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Use of Digital Reading Devices by Library Users during Covid-19 Pandemic: A Survey of Central University Libraries Users of Assam

***Ms. Puja Paul, **Sri Rajesh Rangappa Aldarthi, ***Prof. Manoj Kumar Sinha**

Author's Affiliation:
*Research Scholar, Department of Library and Information Science, Assam University, Silchar, Assam 788011, India
E-mail: paulpuja9993@gmail.com,
**Assistant Professor, Department of Library and Information Science, Assam University, Silchar, Assam 788011, India
E-mail: rajesh.aldarthi@gmail.com
**Prof. and Dean, SVSLSc, and Former Head, Department of Library and Information Science, Assam University, Silchar, Assam 788011, India
E-mail: mksinha1965@gmail.com

Corresponding Author: Prof. Manoj Kumar Sinha, Prof. and Dean, SVSLSc, and Former Head,Department of Library and Information Science, Assam University, Silchar, Assam, India-788011
E-mail:mksinha1965@gmail.com

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ABSTRACT

Authors attempt to find the use and awareness of Digital Reading Devices (DRD's), impact of DRD on library usage; Usefulness of DRD's during covid-19 pandemic situation. The paper explaining the meaning and definition of term 'DRD' elaborates on effectiveness of DRD during covid-19 pandemic period. Study adopted survey methods involving two central university libraries of Assam (Assam University Silchar and Tezpur University). Samples are dawn for all library user categories for UG and PG students; Research Scholars; Faculty and Staff members. With equal sample (154) representation from both universities, in total 308 responses were collected and analysed using SPSS package. Cross tabulation is used data analysis and graphical representations of individual universities are provided. Result of study indicated that libraries have provided more digital information services and shifted toward offering digital contents and services to their respective user. All categories have positive approach and views toward benefits of using DRD during Covid-19 Pandemic period.

KEYWORDS: *Library User; User Study; Library and Information Science; Digital Reading Device; Covid-19; Pandemic*

INTRODUCTION

Reading is the basic foundation for the academic skills of an individual. It helps overall development and provides steps to excel in every sphere. Even our education system acknowledges that reading is essential and should be prioritized from the initial stages of

study. Unfortunately, reading is mainly misunderstood with reading textbooks, but not confined to reading for educational purposes; only, no doubt that reading is a priceless activity, but its importance is deteriorating rapidly. One of the most prominent causes is the technology boom, owing to which we spend most of our time in front of the television, computer screen, or mobile.

For Librarians, promoting reading and developing lifelong reading habits have always been similar to developing information literacy through their integrated academic library programs. They are creating extensive collections of quality literature (books and novels) and rich information books, all supporting the academic curriculum and resources to support positive reading habits. Computerization and the pervasive infiltration of the internet have dramatically altered all librarians' work areas. The university library community has fully engaged in managing technologies:automating library collections; providing references online; providing access to databases and electronic materials; building a significant virtual presence through university library websites; archives of student work; collecting bookmarks of thematic resources. However, the traditional areas of promoting reading and providing readers' advice have often remained static and bound by face-to-face methods such as conducting book talks, building in-library displays; and bulletin board displays. In addition, a growing body of research on home and family influences children's motivations for reading. (Doiron & Shapiro, 2007; Doiron, 2003; Baker, 2003; Baker, Scher & Mackler, 1997), As well as evidence that by improving students' access to reading materials and opportunities to interact with peers about their reading, teachers can do a better job of helping all readers become skillful, motivated readers (Dreher, 2003). Since technology occupies more and more students' time out of the classroom, it would seem essential to explore how these two areas might unite to explore how new technologies such as e-books and e-readers support motivating students to read.

Many academic libraries have embraced the use of DRD to promote reading, keep up with client demands and address the specific needs of readers. Academic libraries led the way by adopting digital access to professional and academic articles and full-text e-books. University libraries have been slow to respond to the pressure for an e-reading component in their programs. Evidence is growing that more and more university libraries are field-testing the use of services where students, research scholars, teachers, and staff can access digital content. Some add DRD to their collections and allow users to borrow the DRD and the books loaded on their hard drives. DRD presented librarians with severe challenges in accepting their roles, meeting these new demands for digital books for users, managing, circulating, and building these collections given their costs, the latest technical skills they demand, and various issues around digital rights management (DRM). Current professional literature and examples from university libraries show that this dissertation synopsis explores building digital collections and using DRD in university libraries and the challenges facing libraries in creating an e-reading component in university library programs.

REVIEW OF LITERATURE

Many portable e-Books in various shapes, sizes, and prices are available on the market. Unfortunately, they have little or no interoperability, i.e., e-Books designed and published for a specific reading device are unsupportive on another device. Some involve attaching the reader to the computer and loading proprietary software, purchasing and downloading titles from the company's library on the internet. Others allow one to connect directly to their library through telephone lines; others still develop satellite download capability. Nevertheless, the market potential for these e-readers is that consumers would pay as they download titles to read. On the other hand, there are some apparent advantages gained with this type of technology, namely: the ability to search text, the ability to change font size and style; the ability to carry many books at any time; and the ability to purchase titles on the Internet 24 hours a day.

Definition of Digital Reading Device

Any research must define the significant terminology for better understanding the concept and limiting the study's scope. Hence, the researcher has attempted to define "Digital Reading Devices" based on literature review, document research, and classroom learning. Defining the term will avoid confusion created by various meanings like homonyms and synonyms.

Digital Reading Device is "any portable electronic device used for reading a digital document." The device may be called irrespective of supporting particular hardware or software. Examples of DRD are Amazon Kindle (and its variants), Nook Reader, Smart Mobile Phones; Tablets; Portable Laptops, etc.

The new word in the publishing industry is not a word but a letter "e," as seen in electronic books or eBooks. eBooks are revolutionizing the publishing industry through the rapid proliferation of digital reading material in the marketplace. E-Books have been the most crucial development in literature since the Gutenberg press and are destined to change many reading habits over the next several years. More and more traditional book publishers and those catering to the professional and business communities see the potential of digital publications. They are working to ensure that they enjoy a share in the market's growth. In 1999 over 9 million information products were sold over the internet and accounted for over 20 percent of all Internet sales. However, the current usage of e-Books is tiny considering the potential market. Jupiter Research forecasts 1.9 million users of eBooks by 2005 (Flash, 2000). IDC predicts that the market in the USA alone will mushroom from US$9 million in 2000 to US$414 million in 2004 (Bartlett, 2000). Forrester Research estimated revenue from digitized book publishing at US$7.8 billion in 2005, up from US$838 million for the year 2000 (Butterfield, 2000).

Libraries provide a mechanism for storing, preserving, and sharing documentary records of various types of human endeavors. The types of information it contains, and the multiple media used to keep this information influence the properties of a library. As information is a commodity, individuals use this resource to build sophisticated knowledge structures in their heads. In the past, a wide range of paper-based products was used to provide access to information. New information handling technologies have significantly influenced conventional paper-based libraries' fundamental nature. It has created a need for a new type of library system as polymedia, electronic, digital, and virtual libraries (Barker, 1996). The popularity of eBooks has grown since their inception in the early 1980s due to their usefulness in distributing large volumes of interactive multimedia information. Barker (1992) has reported the fundamental nature of eBooks, the philosophy underlying their use, a primary taxonomy, and a description of various techniques involved in their design and fabrication. There is an increasing interest in using e-books and other forms of online documentation to disseminate information and provide global access to it. It can be achieved through portable access stations such as notebooks and palmtop computers. With time, a comprehensive media strategy allows information to be moved from one medium to another as the needs of its users change (Barker, 1998). Landoni et al. (1993) reported two innovative forms of eBooks, hyper-books, and visual books, based on the book metaphor and the environments in which such eBooks are produced. Hyper-books maintain many of the paper books' features and allows text access in a non-linear way following the hypertext philosophy. Visual books represent a particular interpretation of the eBook, based mainly on the visual aspects of the actual book; its physical features as dimensions, thickness and page form, and general design style. The role of metaphors in producing e-Books, the main difficulties when implementing the visual book viewer, and guidelines for producing good eBooks and electronic publications, in general, have been reported. The procedures include: page metaphor should be respected; logical structure of the book has to be considered; book template has to be used strictly to present book-related information; titles, pagination, and typographical aspects have to be designed; and

visual clues have to be adopted (Landoni & Gibb, 2000; Landoni et al., 2000).

The future of electronic publishing will be in the form of files one can download, view, and print out from the computer or reading device one already owns (Ditlea, 2000). The challenge for libraries is integrating this new format of texts into the traditional library service model. Various opportunities exist to enhance library clientele's service by combining electronic texts and reading devices (Ormes, 2000; Rippel, 2001). Examples include Stock selection models. The eBook environment provides the library with the potential to provide its readers with instant access. In developing an eBook collection, the libraries move to a just-in-time model rather than the just-in-case model –

The Circulation of eBook readers
Circulating pre-loaded eBook readers may be a short-term solution to integrate eBooks into the library. Until e-books adopt a common content format such as the Open eBook Standard, librarians may need to embrace all eBook formats (Tennant, 2000).

Circulation of eBooks
As eBooks are electronic files, library users can download them directly from the library's catalogue or via the library's Web site without visiting the service point. The integration of eBooks into circulation systems is managed as follows:

Existing systems suppliers will develop new modules for current library management systems that allow the integration of eBooks into the acquisition and circulation process; and organizations that specialize in supplying eBooks will manage the administration (record management of texts, provide MARC records for OPAC and authentication to access) of the eBooks on the library's behalf. The actual eBook files will be managed and maintained on this organization's server. Net-Library is already offering this service. The cost structure of eBooks. An eBook in a library can be circulated or distributed to an infinite number of readers simultaneously, without wear or loss. However, it deprives the publishers and authors of their fair compensation. "A system to be devised whereby the library purchases the number of copies needed and circulates each according to procedures agreed upon by the publisher and the library and effectuated by technology" (Barnard, 1999).

STATEMENT OF THE PROBLEM

In the above sections, an attempt has been made to discuss the brief account of Digital Reading Devices and their probable impact on library usage. It is also vital to examine whether these libraries have the suitability of their ICT infrastructure structure and framework to adopt the new changes and challenges. It is also necessary to investigate how library users and professionals are prepared for these fast-changing events and information challenges. Hence, research under the topic entitled "*Use of Digital Reading Devices by Library Users during Covid-19 Pandemic: A Survey of University Library Users of Assam* "will be undertaken to study the research problems for M.Phil. Dissertation Work of the first author.

OBJECTIVES OF THE STUDY

The main objectives of the study are:

1. To examine the level of awareness of Digital Reading Devices (DRD) among the Central University Library Users of Assam;
2. To identify various Digital Reading Devices (DRD) used by students, research scholars, faculty, and staff of Central University Libraries in Assam;
3. To find out the level of usage of Digital Reading Devices (DRD) among the Central University Library Users of Assam.

METHODOLOGY

The study has adopted a combined methodology of theory and fieldwork to examine the Use and Impact of Digital Reading Devices (DRD) on library Usage. In this context, an exhaustive survey of the literature was conducted.Several databases have been searched, like ERIC, LISA, International Dissertations Abstracts, etc., to get the published documents. Based on the literature review, a structured questionnaire had been designed to collect data from the target Library User of the

Central University Libraries of Assam, including PG and UG Students, Research Scholars, Faculty, and Staff members. Based on the data collected constituting representative samples of each category representing a minimum of 25 members. Discussions held with the guide, professionals, experts, and fellow researchers to get a clear picture of the concept and the related aspects. The data collected from the questionnaire analysed to test the hypothesis framed and to fulfil the stated objectives. For this purpose, the SPSS software package used for the statistical analysis techniques such as frequency distribution, percentage analysis, and cross tabulation; chi-square test; and other appropriate statistical methods deemed suitable for fulfilling the stated objectives of the study, depending on the data collected from the respondents. A total of 154 responses were received from each university, accounting to a total of 308 valid responses.

Duly collected data was analysed and summarized in tabular and graphical form, and the same will be interpreted following the study's objectives for reporting the findings. Finally, based on the result of the survey, appropriate suggestions have been made for better adoption of DRD in libraries.

SCOPE AND LIMITATIONS OF THE STUDY

A random sampling technique will be adopted to select the sample, so research may have certain constraints in representing a full view of the study's objectives.

Research's expertise on the topic (Digital Reading Devices and Its Impact on Library Usage) is confined to document study and classroom learning, so there may be limitations in understanding the concept, framing definitions, and describing the terminology used in the study.

The study requires a considerable time investment in conducting a literature review, sample selection; data collection; data analysis, and drafting the Dissertation, which needs to be completed within one semester. Hence, the Dissertation may not report the intended results to contain some errors.

Conducting research is an expensive task, which includes a variety of expenses like: (i) purchase of documents resources; (ii) photocopying available resources from the library; (iii) printing and reprinting of draft synopsis; (iv) questionnaires and dissertation copies; (v) binding; (vi) purchase of stationeries items; (vii) travelling expenses etc., Since the researcher is a non-earning student dependent on parents/guardians in all financial matters, it may not be possible to spend the research lucratively.

DATA ANALYSIS AND INTERPRETATION

User Category -Wise Awareness of Digital Reading Device

Table 1: User Category wise Awareness of Digital Reading Device

		Awareness of Digital Reading Device						Total	
		Yes		No		Maybe			
User Library Category	**UG Student**	46	71.9%	7	10.9%	11	17.2%	64	100%
	PG Student	39	70.9%	5	9.1%	11	20%	55	100%
	Research Scholar	47	64.4%	6	8.2%	20	27.4%	73	100%
	Faculty	40	66.7%	9	15%	11	18.3%	60	100%
	Staff	40	71.4%	5	8.9%	11	19.6%	56	100%
	Total	212	68.8%	32	10.4%	64	20.8%	308	100%

Table 1: describes "User Category wise Awareness of Digital Reading Device" for UG Students; PG Students; Research Scholars; Faculty and Staff Members of Library. Majority of respondents 71.9% (46) form UG; 70.9% (39) form PG; 64.4% (47); and 66.7% (40) from faculty and staff categories said 'Yes', indicating that they are aware of Digital Reading Devices (DRD). While 17.2% (11)-UG; 20% (11)-PG; 27.4% (20)-Research Scholars; 18.3% (11)-faculty; and 19.6% (11) – staff members said 'maybe'. Only 10.9% (7); 9.1% (5); 8.2% (6); 15% (9); and 8.9% (5) marked 'no' values from options yes; maybe; and no respectively.

In total 68.8% (212) respondents have agreed to be aware of DRD's, while 20.8% (64) said maybe and only 10.4% (34) said no out of 308 respondents under study.

Chi-Square Test of User Category -Wise Awareness of Digital Reading Device

Table 2: Chi-Square Test of User Category wise Awareness of Digital Reading Device

Chi-Square Tests				
Name of University		**Value**	**df**	**Asymptotic Significance (2-sided)**
Assam University Silchar	Pearson Chi-Square	5.750[b]	8	0.675
	Likelihood Ratio	6.063	8	0.64
	Linear-by-Linear Association	0.698	1	0.403
	N of Valid Cases	154		
Tezpur University	Pearson Chi-Square	8.550[c]	8	0.382
	Likelihood Ratio	8.604	8	0.377
	Linear-by-Linear Association	0.324	1	0.57
	N of Valid Cases	154		
Total	Pearson Chi-Square	4.367[a]	8	0.823
	Likelihood Ratio	4.147	8	0.844
	Linear-by-Linear Association	0.082	1	0.774
	N of Valid Cases	308		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.71.				
b. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 2.70.				
c. 7 cells (46.7%) have expected count less than 5. The minimum expected count is 2.81.				

Table 2: provides details of "Chi-Square Test of User Category-Wise Awareness of Digital Reading Device". Pearson Chi-Square test values are estimated to be 0.675, which is higher than >0.05 significance level. Elaborating that User Category does not have any effect on Awareness of Digital Reading Device in both universities under study.

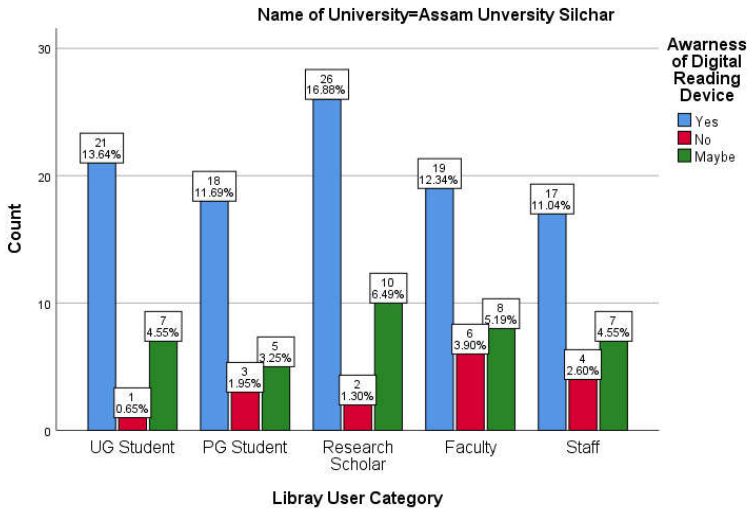

Figure 1: User Category wise Awareness of Digital Reading Device of Assam University Silchar

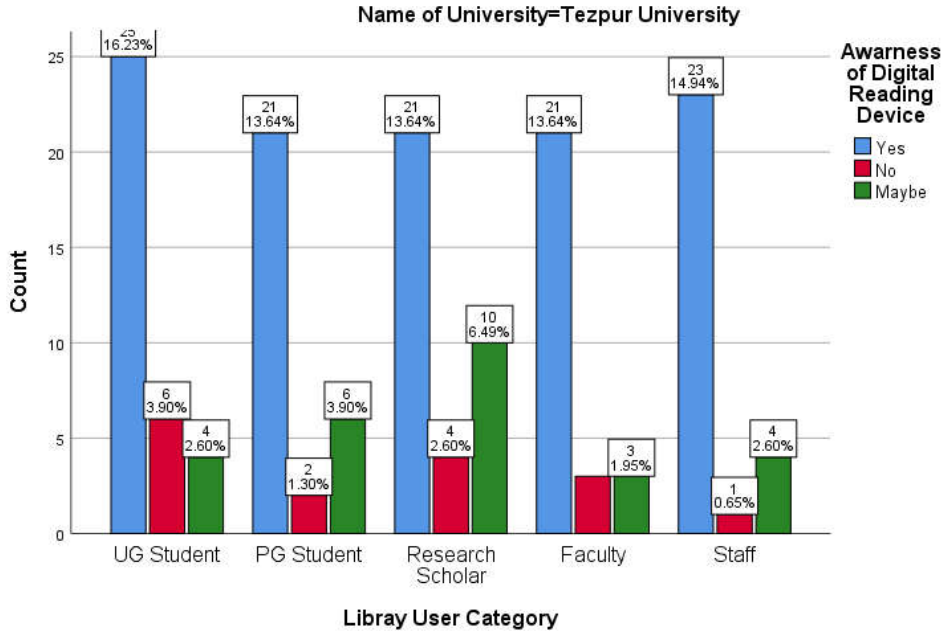

Figure 2: User Category wise Awareness of Digital Reading Device of Tezpur University

Figure1 and 2 provides graphical representation of awareness level among respondents about DRD in Assam University Silchar and Tezpur University individually.

Digital Information Service offered

Table 3: Digital Information Service offered

		Digital Information Service			Total
		Yes	**No**	**Maybe**	
Library User Category	**UG Student**	34	3	27	64
		53.10%	4.70%	42.20%	100.00%
	PG Student	36	1	18	55
		65.50%	1.80%	32.70%	100.00%
	Research Scholar	43	2	28	73
		58.90%	2.70%	38.40%	100.00%
	Faculty	33	6	21	60
		55.00%	10.00%	35.00%	100.00%
	Staff	29	3	24	56
		51.80%	5.40%	42.90%	100.00%
Total		175	15	118	308
		56.80%	4.90%	38.30%	100.00%

Table 4: Chi-Square Test of Digital Information Service

Chi-Square Tests				
Name of University		**Value**	**df**	**Asymptotic Significance (2-sided)**
Assam University Silchar	Pearson Chi-Square	11.946[b]	8	.154
	Likelihood Ratio	13.731	8	.089
	Linear-by-Linear Association	1.931	1	.165
	N of Valid Cases	154		
Tezpur University	Pearson Chi-Square	8.212[c]	8	.413
	Likelihood Ratio	10.178	8	.253
	Linear-by-Linear Association	.886	1	.346
	N of Valid Cases	154		
Total	Pearson Chi-Square	7.394[a]	8	.495
	Likelihood Ratio	7.079	8	.528
	Linear-by-Linear Association	.116	1	.733
	N of Valid Cases	308		
a. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 2.68.				
b. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 1.52.				
c. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 1.05.				

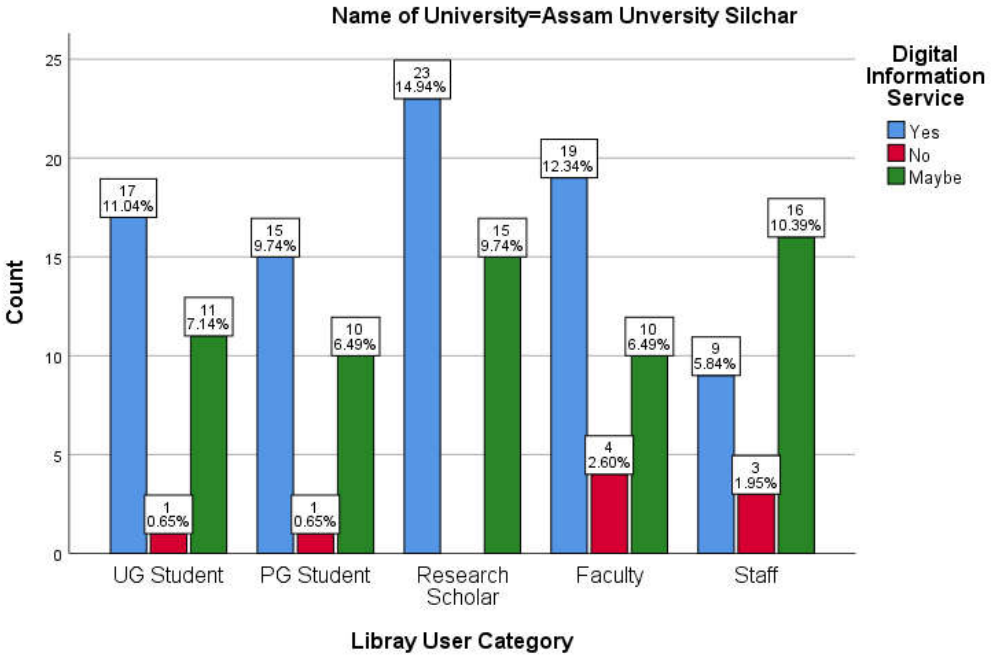

Figure 3: Digital Information Service provided by Assam University Silchar

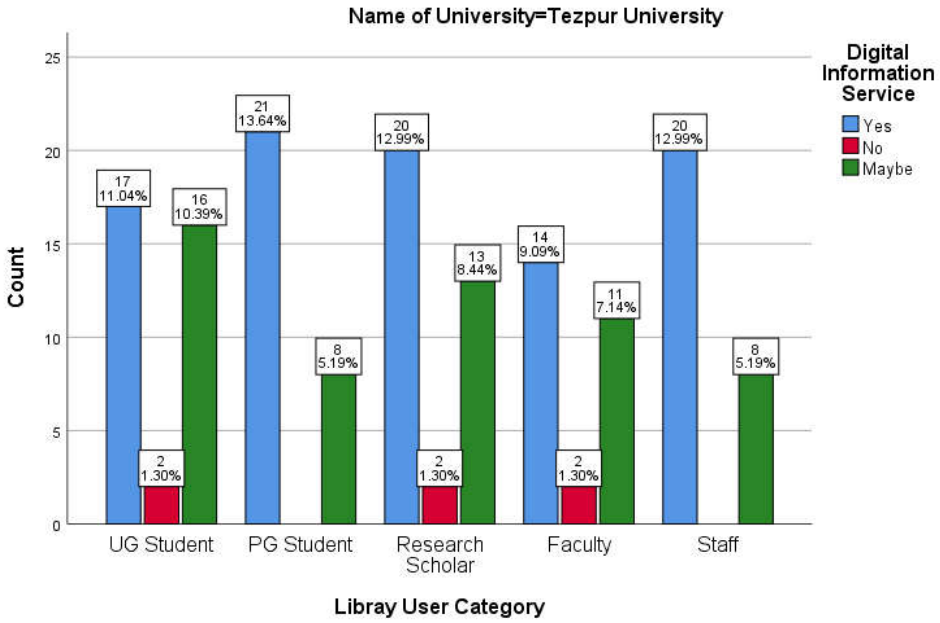

Figure 4: Digital Information Service provided by Tezpur University

Table 3: describes "Digital Information Service offered prior to covid-19 pandemic by respective university libraries" estimates for same are as follows: Majority of respondents 53.10% (34) form UG; 35.5% (43) form PG; 58.9% (43)-Research Scholars; 55% (33); and 51.8% (29) from staff categories said 'Yes', indicating that university libraries offer Digital Information Service prior to covid-19 pandemic. While 42.2% (27)-UG; 32.7% (18)-PG; 37.4% (28)-Research Scholars; 21% (35)-faculty; and 42.9% (24) – staff members said 'maybe'. 4.7% (3); 1.8% (1); 2.7%

(2); 10% (6); and 5.4% (3) marked 'no' values from options yes; maybe; and no respectively.In total 56.8% (175) respondents have agreed that Digital Information Service offered prior to covid-19 pandemic by respective university libraries, while 38.3% (118) said maybe and only 4.9% (15) said no out of 308 respondents under study.

Table 4: provides details of "Chi-Square Test of Digital Information Service offered prior to Covid-19 pandemic by respective university libraries". Pearson Chi-Square test values are estimated to be 0.154 for AUS and 0.413 for TU which is higher than >0.05 significance level. Elaborating that User Category does not have any effect on Digital Information Service offered prior to covid-19 pandemic by respective university libraries in both universities under study.

Disruption of Library Usage due to Covid-19 Pandemic

Table 5: explains disruption of Library Usage due to Covid-19 Pandemic estimates for same are as follows: Majority of respondents 81.3% (52) form UG; 74.5% (41) form PG; 68.5% (50)-Research Scholars; 65% (39); and 75% (42) from staff categories said 'Yes', indicating that disruption in Library Usage due to Covid-19 Pandemic has occurred. While 14.1% (9)-UG; 12.7% (7)-PG; 27.4% (20)-Research Scholars; 23.3% (14)-faculty; and 25% (14) – staff members said 'maybe'. 4.7% (3); 12.7% (7); 4.1% (7); and 11.7% (7); marked 'no' values from options yes; maybe; and no respectively. In total 72.7% (224) respondents have agreed that there is disruption of Library Usage due to Covid-19 Pandemic by university libraries, while 20.8% (64) said maybe and only 6.5% (20) said no out of 308 respondents under study.

Chi-Square Test of Disruption of Library Usage due to Covid-19 Pandemic

Table 6: provides details of "Chi-Square Test of disruption of Library Usage due to Covid-19 Pandemic by respective university libraries". Pearson Chi-Square test values are estimated to be 0.003, which is <0.05 significance level for AUS and 0.619 for TU which is higher than <0.05 significance level. Elaborating that User Category in Assam University has effect on <0.05 significance level. Hence null hypothesis "user category has no impact on < disruption of Library Usage due to Covid-19 Pandemic stands rejected. Which for Tezpur University same is not applicable as significance level is much higher than 0.05 significance level. TU respondents don't see much disruption in library services due to Covid-19 pandemic.

Table 5: Disruption of Library Usage due to Covid-19 Pandemic

		Disruption of Library Usage due to Covid-19 Pandemic			**Total**
		Yes	**No**	**May be**	
Library User Category	UG Student	52	3	9	64
		81.30%	4.70%	14.10%	100.00%
	PG Student	41	7	7	55
		74.50%	12.70%	12.70%	100.00%
	Research Scholar	50	3	20	73
		68.50%	4.10%	27.40%	100.00%
	Faculty	39	7	14	60
		65.00%	11.70%	23.30%	100.00%
	Staff	42	0	14	56
		75.00%	0.00%	25.00%	100.00%
Total		224	20	64	308
		72.70%	6.50%	20.80%	100.00%

Table 6: Chi-Square Test of Disruption of Library Usage due to Covid-19 Pandemic

Chi-Square Tests				
Name of University		**Value**	**df**	**Asymptotic Significance (2-sided)**
Assam University Silchar	Pearson Chi-Square	23.442b	8	.003
	Likelihood Ratio	26.465	8	.001
	Linear-by-Linear Association	11.064	1	.001
	N of Valid Cases	154		
Tezpur University	Pearson Chi-Square	6.250c	8	.619
	Likelihood Ratio	8.154	8	.419
	Linear-by-Linear Association	1.143	1	.285
	N of Valid Cases	154		
Total	Pearson Chi-Square	17.050a	8	.030
	Likelihood Ratio	19.891	8	.011
	Linear-by-Linear Association	2.792	1	.095
	N of Valid Cases	308		
a. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 3.57.				
b. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 1.52.				
c. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 1.93.				

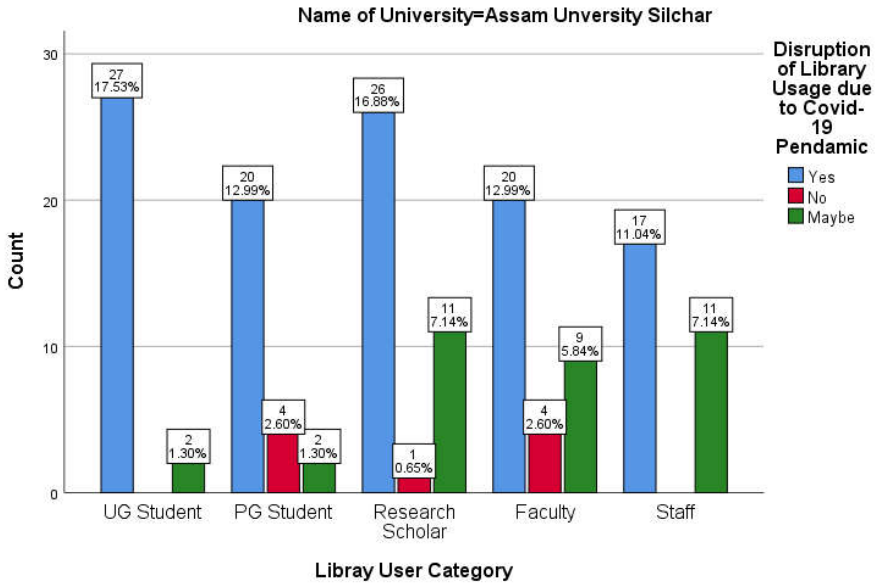

Figure 5: Disruption of Library Usage due to Covid-19 Pandemic in Assam University Silchar

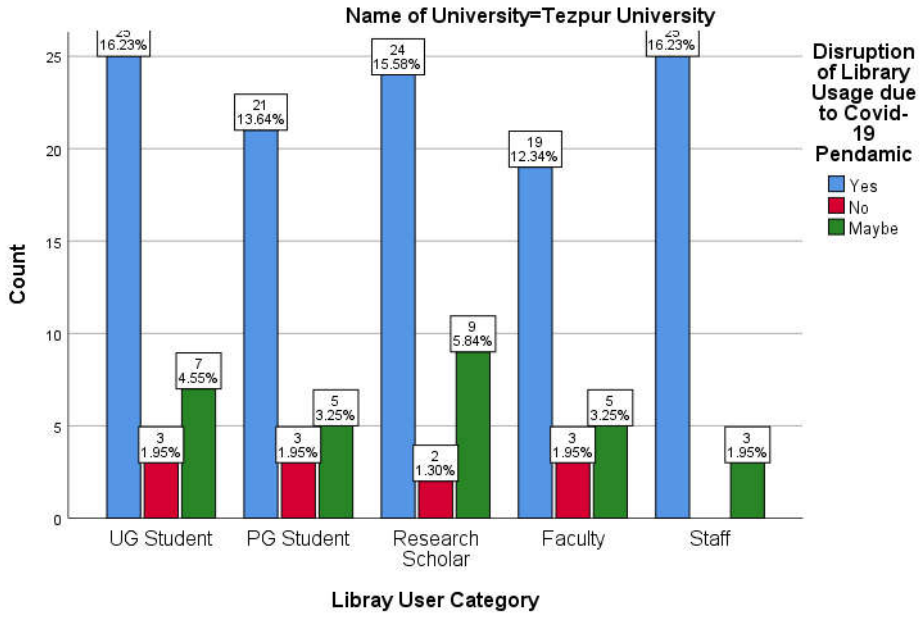

Figure 6: Disruption of Library Usage due to Covid-19 Pandemic in Tezpur University

Figure 5 and 6 provides graphical representation of Disruption of Library Usage due to Covid-19 Pandemic in Assam University Silchar and Tezpur University individually.

Providing More Digital Information Services due to Covid-19 Pandemic

Table 7: Providing More Digital Information Services due to Covid-19 Pandemic

		Providing More Digital Information Services due to Covid-19 Pandemic					**Total**
		Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	
Library User Category	UG Student	1	0	20	27	16	64
		1.60%	0.00%	31.30%	42.20%	25.00%	100.00%
	PG Student	0	4	14	20	17	55
		0.00%	7.30%	25.50%	36.40%	30.90%	100.00%
	Research Scholar	3	4	14	33	19	73
		4.10%	5.50%	19.20%	45.20%	26.00%	100.00%
	Faculty	4	1	7	21	27	60
		6.70%	1.70%	11.70%	35.00%	45.00%	100.00%
	Staff	1	2	12	24	17	56
		1.80%	3.60%	21.40%	42.90%	30.40%	100.00%
Total		9	11	67	125	96	308
		2.90%	3.60%	21.80%	40.60%	31.20%	100.00%

Table 8: Chi-Square Test of Providing More Digital Information Services due to Covid-19 Pandemic

Chi-Square Tests				
Name of University		**Value**	**df**	**Asymptotic Significance (2-sided)**
Assam University Silchar	Pearson Chi-Square	25.927b	16	.05
	Likelihood Ratio	26.875	16	.043
	Linear-by-Linear Association	2.438	1	.118
	N of Valid Cases	154		
Tezpur University	Pearson Chi-Square	12.178c	16	.732
	Likelihood Ratio	14.889	16	.533
	Linear-by-Linear Association	.093	1	.760
	N of Valid Cases	154		
Total	Pearson Chi-Square	23.566a	16	.099
	Likelihood Ratio	26.232	16	.051
	Linear-by-Linear Association	.741	1	.389
	N of Valid Cases	308		
a. 10 cells (40.0%) have expected count less than 5. The minimum expected count is 1.61.				
b. 10 cells (40.0%) have expected count less than 5. The minimum expected count is .68.				
c. 10 cells (40.0%) have expected count less than 5. The minimum expected count is .88.				

Table 7: explains Providing More Digital Information Services due to Covid-19 Pandemic estimates for same are as follows: 42.2% (27) form UG; 36.4% (20) form PG; 45.2% (33)-Research Scholars; 35% (21); and 42.9% (24) from staff categories marked 'agree', indicating that university libraries have provided more digital information services due to Covid-19 pandemic. Followed by 25% (16)-UG; 30.9% (17)-PG; 26% (19)-Research Scholars; 45% (27)-faculty; and 30.4% (17) – staff members opted for 'strongly agree'. While 31.3% (20); 25.5% (14); 19.2% (14); 11.7% (7); and 21.4%(12) marked 'neutral' values from options on five-point scale no respectively.
In total 40.6% (125) agree and 31.2%(96) strongly agree, cumulatively a total of 71.8(221) of 308 feels university libraries have provided more digital information services due to Covid-19 pandemic, while 28.8% (87) marked either disagree or strongly disagree option.

Chi-Square Test of Providing More Digital Information Services due to Covid-19 Pandemic

Table 8: provides details of "Chi-Square Test of university libraries have provided more digital information services due to Covid-19 pandemic". Pearson Chi-Square test values are estimated to be 0.05, which is < or = to 0.05 significance level for AUS and 0.533 for TU which is higher than <0.05 significance level. Elaborating that User Category in Assam University has effect on university libraries has provided more digital information services due to Covid-19 pandemic. Hence null hypothesis, "university libraries have provided more digital information services due to Covid-19 pandemic stands rejected. Which for Tezpur University same is not applicable as significance level is much higher than 0.05 significance level. TU respondents don't feel that university libraries have provided more digital information services during Covid-19 pandemic.

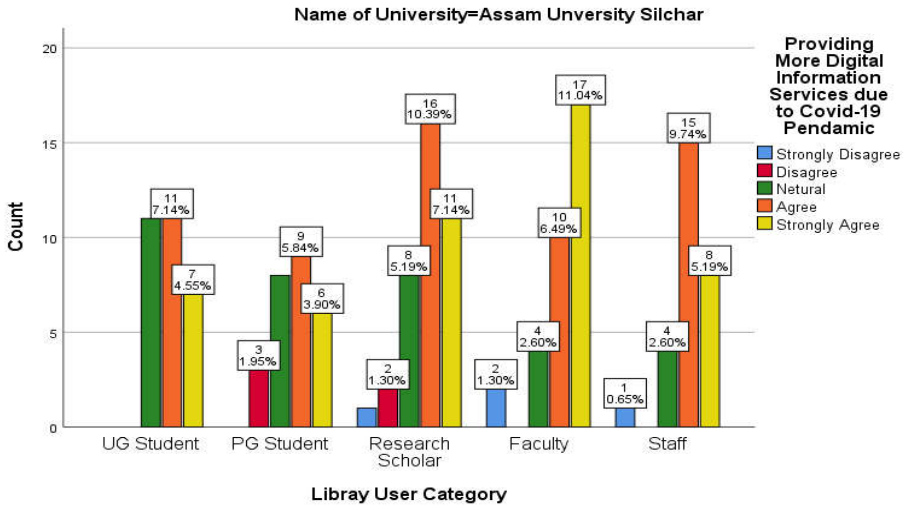

Figure 7: Providing More Digital Information Services due to Covid-19 Pandemic in Assam University

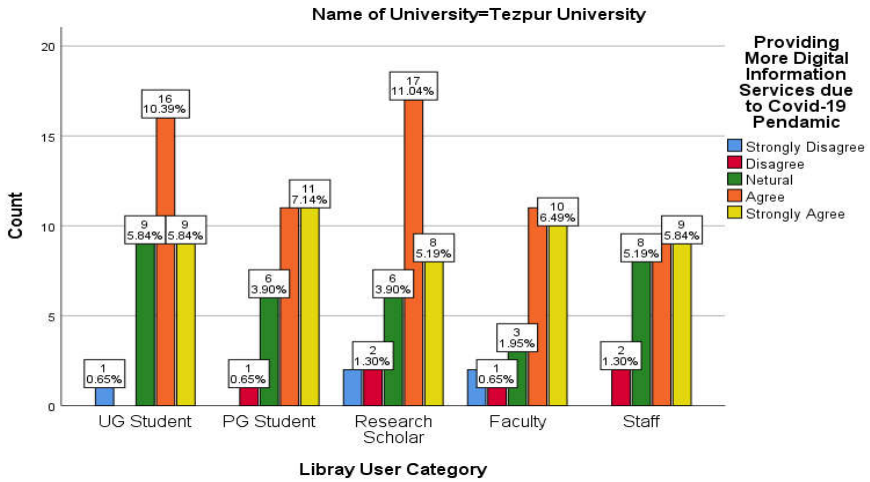

Figure 8: Providing More Digital Information Services due to Covid-19 Pandemic in Tezpur University

Figure 7 and 8 provides graphical representation of Providing More Digital Information Services due to Covid-19 Pandemic in Assam University Silchar and Tezpur University individually.

Digital Reading Device provided by Libraries during Covid-19 Pandemic

Table 9: Digital Reading Device provided by Libraries during Covid-19 Pandemic

		Yes	No	Total
Library User Category	UG Student	51	13	64
		79.70%	20.30%	100.00%
	PG Student	55	0	55
		100.00%	0.00%	100.00%
	Research Scholar	64	9	73

		87.70%	12.30%	100.00%
	Faculty	49	11	60
		81.70%	18.30%	100.00%
	Staff	46	10	56
		82.10%	17.90%	100.00%
Total		265	43	308
		86.00%	14.00%	100.00%

Table 10: Chi-Square Test of Digital Reading Device provided by Libraries during Covid-19 Pandemic

Chi-Square Tests				
Name of University		**Value**	**df**	**Asymptotic Significance (2-sided)**
Assam University Silchar	Pearson Chi-Square	15.998b	4	.003
	Likelihood Ratio	18.412	4	.001
	Linear-by-Linear Association	8.741	1	.003
	N of Valid Cases	154		
Tezpur University	Pearson Chi-Square	14.713c	4	.005
	Likelihood Ratio	20.443	4	.000
	Linear-by-Linear Association	4.337	1	.037
	N of Valid Cases	154		
Total	Pearson Chi-Square	12.898a	4	.012
	Likelihood Ratio	20.177	4	.000
	Linear-by-Linear Association	.596	1	.440
	N of Valid Cases	308		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.68.				
b. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 4.05.				
c. 5 cells (50.0%) have expected count less than 5. The minimum expected count is 3.33.				

Table 9: explains digital reading device provided by libraries during Covid-19 Pandemic to Library User estimates for same are as follows: majority of respondent's opinions that 79.7% (51) form UG; 100% (55) form PG; 87.7% (64)-Research Scholars; 81.7% (64); and 82.1% (46) from staff categories marked 'yes', indicating that university libraries have provided digital reading device during Covid-19 Pandemic to Library User. While 20.3% (13)-UG; 12.3% (9)-Research Scholars; 18.3% (11)-faculty; and 17.9% (43) – staff members opted for 'no'.

In total 86% (265) agree and 14%(43) disagree, out of 308 that digital reading device provided by libraries during Covid-19 Pandemic to library user.

Chi-Square Test of Digital Reading Device provided by libraries during Covid-19 Pandemic

Table 10: provides details of "Chi-Square Test of digital reading device provided by libraries during Covid-19 Pandemic to library user". Pearson Chi-Square test values are estimated to be 0.05, which is < or = to 0.003 significance level for AUS and 0.005 for TU which is also less than <0.05 significance level. Elaborating that User Category in Assam University and Tezpur University has effect on university libraries has providing digital reading device during Covid-19 Pandemic to library user. Hence null hypothesis, "university libraries have provided digital reading device during Covid-19 pandemic to library user stands rejected in both cases.

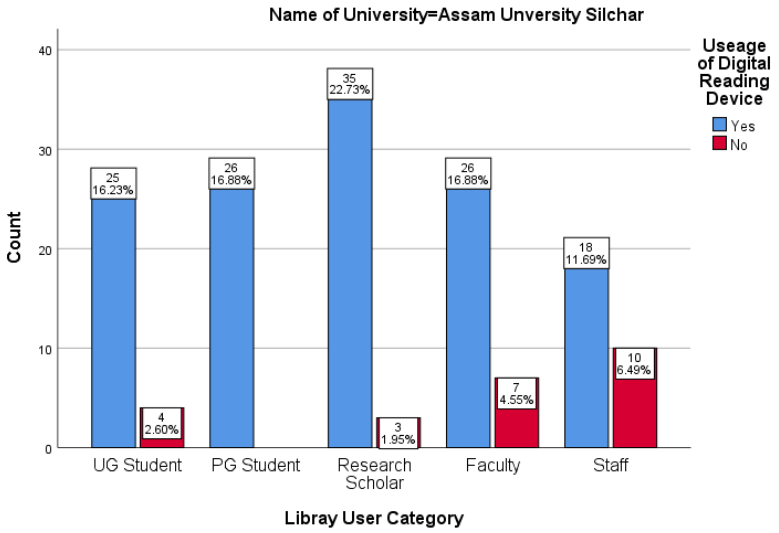

Figure 9: Digital Reading Device provided by libraries during Covid-19 Pandemic in Assam University

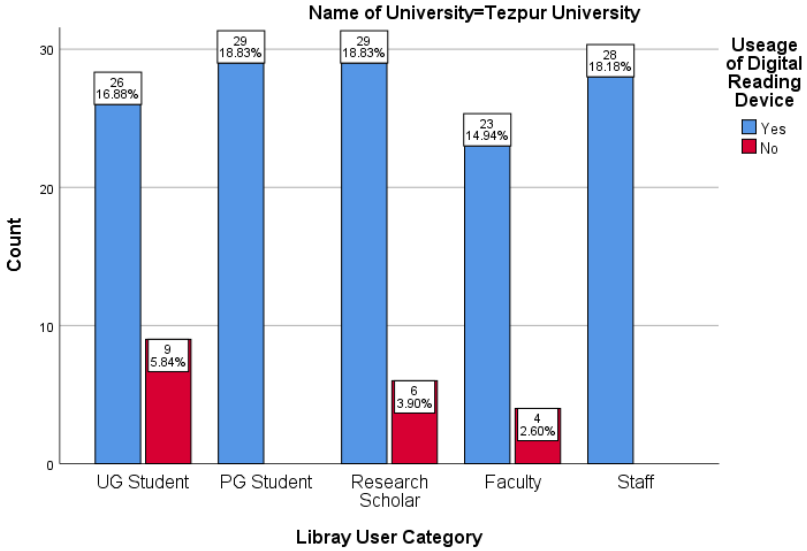

Figure 10: Digital Reading Device provided by libraries during Covid-19 Pandemic in Tezpur University.

Figure-9 and 10 provides graphical representation of digital reading device provided by libraries during Covid-19 Pandemic to library user in Assam University Silchar and Tezpur University individually.

DRD usage by Library User during Covid-19 Pandemic

Table 11: DRD usage by Library User during Covid-19 Pandemic

		Yes	No	Maybe	Total
Library User Category	UG Student	35	15	14	64
		54.70%	23.40%	21.90%	100.00%
	PG Student	44	5	6	55
		80.00%	9.10%	10.90%	100.00%
	Research Scholar	49	14	10	73
		67.10%	19.20%	13.70%	100.00%
	Faculty	40	17	3	60
		66.70%	28.30%	5.00%	100.00%
	Staff	34	15	7	56
		60.70%	26.80%	12.50%	100.00%
Total		202	66	40	308
		65.60%	21.40%	13.00%	100.00%

Table 12: Chi-Square Test of DRD usage by Library User during Covid-19 Pandemic

Chi-Square Tests				
Name of University		**Value**	**df**	**Asymptotic Significance (2-sided)**
Assam University Silchar	Pearson Chi-Square	23.581b	8	.003
	Likelihood Ratio	26.004	8	.001
	Linear-by-Linear Association	1.062	1	.303
	N of Valid Cases	154		
Tezpur University	Pearson Chi-Square	17.228c	8	.028
	Likelihood Ratio	17.714	8	.023
	Linear-by-Linear Association	.149	1	.699
	N of Valid Cases	154		
Total	Pearson Chi-Square	16.488a	8	.036
	Likelihood Ratio	17.610	8	.024
	Linear-by-Linear Association	.928	1	.335
	N of Valid Cases	308		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.14.				
b. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 3.38.				
c. 5 cells (33.3%) have expected count less than 5. The minimum expected count is 3.51.				

Table 11: explains DRD usage by library user personally during Covid-19 pandemic estimates for same are as follows: majority of respondent's opinions that 54.7% (35) form UG; 80% (44) form PG; 67.1% (49)-Research Scholars; 66.7% (40); and 60.7% (34) from staff categories marked 'yes', indicating that library user used DRD at individual level to access library resources during Covid-19 pandemic. While 21.9% (14)-UG; 10.9% (6)-PG; 13.7% (10)- Research Scholars; 5% (3) –faculty; and 12.5% (7) – staff members opted for 'maybe'. And 23.4% (15) – UG; 9.1% (5)-PG; 19.2% (17)- Research Scholars; 28.3% (17) –faculty; and 26.8% (17) – staff members opted for 'no'.

In total 65.6% (202) agree to use DRD at personal capacity for accessing library resources; while

13% (40) respondents are not sure of using DRD and 21.4%(66) disagree on use, out of 308.

Chi-Square Test of DRD usage by Library User during Covid-19 Pandemic

Table 12: provides details of "Chi-Square Test of usage by library user personally during Covid-19 pandemic". Pearson Chi-Square test values are estimated to be 0.003, which is < 0.05 significance level for AUS and 0.699 for TU which is higher than <0.05 significance level. Elaborating that User Category in Assam University has effect on usage by library user personally during Covid-19 pandemic. Hence null hypothesis, "user category has impact on usage by library user personally during Covid-19 pandemic" stands rejected in case of Assam University. For Tezpur University same is not applicable as significance level is much higher than 0.05 significance level. TU respondents don't feel that usage by library user personally during Covid-19 pandemic.

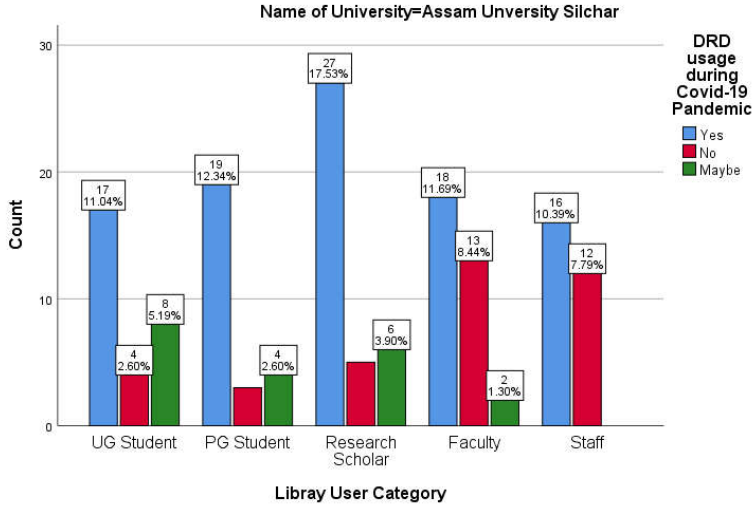

Figure 11: Usage of Digital Reading Device during Covid-19 Pandemic by Library User in Assam University

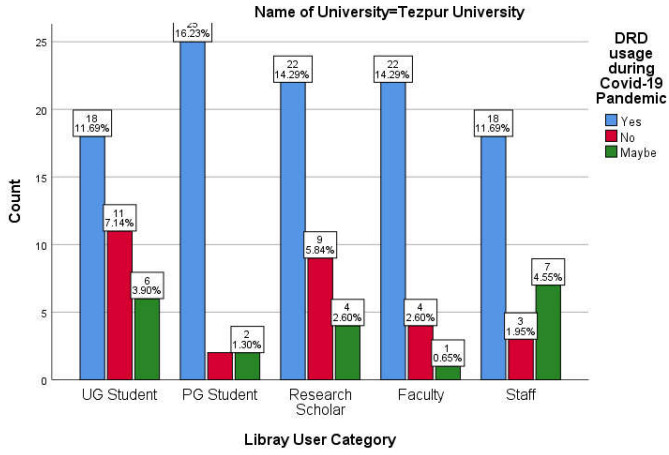

Figure 12: Usage of Digital Reading Device during Covid-19 Pandemic by Library User in Tezpur University

Figure-11 and 12 provides graphical representation of digital Usage of Digital Reading Device during Covid-19 Pandemic by Library User in Assam University Silchar and Tezpur University individually.

Rating Usefulness of DRD during Covid-19 Pandemic

Table 13: Rating Usefulness of DRD during Covid-19 Pandemic

		Highly Positive	**Positive**	**Neutral**	**Negative**	**Total**
Library User Category	UG Student	24	13	19	8	64
		37.50%	20.30%	29.70%	12.50%	100.00%
	PG Student	16	23	16	0	55
		29.10%	41.80%	29.10%	0.00%	100.00%
	Research Scholar	23	21	25	4	73
		31.50%	28.80%	34.20%	5.50%	100.00%
	Faculty	21	21	16	2	60
		35.00%	35.00%	26.70%	3.30%	100.00%
	Staff	27	12	14	3	56
		48.20%	21.40%	25.00%	5.40%	100.00%
Total		111	90	90	17	308
		36.00%	29.20%	29.20%	5.50%	100.00%

Table 14: Chi-Square Test of Rating Usefulness of DRD during Covid-19 Pandemic

Chi-Square Tests				
Name of University		**Value**	**df**	**Asymptotic Significance (2-sided)**
Assam University Silchar	Pearson Chi-Square	13.554b	12	.330
	Likelihood Ratio	15.372	12	.222
	Linear-by-Linear Association	.080	1	.777
	N of Valid Cases	154		
Tezpur University	Pearson Chi-Square	22.482c	12	.032
	Likelihood Ratio	21.739	12	.041
	Linear-by-Linear Association	3.941	1	.047
	N of Valid Cases	154		
Total	Pearson Chi-Square	20.412a	12	.060
	Likelihood Ratio	21.797	12	.040
	Linear-by-Linear Association	2.567	1	.109
	N of Valid Cases	308		
a. 5 cells (25.0%) have expected count less than 5. The minimum expected count is 3.04.				
b. 5 cells (25.0%) have expected count less than 5. The minimum expected count is 1.35.				
c. 5 cells (25.0%) have expected count less than 5. The minimum expected count is 1.58.				

Table 13: explains Rating for Usefulness of DRD during Covid-19 Pandemic estimates for same are as follows: majority of respondent's opinions that 37.5% (24) form UG; 29.1% (16) form PG; 31.5% (23)-Research Scholars; 35% (21)-faculty; and 48.2% (27) from staff categories marked 'strongly Positive', indicating that overall Usefulness of DRD during Covid-19 Pandemic. Followed by 20.3% (13)-UG; 41.8% (23)-PG; 28.8% (21)-Research Scholars; 35% (21)-faculty;

and 21.4% (12) – staff members opted for 'Positive'. While 29.7% (19); 29.1% (16); 34.2% (25); 26.7% (16); and 25% (14) marked 'neutral' values from options on five-point scale no respectively.

In total 36% (111) strongly agree and 29.2%(90) agree, cumulatively a total of 65.2(201) of 308 feels overall DRD have been usefulness during Covid-19 pandemic, while 5.5% (17) marked negative; and rest have marked neutral option on five-point scale of Strongly Positive; Positive; Neutral; Negative; and Strongly Negative.

Chi-Square Test of Rating Usefulness of DRD during Covid-19 Pandemic

Table 14: provides details of "Chi-Square Test of Overall DRD has been usefulness during Covid-19 pandemic". Pearson Chi-Square test values are estimated to be 0.330, which is >0.05 significance level for AUS and 0.060 for TU which is higher than 0.05 significance level. Elaborating that User Category in both university libraries has effect on overall DRD have been usefulness during Covid-19 pandemic, "user category has no impact on overall usefulness of DRD during Covid-19 Pandemic cannot be rejected.

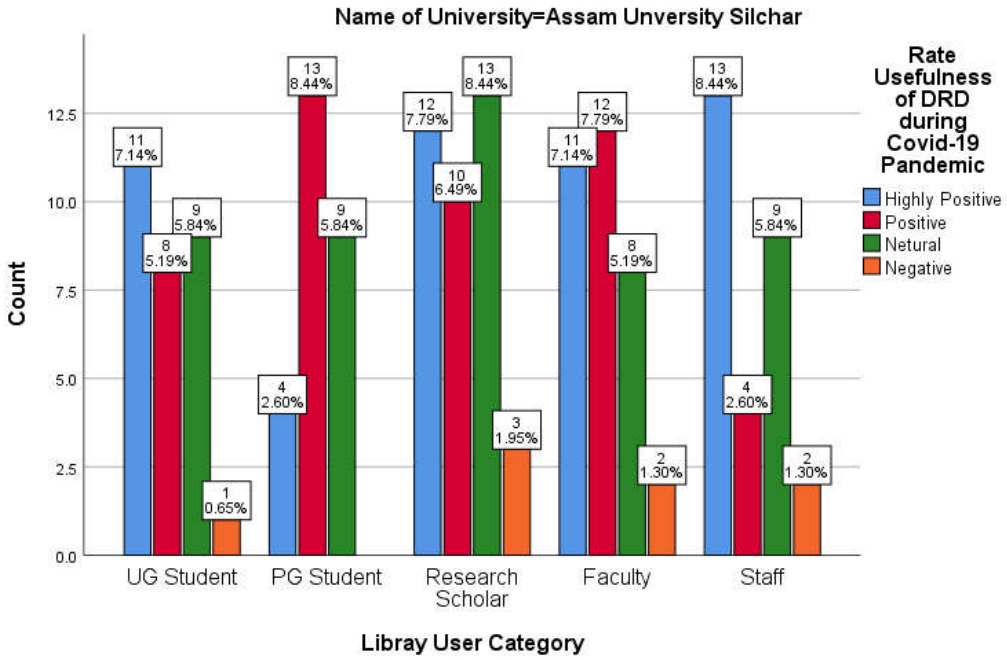

Figure 13: Rate Usefulness of DRD during Covid-19 Pandemic in Assam University

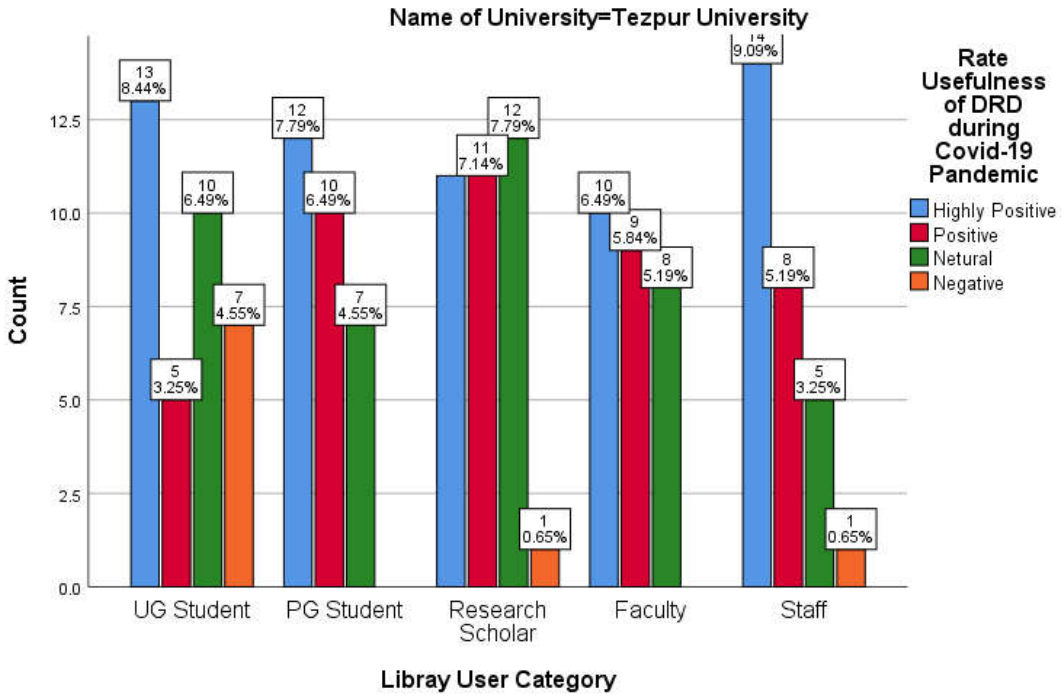

Figure 14: Rate Usefulness of DRD during Covid-19 Pandemic in Tezpur University

Figure-13 and 14 provides graphical representation of overall usefulness of DRD during Covid-19 Pandemic in Assam University Silchar and Tezpur University individually.

Helpfulness of DRD in Accessing Library Services during Covid-19 Pandemic

Table 15: Helpfulness of DRD in Accessing Library Services during Covid-19 Pandemic

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Library User Category	UG Student	8	26	23	4	3	64
		12.50%	40.60%	35.90%	6.30%	4.70%	100.00%
	PG Student	13	27	15	0	0	55
		23.60%	49.10%	27.30%	0.00%	0.00%	100.00%
	Research Scholar	25	23	19	1	5	73
		34.20%	31.50%	26.00%	1.40%	6.80%	100.00%
	Faculty	18	21	8	3	10	60
		30.00%	35.00%	13.30%	5.00%	16.70%	100.00%
	Staff	16	19	12	5	4	56
		28.60%	33.90%	21.40%	8.90%	7.10%	100.00%
Total		80	116	77	13	22	308
		26.00%	37.70%	25.00%	4.20%	7.10%	100.00%

Table 16: Chi-Square Test of Helpfulness of DRD in Accessing Library Services during Covid-19 Pandemic

Chi-Square Tests				
Name of University		**Value**	**df**	**Asymptotic Significance (2-sided)**
Assam University Silchar	Pearson Chi-Square	34.468b	16	.005
	Likelihood Ratio	37.993	16	.002
	Linear-by-Linear Association	.228	1	.633
	N of Valid Cases	154		
Tezpur University	Pearson Chi-Square	18.698c	16	.285
	Likelihood Ratio	23.958	16	.090
	Linear-by-Linear Association	.345	1	.557
	N of Valid Cases	154		
Total	Pearson Chi-Square	36.378a	16	.003
	Likelihood Ratio	41.376	16	.000
	Linear-by-Linear Association	.001	1	.976
	N of Valid Cases	308		
a. 9 cells (36.0%) have expected count less than 5. The minimum expected count is 2.32.				
b. 10 cells (40.0%) have expected count less than 5. The minimum expected count is 1.35.				
c. 10 cells (40.0%) have expected count less than 5. The minimum expected count is .88.				

Table 15: Explains DRD helped Accessing Library Services during Covid-19 Pandemic estimates for same are as follows: majority of respondents opinions that 40.6% (26) form UG; 49.1% (27) form PG; 31.5% (23)-Research Scholars; 35% (21); and 33.9% (19) from staff categories marked 'agree', indicating that DRD helped Accessing Library Services during Covid-19 Pandemic. Followed by 12.5% (8)-UG; 23.6% (13)-PG; 34.2% (25)-Research Scholars; 30% (18)-faculty; and 28.6% (16) – staff members opted for 'strongly agree'. While 35.9% (23); 27.3% (15); 26% (19); 13.3% (8); and 21.4% (12) marked 'neutral' values from options on five-point scale no respectively.

In total 37.7% (116) agree and 26%(80) strongly agree, cumulatively a total of 63.7(196) of 308 feels DRD helped Accessing Library Services during Covid-19 Pandemic, while 11.3% (35) marked either disagree or strongly disagree option; and rest have marked neutral option on five-point scale of Strongly Agree; Agree; Neutral; Disagree ; and Strongly Disagree.

Helpfulness of DRD in Accessing Library Services during Covid-19 Pandemic

Table 16: provides details of "Chi-Square Test of DRD helped Accessing Library Services during Covid-19 Pandemic". Pearson Chi-Square test values are estimated to be 0.005, which is < 0.05 significance level for AUS and 0.285 for TU which is higher than <0.05 significance level. Elaborating that User Category in Assam University has effect on DRD helped Accessing Library Services during Covid-19 Pandemic. Hence null hypothesis, "DRD helped Accessing Library Services during Covid-19 Pandemic stands rejected. For Tezpur University same is not applicable as significance level is much higher than 0.05, significance level. TU respondents don't feel that DRD helped Accessing Library Services during Covid-19 Pandemic.

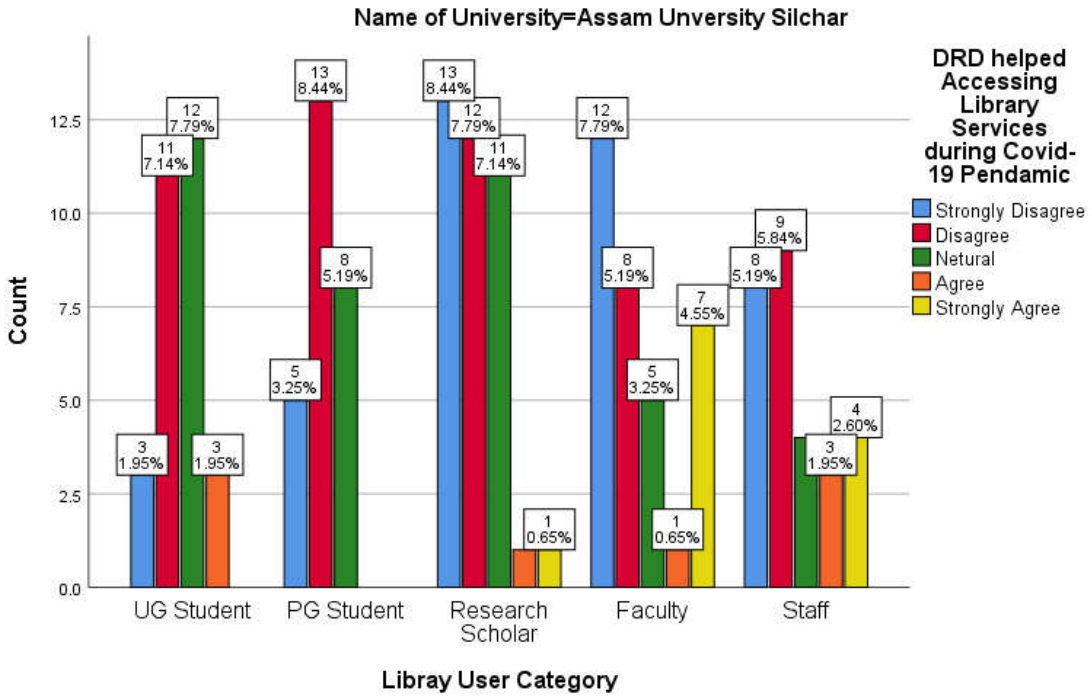

Figure 15: DRD helped Accessing Library Services during Covid-19 Pandemic in Tezpur University

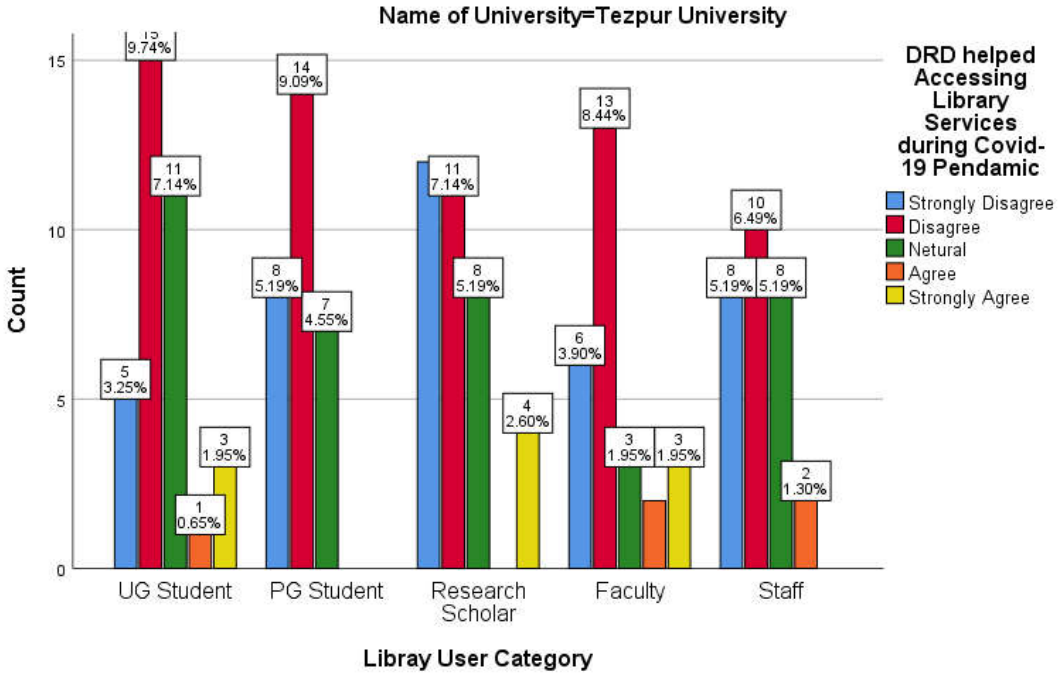

Figure 16: DRD helped Accessing Library Services during Covid-19 Pandemic in Assam University

Figure 15 and 16 provides graphical representation of DRD helped Accessing Library Services during Covid-19 Pandemic in Assam University in Assam University Silchar and Tezpur University individually.

FINDING AND SUGGESTIONS

Study reveals that 68.8% (212) respondents have awareness of DRD's, while 20.8% (64) are not sure and marked 'maybe' and only 10.4% (34) are not aware of DRD out of 308 respondents under study. Indicates that majority of university library users are aware of DRD.

It can be suggested that based on above finding, university libraries need to conduct more awareness and training programs for their respective user to educate and enable them to use more DRD's. Which will easy the process of shifting to paper-less resources.

56.8% (175) respondents have agreed that Digital Information Service offered prior to covid-19 pandemic by respective university libraries, while 38.3% (118) said maybe and only 4.9% (15) said no out of 308 respondents under study.

Study finds that large number of digital information services offered by university libraries but still 43.2% user are not sure of existence or reject the offering of such services by libraries. University libraries have to conduct outreach educational programs to convert these potential users from print to digital version of information services

72.7% (224) respondents have agreed that there is disruption of Library Usage due to Covid-19 Pandemic by university libraries, while 20.8% (64) said maybe and only 6.5% (20) said no out of 308 respondents under study.

Disruption was inevitable as floods of covid-19 pandemic without warning. Study suggests adopting and university libraries should be prepared for any such incidents in future. Converting their collection and services to digital based. Just too much depending on traditional method and collection serve their clients during crisis.

40.6% (125) agree and 31.2%(96) strongly agree, cumulatively a total of 71.8(221) of 308 feels university libraries have provided more digital information services due to Covid-19 pandemic, while 28.8% (87) marked either disagree or strongly disagree option.

Based on above observation, we can suggest that libraries have shifted towards digital services due to situation and same should be continued without dropping the anchor as pandemic situation eases. This continuation of digital information service will enhance their reach to outstation clients and solve hindrance in satisfying user information needs. And depends of clients on libraries will increase substantially, which is generally lacking now, because of which user depends on Google or other external information providers than their own libraries.

86% (265) agree and 14%(43) disagree, out of 308 that digital reading device provided by libraries during Covid-19 Pandemic to library user.

Providing DRD for user from libraries will encourage user to read digitally. Considering the economic conditions of students and research scholars who cannot afford such devices on their own. Special programs may be launched to economically weaker sections, in accordance with book bank facility for scheduled caste and Scheduled Tribe community students and scholars.

65.6% (202) agree to use DRD at personal capacity for accessing library resources; while 13% (40) respondents are not sure of using DRD and 21.4%(66) disagree on use, out of 308.

1/3rd of user unable to use DRD in individual capacity. Possible reasons can be many like non-availability of DRD; Internet; Electricity; knowledge to use DRD or Un-affordability to DRD; Internet Charges etc. Libraries should find solutions and offer assistance to such user groups.

36% (111) strongly agree and 29.2%(90) agree, cumulatively a total of 65.2(201) of 308 feels overall DRD have been usefulness during Covid-19 pandemic, while 5.5% (17) marked negative; and rest have marked neutral option on five-point scale of Strongly Positive; Positive; Neutral; Negative; and Strongly Negative.

Usefulness of DRD is unquestionable either in normal situation or adverse situation. DRD are new way of serving user even when libraries are

physically closed for user. More and more resource and services needs to be converted to digital based enhancing user accessibility 24/7. It's suggested that gradual procurement adoption of DRD into university libraries should be planned and kick started.

37.7% (116) agree and 26%(80) strongly agree, cumulatively a total of 63.7(196) of 308 feels DRD helped Accessing Library Services during Covid-19 Pandemic, while 11.3% (35) marked either disagree or strongly disagree option; and rest have marked neutral option on five-point scale of Strongly Agree; Agree; Neutral; Disagree; and Strongly Disagree.

Overall multi-functional DRD are more preferred by user than mono-functional devices. Hence efforts should be made to include multi-functional devices into libraries more.

CONCLUSION

Impact of DRD before Covid-19 pandemic was recognised but at a turtle speed. Given the situation of pandemic where libraries were physically closed and all services were shut down without any option. Gradually libraries and other institutions started finding ways to restart and digital service came to rescue of human kind. Libraries too started offering digital services but its user are not completely competent enough to adopt and adjust to such services excepts only few tech savvy clients. In this context above study attempted to find the importance of DRD and its impact on library usage. Results have a positive flow of opinions from two university libraries under study. And majority have found the DRD and digital library services helpful during Cocid-19 Pandemic.

Further a Regional and National Level studies can be carried out on the topic and comparative studies can also be encouraged to find larger impact of DRD on library usage.

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