they might evenuse any decryption method even if the wireless communication is encrypted. Sometimes, Rogueaccess points might also be setup by perpetrators to capture the data.

Data interference

Data interference involves modification of data either by deletion, alteration, suppression or restriction to access. Data that are available on computers and networks are vital for privateusers and business. It depends on integrity and availability. In this type of crime the perpetratorviolate the integrity of data by either deleting or modifying them. Most popular method of this isby the use of a computer virus that is being spread through email, chat or any othercommunicating medium. Recent viruses are able to install back-doors thereby enabling theperpetrators to control the victim remotely.

System interference

Attacks can be targeted on computers and networks. These are targeted by the use ofcomputer worms or denial of service attacks. Computer worms are self-replicating programsthat harms the computer systems and networks. This type of attack is by targeting the availabilityor resources, perpetrators can prevent users from accessing systems, emails etc. for e.g., DoSattacks launched causes some of the services not available for several hours to days.

Content Related Offences

Certain types of subject matter as criminally illegal can be a highly contentious matter,raising complex definitional issues, questions of causation and human rights concerns, specificallyrights to privacy and freedom of expression. Content-related crimes also raise difficultenforcement issues, in terms of the technical issues of managing content and the foreign sourcingof such material. Despite the complexities surrounding content regulation, in recent years wehave witnessed substantial policy and legislative activity in the area, both in terms of expandingthe subject matter considered illegal, and raising the tariff applicable to such offences.

Pornographic Material & Child Pornography

This category of offence includes storage/dissemination of pornographic material that is lascivious. Sexually related content distributed over the internet, through exchange of mediasuch as pictures, videos and the like through the internet. The anonymity of the internet havefacilitated the distribution of these materials through: file sharing, online chat. Child pornography,images of children involved in sexual activities, is traded on the Internet around the clock. Childpornographers use the Internet's ease of distribution to sell their material to pedophiles (adultswho are sexually attracted to children). In addition to purchasing child pornography, pedophilesalso visit online chat rooms hoping to lure children into situations for sex. Luring or tricking aminor into sexual activity is prohibited. For example, chatting with a fifteen-year-old girl over theInternet, then suggesting a meeting is illegal conduct. Traveling to a minor's home to engage insex after meeting by way of Internet chat rooms is also criminal activity that will be prosecuted.

Spam and Related Threats

Spam refers to the use of electronic messaging systems to send out unrequested orunwanted messages in bulk. The difficulty with stopping spam is that the economics of it are socompelling. While most would agree that spamming is unethical, the cost of delivering a messagevia spam is next to nothing. If even a tiny percentage of targets respond, a spam campaign canbe successful economically."Spam" is described as the release of unsolicited bulk messages. The most commonmeans through which these attacks are targeted is through email. Spam emails sent throughsingle mail server is technically easy to identify when compared to spams distributed throughthe use of botnets to distribute unsolicited email. Identifying spams sent through botnets aredifficult to analyse and track the criminals.

Other Offences

In addition to the above types, Racism, Hate Speech, Glorification ofViolence, Religious Offences, Libel and False Information are other offences.

Case Study

The internet and illicit drug sales

Since the mid-1990s, the internet has increasingly been used by drugtraffickers to sell illicit drugs or the chemical precursors required tomanufacture such drugs. At the same time, illegal internet pharmaciesadvertise illicit sales in prescription medicines, including substances underinternational control, to the general public. These substances are controlledunder the three international drug control treaties and include opioidanalgesics, central nervous system stimulants, tranquillizers and otherpsychoactive substances. Many pharmaceuticals offered for sale in this

way areeither diverted from the licit market or are counterfeit or fraudulent –constituting a danger to the health of consumers. The fact that illegal internetpharmacies conduct their operations from all regions of the world and areable to relocate their business easily when a website is closed down means thattaking effective measures in this area is essential.

Copyright and Trademark related offences

Copyright related offences

Exchange of copyright protected songs, files and software through file sharing systemsare being done. The basis for this copyright violation is mainly due to the speed with which it isbeing done and also the reproduction is accurate. The digital sources are duplicated withoutloss of quality. Another method is to circumvent the Digital Rights Management systems. Filesharing is one such method through which these offences are being carried out. The users canshare files through network that are peer-per to millions of other users. Once the file sharingsoftware is installed, the users can share the files of interest. File sharing systems have beenused to share and exchange any kind of computer data such as audio, video and software.Peer to peer technology plays a vital role in this. For instance copies of movies have appearedthrough file sharing systems in internet even before the movies were released officially.

Trade Mark related Offences

Trade mark violations are similar to copyright violation. Several emails are sent to internetusers resembling emails from legitimate companies including Trade mark. Perpetrators usebrand names and trade mark fraudulently, for example Phishing. Another type of trade markviolation is domain name related offences. Cybersquatting for instance is the illegal process ofregistering a domain name identical or similar to a trade mark of a company. The offenders inthis case seek to sell the domain for a high price. Domain hijacking is yet another offence inwhich the domain names that have accidentally lapsed are being registered by attackers whoclaim to release the same for a huge sum.

Computer Related Offences : This category covers the following types of frauds.

Fraud and Computer Related Fraud

Advance fee fraud: One of the most popular computer related fraud is to convince large number of victims bysending email enabling them to make huge profits. The strategy used to ensure that the victim'sfinancial loss is below a certain limit. In such cases, the victims do not launch a complaint.

Case Study : Nigerian - Advance fee fraud – a hypothetical scenario

My dear friend,

Let me introduce myself. I am ..... I am the wife of form president ofRepublic of ..... My husband died recently in a plane crash. Duringcleaning his documents, I found that my husband has 10,000,000 US $ on asecret account. I would like to transfer this money to my family that is living in US. Unfortunately, I am not able to transfer the money directly. I wouldlike to transfer 10,000,000 US $ to your account and ask if you could transfer9,000,000 US $ to my family. The remaining 1,000,000 US $ will be for you. Ifyou agree, I would like ask you to transfer first of all 10$ to my account sothat I can verify your bank account information

In this type of fraud, the victim is asked to transfer money as an advanceamount for processing. Although, this is very popular fraud scam, there is no technology component in it.

Case Study

Auction Fraud

Online auction fraud is another category that is popular. The difficulty in distinguishingbetween genuine users and offenders has resulted in auction fraud. Example: offering non-existentgoods for sale and receiving payment before delivery; buying goods without intentionto pay. With the advent of internet, goods and products are purchased online. Auction Fraudinvolves non delivery of products purchased online. It is a fraud involving misrepresentation ofa product which is advertised for sale in the internet. The mode of operation of such auctionfraud involves the seller who is residing in one place, pretends that he is outside of his workplace for business, travel, family reasons etc, responds to the victims by a congratulatory emailrequesting the victim to send fund to be transferred to other individuals account. The modeof money transfer will usually be stated in the email as to be via western union, via bank ormoney-gram. The innocent victims will only be there to experience that virtually unrecoverablemoney and the product purchased as well. The demand for money at times is also flexibleallowing victims to send part of the money and the rest after receipt of the product.

Auction Fraud

Case Study

Indiatimes.com Auction site.

One person posted details of Mobile phones forauction. Many participated and won auctions. The money was to be paid in thebank account with ICICI. After payment none got the deliveries. Complaints madeto India Times … no remedy. Reported to CBI. Account was traced to Madurai.Accused, III yr. Engineering student from Madurai arrested. Son of a Contractor, living inposh area of Madurai. Lust for extra pocket money. Three charge sheets filed.Pending Trial.

Case Study

www.Baazee.com.10 Sony Ericsson P900 mobile phones were put up for auctionby one seller. Market Price 40,000/-. Offering price 15,000/-. Posing himself asSony Ericsson Importer. Many users placed bids. Seller supplied his bank a/c tobidders, asked to deposit money in his account. Bidders deposited money, mobilesnever delivered. Accused was traced and arrested. Final Yr. MBBS student atBangalore, Malaysian Citizen from affluent family. Could not pass his exams, familycut pocket expenses. As alternative source of income, indulged in cheating people. Later on selling Laptops through “www.sulekha.com”. *Charge-sheeted.*

Computer Related Forgery

Computer related forgery describes the manipulation of digital documents. Examples include:

- Creating a document that appears to originate from a reliable institution
- Manipulating electronic images

- Altering the text documents
- Criminals

Criminals often send out emails, which look as if they are legitimate emails from financial institutions. The emails are designed in such a way that it is difficult to assess them as fakeemails. Many victims disclose their personal information during an online transaction. Manipulationof documents has always been attempted by criminals. With digital forgeries, digital documentscan now be easily manipulated without loss of any quality. It is difficult to prove digital manipulationfor the forensic experts.

Counterfeit Currencies

Law enforcement personnel suspected that computers have been used to preparecounterfeit Indian currencies. The requirement was to examine the storage mediafor evidence. Printing of counterfeit currencies was done with the use of high techcomputers, scanners, and specialized printers in conjunction with screen printingtechnology. High resolution scanners and cameras are available which reproducethe exact graphics found in the currency. High quality printers are used whichreproduce the exact colour of the currency images. Frequent practice byfraudsters, is to scan currency notes using scanners associated with computersystems. These scanned images are subsequently edited; the number panel isfrequently altered by generating either random numbers or sequential numbersfor the series.

Identity theft

The term identity theft describes the criminal act of fraudulently obtaining and using anotherperson's identity. In general the offence described as identity theft contains three different phases:

- The offender obtains identity related information in the first phase. This part of theoffence is carried out by using crimeware (malware) or Phishing.
- In second phase, the offender interacts with identity related information.For example: Sale of identity related (credit Card records) information.
- In the third phase, the gathered identity related information is used to commit furthercrimes. For example the perpetrator might use the data set such as preparing fake documents;identity related documents or credit card fraud.An evolution channel of identity theft includes people, mail, telephones, computers andsmart phones.

Case Study

Dr.JubalYennie

In 2013, 18 year old Ira Trey Queensberry III, a student of the Sullivan CountySchool District in Sullivan County, Tennessee, created a fake twitter accountusing the name and likeness of district superintendent, Dr.Yennie. AfterQueensberry sent out a series of inappropriate tweets using the account, the realDr.Yennie contacted the police, who arrested the student for identity theft.

Misuse of Devices

Cyber crime can be committed using only fairly basic equipment. Committing an onlinefraud needs nothing more than a computer and internet access and can be carried out from apublic internet café. However, using specialized software tools more sophisticated offencescan

be committed. Software tools needed to commit such sophisticated crimes are quite oftenavailable as freeware. These generally include tools that can be used to launch a denial ofservice attacks, craft and design virus, worms and Trojans, decrypt anencrypted communicationand illegally access the systems and networks. Automated tools that enable to carryout multipleattacks within a short span of time are also available, for example: spam tools kits – that sendout spam emails to anyone. Different internationallegislative initiatives are being undertaken toaddress cyber scam software tools.

Case Study

Andhra Pradesh Tax case

Dubious tactics of a prominent businessman from Andhra Pradesh was exposed afterofficials of the department got hold of computers used by the accused person. Theowner of a plastics firm was arrested and Rs 22 crore cash was recovered from hishouse by sleuths of the Vigilance Department. They sought an explanation from himregarding the unaccounted cash within 10 days.The accused person submitted 6,000 vouchers to prove the legitimacy of trade andthought his offence would go undetected but after careful scrutiny of vouchers andcontents of his computers it revealed that all of them were made after the raids wereconducted. It later revealed that the accused was running five businesses under theguise of one company and used fake and computerised vouchers to show sales recordsand save tax.

Cyber Terrorism

In 1990s the trend was focusing on the Networked based attacks targeted against critical infrastructure such as energy supply and the use of information technology. There has been achange in situation after 9/11 attacks. The internet played a role within the preparation of theoffence. Today the information and communication technology is used by terrorists and internetfor propaganda, information gathering, preparation of real world attacks, publication of trainingmaterial, communication, terrorists financing and attack against critical infrastructure.

Case Study

Al Qaeda

Al Qaeda has deemed the Internet "a great medium for spreading the call of Jihad andfollowing the news of the mujahideen (Islamic warriors)." Thus, the Al Qaedaoperational manual *Military Studies in the Jihad Against the Tyrants* describes one of itsprimary missions as "Spreading rumors and writing statements that instigate peopleagainst the enemy.

Cyber warfare

Parallel to the term of cyber terrorism is an older term known as information warfare: Information warfare is defined as a planned attack by nations or their agents against informationand computer systems, computer programs, and data that result in enemy losses (Janczewskiand Colarik, 2008).

"Information warfare specialists at the Pentagon estimate that a properly prepared and well coordinated attack by fewer than 30 computer virtuosos or skillful persons strategicallylocated around the world, with a budget of less than $10 million, could bring the United Statesto its knees."

Historical glimpse of cyber warfare is illustrated in Figure 3:

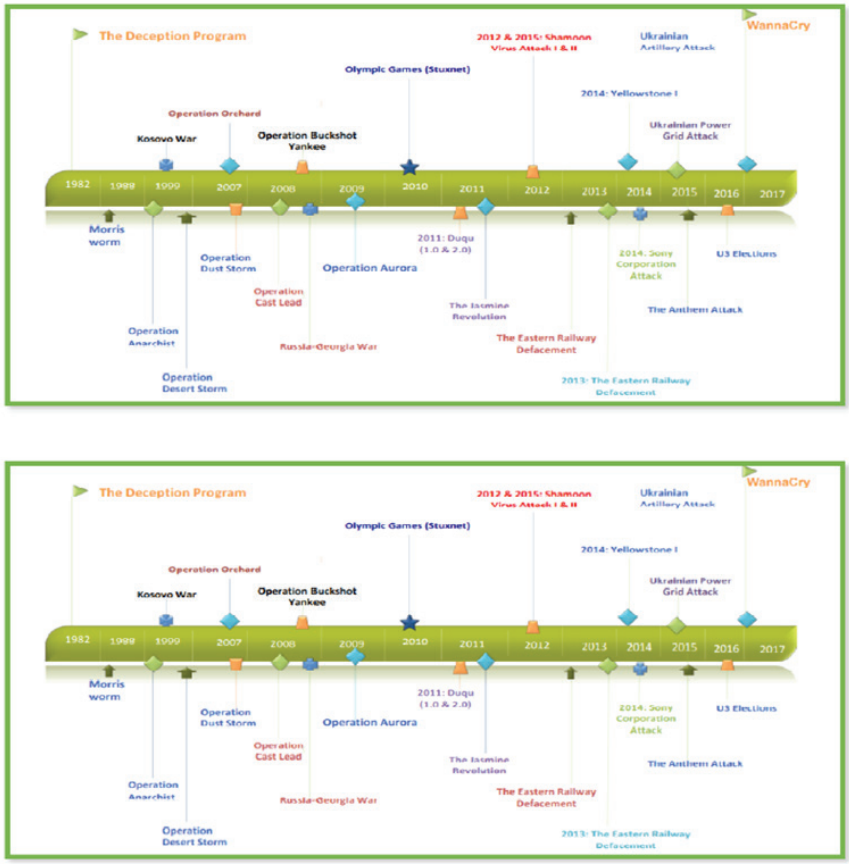

Figure 3: Cyber Warfare – A historical glimpse

Recent ransomware attack WannaCry has affected 150 countries and were based oncollecting ransom by encrypting the remote computers. This caused many computers affectedand the main motive was to sabotage the systems and networks which occurred in three phases.

WannaCry

The WannaCryransomware attack was a worldwide cyber-attack by the WannaCryransomwarecryptoworm, which targets computers running the Microsoft Windowsoperating system by encrypting data and demanding ransom payments in theBitcoincryptocurrency. It affected 150 countries worldwide. The conflict type is tointerstate and motive is to sabotage. Phase I appeared prior to Jan 16, 2017. Phase IIin Jan 2017 and phase III in May 2017.

Cyber Money laundering

Internet has transformed the traditional money laundering techniques. Online financial services worldwide provide quick financial transactions. Drug peddlers, organized criminals use computers and networks to electronically trade between partners including credit card internet

banking, e-cash , e-wallet. For eg: visa cash, mondrex card – store billions of dollars.Mobile banking and mobile commerce are growing and this technology can be effective tools inthe hands of money launderers who can transfer money bythe click of a mouse. Anonymity inthe internet is exploited by the criminals. Aims being to conceal the source of money, to avoiddetection by law enforcement and also they are trying to cover up their tracks. Use such moneyfor drug trafficking, extortion. As far as the banks are considered safe for launders are Cyprus, CaymanIslands, Luxemburg, Switzerland other financial institution like fund managers arethose facilitating Electronic Fund Transfer. In the current global scenario, difficulties arise in investigation of internet based money laundering techniques which often derive from the use ofvirtual currencies and the use of online casinos.

Case Study

GoldQuest Scheme case

Scheme run by Questnet Enterprises. Several people of Kavali Town, NelloreDistrict were lured by local promoters of the GoldQuest. Many joined theGoldQuest Scheme by paying Rs 33,000 and Rs 66,000 respectively. But theaccused did not repay the money and cheated people.

Phishing

Phishing is a process in which the users are misguided to different hyperlink which comes via mail taking victims to fake websites and stealing important information like credit card detailsand pin numbers while victims are using the internet or in other words the attacker sends emailto customers, falsely claiming to be from a legitimate company in the hope of enticing thecustomers to a spoofed website.

The spoofed website mimics the legitimate website for the sole purpose of stealing the personal information of the customers. In this spoofed website the customers are asked toupdate their personal information such as name, account number, credit card number, pinnumbers and other information. According to Anti Phishing Working Group report, global phishingsurvey 2017 there was 60,926 number of unique phishing sites were detected. Among this85,744 number of unique phishing email reports(campaigns) received. Nearly 268 numbers ofbrands targeted by Phishing campaigns. Most targeted industry sectors in 2017 were softwareas a service (SaaS) providers, webmail providers. Also increased attack on the financial andbanking targets were staged apart from file hosting and file sharing sites. According to thereport for fourth quarter the countries hosting services, the phishing activity trend is illustratedin table:

Country of hosting	Oct	Nov	Dec	Total
United States	2771	1828	5897	10496
Ireland	797	418	1437	2652
Brazil	404	397	968	1769
Germany	96	92	325	513
Canada	129	75	273	477
Netherlands	26	47	67	140
Czech Republic	30	45	50	125
Portugal	29	21	43	93
United Kingdom	25	15	48	88
Other Countries(39)	151	127	9536	16879
Total	4468	3065	18644	26167

Phishing attacks country wide in fourth quarter, 2017

Case Study

Phishing

A spoofed email from a reputed financial organization website " XYZ.com " wasdistributed to many of the organization employees. The email claimed that the employees credentials namely were about to expire. It also contained instruction to go to the website to renew the passwords within 24 hrs. While attempting to renew, the employees were redirected to a fake webpage that appeared to be legitimate, where the employees gave the credentials. During the process a malicious script was running behind which hijacked the user credentials which was further used by the attackers to compromise the entire organizations network.

Phishing Incidents were found on various platforms or hosting service providers. They includefacebook, Google, Cloudflare, Amazon, websitewelcome, Local webservices, OVH hosting, Unvierso Online, and other ISPs.

1. **Cyber Security in information transfer**

Cyber security helps in the defending of the following devices and systems belonging to individual persons or business enterprises as the case may be.

a. Computers
b. Servers
c. Networks
d. Electronic Systems
e. Data Storage
f. Mobile Devices
g. Embedded Devices
h. Internet of Things(IoT)
i. Robotics

CS is classified and given in the following table:

Classification of Cyber Security

S.No.	Classification of Cyber Security	Security Activities
1	Network Security	Helps in securing the computer networks
2	Application Security	Securing the applications (software and web applications)
3	Information Security	Helps in Protecting the information at storage, information in transit and information at rest
4	Operational Security	Helps in protection during the operations phase
5	Disaster Security	Restoration of Data and helps restore the functional, operational capabilities

Cyber Security initiatives in India

Key Cyber Security initiatives launched by Government of India

India has taken some initiatives to strengthen its cyberspace. These include awareness programmes; efforts to create a strong policy environment and strengthen security monitoring capabilities, and international cooperation; and research and development to promote cyber security. Some of the key initiatives are mentioned below under:

1. **National Cyber Security Policy**: The policy provides the vision and strategic direction to protect the national cyberspace. The policy was released in 2013.
2. **National Cyber Security Coordination Centre (NCCC):** The NCCC will perform realtime threat assessment and create situational awareness of potential cyberthreats to the country. It was made operational in August 2017.
3. **National Critical Information Infrastructure Protection Centre (NCIIPC):** The organisation was created under section 70A of the IT Act. It is designated as a national nodal agency in respect of critical information infrastructure protection. It aims to protect and safeguard critical information infrastructure (CII) against cyber-terrorism, cyber-warfare and other threats.
4. **Cyber Swachhta Kendra**: Launched in early 2017, the Cyber Swachhta Kendra provides a platform for users to analyse and clean their systems of various viruses, bots/ malware, Trojans, etc.
5. **International cooperation:** Seeking to secure cyberspace, India has entered into nine new bilateral agreements with developed nations such as the US, Singapore and Japan in order to promote research and information sharing on cyber security. These collaborative efforts will enable India to combat advanced threats.
6. **Promoting research and development:** To promote cyber security across the nation, the government has initiated a programme to offer a public grant worth 1000 crore INR to companies responsible for innovation and research in cyber security.

Sectoral and state CERTs:

The government has launched sectoral Computer Emergency Response Teams (CERTs), starting with critical sectors such as power and finance. Further, the government has planned to launch CERTs in the state-level.

Security testing:

There are plans to set up ten additional Standardization, Testing and Quality Certification (STQC) testing facilities across the country for the evaluation and certification of IT products. According to the International Telecommunication Union's (ITU) Global Cyber Security Index, India ranked 5th in 2015, but has moved to the 23rd rank among 134 countries in 2017. The security landscape of the country may be further improved with concrete initiatives and learning's from other countries.

Conclusion

The role of cyber security has been discussed in the foregoing pages and it is very significant in the information transfer and scholarly communication.Transferring files or information from computer to computer (and person to person) is a common occurrence in this information literate society. The processes and the role of cyber security in information transfer preferably encrypt the data over the network (in transit) and in storage and require strong authentication to ensure both the sender and recipient are who they claim to be.The importance of developing interactive, collaborative knowledge transfer strategies while adhering to the cyber security methods have to be followed in the present open access information society.

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USER SATISFACTION TOWARDS RESOURCES AND SERVICES OF GAUTAM BUDDHA CENTRAL LIBRARY AT BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY, LUCKNOW DURING PANDEMIC: A SURVEY

Komal Kirad[1] **Dr. Mahender Pratap Singh[2]**

Introduction

The situation around the world has come to a standstill due to the COVID-19 pandemic. This pandemic puts physical, mental and economic effects on people. First case of COVID-19 found in the city of Wuhan in China and it spread from person to person. People have been imprisoned in their homes in this pandemic. All work has emerged as work from home and learning from home. Due to the complete shut down the demand for e-learning and digital information has increased. All the libraries have converted from traditional to digital mode, although this work was already happening but slowly after COVID-19 this work has accelerated and almost all the libraries have converted themselves to digital platform.

The whole education system and libraries were affected by the pandemic but slowly libraries were able to cope with the situation and resume their services for the users. Users plays very important role in the library and libraries have an obligation towards users to cater their needs. User satisfaction towards library services has become an imperative concern in pandemic. Therefore,this paper is an attempt to identify whether the research scholars are satisfied with the e-resources and services being provided in this pandemic.

Literature Review

Pratap (2016)examinedthe level of satisfaction of users towards library services.The questionnaire method was used to collect information disclosing information exploring users' behaviour and satisfaction in this study. 200 questionnaires were distributed to the respondents and 183 completed questionnaires were received. This study was mainly to know the level of satisfaction. This study revealed that most of the users are satisfied with the library services.

Hemavathi (2018)surveyed Law College libraries which disclosed user satisfaction with library resources and services. Total 200 questionnaires were distributed out of which 160 questionnaires received.The study findings showed that 91.25 percent visited libraries to borrow books and reading materials. This study concluded that users are satisfied.

Amarasekara and Marasinghe (2020) revealed user satisfaction on library resources and services. This study was recognized that the respondents used the library for various purpose. Result of this study shows most of respondents were satisfied with library staff, library services and its resources.

Rashid and Yadav (2020) revealed a huge impact of COVID-19 outbreak on the higher

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education and research. COVID-19 has speedup the use of e-learning tools and platforms for effective student's engagement, which may have limitations of accessibility and affordability for many students. The pandemic exposed loopholes redesigning the current higher education system and the rapidly changing education environment of the world requires more training of teachers in digital technology. In the post-pandemic situation, the use of e-learning and virtual education may become an essential part of the higher education system. Higher education institutions and universities need to plan post-pandemic education and research strategies to make sure student learning outcomes and standards of educational quality.

Chioma and Asuzu (2021) revealed how academic librarians have been able to provide library services to users in the era of the COVID-19 pandemic without leaving their comfort zones on both sides; Also, how did academic library usersespecially Nigerian users were able to access the information? The academic library was closed due to COVID-19 as a preventive measure for the spread of the disease in the country. In this study survey method was adopted for the collection of data. This study shows that academic librarians in Nigeria were not prepared for such a pandemic situation.

BN et al. (2020)revealed how public library play vital role in modern society.This study investigates the utilization and user satisfaction. It was questionnaire-based survey investigator circulated 125 questionnaires among users and 100 received back. Author observed majority of the users were satisfied with the resources, facilities and services provided by the library. The study revealed that the library is extensively used by users of all age groups.

Objectives of Study

1. To know overall satisfaction of users.
2. To know satisfaction towards e-resources.
3. To know satisfaction of user towards library services during pandemic.
4. To identify various promotional activities of library.
5. To identify user's awareness towards library resources during pandemic.

Methodology

Keeping the objectives in mind, a well-designed questionnaire was prepared and distributed among the research scholars of Library and Information Science of Babasaheb Bhimrao Ambedkar University, Lucknow. The investigator collected the data from the researchers through questionnaire and MS excel is used for data analysis. During the study 37 questionnaires were received out of 38 questionnaires.

Data Analysis and Interpretation

Table – 1. Gender-wise distribution of the Respondent.

Sl. No	Gender	No. of respondents	Percentage
1	Female	18	48.6
2	Male	19	51.4
	Total	37	100

The table-1 described the gender wise distribution of respondents. Out of 37 respondents 19 were male and 18 were female.

Table – 2. Course-wise distribution of the Respondents.

Sl. No	Course Name	No. of respondents	Percentage
1	PhD.	30	81.1
2	M.Phil.	07	18.9
	Total	37	100

The table-2 described the course wise distribution of respondents. Out of 37 respondents 30 were PhD. and 07 were M.Phil.

Table – 3. Age-wise distribution of the Respondents.

Sl. No	Age group	No. of respondents	Percentage
1	20-30 years	28	75.7
2	31-40 years	08	21.6
3	41-50 years	01	02.7
4	50 years and above	-	-
	Total	37	100

Table-3 shows that 75.7% of the respondents are in the age group of 21-30 years. 21.6% of the respondents are in the age group of 31-40 years and 02.7% respondents are in the age group of 41-50 years.

Table- 4. Users familiar with E-Resources.

Sl. No	Opinion	Respondents	Percentage
1	Highly familiar	15	40.5
2	Very familiar	19	51.4
3	Moderately familiar	03	08.1
4	Less familiar	00	-
5	Not familiar	00	-
	Total	37	100

The table-4 described that 15(40.5%) of respondents highly familiar with e-resources and 19(51.4%) of respondents very familiar with e-resources, 03(08.1%) respondents moderately familiar with e-resources.

Table -5. Users'awareness and knowledge about the availability of E-Resources in the Library.

Sl. No	Opinion	Respondents	Percentage
1	Highly aware	11	29.7
2	Aware	23	62.2
3	Neutral	2	05.4
4	Not aware	1	02.7
5	Can't say	-	-
	Total	37	100

The table-5 described that 29.7%of respondents highly aware with availability of e-resources in the library and 62.2% of respondents very aware with availability of e-resources in the library, 05.4% respondents neutral and 02.7%respondent not aware with availability of e-resources in the library.

Table-6. Library supporting the continuation of teaching and learning during COVID-19 period.

Sl. No	Opinion	Respondents	Percentage
1	Highly supportive	08	21.6
2	Supportive	25	67.6
3	Neutral	04	10.8
4	Not support	-	-
5	Can't say	-	-
	Total	37	100

The table-6 described that 08(21.6%) of respondent's opinion is highly supportive library with the continuation of teaching and learning during COVID-19 period and 25(67.6%) of respondent's opinion is supportive library with the continuation of teaching and learning during COVID-19 period and 04(10.8%) respondents neutral.

Table -7. Library subscribing new databases during Pandemic.

Sl. No	Opinion	Respondents	Percentage
1	Yes	24	64.9
2	No	-	-
3	Can't say	13	35.1
	Total	37	100

The table-7shows that 64.9% of the respondents sayslibrary subscribing new databases during pandemic while 10.8% respondentsdenied and 29.7% respondents arenot sure about library subscribing new databases during pandemic or not.

Table -8. Library organize training for the use of E-Resources.

Sl. No	Opinion	Respondents	Percentage
1	Yes	22	59.5
2	No	04	10.8
3	Can't say	11	29.7
	Total	37	100

The table-8shows that 59.5% of the respondents sayslibrary organize training for the use of e-resources while 10.8% respondentsdenied and 29.7% respondents arenot sure about library organize training for the use of e-resources or not.

Table- 9. Which method is adopted by the University Library?

Sl. No	Programmes	Respondents	Percentage
1	Webinar	21	91.3
2	Conference	04	17.4
3	Workshop	06	26.1
4	Tutorial video	02	08.7

The table-9 described that 21(91.3%) respondent's opinion is webinar method is adopted by the library for organize training for the use of e-resources, 04 (17.4%) respondent's opinion is conference, 06 (24.3%) respondent's opinion is workshop and06 (24.3%) respondent's opinion is tutorial video.

Table- 10. Is COVID-19 has adversely affected to the Resources of Library?

Sl. No	Opinion	Respondents	Percentage
1	Yes	20	54.1
2	No	08	21.6
3	Can't say	09	24.3
	Total	37	100

The table-10 described that 54.1%respondents say COVID-19 has adversely affected to the resources of library while 21.6%respondents denied and 24.3% respondents are not sure aboutCOVID-19 has adversely affected to the resources of library or not.

Table – 11. Facilities does Library provide to the Researchers during Pandemic

Sl. No	Facilities	Respondents	Percentage
1	Open access	23	62.2
2	Web OPAC	17	45.9
3	CAS	04	10.8
4	Remote access	29	78.4

The table-9 described that23(62.2%) respondentssay library provide facilities to the researchers through open access during pandemic, 17(45.9%) respondentssay opinion is web OPAC, 04 (10.8%) respondentssay CAS and, 29(74.4%) respondentssay remote access.

Table- 12. Is COVID-19 has adversely affected to the Services of Library?

Sl. No	Opinion	Respondents	Percentage
1	Yes	23	62.2
2	No	07	18.9
3	Can't say	07	18.9
	Total	37	100

The table-12 showsthat62.2% of the respondents says COVID-19 has adversely affected the services of library while 18.9% respondentsdenied and 18.9% respondents arenot sure about whether COVID-19 has affected the services or not.

Table- 13. User Satisfaction with the initiatives taken by the Library to support the Researchers during Pandemic.

Sl. No	Opinion	Respondents	Percentage
1	Very satisfied	14	37.8
2	Somewhat satisfied	15	40.5
3	Neither satisfied nor dissatisfied	06	16.2
4	Somewhat dissatisfied	01	02.7
5	Very dissatisfied	01	02.7
	Total	37	100

Figure- 1. User Satisfaction with the initiatives taken by the Library to support the Researchers during Pandemic.

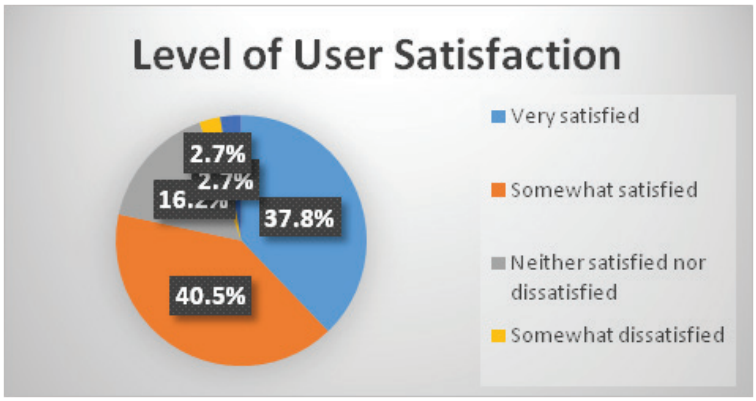

Figure-1 shows that 14 (37.8%) respondents very satisfied with the initiatives taken by the library to support the researchers during pandemic and 15(40.5%) respondents somewhat satisfied, 06(16.2%) respondents neither satisfied nor dissatisfied, 01(02.7%) respondent somewhat dissatisfied, and 01(02.7%) respondent very dissatisfied.

Findings

1. Majority of the respondents are familiar with E-Resources.
2. Library subscribing new databases and E- Resources during pandemic.
3. Library organize training programs through workshop and webinar.
4. COVID has adversely affected to the services and resources of library.
5. Out of 37 respondents, 15(40.5%) users are somewhat satisfied with the initiatives taken by the library to support the researchers during pandemic.
6. Out of 37 respondents, 25(67.6%) respondent's opinion is supportive library with the continuation of teaching and learning during COVID period.
7. Majority of the respondents says library provide facilities to the researchers through open access and remote access during pandemic.

Suggestions

Library should subscribe a greater number of journals in the subject area of Library and information science and web of science database. Libraries should organise awareness program regarding various services and resources offered by them.Along with traditional library services and resources, libraries should invest in recent technologies, such as library should try to improve the quality and quantity of its e-resources.

Conclusion

From this survey it was found that university libraries subscribed to new resources and

support continuation of teaching and learning during the pandemic. Library provides facilities to the researchers through open access and remote access during pandemic. Awareness and training programs were initiated to inform users, users are satisfied with the changes in the university library during COVID period. This survey revealed that there is a need to subscribe more resources in the library and there is a need for more awareness and orientation programmes.

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STATUS OF RESEARCH DATA MANAGEMENT SERVICES AT ACADEMIC LIBRARIES IN INDIA: AN OVERVIEW

Nazia Salauddin[1]

Introduction:

Data collection gives a great benefit to information communication technology. The academic research fraternity and libraries became faced with a huge challenge. The ICT makes data available in the simplest and most compact way. It provides libraries with innovative techniques and approaches for collecting and reviewing data to allow effective use of data gathered and accessible, justifying its importance and contributions. The management of analysis data has a method of study. Research data services here are described as the complete data life cycle services, including data management plans, the selection, preservation, preservation, and archiving of data, and the creation and conversion of documentation. (Corrall, 2014) states the librarians are now proceeding with ICT strengthening research assistance. This prevailing service is focused on a comprehensive understanding of support for academic research. It needs to support research and concentrate on preparing for service, new positions, and skills.

The fundamental scenario has become change from conventional to modern. The research word itself explains to regain and rework so we must be created the content for usable and accessible to all. Financing bodies and several foreign publishers have ordered researchers to include their raw data produced and used to report their results. They encourage the deposit of research results in open data repositories for anyone to access, browse, and use and validate the analysis published. The repositories in datasets use specialized metadata to define research data which enables them to be identified, accessed, and controlled easily. Moreover, during the submission of their submission applications, the funding bodies mandated that submission applicants clarify their data management plan (DMP).

Policy in India and across the world:

National science foundation data sharing policy:

The NSF has clearly mentioned that the data should be shared with other scholars. The available data has to be used for reference purposes. There is no incremental cost and readily available within a time period. The primary information, samples, physical collections, and other supporting materials generated or gathered as a result of work supported by the National Science Foundation should be shared with other domains.

The national Data science service US

The National Data Service is a new approach to finding, reusing, and publishing data for scientists and researchers from all disciplines. It's a global network of government agencies, data aggregators, community-based federations, publishers, and cyber infrastructure providers. All of this provides a foundation for data archiving and sharing activities in various groups and integrates them using a shared collection of resources.

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Australian National data service:

The Australian National Data Service was established in January 2009. ANDS is supported by the Australian Government. The ANDS Project partners are Monash University (lead institution), the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and the Australian National University (ANU).The Australian government recognizes the importance of providing unparalleled data access to Australian researchers, allowing for some more effective and innovative analysis in a high-quality data set that really can resolve main research obstacles. The Australian National Data Service (ANDS) was developed to facilitate this by focusing on four data transformations – from unconstrained to controlled, disconnected to linked, invisible to findable, and single-use to reusable that will allow Australia's research data to become a national strategic resource as a whole.

FAIRsharing.org

FAIRsharing is open to anyone. With an increasing list of adopters, FAIRsharing brings the producers and users of standards, databases, libraries, and data policies closer together. Adopters include representatives from universities, libraries, journal publishers, funders, technology programs, associations, and other organizations or initiatives that serve and advise individual researchers and other stakeholders on research data management issues. We also welcome collaborative ideas from complementary resources, and we're interested in working on joint ventures to improve programs for particular stakeholders and communities.

PURE help to research managers:

PURE is a science data archive that allows researchers to exchange and reuse data from a variety of fields. They give you the tools you need to analyze research efficiency and partnership patterns, as well as assess the efficacy of research policies, and highlight research excellence. Pure gathers analysis data from a variety of internal and external sources, ensuring that the data that informs the strategic decisions are reliable, accurate, and available in real-time.

In India, the data sharing and support work is going on not to reach any specific path. The continuation process makes the rich path to create the research data management system in India. The **OGD, data.gov**.in this is a really good platform for the general public purpose. The govt departments and ministers for publishing their data work documents, resources, and services so that work should be show in real tangible in form

The National Data Sharing and Accessibility Plan **(NDSAP)** were implemented to allow to share of non-sensitive datasets created with public funds by ministries and departments. For national planning and development, the government aims to promote the exchange of datasets.

The Indian Council of Social Science Research **(ICSSR)** has created the ICSSR Data Service13 platform for researchers and institutions in the social sciences to deposit, use, reuse, and analyze data in order to help, encourage, and improve research and policy analyses across the world. NSSS and ASI datasets are kept by the ICSSR Data Service13.

Related researches

The earlier studies reveal that the data gaining was highly important for prospects. The academic and research institute are developing infrastructure and services to support and enhance the research activities. The curation of the Data term initiated in 2012 has the top trend in academic

libraries. (Akers and Doty, 2013)] Analyzed the creation of RDM programs at 8 universities in the United States. The study focused on the role of the library in education and resources for data processing before, after, and after its research projects. It established parallels and discrepancies in the original incentive to provide RDM, coordination with the other sections/divisions, strategies to the user needs evaluations, and improvements in library staff's competencies needed to execute RDM.(Norman and Stanton,2014). This reveals how RDM at Sydney University is being helped by three stories to build a conceptual strategy for libraries leadership. Every narrative shines a light on the core components that help RDM – the participation of academics, collaborations with other departments, and supportive political and practice positions.

The latest study had done by (Tripathi, Shukla and Sonker, 2017) The research data management (RDM) services proposed by various university libraries for controlling, arranging, curating, and preserving research data collected at their universities' department and laboratories for reuse and dissemination were studied and the results have been done.

Literature review

Research data management requires all acts and procedures that are conducted or executed to ensure the correct recording, organization, saving, archiving, and curation of research data to be available for access, usage, and re-use as appropriate after research. An RDM framework is built in compliance with researchers' requirements. A data management framework for analysis may be based on three-tier architecture. The framework can store data on a file basis; a metadata archive and an internet browser to allow data storage and use. Other similar principles such as data analysis and data management are available. Data curation is data management from the period of its origins into obsolescence, is no longer relevant, and is ready for deletion. Data management refers to attempts being undertaken to ensure the accuracy and consistency of data by scholars. It also requires conformity with or compliance with sector requirements and procedures. Data stewardship is the responsibility of all stakeholders such as academics, library employees, IT experts, managers, and other data management team professionals. Worldwide universities concentrate on research activities that have vastly increased research data quality. The data had been organized and processed on an individual basis and would not have been focused upon. The funding agencies require the researchers and candidates to provide RDM plans, the significance is gaining, and awareness is growing in the scientific environment. Libraries have often responded to changes brought on by technology or researchers' actions. Again, libraries have taken steps to give their researchers RDM facilities. Every year, the ACRL Committee for Study Strategy and Analysis reports the worldwide top patterns and problems. The 2016 study emphasized the significance, amongst these various problems impacting libraries in higher education, of research data facilities, data policy, and data management plans. This subject was so significant that the last and first issues of the IFLA Journal in 2016 and 2017 respectively addressed the best practices in RDM, which have been adopted worldwide.(Kurzman *et al.*, 2018)

(Cox *et al.*, 2019)The result supports the RDS has future ambition and much evolution. The research data service development has explained as the extension of traditional library services to research data. The status of RDM service is still growing and developing that reflects the transformation of traditional to model form, it also reveals the representation of the role of academic libraries. The RDM service can be the benchmark role of academic libraries.

(Shrivastava and Gupta, 2018) The transformation of information from traditional to electronics has tremendous challenges to the library and librarian. The re3data.org has a unique platform

to register research data preservation with the whole world. It is a high opportunity for the researcher. They have specified tools and techniques to organized effective repository resources for the desired research. The study objective is to identify the research data management status in the country and people aware of the same. They have also identified research data preservation scenarios in the Indian repository system.

(Tripathi *et al.*, 2017) They have focused and the importance of research material. How data can be explored to reuse for the future. They suggested that the library can play an important role to produce the research data management system for the academic fraternity. Libraries should establish a tool at the university level that encourages the scholars and professors to deposit their raw data into institutional repositories developed by most university libraries.

(Tripathi, Shukla and Sonker, 2017) They have focused on the status of the Research data system in India. They had analyzed all 47 central universities in India and other premium institutes. Those who had scored the high-rank in-country. They also analyzed the 20 top universities in the world and found that they have an RDM system and institutional repository, they have also associated and collaborate their service with the peer universities. All have recommended a framework for the university libraries in the country to follow for actually implementing RDM services.

(Cox *et al.*, 2017) They articulated the study toward the developed countries about the Research data management service capabilities in higher education sector libraries. The result analysis that libraries provide leadership in RDM particularly in advocacy for the development of policy and guidelines. The advancement of data curing skills is undertaken in libraries, but skills and knowledge eventually happen. Such main obstacles include resourcing, collaborating with other support providers, and bringing academics and senior management to buy. The analyses can be used to determine patterns and relative maturity levels in relation to previous research. The model of RDM which reflects actual and scheduled research data and practice resources in institutional libraries and represents current trends and a framework for future research activities is included in the context of RDM activities discussed in this report.

(Koltay, 2017) Focused the research 2.0 found in literary analyses that reveals from country to local level. They found that a data-intensive feature requires helping of the research community with the academic libraries. The librarian must be take initiative to construct the research data services. The research raising demand the awareness of RDM should be mandated and this service has required more cooperation with peer universities leadership and research support units too.

(Elsayed, 2016) They have surveyed the practice and procedure of sharing research data services from the three Arab universities in Egypt, Jordan, and Saudi Arabia. They recommended suggestions for the basis of the survey result. The contribution of scientific data for the development and enhancement of citation work has the key factor of the motivation of research to share the data. The research work progress show from the citation work. The RDM creation has a big deal from the university to institutes, there are some challenges and shortcomings some of the technological challenges, and some of the policy guidelines. They also suggest that some of the barriers have a mutual understanding between the institutions and material factors.

(Tenopir *et al.*, 2013) They suggested who sponsors that acknowledged research would explain the dynamic interest in the same way. Survey findings show established states that data protection preparation, digital curation (select, store, hold and archive), and the development of and transfer of metadata require a great deal of consideration for safety and operation. In this early stage of large service growth, we announce the findings of an observational investigation on the RDS practice

of librarians in the U.S. and Canadian research Libraries, which offers a basis for involvement. This study explored the views of the questioned librarians as to how ready they are to deliver RDS (backgrounds, expertise, and employment), how important RDS is to their libraries and organizations, and what relates to the role of the RDS in librarians.

The Idea of RDM initiated:

In the 1980s the new concepts of data research sharing with external people had risky just because of the fear of theft or scooping data, but the situation becomes changed by the technological enhancement in the 1990s quoted as an example of the US Long-Term Ecological Research Network site had data sharing policies in 1993 it data catalog was publicity available for all that is called online catalog. it consisted only summary description of the data.(Delgado, Porter and Stern, 2010)

The situation and scenario have become changed from time to time and it can be a shift over the environment The growing stage of awareness of management and regeneration of data has become an essential part of the organization in March 2001, during the OECD Committee on Scientific and Technology Policy meeting, scientists from the Netherlands recommended that a working group on issues of access to digital forms of research data be established (Arzberger *et al.*, 2004). Simultaneously, funding agencies promoting development publicly report their findings. For grants over $500,000, the National Institutes of Health, for example, added a data management plan provision in 2003. (Borgman,2012). Furthermore, in 2015, the European Commission initiated the Open Research Data Pilot program, which aims to make scientific papers and research data from projects sponsored by the European Research Council under Horizon 2020 publicly available for reutilization(De Castro, 2015).

The technological boom has profound and promotes a culture of research data sharing. The technological enhancement makes a large number of the platform to make the bridge between the tools and us. All kind of data has been shared with many online tools. One example is the evolution of research data repositories of many types: institutional, single-discipline, and multidisciplinary. The worldwide most large comprehensive web registry of the data repository is called re3data.org. The re3data has a large repository system in the world there was 3712 repository have registered on the website.(*Browse by country | re3data.org*, 2021-03-15). There are many examples over there the data repository to share the data in respective dept with some policy and guidelines.

RDM tools

Re3data: re3data.org is an international repository of research data archives that includes repositories from a variety of academic disciplines. It provides scholars, research institutions, publishers, and academic institutions with repositories for long-term storage and access to data sets. Re3data.org encourages a sharing community, improved access to research data, and increased visibility of research data.

Research Data Domain Glossary: This segment of the CASRAI dictionary is an experiment to see whether a dedicated collection of words for the Research Data Domain is useful. Each word has a unique identifier (UUID) and a URL that can be used as references in documents to improve reading comprehension by connecting words to their definitions.

Adobe Bridge: It is free software for public access and UC members. It can be segregated the images according to our need.

Amazon Web services storage services: It has paid service and offers many kinds of storage. The cost depends upon the storage usage. The RDM consultation is required if we will be implemented on that.

bDrive: bDrive is a collaborative application framework that allows you to store files and collaborate with others. It's an enterprise version of Google Drive, which means it's used under the terms of a UC Regents-approved agreement. UC does not accept the vendor's requirement that we waive their liability, making bDrive more secure than your personal Google Drive.

Box: A cloud-based system that provides scholars can collaborate by storing and sharing papers, images, research materials, as well as other files. Box helps users to work on Microsoft Office documents at the same time.

DMP tool: The DMP tool is an online platform for making data management plans that includes step-by-step guidelines and guidance for meeting the criteria of specific funding agencies. The California Digital Library, along with seven other partner organizations, created the tool to provide in-depth instruction in reaction to federal financiers that need data management plans.

Figshare: Figshare is a cross-disciplinary database that allows users to make all of their research findings citable, accessible, and accessible. Figures, datasets, media, documents, posters, presentations, and file sets can all be transmitted using Figshare, which enables users to upload any file format to be rendered visualizable throughout the browser. Data cite DOIs are used by Figshare for long-term data reference.

Open science framework The Open Science Framework (OSF) is a free, open-source web application which links and facilitates the research process, allowing students to create their research more efficiently and successfully. Researchers use the OSF to co-operate on research projects, resources, and data, as well as record, archive, distribute, and record them.

XSEDE Bridges computing and storage**:** The Pittsburgh Supercomputer Center hosts the XSEDE national infrastructure facility. Aaron Culich is the XSEDE champion on campus (as of 2016). Via a competitive application process, XSEDE provides free computing and storage to eligible researchers.

XSEDE Storage Services**:** XSEDE is a collection of national facilities that scientists can use to share computational resources, data, and expertise in a collaborative manner. People all over the world use these resources and facilities to better our earth, such as supercomputers, data collections, and new tools. Several facilities for storing research data are available via the XSEDE tools.

Services offered and planned

The Indian academic libraries are more likely to offer online access to RDS services. The consultative services have frequently involved a client library in charge and often inform students, scholars, and faculty members about where to look for information on data management plans, metadata standards, and data citation practice. The traditional service mode has become change to new technological phenomena. The services are similar to the traditional reference and instructional services that libraries have long provided. Integration with others on making plans, project work, or training can also be included in consultative services.

5 Method of the Study

The study covers all the central universities of India as per UGC listed on the website. The study of these universities survey has been done and finds the status of the research data management system initiated by the libraries.

The survey highlights the influential practices among the university libraries focused on the following aspects:

- Whether the libraries are providing RDM services on their own or in collaboration with other parameters units of the universities.
- Whether library create their own the Institutional repository
- Identifying the primary components of RDM services.
- Whether the libraries have any written policy and guidelines about the RDM
- Do the libraries have initiated awareness campaigns and program to maintain the scientific data for researchers

Data collection and its interpretation:

Surveyed all the 54 central universities libraries of India with their library website. The hundred 100 questionnaires randomly administrated to all 54 central universities. The get back and filled questionnaire was 82. The status of research data management has to deploy the libraries under the collection organized and curate the data generated at the concerned department and laboratories. The UGC gives the guidelines and suggestions for the enhancement of the university system including a library. The policy and guidance of research data management are not also under the deploying stage.

It is also important to throw light on the other side; the many institutes in the private and govt sector have created and maintained the institutional repository/data repository. The 55 research institutes are created the same data listed from www.re3ddata.org. The website has updated and listed 2450 research data repositories over the humanities, social sciences, and sciences in India. The result also revealed that the awareness towards the research-creation has much spread over the country.

Research data management at central university libraries in India

Table: 1 Status of Research data management system in the central universities

Sl .No	Name of the university	Status of Research Data Management
	Tezpur university, Assam	Research data available with digitalizes in form
	University of Hyderabad, Hyderabad	Created digital library
	Maulana Azad National Urdu University Hyderabad	Created E–content Collaborated with NDL consortium
	English and Foreign Languages University Hyderabad,	Collaborated with NDL consortium
	Jamia Millia Islamia, New Delhi	Collaborated with NDL consortium
	University of Delhi, Delhi	In central science library has Using with National science laborites data base & created Bibliographic information on awarded thesis and dissertation
	South Asian University, New Delhi	Archive system available in close access.

	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Wardha	Research archives available
	Nagaland University, Kohima	Digital Repository
	Pondicherry University, Pondicherry	Digital Repository
	Aligarh Muslim University, Aligarh,	River Ganga Repository
	Banaras Hindu University, Varanasi	Research data archive in many form
	Visva Bharti, Shantiniketan	Digital archives
	Central University of Orissa, Koraput	Digital archives
	Central University of Karnataka, Gulbarga	Digital archives

The above table showed that only 15 universities have created the record data management system. Some of the universities have collaborated with the consortium, though central universities have enormous facilities they have to maintain their themselves. The table also reveals that many universities have created digital repositories instead of RDM. The repository has also important both are important for the enhancement of information. Ultimately the purpose of research data management to share the information and extent the knowledge and eliminate the duplication of work. In the end, it seeks to exchange information and resources and extend expertise to eliminate duplication of work.

Table :2 Status of Institutional repository in Central universities of India with establishment year

The above table showed that out of 54 central universities the 23 central universities has an institutional repository. The data shows that 50 % central university has created the institutional repository for safe research work for future prospects. The university above has already demonstrated that most old universities have done this work.

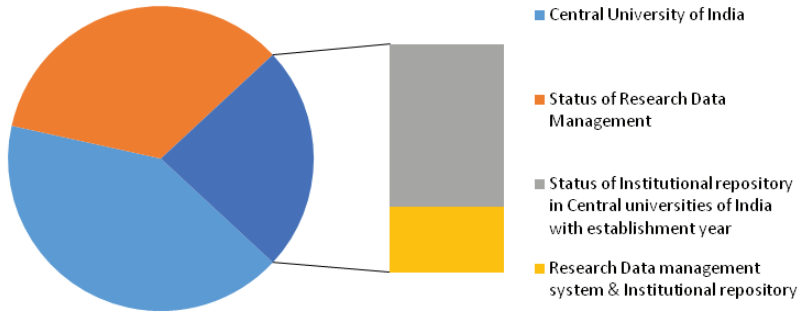
Table :4 List of those university who have research data management system and institutional repository both

Sl. No.	Name of the university	Research Data management system & Institutional repository
	Tezpur university, Assam	Service Available
	University of Delhi, Delhi	
	Nagaland University, Kohima	
	Pondicherry University, Pondicherry	
	Aligarh Muslim University, Aligarh,	
	Banaras Hindu University, Varanasi	
	Central University of Rajasthan, Ajmer	
	Central University of Orissa, Koraput	
	Central University of Karnataka, Gulbarga	

The table data shows that only 9 universities have provides the Research data management service in different forms. These universities have provided institutional repository and digital archives both. The nation's innovation development has directly involved the research work. The institutional repository and digital archive help to secure the research work from many domains

of duplication. It further shows the expertise of universities in working culture and works safety.

Graphical representation of RDM in central universities of India



7 Suggestions and Recommendations

It the primary theme that all the libraries and stakeholder must understand the significance of research data, their availability, retrieval for the usage of others. After the conduction of work kept and reported. Management must recognize the importance of data and contend financially to reserve and cure the study data strategy. The administration must understand the relevancy of data and give the financial concurrence for the preservation and curation of the research data plan. Libraries may take initiative to make a proposal to optimize RDM services but the deep realistic progress may only be optimized if the university administration makes the data policy with the collaboration of other universities at the national level and inculcate the budget for turning the execution of RDM.

- The libraries must be take lead in the curation of content work generated in universities. Usually, libraries preserve the data about the university's content heritage and cultural development.
- Libraries should collaborate with researchers, project work, investigation work, and computer division of the universities or higher from ICT skill person to achieve the desired result. The accessibility of data should be at ease from the computer.
- Libraries must be set ICT infrastructure to collect organize and disseminate the database set. Many universities have already created their institutional repository. The execution of RDS will extend the service of the Institutional repository. The libraries can make the profile of researchers and their staff in the databases system. The database should be accessed from various domains like log-in facility, update the research work, project report, etc.
- The libraries should make written documented policy for the RDM
- The researcher must be used on a unique ID ORCHID or make a renowned researcher id. So that the profoundly different them as researchers individually.
- The library and information sciences deal with a jack of all master of none and its reveal that curriculum of the library science and information sciences must be updated with

collaborating new technologies, some of the short training programs must be organized so that it can update the skill and technological enhancement.

- The capacity building needs more effort so that the new tools and technological development need to continuously update ourselves. The RDM required more skill and more technological sound people.
- The RDM initiative staff must be aware the tools like open refine, regular expressions web crawling open refine tools, reference management software metadata tools, etc.

8 Conclusion: The present study has concentrated on the significance of the research data and universities providing the service with which parameters to the researchers. The research analysis shows that Indian universities are very initial in the condition of execution of RDM services whereas other prominent institutes are gradually deployed the research data management system. The developing accessibility of RDM is in need of a research fraternity and the library should take initiative to develop. The research approach needs to require new skills and make research design to the user for the users.

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Appendix 1

Table 1: List of central universities of India with library website

Sl.No	Name of the university	Library website	Sl.No	Name of the university	Library website
	Rajiv Gandhi University, Itanagar	https://rgu.ac.in/library/	28.	Tripura University, Agartala	https://www.tripurauniv.ac.in/Home/CentralLibraryIndex
	Assam University, Silchar	http://libraryopac.aus.ac.in/	29	Aligarh Muslim University, Aligarh,	https://www.amu.ac.in/libraries/maulana–azad–library
	Tezpur university, Assam	http://www.tezu.ernet.in/Library/index.php	30	Babasaheb Bhimrao Ambedkar University, Lucknow	http://14.139.228.238/lib_stf
	Central University of Gujarat, Gandhinagar	http://14.139.122.35/drupal/	31	Banaras Hindu University, Varanasi	https://www.bhu.ac.in/lib/
	University of Hyderabad, Hyderabad	http://igmlnet.uohyd.ac.in:8000/	32	Central University of Jammu, Jammu	https://www.cujammu.ac.in//Default.aspx?option=article&type=single&id=35&mnuid=738&prvtyp=site
	Maulana Azad National Urdu University Hyderabad	https://manuu.edu.in/University/Centre/Library/Profile	33	Allahabad university, Allahabad	https://www.allduniv.ac.in/central–library/about
	English and Foreign Languages University Hyderabad,	https://www.efluniversity.ac.in/LibE–ShodhSindhu.php	34	Rajiv Gandhi National Aviation University, Raibarali	Rajiv Gandhi National Aviation University, Raibarali
	Jamia Millia Islamia, New Delhi	https://www.jmi.ac.in/studyatjamia/library	35.	Rani Lakshmi Bai Central Agricultural University, Jhansi	https://www.rlbcau.ac.in/#
	University of Delhi, Delhi	http://www.du.ac.in/ducc/index.php?page=du–library–system http://crl.du.ac.in/Doc.Bib/BIBLIOGRAPHY.htm	36.	Visva Bharti, Shantiniketan	http://14.139.211.2/library/index.php/about/our–team

	Jawaharlal Nehru University, New Delhi	http://lib.jnu.ac.in	37.	Hemwati Nandan Bahuguna Garhwal University, Srinagar	https://www.hnbgu.ac.in/library–srinagar–campus
	Indira Gandhi National Open University, New Delhi	https://libraryopac.ignou.ac.in/	38.	Central University of Tamil Nadu, Thiruvarur	https://cutn.ac.in/central–library/
	South Asian University, New Delhi	http://www.southasiaarchive.com	39.	Indian Maritime University, Chennai	http://imukochi.informaticsglobal.com/
	The Indira Gandhi National Tribal University, Amarkantak	http://www.igntu.ac.in/clib.aspx	40.	Central University of Rajasthan, Ajmer	http://14.139.244.219/library
	Dr. Harisingh Gour Vishwavidyalaya, Sagar	http://dhsgsu.ac.in/departmentdetails/110	41.	Central University of Punjab, Bathinda	http://www.cup.edu.in/library.php
	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Wardha	http://hindivishwa.org/contentdtl.aspx?category=13&cgid=34	42	Central University of Orissa, Koraput	https://cuo.ac.in/Facilities_Library.asp?pgid=6&subid=1
	Mizoram University, Aizwal	https://lib.mzu.edu.in/	43.	Central University of Kerala, Kerala	https://www.cukerala.ac.in/index.php?option=com_content&view=article&id=125&Itemid=273&lang=en
	North Eastern Hill University, NEHU Campus, Shillong	https://www.nehu.ac.in/library/index.html	44.	Central University of Karnataka, Gulbarga	http://cuklibrary.ac.in/index.html
	Manipur University, Imphal	https://www.manipuruniv.ac.in/p/library–blink–new–blink	45.	Central University of Jharkhand, Ranchi	Try next to get the data website is not working
	Central Agricultural University, Imphal	http://dhsgsu.ac.in/departmentdetails/110	46	Central University of Kashmir, Srinagar	https://www.cukashmir.ac.in/displaydepartment.aspx?sid=74&did=36&pag=494
	Nagaland University, Kohima	https://library.nagalanduniversity.ac.in/	47.	Central University of Himachal Pradesh, Kangra	http://www.cuhimachal.ac.in/library.aspx
	Pondicherry University, Pondicherry	http://lib.pondiuni.edu.in/	48.	Central University of Haryana, Mahendergarh	library2dotblog.wordpress.com
	Sikkim University, Gangtok	https://library.cus.ac.in/	49.	Guru Ghasidas Vishwavidyalaya, Bilaspur	http://www.ggu.ac.in/central_library.html
	Nalanda University, Rajgir	https://nalandauniv.edu.in/library/digital–library/	50	Central University of Bihar, Patna	https://www.cusb.ac.in/index.
	Mahatma Gandhi Central University, East Champaran	http://www.mgcub.ac.in/library.php	51	The Central Sanskrit University, Janakpuri, New Delhi	http://www.sanskrit.nic.in/section_library.php
25	Shri Lal Bahadur Shastri National Sanskrit University, Katwaria Sarai, New Delhi	No library such details With collaborate NDL	52	National Sports University,Koutruk, Manipur	

26	Dr.Rajendra Prasad Central Agricultural University,Pusa, Samastipur – 848 125, Bihar, India	https://www.rpcau.ac.in/university–library/	53	The National Sanskrit University, Tirupati	http://nsktu.ac.in/index.php/resources–subscribed/
27	Central University of Andhra Pradesh, Anantapuram	https://cuap.ac.in/library.html	54	Central Tribal University of Andhra Pradesh, Vijayanagarm	No information available

INFORMATION NEED AND INFORMATION SEEKING BEHAVIOUR: A REVIEW OF THE LITERATURE

Purvisha J Patel Dr. Nimesh D Oza[1]

Introduction

Information is power. It is a vital source for human beings for living a prosperous life on the earth. Information is all around and is utilized in all walks of life right from purchasing a pin to writing a research article by the human beings irrespective of caste, creed, and gender, rich, poor, educated and uneducated. Thus the information helps against social imbalance. It is the supreme assets than all other movable and immovable assets that the people hold on earth. In the contemporary world, people are valued as rich and poor, not because of their assets but they are valued as information-rich and information poor. The information rich people are those who are highly skilled in identifying their information needs and apply seeking behaviors so as to access the information from both online and traditional resources successfully and satisfying their information needs. The information poor people are lacking in their skills in getting their information needs to be satisfied.

Information

The word “information” was apparently derived from the Latin stem of the nominative informatio, this noun is in its turn derived from the verb "informare". When the raw data is processed or value is added to it, data becomes information. Shannon and Weaver (1949) defined “Information as any stimulus that reduces uncertainty”. Line (1974) defined that information need is what an individual ought to have for his work, his research, his edification, his creation etc. Ford (1980) defined “information as the structure of any text which is capable of changing the image structure of recipient”. Webster’s International Dictionary (1994) defines “Information” as

a) Facts or figures ready for communication or use as distinguished from incorporated in a formally organized branch of knowledge.

b) The process by which the form of an object of knowledge is impressed upon the apprehending mind so as to bring about the state of knowing.

2. Information Seeking

Tom Wilson has said that information seeking is “the purposive seeking for information as a consequence of a need to satisfy some goal” (1999b).

Likewise and Zerbinos (1990) said that “information seeking take place when a person has knowledge stored in long term memory that precipitates an interest in related information as well as the motivation to acquire it. It can also place when a person recognizes a gap in their knowledge that may motivate that person to acquire new information.

Grey Marchionini (1995) defined *as “information seeking is a process in which human purposefully engage in order to change their state of knowledge.”*

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According to **Ford (2004)**, the system-centered approach focuses on information seeking that is related to information channels and sources of information.

Information Seeking Behaviour

According to **Johnson (1997)**, information seeking can be described as "the purposive acquisition of information from selected information carriers". **Grey Machionini (1995)** provided a more specific definition: "A process, in which humans purposefully engage in order to change their state of knowledge".

Tom Wilson (1999b) defines the information behaviour as "the totality of human behaviour in relation to sources and channels of information seeking and information use. Thus, it includes face-to-face communication with others, as well as the passive reception of information as in, for example, watching television advertisements, without any intention to act on the information gives (1999b).

Krikelas (1983) defined information seeking behaviour as any activity of an individual that is undertaken to identify a message that satisfies a perceived need.

According to **Kuhlthau (1991),** these theories "suggest a series of stages with changes in feelings, as shown in the phases of construction; changes in thoughts, as shown in levels of information need and levels of specificity; as well as changes in expression and mood".

Information need and information seeking behavior

The terms *information, information need and information seeking behavior* are all used in different ways. Within the context of user studies, *information* has been used "to denote factual data or advice or opinion, a physical object, such as a book or journal, or the channel through which a message is conveyed, for example, oral or written communication" (Rohde, 1986, p. 50-51). Within library and information science, *information* has been defined as "any stimulus that reduces uncertainty" (Krikelas, 1983, p.6).

The term *information need* has also been used in a variety of ways. *Information need* is a subjective, relative concept only in the mind of the experiencing individual (Wilson and Streatfield, 1981). It has been defined as the "recognition of the existence of uncertainty" (Krikelas, 1983, p.6)

Anwar (2007) has critically analyzed the beginning of research activity on information needs and presented an analysis of the literature on information needs and seeking behavior in Pakistan. He reviewed 14 student-research projects produced from 1975 to 1982 at the University of the Punjab, which have remained unpublished. He also concluded that there is a dire need for the LIS academics and practitioners in Pakistan.

Anjum (1978) probed the information needs of the humanities faculty members of University of the Punjab, Lahore using a questionnaire supplemented by selected interviews. Major findings of the study pointed out that humanist scholars were less interested in informal sources of information.

Aims and objectives

The aim of the paper is to examine and recommend meta-synthesis methodologies that researchers in information behaviour might use. The term methodology is used as the social science research strategies that have been adopted are important in determining how the results of

research studies may be synthesized. In the paper, an existing meta-synthesis is discussed, to only models of information seeking behaviour

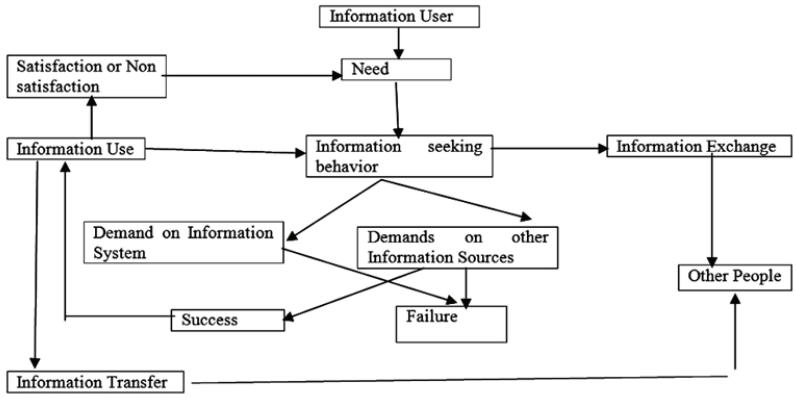
Accordingly, the objectives of the paper are to: 1) identify and examine the theoretical research strategies commonly used in information behaviour research; 2) discuss meta-synthesis methods that might be appropriate to the type of research studies normally encountered in information behaviour research; and 3) propose some useful meta-synthesis methods for information behaviour research.

Model of Information Seeking Behaviour

Most of the information seeking behaviour models are of variety: they are statements that attempt to describe an information-seeking activity, the causes and consequences of that activity, or the relationships among stages in information-seeking behaviour. Very few models do search advance to the stage of specifying relationships among theoretical propositions, rather, they are at a pre-theoretical stage, but may suggest relationships that might be fruitful to explore or test. Models of information behaviour, however, appear to be fewer than those devoted to information-seeking behaviour or information searching. The models have been discussed one by one.

Wilson's (1981) Model of Information Behaviour

The aim of Wilson's 1981 model shown in figure 1 is to outline the various areas covered by what he proposed as 'information-seeking behaviour' as an alternative to 'information needs'.



Wilson suggests that information-seeking behaviour arises due to the need perceived by an information user in different stages or sequences. In order to satisfy that need, user makes demands upon formal or informal information sources or services. These demands for information result in success or failure to find relevant information. If the result becomes

successful, the individual then makes use of the information found and may either fully or partially satisfy the perceived need or indeed. The model also highlights that part of theinformation-seeking behaviour may involve other people through information exchange and that information perceived as useful may be passed to other people, as well as being used or instead of being used by the person himself or herself.

Wilson's (1996) Model of Information Behaviour

Wilson made another model which is revision to his 1981 model of information behaviour. In this model shown in figure 2, various cycles of information activities occur, arise from the information need to the phase when information is being used (information processing and use). The primary structure of Wilson's 1996 model is based on his first one. Here the 'intervening variables' that fall under third group in the picture show how the information seeking barriers evolve during the needs of information. These are psychological, demographic, role-related or interpersonal, environmental and source characteristics. The 1996 model now also identifies 'information-seeking behaviour' (the fifth group of concepts in the figure), namely passive attention, passive search, active search and on-going search.

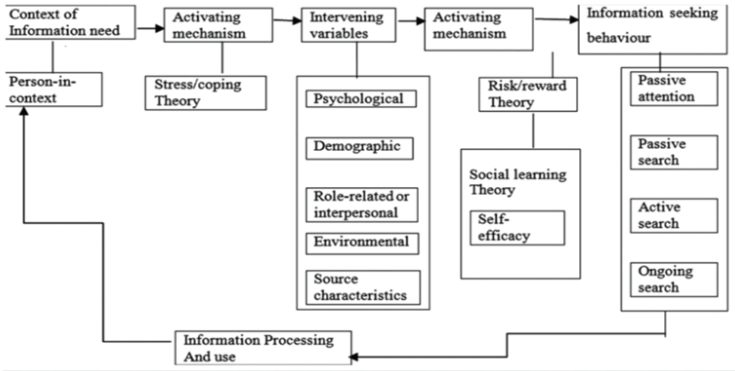


Fig.2: ***Wilson's (1996) model of information behaviour of information behaviour***

The main principle in this revised model is that if information needs are to be satisfied, 'information processing and use' becomes an essential part of the feedback loop shown at the bottom of the model. The 1996 model also presents four relevant criteria as information seeking behaviour to explain users' behaviour. In the second and fourth group of concepts in figure 2.3 these mechanisms are represented as and the stress/coping, risk/reward, social learning theory and 'self-efficacy'. The activating mechanisms are psychological factors which are explained by these different theories and which prompt the user to proceed with the information seeking process.

Dervin's Model (1983)

Dervin's sense-making theory has developed over a number of years, and can not be seen simply as a model of information-seeking behavior. She indicates this theory as a set of assumptions, a theoretic perspective, a methodological approach, a set of research methods, and a practice designed to cope with information perceived as a human tool designed for making sense of a reality assumed to be both chaotic and orderly. However, sense-making is implemented in terms of four constituent elements - a situation in which information problems arise; a gap, which identifies the difference between the contextual situation and the desired situation an outcome, that is, the consequences of the sense-making process, and a bridge, that is, some means of closing the gap between situation and outcome. To bridge this gap, individuals seek information to make new sense and use this information to help them in everyday life. The outcome represents the use of information to complete a task. This makes the sense-making experience a holistic experience

Situation Gap. Dervin presents these elements in terms of a triangle factors: situation, gap/bridge, and outcome, which is represented by figure 3

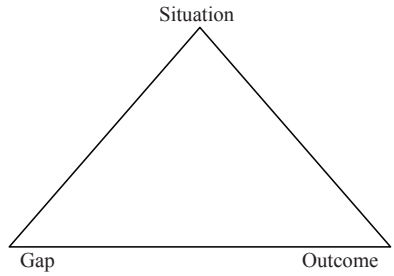
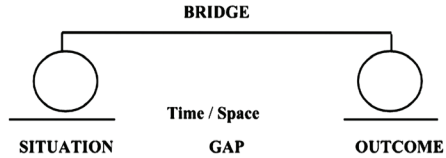


Fig.3*: Dervin's 'sense-making' triangle*

However, it may be preferable to use the bridge metaphor more directly and present the model in Fig.4 as below. The central activities of sense-making are information-seeking, processing, creating and using. By using the Sense-making approach to study users' information behaviour, researchers are able to discover people's strategies, expectations, attitudes, and anxieties within their lives and work situations(Solomon 1997).



Sense-making provides a theoretic perspective on information needs, but it is also a methodological approach that could be used to study information usage behaviour.

Ellis (1989) and Ellis Cox and Hall (1993) Model

Ellis (1998) proposes and involved a model of information seeking behaviors based on studies of the information seeking patterns of social scientist, research physicists and chemists, and engineers and research scientist in an industrial firm. . In this model, the decision of whether the information found is enough to fulfill a user's needs is dependent upon chasing and evaluating references as well as systemically identifying content hat is area of interest to user. He focused the information-seeking activities, rather than the nature of the problems or criteria used for determining when to stop the information search process.

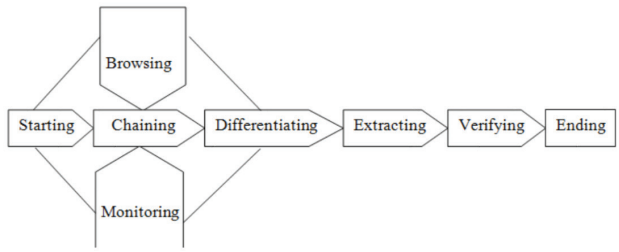


Fig. 6 Ellis's behavioral Model

Ellis categories of information seeking Behaviour

Ellis describes six categories of information seeking activities:

Starting: comprise those activities that form the primary search for information identifying sources of interest that could serve as starting points of the search.

Chaining: can be backward or forward. Backward chaining takes place when references from primary sources are followed, and is well established routine of information seeking among scientists and researchers. In other hand, forward chaining followed other sources that refer to primary sources or document.

Browsing: is the activity of semi-structured searching in areas of potential search. The individual often simplifies browsing by looking through tables of contents, list of titles, subject headings, names of person's abstracts and summaries and so on.

Differentiating: the individual filters and selects from among the sources scanned by noticing differences between the nature and quality of the information offered. The differentiation process is likely to depend on the individual's past or initial experience with the information sources.

Monitoring is the activity of keeping current of developments in an area by regularly information sources. The individual monitors by focused on a small number of what are perceived to be core sources. Receiving site updates through push technology, SDI profiles, CAS etc

Extracting is the activity of systematically working through a particular source of information. Extracting may be achieved by consulting the different information sources, retrospective searching and used bibliographies, indexes, or online databases.

Verifying: where the accuracy of the information is checked

Ending: this typing up the conclusion of the information seeking process

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AUTHOR INDEX

Abubakar Ladan	185	Kala Baskar N	463
Abubakar Mohammed	79	Kaliyaperumal K	387
Adhilakshmi C	203	Kanyarat Kwiecien	295,359
Alagu A	241	Kathleen Burnett	1
Aman Verma	425	Katrin Setio	443
Anil Kumar	325	Kazuko Maekawa	67
Bagavathi A	99	Kippeum Choi	249
Balwan Singh	381	Kiruthika D	451
Baskar K	263	Komal Kirad	479
Baskaran C	157	Kulthida Tuamsu	359
Chellappandi P	229	Kumar Rajendran	331
Chutima Sacchanand	25	Kutyamukama Gitta Alice	79
Deepalakshmi R	165	Lakshmi Y	157
Devi Laksmi	443	Laksmi	305
Dinesh Kumari	381,395	Lily Srivastava	175
Dong-Geun Oh	365	Louies S	387
Eungi Kim	365	Madhu Midha	235
Ganesan P	71,207	Mahender Pratap Singh	41,409,479
Ganesh P	143,189	Mallawaarachchi C	351
Gani Nur Pramudyo	305	Mangai G	207
Gary Burnett	1	Margam Madhusudhan	311
Hamid R Jamali	21	Miyuki Yamada	67
Hemavathy C	203	Muniyasamy M	401
Hepzibah Beulah	169	Nagaiah M	241
Holly Randell-Moon	21	Nagajyothi H K	71
Hyo-Jung Oh	135,249	Nazia Saluddin	487
Isha Arya	41	Neelam Malik	395
Jagtar Singh	339	Nidhi	311
Jane Garner	21	Nimesh D Oza	501
Jaturong Chitiyaphol	295	Philip Hider	21
Jeong Ho Na	135	Prarthana Borthakur	95
Jessie Lymn	21	Pratibha Prajapati	409
Jeyshankar R	115,147,195,401	Purvisha J Patel	501
Jin Sol Lim	135	Ragitha Radhakrishnan	331
Jisuk Yeo	365	Rajendran P	215,223
Juli Devi	373	Rajyavardhanan R	417
Jutatip Chanlun	299	Ramesh Babu B	11

Ramya V	271
Rashmi Parekh	433
Sakthivel P	457
Sarah Kaddu	79
Saravanan R	277
Seema Parmar	381,395
Senthilkumar A	255
Seungmin Lee	127
Shamsuddeen Aliyu Sada	185
Shantha G	229
Shraddha Dixit	37
Shreyashi Srivastava	175
Shyam Sundar	451
Simon Wakeling	21
Singh K P	373
Singh M P	37
Siva N	143,189,215,223
Sivagami M	115,195
Sivakumar B	277
Siwanath Nanthapichai	359
Sridevi Baskar	157
Sumathi T	401
Sunil	325
Suresh N	417
Sutthinan Chuenchom	295
Suwannee Hoaihongthong	295
Tajun Sabina	147
Tarvinder Singh	339
Thanuskodi S	241
Thomas Mandl	283
Tsutomu Shihota,	67
Veeranjaneyulu K	85
Vivekanandan S	143,189,215,223
Yazdan Mansourian	21
Yoona Kang	249
Zensei Oshiro	51,67

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