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LEVERAGE TECHNOLOGY TO ENHANCE SECURITY IN LIBRARIES: LITERATURE REVIEW

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ABSTRACT

Over the past decade, public libraries have seen a tremendous transformation, becoming multifunctional institutions that function as hubs for innovation, media platforms, and community places for local entrepreneurs. Modern libraries are equipped with advanced technology and encounter a range of risks in the technology-driven setting. Consequently, it is imperative to priorities network security and cyber library insurance in order to safeguard against potential cyber-attacks.

The literature review encompasses a range of subjects the pervasive influence of Artificial Intelligence (AI) on human existence, the utilization of Cyber-Physical Systems (CPS) within library settings, the utilization of contemporary technologies for record management in public libraries, and adoption of security protocols in academic libraries. Research also investigates the difficulties and potential advantages associated with the implementation of technologies such as the Internet of Things (IoT) and the utilization of technology with NIT libraries, The study highlights the significance of comprehending and resolving security issues, adopting suitable security protocols, and cultivating a secure digital milieu for both the broader populace and the regional library system.

KEYWORDS: *Academic Libraries, Cybercrimes, Cybersecurity, Artificial Intelligence, Emerging Technology.*

1. INTRODUCTION

Libraries now encompass more than just books and documents. Over the past decade, our public libraries have undergone a substantial metamorphosis, evolving into multifaceted establishments that serve as centers for innovation, media platforms, and communal spaces for local entrepreneurs and artists. Modern libraries have multiple functions and house state-of-the-art equipment. Libraries must be aware of the hazards they face in the current technology-driven environment in order to effectively operate as the transformed entity they have become.

Libraries often have computers that have high bandwidth and a local network connection. Moreover, due to their historical practice of providing unrestricted access to information, libraries continue to be a significant focal point for hackers. This elucidates the need of network security and the imperative of cyber library insurance, which collaborates to protect libraries from damage and furnish them with the necessary resources following any magnitude or extent of an attack.

Understanding the potential risks and implementing appropriate security measures are crucial for fostering a secure digital environment for both the general public and the local library system.

Multiple research was undertaken on various facets of safety concerns.

This study provides an overview of the relevant literature available. There is a little body of research that directly pertains to the topic under consideration. An examination of the existing body of literature indicates that a significant proportion of studies are sourced from other countries, and scholars in the field of library and information science acknowledge and value the significance of these studies. The researchers haveendeavored to present a concise evaluation of the existing literature in both domestic and international contexts. The present review was conducted utilizing the SCOPUS database and encompasses several of the issues enumerated below. A comprehensive analysis of available literatures has been conducted on number of publications out of which 10 relevant publications have been classified and arranged here in a sequential manner according to their year of publishing (Latest to Old).

2. Literature Review

The following literatures were reviewed for the purpose of this article.

Sharma, Shweta (2021) in her research talks about the impact of Artificial Intelligence (AI) in todays time. As per her research paper, "The AI is yet an emerging science in various features as indicated by the difficulties experienced in 21st century. Nowadays one can't imagine a world without AI as it has had a gigantic impact on human life". The essential objective of artificial intelligence is to develop advancement-based activities which addresses the human data in order to handle issues. Basically, artificial intelligence is an examination of how an individual think, works, learns and makes choices in any circumstance of life, whether or not it may be related to basic reasoning or learning new things or thinking equitably or to produce an answer yet. Computer based intelligence is in almost every sphere of human life, including gaming, language preparation, discourse acknowledgement, insight robots, money-related exchanges, and so forth; every movement of human life has become a subset of AI. Security issues have become a significant threat for governments, banks, and associations due to online ambushes by hackers. AI and cyber security have expanded and become more essential in the progressing event but AI is suffering also as it is a dynamic and fragile issue associated with human life.

Liang, X and Che, H (2020) in their paper presented the current state of research of Cyber-Physical System (CPS) and its application in libraries. CPS is a kind of large-scale and networked system that consists of physical and cyber elements and is currently of interest in academia, industry and government. In this survey, the definitions, theoretical foundation and basic applications of CPS are systematically reviewed. In addition, the development of library and current research of CPS application in library management are presented. The vision and challenge of smart library are also discussed. This study shows that a lot of CPS technology applications are still in initial stage, and explores CPS potential impacts on libraries. The application of CPS in library management has not been paid much attention, this study provides a prospective for the application of CPS libraries.

Masenya, Tlour Maggie (202) in her article published that many organizations, including libraries and information centers are struggling to manage their records. Effective management of records ensures the public library's ability to function effectively and provides documentary evidence of scholars and citizens. Recently, modern technologies such as blockchain, cloud computing andInternet of Things (IoT) have increasingly been adopted by various organizations

to manage records while other organizations are slow to adapt them. Public libraries are positioning themselves to take this advantage by implementing innovative technologies to manage their records. This study investigates the application of modern technologies in managing records in public libraries with the view to highlight how these technologies can revolutionize library practice. The study established that although public libraries acknowledge the importance of modern technologies such as blockchain, cloud computing and Internet of Things (IoT) in managing their records, these technologies are being slowly adopted due to lack of information technology, infrastructure, technical support, and knowledge and skills. Therefore, all these challenges made it difficult for librarians and information professionals to maximize the benefits of these technologies and they struggle to see how these technologies can be incorporated into their institutions. Public libraries thus need to better understand best practices for records management, which may go a long way in influencing library policy to support records-management processes. The study recommends that public libraries consider exploring collaborating with other sectors such as archival services to implement modern technologies for the purpose of managing records.

Pandya, C.K, &Boricha, S.J (2019) Academic libraries are the center of the learning community, giving students and professors a space to do research and further their knowledge (Simmonds, 2001). To do this, librarians must create security policies for library systems and be prepared for quick access to information sources. This article discusses the management of collection security in university libraries.

The major goals are to find out how collection security management has been implemented in Gujarati academic libraries. To compare the degree of implementation of collection security management in academic libraries according to library type and to make suggestions about potential ways to improve the situation. Access to any area of the library must be regulated and explicitly specified by academic library administration. Additionally, staff members should enforce restrictions by politely confronting any illegal users found to be outside the permitted public area.

The findings of this study demonstrate how expensive and damaging to library items the issue of theft and mutilation is. In order to deter theft and mutilation of library resources, library administration should maintain the security system and purchase enough supplies.

Liang, XL and Chen, Y (2018) reported on the current state of research on applications of IoT in libraries, describe challenges that IoT application face in libraries and discuss directions of adopting IoT in libraries in the future in their paper. To conduct this research, the literature of IoT and its application in libraries were reviewed by examining existing literature in institute of Electrical and Electronics Engineers (IEEE) Xplore. This study provides a prospective for the application of IoT in libraries;the technologies of IoT have the potential in betterment of library services. The limitation of this study is that only IEEE Xplore is included. Other database should be explored in future research. The application of IOT in libraries is an emerging issue; a systematic and extensive review of recent research on applications of IoT in libraries is unavailable. This paper present and overview of IoT in libraries, findings and potential research opportunities.

Arora, Kumar Ajay (2017) in his paper described to ascertain how NIT librarians at a few northern Indian NIT libraries feel about the use of technology in their institutions. Based on a questionnairesurvey of the chosen librarians, the study was conducted. The article looks into how technology is now used and how proficient librarians are using it. It also establishes the

technology's perceived benefits and drawbacks, as well as any obstacles to technology adoption at NIT libraries. The findings indicated that librarians have a propensity for technology, and it is critical to open to change. However, challenges like the dependability of the technology, untrained employees, and a lack of sufficient funding are causing delays in the implementation of technology in NIT libraries. The survey clearly shows that NIT librarians' employee technological tools, but they are unable to put such tools into practice due to a lack of qualified staff, a separate IT center for resolving connectivity issues, and problems with the technology's dependability.

Bhavsar, S (2017)presented the Libraries have to decide to invest in various measures required to pre-empt /curb cybercrimes and how they perform their respective cost-benefit analysis of such investments. Cybercrimes are growing because of the speedy evolution of technology and the laws, including changes, only follow technology. Protection measures such as hardware identification, access controls software and disconnecting critical libraries applications should be devised. It should be noted that technological apparatus does not commit crimes; people do. The perpetratorsgreatest advantage is the ignorance of the sentinel of the systems. While different countries are passing different legislation relating to cybercrime, the awareness of the situation is still lost in our bureaucracy. In order to effectively tackle this problem, organizations need to make the public aware of the seriousness of the authorities to pre-empt cybercrimes.

Kalbande, D.T, Chavan, S.P &Golwal, M.D (2013) reports on a research done at engineering colleges in Marathwada region to determine how students felt and acted about library damage. A questionnaire was given to 1000 randomly chosen college students from across the eleven colleges in order to gather the necessary data, and 505 of them responded. Analysis of their answers revealed that the majority of respondents did not view the theft, mutilation, or passing of books and journals as vandalism of library material; rather, they saw it as a form of academic self-survival.

Limited library resources, the expensive cost of personal textbooks, the high cost of photocopying, and peer pressure are all factors that contribute to vandalism. There are suggestions for easing lending restrictions, stepping up user education, providing numerous copies of textbooks, and implementing strong security measure.

The goal of the study was is to:

1. Identify various vandalism related acts
2. To determine thereasons for vandalism
3. To gather use feedback regarding vandalism
4. To evaluate the actions done by government, committee, personnel, and management of the library to stop the damage.

In order to determine the current circumstance, the present study used survey methodology to gather data from Engineering college Libraries linked with SRTU.

The present study looked at the users' views on various types of vandalism that either intentionally or unintentionally harm library property. The report makes it quite clear that theft and library mutilation have an impact on students' education.

Every librarian should have strategy in place to deal with vandalism as it happens and to stop it from happening in the first place. Because of this, the researcher believed that all of the illegal

issues and vandalism from the engineering college libraries are likely to minimized but not entirely prevented.

Chatterjee, A &Maity, A (2013) With the application of information technology to nearly every aspect of library service, security becomes a serious problem for the contemporary, well equipped libraries. The previous security risks in the library are now replaced by contemporary network risks and cybercrime. In this paper, two major sets of risks to contemporary libraries are briefly discussed, along with possible preventive actions. Some of these preventative actions are presented in the article in the library and information center.

Security threat, library theft, library vandalism, and cybercrime are some related terms.

The present study is mainly focused on modern library services, backdrop of the situation, types of security aa treats in libraries, strategies for preventing emerging security threats, duties and responsibilities for the librarian and thrust area of research.

Outcome of the present study as follow with the use of IT in modern society, the function of libraries has undergone a significant transformation. The new services offered by the libraries and information centers are well placed. However, maintain them in good shape and making the users feel comfortable is what matters most. Only when the librarians are assisted in taking the appropriate action by the library administrators is this possible. The library's claim state is hampered by the riding number of threats and acts of vandalism over there. Therefore, suitable security taken by all libraries and information centers, and each type of library should have its own budget.

Osayande, O (2009) in his paper published the concerns of librarians about the security of their collections. This study investigates and assess security challenges in academic libraries, such as dealing with disruptive and deviant clients, dealing with fire outbreaks, mutilation or vandalism of library resources, and theft of library materials. This study's main focus is on the problems with the material theft and mutilation that have plagued university libraries. Lack of consideration for others' needs, broken copy machines, ongoing power outages, lackof security, etc. are few of the causes of patrons stealing and /or damaging library goods. The study looks at how crimes against libraries operate, their effects on professors and other users as well as the library itself. The report concludes by recommending proactive, modern methods for combating the threat of theft and damage in academic libraries. The installation of Electronic Security Systems (ESS), such as the 3M security system, electronic surveillance cameras/CCTV, Radio Frequency Identification (RFID) System, etc., security staff, window protection, and facility considerations when planning a library building are a few examples.

The finding of the study is describing there is no denying that academic libraries have additional security issues. The theft and mutilation of periodicals' books and other physical resources are just two of the issues that have been revealed by the current literature on library crimes. It is imperative that librarians of academic libraries think about installing electronic security systems to minimize or prevent unethical losses and vandalism of library materials because the cost of books and journals id increasing significantly and the libraries are required to diversify funds into other expensive materials while considering the most recent technology. Additionally, there is little use in investing millions of naira or foreign currency in new acquisitions of information resources f security systems are not first purchased and installed to protect them.

3. CONCLUSION

A thorough examination of existing literature undertaken to assess previous studies on a range of topics, encompassing the societal ramifications of Artificial Intelligence (AI), the application of Cyber-Physical Systems (CPS) in library environments, the incorporation of modern technologies like blockchain and Internet of Things (IoT) in record management, and the implementation of security measures in academic libraries. These studies highlighted the need of understanding and addressing security issues in the digital age to create a safe environment for both library users and staff.

In his study, Sharma (2021) investigates the significant impact of Artificial Intelligence (AI) on the human experience and the challenges associate with its incorporation. Liang and Che (2020) conducted a study to explore the potential use of Cyber-Physical Systems (CPS) within the realm of library management. Their research underscores the need for more investigation in this particular area. Masenya (2020) did a study that focuses on the application of modern technologies for the purpose of managing records within public libraries. The study highlights the challenges faced by libraries while endeavoring to incorporate new technology. Pandya and Boricha (2019) analyze the importance of collection security management in academic libraries and provide recommendations for improving security practices. Liang and Chen (2018) conducted a study to examine the use of Internet of Things (IoT) technology in library environments, as well as to analyze the challenges and potential benefits associated with its implementations. Arora (2017) did a study that investigates the utilization of technology inside NIT libraries and the challenges faced by librarians in adopting innovative technological improvements. The necessity for libraries to allocate resources towards the implementation of cybersecurity measures in order to reduce cybercrimes is emphasized by Bhavsar (2017). Kalbande, Chavan, and Golwal (2013) conducted a study that investigates the phenomenon of library damage in engineering colleges, with the objective of gaining a comprehensive understanding of students' viewpoints towards library resources.
The studies described above underscore the importance of cybersecurity in library environments and underscore the need for proactive measures to protect against cyber threats. In order to safeguard their digital assets and ensure the welfare of their patrons, libraries must priorities staying abreast of technological advancements and implementing robust security protocols. By strategically addressing these challenges and dedicating resources to bolstering cybersecurity protocols, libraries may maintain their significance as vital community hubs for promoting innovation, aiding education, and facilitating information accessibility in the digital age.

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