



AN ANALYTICAL STUDY ON THE IMPACT OF 'VIRTUAL AND DIGITAL LIBRARIES' IN THE ERA OF MODERN TECHNOLOGY.

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Abstract : The collection of the traditional libraries are mostly printed media, and are not well organized at retrieval or on sharing level. The hardcopy documents are failing at a rapid rate when it comes to share on different geographical region, the collected information is not easy to locate and procure. Such information does not reach the user of the libraries on time. Whereas A virtual library defined as the internet-based digital library. The concept of virtual library is that any person who has a computer and net connection to the library networks can access not only the resources of that library but also a variety of information available through national and international networks without being physically present in the library. Quantitative data relies on quantity of a specific phenomenon. It focuses on gathering and analyzing numerical data and can be used to find averages and patterns or to predict outcomes. Research design taken place by issuing total of 120 questionnaires to respondents. The questionnaire was sent by email survey, and generating 118 valid returned questionnaire responses, each question was statistically measures using a 5 points Likert scale item. In order to know whether the questions in this questionnaire were exclusive reliable, a Cronbach's alpha will be run to resolve the question of reliability of questionnaire. Study further explained about the impact of virtual digital libraries in the modern era of technology. It draws a conclusion using tables, facts, and graphs. Many scientific and field-based studies primarily use this form of research.

Index Terms - Digital Library, Virtual Library, Information Technology, Modern era, Media.

I. INTRODUCTION

Library is a place where the collection of information resources in print or in other forms that is organized and made accessible for reading or study is kept. International Organization for Standardization has defined library as irrespective of the title, any organized collection of printed books and periodicals or of any other graphic or audio-visual materials, and the services of a staff to provide and facilitate the use of such materials as are required to meet the informational, research, educational or recreational needs of its users. Advances in Information Communication Technology (ICT), particularly the World Wide Web (WWW) have seen the evolution of the automated library, electronic library, digital library, virtual library, Hybrid library etc. **DIGITAL LIBRARY** - The name DIGITAL means that the collection is on a binary format and stored on an electronic device. So, it is a Library whose material (books, journals, reports, thesis, and so on) is stored on electronic forms. **VIRTUAL LIBRARY** - It's a collection of links. Those links do not reflect physical Library material. It reflects subjects' categories of sites on Internet. The name virtual means "not real". So here the word Library is in the concept VIRTUAL LIBRARY because it looks like a Library index. But it's a kind of "link management system", not a kind of Library.

An important advantage to digital conversion is increased accessibility to users. They also increase availability to individuals who may not be traditional patrons of a library, due to geographic location or organizational affiliation.

- No physical boundary: The user of a digital library need not to go to the library physically; people from all over the world can gain access to the same information, as long as an Internet connection is available.
- Round the clock availability: A major advantage of digital libraries is that people can gain access 24/7 to the information.
- Multiple access: The same resources can be used simultaneously by a number of institutions and patrons. This may not be the case for copyrighted material: a library may have a license for "lending out" only one copy at a time; this is achieved with a system of digital rights management where a resource can become inaccessible after expiration of the lending period or after the lender chooses to make it inaccessible (equivalent to returning the resource).
- Information retrieval: The user is able to use any search term (word, phrase, title, name, subject) to search the entire collection. Digital libraries can provide very user-friendly interfaces, giving click able access to its resources.
- Preservation and conservation: Digitization is not a long-term preservation solution for physical collections, but does succeed in providing access copies for materials that would otherwise fall to degradation from repeated use. Digitized collections and born-digital objects pose many preservation and conservation concerns that analog materials do not. Please see the following "Problems" section of this page for examples.
- No Space limitation: Whereas traditional libraries are limited by storage space, digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain them and media storage technologies are more affordable than ever before.
- Added service value: Certain characteristics of objects, primarily the quality of images, may be improved. Digitization can enhance legibility and remove visible flaws such as stains and discoloration.^[27]

II. CLASSIFICATION OF LIBRARIES:

A. Traditional Library: Traditionally, libraries were collections of books, manuscripts, journals, and other sources of recorded information. It is difficult to get such publications in the absence of personal influence and contacts. There are certain restricted publications containing highly informative materials but may not be easily available. Sometimes the information is published after many years. By the time it is published, the information becomes obsolete and then abandoned. Since it is not properly indexed or listed, the researcher is forced to go through long and tedious process to ascertain whether any material of his/her interest is available or not. Here the collections are not well organized and some reports are deteriorating at a rapid rate. Preserving them in their original form is difficult and it is not cost effective.

B. Automated Library: A library with machine-readable catalog, computerized acquisition, circulation and OPAC are called as automated library. The holdings of such types of libraries are same as that of traditional libraries.

C. Electronic Library: When automated libraries go for LAN (Local Area Networking) and CD-ROM networking and started procuring E-journals and other similar kinds of publications then it is known as electronic library. The resources of the electronic libraries are in both print and electronic form. The electronic media are used for storage, retrieval and delivery of information.

D. Digital Library: It is a later stage of electronic library. In digital library high speed optical fiber are used for LAN and the access is over WAN and provide a wide range of Internet based services i.e. audio and video conferencing and like other. The majority of the holding of a digital library is in the computer readable form and also acts as a point of access to other online sources.

E. Virtual Library: It is a companion term to digital library, brought forth by the National Science Foundation. The concept of virtual library also emerged simultaneously with electronic library and digital library. This emergence is perhaps because all the information uses are at present through networked libraries at the desktop which is quite virtual (practical) without the physical existence of books on shelves.

F. Hybrid Library: It was designed to bring a range of technologies from different sources together in the context of a working library and to explore integrated systems and services in electronic and printed environments. It reflects the transitional state of the library, which today can neither be fully printed nor fully digital.

III. RESEARCH GAPS IDENTIFIED

This research study, controlled to the sample of only users of Digital and Virtual library. Hence this study excluded the views or opinion of other population sampling who is not from the other classified libraries.

IV. LIMITATIONS & DELIMITATIONS

Limitation: Study controlled to only virtual and digital library users.

Delimitation: Study excluded non virtual and digital library users.

V. OBJECTIVE

To Study the impact of 'Virtual and Digital Libraries' in era of modern technology.

To Study the importance of ‘Virtual and Digital Libraries’ in era of modern technology.
To analyze the provisions by Virtual and Digital Libraries in era of modern technology.
To identify the important elements of Virtual and Digital Libraries in era of modern technology.

VI. HYPOTHESIS

Null Hypothesis: There is no impact of ‘Virtual and Digital Libraries’ in era of modern technology for researchers.
H0: $r = 0$

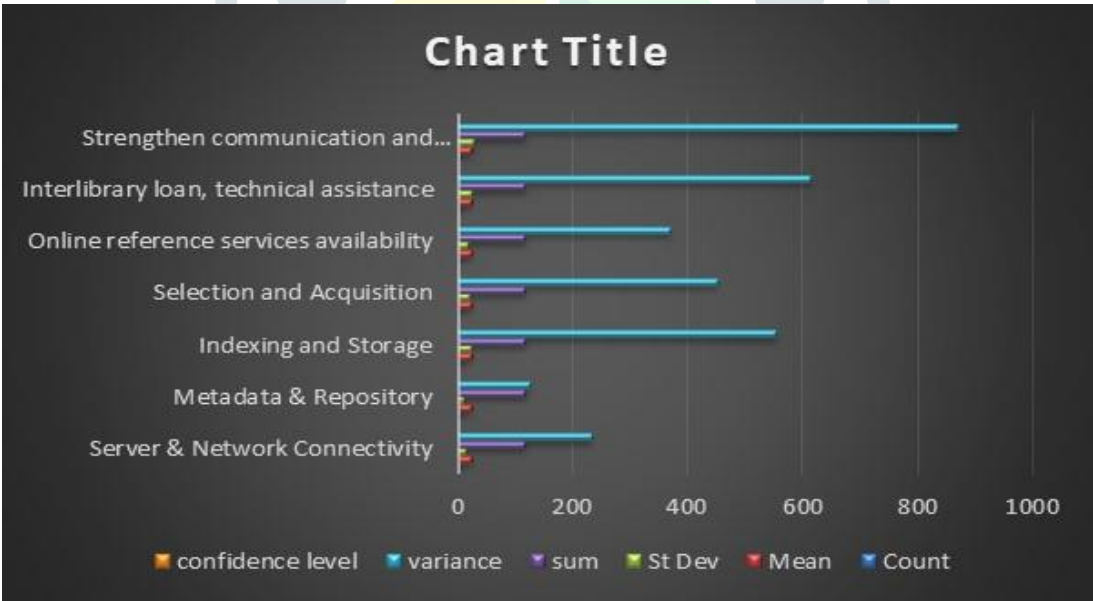
Alternative Hypothesis: There is an impact of ‘Virtual and Digital Libraries’ in era of modern technology for researchers.
H1: $r \neq 0$

VII. RESEARCH METHODOLOGY

Quantitative data relies on quantity of a specific phenomenon. It focuses on gathering and analyzing numerical data and can be used to find averages and patterns or to predict outcomes. Research design taken place by issuing total of 120 questionnaires to respondents. The questionnaire was sent by email survey, and generating 118 valid returned questionnaire responses, each question was statley measures using a 5 points Likert scale item. In order to know whether the questions in this questionnaire were exclusive reliable, a Cronbach's alpha will be run to resolve the question of reliability of questionnaire. Study further explained about the impact of virtual digital libraries in the modern era of technology. It draws a conclusion using tables, facts, and graphs. Many scientific and field-based studies primarily use this form of research. For analyzing the feedback received, created a dataset is a range of contiguous cells on an Excel worksheet containing data to analyze its mean and standard deviation to calculate the mean of a dataset in Excel, function, where Range is the range of values has been summarized as below:

	Variables	Count	Mean	St Dev	sum	variance	confidence level
1	Server & Network Connectivity	5	23.6	15.27	118	233.3	68.3%
2	Metadata & Repository	5	23.6	11.22	118	125.8	68.3%
3	Indexing and Storage	5	23.6	23.55	118	554.8	68.3%
4	Selection and Acquisition	5	23.6	21.28	118	452.8	68.3%
5	Online reference services availability	5	23.6	19.26	118	370.8	68.3%
6	Interlibrary loan, technical assistance	5	23.6	24.8	118	614.8	68.3%
7	Strengthen communication and collaboration	5	23.6	29.5	118	870.3	68.3%

Table 1: Analysis -mean and standard deviation



Graph 1: Analysis -mean and standard deviation

The hypothesis was tested using SPSS to obtain co-variances by going to Analyse-Correlate-Multivariate; we also checked the dimensionality of the scale and factor analysis on collected data from respondents.

		Q1	Q2	Q3	Q4	Q5	Q6	Q7
Q1	Covariance	233.3	221.5	121.3	551.2	432.1	414.9	432.1
Q2	Covariance	221.5	125.8	551.2	432.1	414.9	551.2	432.1
Q3	Covariance	121.3	551.2	554.8	414.9	414.9	121.3	551.2
Q4	Covariance	551.2	432.1	414.9	452.8	551.2	432.1	414.9
Q5	Covariance	432.1	414.9	432.1	414.9	370.8	432.1	414.9
Q6	Covariance	414.9	432.1	414.9	432.1	414.9	614.8	553.1
Q7	Covariance	414.9	432.1	414.9	432.1	414.9	553.1	870.3

Table 2: Computing Covariance

Correlation is a bivariate analysis that procedures the strength of suggestion between two variables and the direction of the relationship. In regards of the influence of association, the significance of the correlation coefficient differs between '+1' and '-1'. In addition to computing the alpha coefficient of reliability to analyse the data generated from 118 completed questionnaires. In SPSS, we obtain covariances by going to Analyse Correlate Multivariate. And provided input of q1, q2, q3, q4, q5, q6, q7 to the variables box and click on options, under statistics, check Cross-product deviations and covariance. Where following a summarized version of the output as Table no. 2 where the diagonals (in bold) are the variances and the off-diagonals are the covariances. We only consider the covariances on the lower left triangle because this is a symmetric matrix.

Cronbach's alpha can be printed as a purpose of the number of examination substances and the normal inter-correlation between the substances. Below, for theoretical resolutions, we show the formulation for the Cronbach's alpha:

$$\alpha = \frac{N\bar{c}}{\bar{v} + (N-1)\bar{c}}$$

Formula 1: Cronbach's alpha

Here is identical to the quantity of items, is the average inter-item covariance between the items and equivalents the average inconsistency. We can see from this formula that if we increase the number of items, it increases Cronbach's alpha. And with this if the average inter-item correlation is low then the alpha value will be low. And as the average inter-item correlation increases the increase in Cronbach's alpha will found, in calculations the number of items constant, where n=7 is equal to the number of objects $\bar{c}$ is the ordinary inter-item covariance between the objects and $\bar{v}$ matches the average alteration. Additional to these particulars as the information from the stated table above, we can analyse each of these mechanisms via the following calculations:

$$\bar{v} = (233.3 + 125.8 + 554.8 + 452.8 + 370.8 + 614.8 + 870.3) / 7 = 3222.6 / 7 = 460.371$$

$$\bar{c} = (221.5 + 121.3 + 551.2 + 432.1 + 414.9 + 441.9 + 553.1) / 7 = 2736 / 7 = 390.857$$

$$\alpha = \frac{7(390.875)}{(460.371) + (7-1)390.875}$$

$$\alpha = 2736.125 / 2805.621$$

$$\alpha = 0.975$$

Equation 1: Value of Cronbach's alpha

The outcomes match with values of below explained SPSS obtained Cronbach's Alpha of 0.975, to check the dimensionality of the scale using factor analysis. For this example, we will use a dataset that contains our test items q1, q2, q3, q4, q5, q6, q7. To compute Cronbach's alpha for all four items q1, q2, q3, q4, q5, q6, q7 use the reliability command in SPSS:

RELIABILITY

/VARIABLES=q1 q2 q3 q4 q5 q6 q7.

	Sample N	%
Valid	118	98%
Excluded*	2	2%
Total	120	100%

Table 3: All Variables, Processing Summary

*List wise deletion based on all variables in procedure

Reliability Statistics

Cronbach' s Alpha	N of Items
0.975	7

Table 4: Reliability Statistics

The alpha co-efficient for the Seven items is **0.975**, suggesting that the items have relatively high internal reliability.

VIII. RESULT AND DISCUSSION

Thought SPSS, we obtain covariances by analysing Correlate Multivariate. And provided input of q1, q2 , q3 ,q4, q5,q6,q7 which are based on variables i.e. are direct important functions of library information management based on library network system, with the Cross-product deviations and covariances condensed version of the output where the diagonals in bold are the variances and the off -diagonals are the addition of covariances. And considered the covariances addition of on the lower left triangle because this is a symmetric matrix. Where covariance shows us the direction of the relationship between all seven variables is very less. And all variable are equal values in their functionalities. The alpha coefficient for the four items is 0.975, suggesting that the Seven items have relatively high internal consistency. Where a reliability coefficient of 0.975 or higher is considered acceptable in this study. And the p-value measures the probability of getting a more extreme value than the one we got from the experiment. And here we have significance level is 0.05 p-value, which is less than alpha 0.975, so we reject the null hypothesis and accept the alternate hypothesis which denoted that the Virtual and Digital Libraries of today's living age of Information Technology (IT) provide us multiple useful features like, the storage and retrieval of information, various forms and formats of best sources of information resources, it also provides medium of communication and collaboration between educational institutions and last but no least online reference services are available over the Internet as reference, interlibrary loan, technical assistance etc.

IX. CONCLUSION

This research study concluded that the digital libraries have reduced the burden of librarians as well as students. It is necessary to stay updated with the new technologies and which will enhance the learning of the students and upgrade their skills and confidence to face the challenges. Digital Library is used in schools, colleges, institutions, and universities to make libraries digital and to keep information up-to-date. And at the same time demand for virtual libraries is increasing day-by-day for their functions like indexing, journals, and reference materials, online reference services are available over the Internet. So, the Impact of 'virtual and digital libraries' in the era of modern technology has played very big role in library science field.

X. FUTURE SCOPE OF STUDY

Study can extend with other LMS for effective structure for implementation.

Study can further explain about virtual to consortium process of libraries.

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