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# CHALLENGES FOR EFFECTIVE IMPLEMENTATION OF NEW TRENDS IN DIGITAL LIBRARIES: A LITERATURE SURVEY

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**Abstract:**

Objectives of the study were to the new trends in digital library. For that researcher study the new trends from the year 2000-2021.Data was collected from LISA over 350 Journals and wide range of conference proceeding from over 60 countries. Data was analyzed and further that 57.02 % articles was from Digital libraries. Rest 12.25 %, 24.11 % and 5.29 % of articles was national University, School and Public Library.

**Key Words**: **Digital Library, New Trends.**

## Introduction

Digital library is a relatively new concept. The term digital library explain the nature of its collection. Digital libraries are electronic libraries in which large number of geographically distributed user can access the contents of large and diverse repositories of electronic objects. Electronic objects include networked text. Images, maps, sounds, videos, catalog of merchandise and scientific, business and government data-set. They also include hypertext, hypermedia and multimedia compositions (Yerkey, 1996)

A digital library is understood to have the information stored predominantly in electronic or digital medium. The digital information collections may include digital books, digital/scanned images, graphic, textual and numerical data, digitized films, audio and video clips etc. A digital library is expected to provide access to the digital information collections. The important characteristics of digital libraries are the storage of information in digital form direct usage of communication networks for accessing and obtaining information and copying by either downloading or on-line/off-line printing from a master file. Digital libraries enable managing very large amounts of data, preserve unique collections, provide faster access to information facilitate dealing with data from more than one location and enhance distributed learning environments. They also help to perform searches that are manually not feasible or practical and offer content owners information. Digital library is an Electronic Library in which a large number of geographically distributed uses access the contents of large and diverse repositories of electronic objects using computer networks. Yerkes defines digital library in which large number of users across the world can access information in *the* form of Networked Electronic texts images maps, sound, videos, catalogues Government Publication hypertext hypermedia and multimedia compositions etc.

## Statement of the Problem:

Research publications are so vital for any professional discipline and preserving as well as access of them is the most crucial task. A considerable extent of such articles published in journals and steps are needed to tackle this from of literature at par with what is happening in the international scenario.

The era of information technology changed the status of library in 21st century. The computer age has shown great impact on information research. The information infrastructure technology and applications

considers digital libraries as systems providing users with coherent access to a very large, organized repository of information and knowledge.

Hence the researcher made an attempt to depict the emerging trends of digital libraries in India and abroad context in view of the prediction that by the turn of the century half of the material accessed will be digital. The researcher felt to study the new trends of digital libraries in India and abroad based on LISA (Library Science Abstract) published during 2002-2021.

**Significance of the Study:**

The significance of the study is argued on the basis of the following points:

a. The study attempts to highlight the trends of digital libraries in India and abroad during the period 2002-2021. b. They study focuses on the digitization process in libraries. c. The study will help the researcher to access the information from the digital libraries instantly.

**Objectives of the Study:**

The objectives of the present study are –

1. To trace out the Literature Survey and trends in Digital library during the period 2002-2021.
2. To determine the language wise distribution of articles.
3. To distribute the article published in variant forms.
4. To arrange the abstracts according to various facts of digital libraries

**Scope of Study:**

The topic of the study "Literature survey & tends in Digital libraries Based on LISA 2002-2021."The present study is limited to a literature survey on "Digital libraries" published during the period 2002-2021which have been abstracted in the journals LISA (Library & Information Science Abstracts) period is of 10 Years.

**Hypothesis:**

Foreign libraries follow the trend of digital libraries in compare to Indian libraries.

**Methodology:**

The method adopted for this study was literature survey. The data was collected from the Journals LISA (Library and Information Science Abstract) over 350 Journals and wide range of conference proceeding from over 60 countries also available on CD-ROM till the year 2002. LISA is available as a CD-ROM database from 1987 onwards. LISA consists of two separate databases covering the literature of Library and information science. LISA abstracts published books journals articles conference proceedings and some reports.

Abreact entries were pasted on cards, and arranged. These cards were categorized into parts included in the chapter "Digital library" So overall article given in the LISA during period (2002-2021) were considered for study.

**Data Analysis:**

Collected data were analyses Language wise distribution category wise distribution and application of Lotka's law for the authorship pattern of citations.

**Lotka's Law:**

Commonly referred to as Lotka's inverse power law was presented by Book stein [20] as a =C/n where C is constant to estimated; from a given set of data and n=1,2,3 Lotka asserted that this equation applies to a variety of fields.

Lotk's law relates to the productivity of scientists in terms of number of paper published in determining "If possible" the part which man of different caliber contribute to progress of science.

Lotk's studied the productivity of authors by publication frequency as indicated in Chemical Abstracts. The study revealed that the productivity of scientists conforms to inverse square law such that for every 100 authors contributing one article, 25 will contribute two articles, 6 will contribute 4 articles & so on. The observed figure for single articles authors was 575% of chemical abstracts data & 59.2% for the physical data.

**Plan and Design of the Study:**

The study is divided into the following five chapters keeping in view the objectives of the study.

Introduction is the subject matter for the first chapter. It provides information on the objective and hypothesis of the study in detail. It also includes scope of the study.

Second chapter deals which history and development of digital libraries.

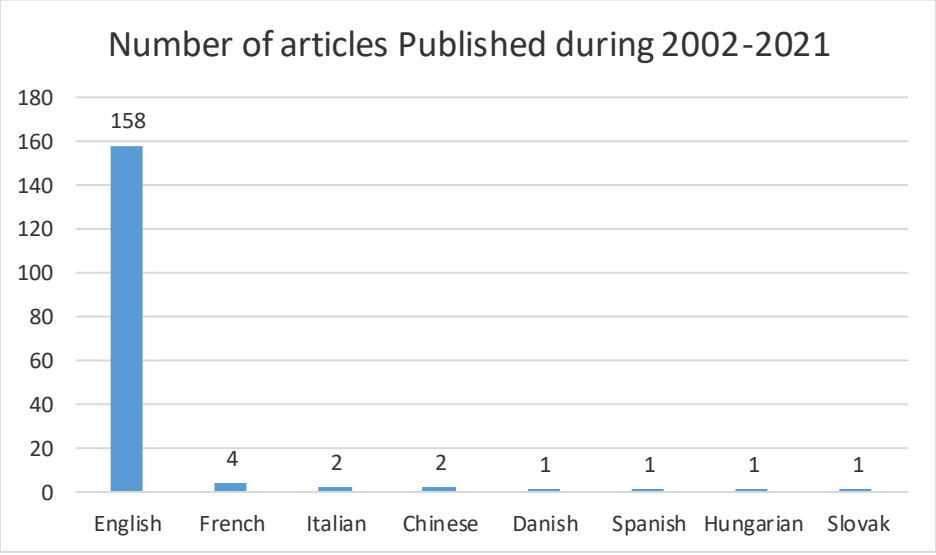
Third chapter is devoted to digital libraries including national digital libraries university digital libraries public digital libraries and School digital libraries etc.

**Language wise Distribution of Articles:**

| Languages | Number of articles Published during 2002-2021 |
|---|---|
| English | 158 |
| French | 4 |
| Italian | 2 |
| Chinese | 2 |
| Danish | 1 |
| Spanish | 1 |
| Hungarian | 1 |
| Slovak | 1 |

From the table it is observed that out of 170 articles 158 i.e. 92.94 % articles are written in English languages. 4 i.e.2.35% article are published in French language, 2.i.e.1.17% article are written in Italian language ,2 i.e.1.17% article in Chinese languages,1 i.e. 0.58 % articles in Danish languages,i.e.0.58 % article in Spanish languages , i.e. 0.58% in Hungarian language and 1. i.e. 0.58 % in Slovak languages languages. From this it is conclude that maximum number of the literature is published in English languages.

Fig.No.1 **Language wise Distribution of Articles**



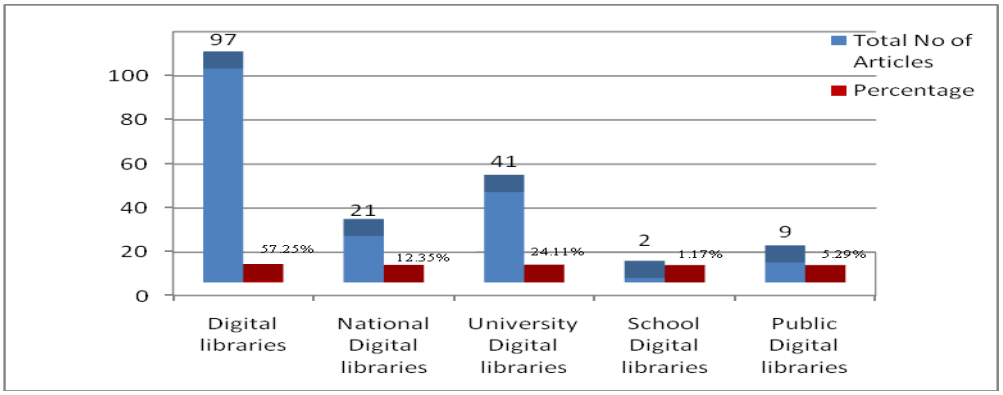
**Language wise Distribution of Articles :**

In the present work author has studied the language – wise distribution of articles. During the period of 2002-2021 is given in the table.

Table No 4.2 **Category – Wise Distribution of Articles**

| Category | Total No of Articles | Percentage |
|---|---|---|
| Digital libraries | 97 | 57.25% |
| National Digital libraries | 21 | 12.35 % |
| University Digital libraries | 41 | 24.11 % |
| School Digital libraries | 02 | 1.17 % |
| Public Digital libraries | 09 | 5.29 % |

Fig.No.2 **Category – Wise Distribution of Articles**




From the above study it is observe that 97 articles i.e. 57.05 % are found purely devoted to information providing articles on digital libraries 21 articles i.e. 12.25 % providing information on National digital libraries 41 articles i.e. 24.11 % are found on University digital libraries 2 articles i.e. 1.17 % found of School digital libraries and 9 article i.e. 5.29 % of Public digital libraries.

**Lotka's Law :**

contains the trends of digital libraries found in India and abroad. Fifth chapter contains conclusion following by a selected bibliography.

| Articles | Author |
|---|---|
| 1 | 170 |
| 2 | $170/2^2$ = 170/4 = 43 (About) |
| 3 | $170/3^2$ = 170/9 = 19 (About) |
| 4 | $170/4^2$ = 170/16 = 11 (About) |
| 5 | $170/5^2$ = 170/25 7 (About) |

The law states that no of authors publishing papers is proportional to $1/n^2$ in each resulting in the authorship of a large number of accounts by a small number of criteria.

The number of authors making n contribution is about 1/n2 of those making one contribution and the proportion of all contribution who make a single contribution is about 60 percent or a (n) = k /n2 where a is a number of authors producing an papers and k a constant.

**Findings and conclusions**:

Out of 170 articles 97 (i.e. 57.09%) articles found on digital libraries which discusses various issues and challenges associated with digital preservation and examines different strategies of digital preservation.

Most of them highlighted initiative at international level to develop workable approaches and best-practice preservation strategies for digital resources in libraries.

The term digital preservation is use in different ways. Kelly (1999) "the storage maintenance and accessibility of digital object (include any digital material such as a text document an image file a multimedia CD-ROM or a database) over long term usually as a consequence of applying one or more digital preservation strategies.

Fresco (1991) defines the term as "the storage maintenance and accesses to digital objective over long term" The key point of this definition is that it is about ensuring that intellectual content which is already in digital from remains accessible to the future generations.

The purpose of preservation is to ensure protection of information of enduring value for access by present and future generations (Conway, 1990) Libraries that traditionally have assumed the responsibility for preserving information face technical organizational, resource and legal challenges in responding to the new demands for digital preservation.

A digital preservation strategy should be evaluated against a set of criteria such as technological feasibility cost-effectiveness in retaining the essential attributes of digital information acceptance by creator's managers of digital repositories & user communities (Hedstorm 1999) the lack of technologically feasible affordable method for digital preservation is a major obstacle for digital libraries. Hendly (1998) identified three potential strategies for ensuring long term access to digital information. These include i0) Technology preservation ii) Technology emulation & iii ) Digital information migration. However, Russell (1999) & Bullock (1999) have accepted "output to permanent paper of microfilm "as a low-tech strategy for preservation.

The important trend in the context of digital technology some of the challenging issues have been discussed below.

I)the question of "copyright law" is a major issue facing the digital technology. The copyright protection is a difficult task here. Using the digital technology is it easy to create digitized copies of the texts photographs etc, but illegal coping and copyright violations may result in losses to digital publishers.

ii) Infrastructure costs – Not all libraries can have the infrastructure like computer hardware software, to access download and store the digitized information. Any library undertaking this project has to take care of the costs involved. If the library is already computerized and has network connection the cost will be lesser but if it is not so then the const will.

The creation of Web-based multipurpose databases concerned with the supreme count and other historically and politically significant institutions events and actors.

Out of total 170 articles 21 (i.e. 12.35%) articles were found on National digital library. The authors outlines the involvement of the National library in a range of digital library initiative which contribute to the fulfillment of its mandate and support the growing range of DL services that complement the library's more traditional collections and services. It also focuses on the digital libraries research which uses a combination of search engines to retrieve Net data and the Internet library.

The author explains the project that will produce a prototype digital library with a focus on environmental information. The aim is to develop the technologies for intelligent access to massive distributed collections comprising multiple terabyte databases of photographs, satellite images videos maps full text documents and multivalent documents.

Out of 170 articles 41 (i.e.24.11%) articles were found on University libraries which work towards the establishment of a hybrid library which will provide a mixture of traditional resources accessible in a physical place, as well as increasing online access to digital resources.

The trend found that University libraries facing the challenges involved in the creation and management of a hybrid library where the traditional library runs in parallel to the electronic library and where the basic consideration is that of integration.

Out of total 170 articles, 2 articles (i.e. 1.17%) found related to school library published on library.

In the current time of information explosion it is extremely cumbersome for a single library to acquire and give service of all published materials and this leads to a shift in emphasis towards non-paper information sources. One of the author examined problems of collection development in traditional libraries and how they can be tacked or managed in the IT environment. Many of the authors focuses on the work of the PANDORA project (Preserving and accessing Networked Documentary Resources in Australia ) and the issues involved in building national archives of digital publication collection development description and control management metadata organization and cooperation preservation and pathways for access.

The World Wide Web is embraced by libraries as a powerful and radically new information medium for its potential in effectively addressing. The concepts of digital libraries and metadata are key components of this model and are anchored firmly within the organization and managerial context of right management and access controls related to source integrity an user security.

Most of the author outlines the obstacles in applying digital security.

Most of the author outlines the obstacles in applying digital technologies to the preservation and access of the intellectual resources of libraries and the advantages which still exist in using analog methods. The challenges involved in the management of a hybrid library where the traditional library uns in parallel to the electronic library and where the basis consideration is that of integrating.

Out of total 170 articles 9 articles found (i.e. 5.29%) published on Public Digital library.

Public library has developed digital reference resources tailored to their patrons needs. The article emphasis especially Public library provides an annotated list of reference meta-sites including the Interned Public library and sites especially designed for children.

Commonly referred to as Lotka's inverse power law was presented by Book stein [20] as a = C/n where C is constant to be estimated; from a given set of data and n = 1, 2, 3 Lotka asserted that this equation applies to a variety of fields.

Lotka's law relates to the productivity of scientists in terms of number of papers published in determining "If possible " the part which man of different caliber contribute to progress of science.

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170 authors contributing 1 article 43 contributes 2 articles 19 authors contribute 3 articles 11 authors contribute 4 articles and about 7 authors contribute 5 articles.

**Conclusion:**

A digital library is meant to allow universal access to all citizens to reach to all kinds of information. The users have the provision to access the digitized materials like e-journals CD-ROM various files through internet various databases of books journals etc. But if all people have free access provision to all information then there may take place unwanted happing because of fun revenge theft enmity etc. Some locally and unavailable materials are often damaged by intruders. So the digital library service must protect its digital sources against the misuse of their contents by various intruders. Hence every one must maintain

and implement some security policy in the digital libraries. Various security techniques like password user identity card hierarchy card methods for access control etc. should be adopted for the benefit of users and institutions. Moreover in the network systems of computers virus techniques like encryption and decryption key system watermarking techniques etc. ate used as a key for authentication as well authorization.

The selection of data and arrangement of data in structured way could be considered as intellectual creation database accordingly should be protected by copyright law. The copyright protection should be encouraging the use of information for creativity and not for creating hurdles in the use of information The librarians should continue to work as catalyst for the free flow of information between the owners of copyright and the users of the information.

Digitization can offer researcher distant access to surrogates of important materials via networked system but there needs to be a coherent and comprehensive UK national preservation strategy.

Majorities of the National libraries are adopting the trend of digital libraries followed by University libraries public library and school library. University libraries which works towards the establishment of a hybrid library which will provide a mixture of traditional sources accessible in a physical place as well as increasing online access to digital resources.

The trend found that University libraries facing the challenges involved in the creation and management of a hybrid library where the traditional library runs in parallel to the electronic library and where the basic considerations is that of integration.

It can be concluded that Foreign libraries following the trend of digital libraries. Indian libraries not yet following the trend of digital libraries they are on the way.

UGC has constituted joint Tariff Technical Committee to implement UGC INFONET connecting more than 170 universities in the country. ERNET India will provide backbone & host 16 mirror sites. INFLIBNET will be monitoring the network to provide assistance to universities for setting up IT infrastructure. This would help in optimizing the overall data traffic and improve performance.

Finally, a library is indeed a growing organism. Individual digital libraries grow and the field itself grows and develops.

**REFERRENCES**

1. Goldman, J : Multimedia for research and teaching the Oyez Oyez Oyez and the history and politics out loud projects. Social Science computer Review 16 (1) spring 1998, p. 30-9
2. Trainer, K: The public services perspective. Collection Management 22 (3/4) 1998, p 199-203
3. Lyon, J. and Hall S. : The creation Literature Online. Digital Publishing Technologies. 2 (1) Jan 97, p. 17-18
4. Greenstein D. and Trent J : Arts and Humanities Data Service. Computers and Texts (13) Dec 96, p. 10-14
5. Marill, J.L. A survey of standards for identifying serial items on the Internet. Acquisitions Librarian (21) 1999, P 83-91
6. Sahu, J.R. Seth, M.K. and Ramesh D.B. : Awareness and use of digital collection by scientists – a study in RRL, Bhubaneswar. Information management in academic and research libraries Proceedings of the 5th National Convention for Automation of Libraries in Education and Research (CALIBER-98) Bhubaneswar India 4-5 March 1998. Edited by M. Mahapatra et. al Ahmedabad India INFLIBNET Centre, p. 123-126
7. Klemperer, K. and Chaoman S : Digital libraries : a selected resource Muszaki Tajekozatatas 45 (7) Jul 1998, p 265-71
8. Fennessy, E.T. Albright, L. and Miraglia, K. Electronic journals and electronic content management systems. Against the Grain 10 (3) Jun 1998, p. 82-4 86

9. Hinche, cliffe, L.J. : From black and white TV to rich interactive learning environments. College & Research Libraries News 59 (9) Oct 1998.
10. Marchionimi, G, Plaisant C. and Komlodi, A : Interfaces and tools for the Library oof Congress National Digital Library program. Information Processing & Management 34 (5)Sep 1998 p, 535-55 il. Raffs.