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ADVANCEMENT OF ACADEMIC LIBRARIES TO DIGITAL WORLD TRANSITION: A REVIEW

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ABSTRACT

Technology breakthroughs and shifting library user needs are driving the continual transformation of today's libraries in a rapidly evolving digital world. The main features of this change and its effects on libraries are witnessed. Libraries have changed significantly as a result of digitalization. By digitizing manuscripts, books, and other materials, libraries have improved accessibility and grown their collections. With the advent of digital libraries, users can now access an extensive array of resources from any location in the globe, removing geographical limitations and creating new avenues for study and research. Physical books, periodicals, and other resources have always been accessible through libraries, which have functioned as knowledge reservoirs. Still, libraries must change in order to stay relevant in the digital age due to the growth of the internet and the abundance of digital content. This paper discusses about the concerns of digital technology in academic libraries, its opportunities in digital world or academic libraries and review about the various ways that libraries are adapting their physical spaces to make more space for digital services and resources.

Index Terms: Libraries, Digital Age, ICT, information literacy, digital resources, digitalisation.

I. INTRODUCTION

Academic libraries are always changing in the digital age to better serve the requirements of researchers, teachers, and students. Academic libraries' conventional function as book repository is changing as a result of the abundance of information available online to become centres for cooperation, information literacy, and support for research.

The growing emphasis on digital resources in university libraries is one of the biggest shifts. Libraries are making investments in digital archives, e-books, and online databases to guarantee that they can offer a variety of scholarly resources. This change broadens the reach of academic libraries beyond their physical locations by enabling users to access resources online and at any time.

Teaching information literacy skills is another crucial function of academic libraries in the digital age. Given the wealth of information available online, it is imperative that researchers and students be able to apply

search tactics, traverse databases, and critically analyze sources. To assist patrons in acquiring these crucial skills, academic libraries are striving to offer workshops, tutorials, and one-on-one consultations.

II. OBJECTIVES

1. To Explore how digital technology has affected libraries today.
2. Analyse the opportunities and difficulties libraries have in changing to the rapidly changing digital environment.
3. Review about the various ways that libraries are adapting their physical spaces to make more space for digital services and resources.
4. Study how digital collections emerge and how online databases are implemented into libraries.
5. Explore about the significance of open-access initiatives and how they are transforming libraries.
6. Examine how libraries could transform into centres of digital innovation, creativity, and collaboration.
7. Study emerging patterns and advancements in the digital era's library transition.
8. Study the way libraries may contribute to bridge the digital divide and promote digital literacy.

III. LITERATURE REVIEW

In the paper titled: Change, change, change: libraries and the future, author **Karen Coyle (1) (2000)**, highlights the changes brought about by new technology are, if there is anything that is hurting libraries at the moment, it is this. Our transition to digital information formats is the biggest transformation we've experienced. The argument that digital is just another format is frequently made, pointing out that libraries already contain collections that include formats like audio and video. It goes much beyond simply switching to a new format when switching from analogue to digital media.

Further the author, **Karen Coyle (1) (2000)**, speaks on Preserving the present for future generations, libraries serve as the archive of the world's collected knowledge. As we enter the digital age, the role that libraries have played for millennia is now under jeopardy. We want this knowledge to be accessible and utilized, hence the word "archive" in this context does not refer to some form of inert storage. This complete spectrum of human intellectual activity is not found in any other institution. In this sense, publishers do not "archive" their own works, nor do they maintain non-profitable products on their list of offerings.

On the design aspect the author, **Karen Coyle (1) (2000)** discusses about Libraries envisioned in the early 20th century as timeless spaces with solid shelves, marble flooring, and books that contained ageless knowledge. This was the Carnegie ideal. The future world we are entering is far less stable and far more flexible. To some extent, this goes against all that we have been taught about the proper operation of libraries. Thanks in part to their adoption of standards and construction of robust, long-lasting systems, libraries have been successful.

The author, **Karen Coyle (1) (2000)** in conclusion speaks Values, not technology, are the key concerns regarding the future of libraries. We have no idea what shape the library will take in the future years, either physically or virtually, due to the speed at which technology is developing. It is the responsibility of librarians to research the technologies at our disposal and ensure that they support the service, collection, and intellectual independence that are the foundational ideals of libraries as they exist today.

The author **Gurjeet Kaur (2) (2015)**, in the article The Future and Changing Roles of Academic Libraries in the Digital Age, the author discusses about Users' need for e-information services is rising and is quickly becoming indispensable. All facets of academic libraries' library and information services have been impacted by the web-based e-learning and teaching environment. This has given library professionals new opportunities and challenges to participate in the knowledge-based society, such as electronic and multimedia publishing, Internet-based information services, global networking, and web-based digital resources. Further the author highlights about the planning that can be helpful in strategic planning procedures in university libraries and, perhaps more crucially, can be used to promote conversation about critical uncertainties.

Different people have different ideas about what constitutes a digital library. One can argue that traditional libraries lack timely and convenient access to current, high-quality, multimedia resources that help break down conceptual and physical barriers and allow for the creation of new services. This is one way that digital libraries outperform traditional libraries in terms of benefits and advantages, was highlighted by the author **Chetana Shah, (3), (2016)**, in the journal paper Future of Digital Library.

Various features were highlighted in the journal article such as Document delivery, data dissemination, intelligent user agents, classification, user access model, publishing, effective retrieval functionality, translating, high services, high performance document servers, browsing and searching, and more are just a few of the services that can be provided by any digital library.

Among their typical browse and retrieval functions are the following ones: Phrase-specific, Boolean operators, wild card, limit field searches, range searching, subject search and steaming, density of terms, frequency of terms, reference links, persistent links, and so forth. The user can search for information in a range of fields using these search options., were highlighted by the author **Chetana Shah, (3), (2016)**, in the journal paper Future of Digital Library.

The study conducted by **Anuradha P, (4) (2017)**, the impact of digital technologies on academic libraries: challenges and opportunities, highlights the impact of digital technology on the evolution of academic library services is evaluated in this essay. The historical evolution of academic libraries is briefly reviewed at the outset, and then the opportunities and challenges facing academic libraries now are discussed. The impact of cutting-edge technological advancements on learning and data management on the academic library industry is also covered, along with the necessity for library workers to acquire new competencies and take on positions like "embedded" librarians.

Various challenges were highlighted by the author **Anuradha P, (4) (2017)**, like Creating interesting services for scholars and learners: There are questions that Google cannot answer. Consequently, the librarian becomes fully aware of the needs and desires of researchers and students in order to significantly and compellingly impact their future work.

Further the author throws light on Libraries now have very different physical and conceptual layouts as a result of both technological advancements and shifting ways that people obtain information. Libraries still play an important role in the community even after they have been updated and adapted for the digital era. Despite the challenging economic times, academic libraries are thriving in adapting to the demands of the research community, staff, and students. They are important hubs for learning, entertainment, and information exchange. **Anuradha P, (4) (2017)**.

In conclusion, the article offers contemplations about upcoming advancements and the influence of digital technological tools. It is evident that for as long as people have written down ideas on paper, libraries have been important resources for academic research. But there's no denying that in the twenty-first century, the library and its function in scholarly study are undergoing a significant change.

Transition/Transformation of Libraries: An Overview, the author **P. Sarasvathy, Manjunath M., Harisha R (5) 2017**, highlights about the how to demonstrate public libraries that are using their space differently with larger, more open areas and a less formal approach to access and display provides numerous examples from around the United States. In the study, he demonstrates how books are categorized (such as jobs, health, money, and trends), then shelved with covers facing outward rather than the spines. He also demonstrates how digital studios were introduced into library design as a means of drawing in a younger, more technologically literate clientele.

The author **P. Sarasvathy, Manjunath M., Harisha R (5) 2017**, also further speaks about the details on policies at the library i.e., instructions on how to utilize the library and its rules and regulations and details regarding library hours, or specifically the hours when the library is open.

Further to this the author **P. Sarasvathy, Manjunath M., Harisha R (5) 2017**, highlights on how Library professionals should rebrand themselves to reflect their competence as content curators in an ever-expanding ocean of knowledge. They should also be producers in order to remain sustainable in the current environment.

The author **P. Sarasvathy, Manjunath M., Harisha R (5) 2017**, in conclusion highlights the future of libraries will focus more on the connections librarians make with communities than on the services they must offer patrons. As a result, librarians must all learn how to become sophisticated librarians. The level of productivity and stakeholder acceptance that academic libraries today enjoy is unprecedented.

In the article The Impact of Digital Technology in the Academic Libraries, authored by **Raja Goud B, (6) 2020**, discusses about evaluation of how digital technologies have changed the way that academic library services are provided. The author **Raja Goud B (6) 2020**, also discusses about the latest innovations in data management and learning technologies and how they affect academic libraries. It also touches on the necessity for library workers to acquire new skills and take on responsibilities like librarians. The author **Raja Goud B (6) 2020** talks about the understanding of digital technology and how multimedia packages and mark-up languages are used to communicate between computers. Further the author **Raja Goud B (6) 2020** concluded that with the thoughts on upcoming advancements and the significance of digital technical

utilities. As long as there has been writing, the library has undoubtedly been a useful resource for scholars. But there's no denying that in the twenty-first century, the library and its function in scholarly study are undergoing a significant change.

The author **Marek Deja, Dorota Rak, Brigitte Bell, (7) (2021)**, in his study uses covariance-based structural equation modelling (CBSEM) to investigate a faculty member's preparedness for the social issues brought about by the digital transformation in academia. Further the author **Marek Deja, Dorota Rak, Brigitte Bell, (7) (2021)**, investigated how this sense of empowerment among academics accounts for the various approaches to information management and the existence of information culture within this community. From the standpoint of governance issues, it was suggested that the elements of information management and information use influence a university's institutional preparedness for the new demands of digital transformation.

On information literacy and digital literacy the author discusses social media and other forms of cooperation in the information environment that have been grown, IL is now also linked to the requirement for information creation and sharing in online spaces. IL is associated with particular communities' and groups' actions within a sociocultural framework.

An example mentioned by the author **Marek Deja, Dorota Rak, Brigitte Bell, (7) (2021)**, a unique setting would be a university, where three distinct groups of people congregate: students, faculty, and librarians. Each of these groups has a unique viewpoint on IL. Librarians are in charge of adapting and implementing IL standards, staff members are seen as trainers in the field of information competencies, and students are seen as information users.

The information for this study was gathered by asking academic staff members at highly esteemed Polish universities about their local contributions to the humanities and social sciences. The local higher education rating was used to determine the target population. There were only 266 responders in total from 6 higher education schools in the study's sample. An online survey was used to gather the data. Purposive sampling, which is non-probability sampling, is the method used in this investigation. Results from the non-probability samples are on par with or superior to those from probability-based sampling. The participants in this investigation comprised academic personnel working in research-teaching roles inside institutions of higher learning. **Marek Deja, Dorota Rak, Brigitte Bell, (7) (2021)**.

The results validated the basic model. Six of the seven assumptions in our study were validated by the research. H6, which examined the direct effect of information management on information consumption, was one of the hypotheses that was not substantiated. While the information literacy variable alone only accounts for 13% of the variance in digital literacy and 19% in self-efficacy, it explains 29% of the variance in information empowerment when combined with the indirect support of digital literacy and self-efficacy measures.

The author, **Sayed Ahmed Inamdar, (8), (2022)**, highlighted on various emerging technologies for library services such as Accessibility technology: As libraries work to increase the inclusivity and accessibility of their collections and services for all users, accessibility technologies are becoming more and more crucial. Libraries can provide better services to individuals with disabilities by utilizing technologies like closed captioning, text-to-speech software, and screen readers.

Internet of Things (IoT): IoT gadgets can assist libraries in better managing their resources and collections and can give users up-to-date information on the location and availability of materials. For instance, sensors can be used to keep an eye on environmental factors like humidity and temperature, and RFID tags can be used to track books and other goods, as highlighted by the author, **Sayed Ahmed Inamdar, (8), (2022)**.

Libraries nevertheless have a bright future ahead of them despite these challenges, because to technologies like cloud computing, artificial intelligence, and virtual and augmented reality, which offer new ways to enhance collections, engage with users, and deliver state-of-the-art services. Libraries have the potential to maintain their important role in promoting literacy and lifelong learning, making knowledge and information more accessible, and fostering a more connected and informed community through the adoption of new technology, concluded by the author **Sayed Ahmed Inamdar, (8), (2022)**.

The author **Yasir Riady, Muhammad Sofwan, Mailizar Mailizar, Turki Mesfer Alqahtani, Lulu Nurul Yaqin, Akhmad Habibi, (9) (2023)**, in their study makes an effort to predict the variables that impact customer loyalty to digital library services, net benefits, user happiness, and system utilization. We used Delone and McLean's information system success model to construct the suggested framework. A survey tool was modified, verified, and dependability tested. Respondents who are Indonesian Open University (IOU) students provided the survey data.

The author carried out study following COVID-19, when students were already used to online or remote learning environments. We designed this study by carefully examining the literature, and then we decided to gather data by conducting a survey in order to understand the variables influencing the system's use, user satisfaction, net benefits, and user loyalty to digital library services. Further the author **Yasir Riady, Muhammad Sofwan, Mailizar Mailizar, Turki Mesfer Alqahtani, Lalu Nurul Yaqin, Akhmad Habibi, (9) (2023)**, discusses about A few academics have attempted to comprehend user loyalty by taking into account not just the satisfaction and net benefits of digital library systems, but also the way users use them. Few academics investigated the variables influencing students' actual usage of digital libraries and their contentment with user loyalty, particularly in the setting of open universities, where previous study has mostly focused on a number of different issues.

The results show that every theory was verified customer satisfaction was the strongest predictor of use, while service quality was the most important factor in predicting customer pleasure. Furthermore, use had the biggest impact on the net benefits variable. **Yasir Riady, Muhammad Sofwan, Mailizar Mailizar, Turki Mesfer Alqahtani, Lalu Nurul Yaqin, Akhmad Habibi, (9) (2023)**.

IV. NEED FOR THE STUDY

The manner in which people look for information has evolved dramatically with the development of technology and the internet. Nowadays, individuals are expecting constant access to services and information at all times and locations. To effectively serve their clients in the future, libraries must comprehend these changing needs.

4.1 Concerns of Digital technology in academic libraries

- a. **Accessibility:** Although digital resources could make remote users more accessible, those without access to technology or dependable internet connections might face difficulties. For certain users, this may result in a digital divide and restricted access to resources.
- b. **Enormous information:** Academic libraries now face a difficult task in properly selecting and organizing pertinent materials due to the exponential growth of knowledge made possible by the digital era.
- c. **Technical innovations:** To enable easy access to digital resources and services, academic libraries must keep abreast of the most recent technological developments. Maintaining infrastructure, hiring qualified personnel, and keeping up with new developments are all necessary for this.
- d. **Licensing and copyright:** As digital technology facilitates the duplication and dissemination of copyrighted content, copyright infringement becomes more likely. To guarantee that they are granting access to materials within the bounds of the law, libraries must manage complex licensing agreements and copyright rules.
- e. **The subject matter proficiency:** Due to the fast flow of information into libraries, academic institutions have to take an active role in library management. National initiatives like the National Digital Library of India have already made significant progress.

4.2 Opportunities in Digital World or Academic Libraries

- a. **Increased Access:** Academic libraries can now provide a wider selection of information and research materials thanks to digital platforms and online resources. For researchers and students who do not have physical access to some resources, this can be particularly useful.
- b. **Academic libraries** can have an important effect on the management and preservation of data due to the increasing amount of digital information generated. This includes providing guidance on how to store, organize, and access data in addition to ensuring data security and integrity.
- c. **Information Literacy:** By utilizing digital platforms, academic libraries can improve their efforts in information literacy. To support the development of critical thinking and digital literacy abilities in students and researchers, they can offer online tutorials, resources, and tools.
- d. **Enhanced Collaboration:** Academic libraries can easily collaborate with other institutions and organizations through digital tools and platforms. Increased resource sharing, knowledge sharing, and collaborative research initiatives may result from this.
- e. **Budgetary restrictions** also make it difficult for libraries to make advancements and purchases of new technology. Libraries must adapt to the ways that technology is changing how people access information in order to stay relevant. Unfortunately, libraries find it challenging to make investments in digital materials, online databases, and computer improvements due to a lack of funding.
- f. Even though e-books are becoming more and more common, printed books continue to rule the reading world. While the number of people using e-books has been rising rapidly, physical books have not been

completely replaced by electronic books. In addition, a lot of readers value the visual attractiveness of printed books. A physical book's typography, cover design, and general layout can improve.

Libraries still have a significant impact on communities in spite of these changes. It has proven beneficial for academic libraries in particular to adjust to the needs of faculty, students, and the research community. They continue to be valuable information sources that support sharing and learning. Academic libraries have been able to sustain their importance and offer important resources and services throughout time of financial crisis.

V Discussion

5.1 To Explore how digital technology has affected libraries today.

a) Inevitably libraries nowadays are greatly influenced by digital technologies. It has revolutionised the services that libraries provide, how they run, and the general experience that patrons have.

b) Web Services Provided by Libraries: In response to the digital revolution, libraries now provide web services. Consumers can use digital platforms to communicate with librarians, reserve and renew books, access research materials from a distance, and take part in virtual workshops and events.

5.2 Analyse the opportunities and difficulties libraries have in changing to the rapidly changing digital environment

a) Expanded Reach: The digital environment offers libraries an opportunity to reach a wider audience. Libraries can extend their services beyond physical boundaries, engaging with users globally through online platforms. This allows them to cater to the needs of diverse communities and provide access to information and resources remotely.

b) Technology Infrastructure: Libraries may have difficulties in enhancing their technology infrastructure in order to accommodate the digital world. This entails making investments in digital platforms, technology, software, and reliable internet connectivity.

5.3 Review about the various ways that libraries are adapting their physical spaces to make more space for digital services and resources

a) Makerspaces: Makerspaces are creative DIY spaces that libraries are introducing. They are frequently furnished with robotics kits, laser cutters, 3D printers, and other tools. These areas let people experiment with technology, pick up new skills, and participate in practical activities. Makerspaces foster creativity, innovation, and digital literacy.

b) Rearranging Spaces to Allow Digital Access: Libraries are reorganising their areas to make room for digital access. This entails setting up computer stations, adding electrical outlets for gadget charging, and offering cosy seats for people who use laptops or tablets. Libraries are making sure that their physical facilities, which combine quiet and more engaging places, are favourable to digital interaction.

5.4 Study how digital collections emerge and how online databases are implemented into libraries

a) Library digital collections are indexed and searchable with the use of metadata, which is created for every item. Descriptive data including title, author, subject, date, and keywords are included in metadata. Users can more effectively discover and access particular resources from the digital collection with the aid of this metadata.

5.5 Explore about the significance of open-access initiatives and how they are transforming libraries

a) Increasing Impact and Visibility: Open-access programmes help make scholarly publications more visible and influential. Paywalls and subscription restrictions are taken down to increase the discoverability and accessibility of research. This may result in more readers, more citations, and more author recognition. Additionally, open access makes research more accessible to audiences outside of academia, such as practitioners, policymakers, and the general public, which increases the research's impact on society.

5.6 Examine how libraries could transform into centres of digital innovation, creativity, and collaboration

a) Collaboration and Co-Working Spaces: Libraries can redesign their physical spaces to incorporate group study rooms, flexible seating options, and collaborative workstations. These areas can support virtual collaboration, enabling people to exchange ideas, collaborate across disciplines, and work on projects together. Virtual collaborations can be facilitated by libraries via online tools and platforms.

5.7 Study emerging patterns and advancements in the digital era's library transition.

a) Digital Skills and Literacy Development: Libraries are essential for fostering digital skills and literacy. To assist users in mastering digital competences, critical thinking techniques, and navigating the digital world, they provide workshops, classes, and training programmes. Libraries collaborate with community organisations and educational institutions to offer digital literacy to all.

5.8 Study the way libraries may contribute to bridge the digital divide and promote digital literacy

a) Digital Skills and Literacy Development: Libraries are essential for fostering digital skills and literacy. To assist users in mastering digital competences, critical thinking techniques, and navigating the digital world, they provide workshops, classes, and training programmes. Libraries collaborate with community organisations and educational institutions to offer digital literacy programmes for all age groups.

VI CONCLUSION

In conclusion libraries have a challenging but positive future in a rapidly evolving digital environment. Libraries continue to be vital to society even in the digital age, despite concern about the digital age's influence on librarians and the obsolescence of traditional library services.

The digitalization of material and the availability of internet resources are two major issues that libraries must deal with. There is a belief that libraries are unnecessary in light of the popularity of e-books, online databases, and search engines. This, however, ignores the crucial role libraries serve in ensuring all in society gets proper access to information.

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