

FACTORS INFLUENCING LIBRARIANS' INTENTION TO USE BLOCKCHAIN
TECHNOLOGY: AN EXTENDED TECHNOLOGY ACCEPTANCE MODEL
PERSPECTIVE

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Abstract

The paper identifies and predicts the factors that could lead to successful blockchain adoption. The study conceptualizes blockchain technology as a dynamic capability that should be possessed by the academic librarians for them to continue to remain productive. The factors influencing the blockchain adoption intention were modeled using the theoretical lens of the adapted Technology Acceptance Model (TAM). The study was limited to professional librarians in Nigerian academic libraries. A descriptive survey approach was used and questionnaire was used to gather information from the respondents. All professional librarians (292) of Federal, State and Private Polytechnics in South Western, Nigeria were covered in the study. Sample was drawn by applying total enumeration technique where all the respondents in the study population constitute the sample size. Data collected were analysed using percentage and frequency count, and the results were presented in tables and charts. The findings identify perceived ease of use, perceived usefulness, security & privacy concern, competitive pressure and technological know-how as the most influencing factors for blockchain technology adoption. The findings of this study will serve as a guide for decision-makers of academic libraries in assessing their adoption probability and help develop future adoption strategies that would enhance library service delivery.

Keywords: Librarian, Blockchain, Intention, TAM, Nigeria

1. INTRODUCTION

Libraries have undergone a remarkable evolution from ancient cuneiform and papyrus to the

printing press and now digital technologies. The digital revolution has transformed how libraries store, access, and disseminate information. As technology advances, libraries continually adapt them to meet evolving needs of their users. However, security concerns pose a significant challenge. Fortunately, blockchain technology offers a promising solution as it provides secure and transparent storage of transactions through advanced cryptography. Blockchain technology is a distributed and decentralized public digital ledger that could be employed to save dynamic transaction data and static records across several computers so that each record would not be modified retroactively without the collusion of the network and alteration of all subsequent blocks (Almekhlafi *and* Al-Shaibany, 2021). Nakamoto conceptualized the idea of blockchain and the idea was communicated to the general public in 2008 during the presentation of a seminar paper titled ‘Bitcon: A peer to Peer Electronic Currency System’ (Nakamoto, 2008). Since then, academic institutions, especially libraries have begun to fully understand the possibilities of adoption of the technology. The integration of blockchain technology in libraries is an evolving field with ongoing research and implementation efforts aimed at improving library services and operations. Libraries have been exploring blockchain technology Since 2019 through innovative projects and today, its adoption continues to expand with more institutions leveraging blockchain's potential to drive digital transformation and enhance library services. As reported by Albid (2021) and Meth (2019), libraries, especially academic libraries are impacted by blockchain technology in numerous ways. The technology are being used in library to gather, preserve and share authoritative information devoid of many technological hurdles, it can as well help academic libraries overcome the challenges associated with the management of E-resources, such as privacy issues regarding information, unauthorized access and theft of information, computer viruses and other malware that corrupt information contents. Despite these great benefits of blockchain technology, most libraries especially those in the developing countries seem not to be interested in its adoption due to poor understanding of the benefits of the technology to library operations. Meanwhile, willingness of librarians and other stakeholders to adopt the technology will surely have effect on the success of the technology. Adoption is conceptualized in this study as the librarians' willingness to embrace and incorporate blockchain technology into their work processes with a focus on understanding the factors that influence their intention to adopt this innovative technology. This study seeks to examine the adoption of

blockchain technology in Nigerian academic libraries within the lens of an adapted Technology Acceptance Model (TAM). By leveraging adoption models, libraries can better navigate the process of adopting blockchain technology and maximize its potential benefits. An array of technology acceptance models exist, but TAM was adopted for this study because the model's strong predictive ability had been established by some information technology (IT) adoption studies (e.g Bryan and Zuva, 2021). However, Mathieson (1991) argued that it is insufficient to rely on the only constructs of TAM to predict IT adoption, thus, this study considers an adapted TAM suitable in order to overcome the above-identified shortcoming of TAM. Since an adapted TAM was used, attitude was removed from the TAM constructs while lack of technology know-how, security & privacy concern and competitive intensity were added to the model's constructs to investigate adoption of blockchain among academic libraries in Nigeria. By examining the role of the selected TAM constructs and other relevant factors, this research will contribute to the growing body of literature on blockchain adoption in libraries and provide insights for promoting the effective integration of this technology in Nigerian academic libraries.

2. STATEMENT OF THE PROBLEM

Obviously, the rate at which the blockchain technology is gaining ground in libraries in developed countries is a strong indication that it will solve a lot of library problems. However, since its creation in 2008, existing literature on the subject matter suggests that Nigerian academic libraries have been slow to adopt blockchain technology which indicates a need for further investigation into the factors influencing its adoption. The implication of this is that, the potentials of this new technology would not be fully maximized if it is not adopted at a broader level. Moreover, the existing literature on blockchain technology focuses on the technology itself rather than its adoption (E.g. Tella, Amuda and Yusuf, 2022; Bhatia, 2020). To address the knowledge gap, this research explores the determinants of blockchain adoption in Nigerian libraries by developing a model that can guide libraries in their adoption journey.

3. OBJECTIVE OF THE STUDY

The main objective of the study was to identify the factors that could influence librarians' intention to adopt blockchain while the specific objectives were to:

- i. examine the influence of perceived ease of use on blockchain adoption intention;
- ii. determine the influence of perceived usefulness on blockchain adoption intention;

- iii. investigate the impact of security and privacy concern on blockchain adoption intention;
- iv. examine the impact of competitive intensity on blockchain adoption intention;
- v. investigate the impact of technological- know-how on blockchain adoption intention.

4. RESEARCH HYPOTHESES

H01: Perceived ease of use is a significant predictor of librarians' intention to adopt blockchain technology.

H02: Perceived usefulness would positively impact adoption of blockchain among librarians in Nigerian academic libraries.

H03: Positive relationship exists between security concern & privacy and the librarians' intention to adopt blockchain.

H04: There is a significant relationship between competitive intensity and the adoption of blockchain among librarians in Nigerian academic libraries.

H05: Technological -know-how would have a significant interest on librarians' blockchain adoption intention.

5. Literature Review

5.1 The Concept of Blockchain and Its Application in Libraries

Blockchain technology was launched by Satoshi Nakamoto in 2009 as a commercial project. The technology is described as a form of distributed ledger that allows for the storage and sorting of records into blocks (Government Office for Science, 2016). As reported by Deloitte (2016), Blockchain is a distributed ledger technology that could be shared, replicated and synchronizes by a group of people. Blockchain technology is beneficial to libraries in many ways; this is evident in the study of Lastovetska (2019) who reported that blockchain creates a unique and verifiable record that can be accessed by anyone; it could be tied to digital materials and used as a method to show “proveable scarcity” of that resource. This would allow digital materials to be uniquely identified, controlled, and transferred, as such publishers could be reassured that no copies were being made. Hence, Librarians do not need to be skeptical about adoption of

blockchain technology because it has much potential in library operations. Another prominent use of blockchain by the library as identified by O'Byrne (2020) is the charging and discharging of library materials, interlibrary loan, collection development processes (selection, ordering, acquisition, supply, payment of library resources). Additionally, with blockchain, research and academic libraries can offer research data management services to secure and protect the research data of their clientele for posterity.

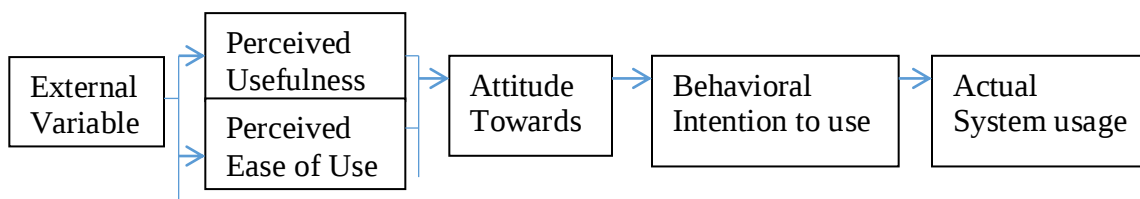
Hoy (2017) reported that preservation, gathering, preserving and sharing of authoritative information could be done easily done with the aid of blockchain technology. Corroborating this, Coghil (2018) observed the possibility of blockchain for the transfer of fund from libraries to vendors and maintaining electronic receipts as digital evidence. Ahmad (2024) explores blockchain's transformative potential in libraries, focusing on applications such as secure digital rights management, streamlined interlibrary loans, and transparent data management that empowers users. Through a review of existing literature and case studies, the research highlights blockchain's as a technology that could enhance operational efficiency and reposition libraries as secure, trustworthy, and user-centric hubs in the digital landscape. Elihaki et al. (2025) explores the potential of blockchain technology in academic libraries. By conducting a systematic review of existing literature across six authoritative databases, the research highlights the benefits of blockchain adoption, including enhanced data security, transparency, collaboration, innovation, and access control. The study concludes that blockchain technology holds significant promise for academic libraries, offering advantages over existing systems and improving service delivery. Similarly, Hanif and Sha (2025) investigate the integration of blockchain technology in library management systems by focusing on enhancing data security and transparency. Using a mixed-methods approach, the study reveals that blockchain can improve security, prevent data manipulation, and promote transparent record-keeping. Also, Visnudharshana et al. (2025) examine the transformative potential of blockchain technology in library systems by focusing on data integrity, user privacy and digital rights management. The study explores the integration of smart contracts, decentralized digital archives, and enhanced metadata cataloging, as well as blockchain's interoperability with AI and IoT. Through case studies and a strategic adoption framework, the research provides insights and best practices for library professionals, highlighting blockchain's potential to create more resilient and innovative libraries. As indicated

above, a lot of benefits could be derived by libraries if they integrate the technology into their services, however, Dilhani, Suraweera and Wadasinghe (2021) warned that complexity and environmental unsustainability may create hurdles for the development of the technology.

5.2 Theoretical Background

Originally, Davis developed TAM in 1986. It is an information system model that explains the decision-making process by which users may or may not adopt and implement a new technology. The theory is an extension of the theory of reasoned action (Fishbein and Ajzen, 1975) which seeks to explain consumer-purchasing behavior. The model proposes that user motivation can be described by three factors: Perceived Ease of Use, Perceived Usefulness, and Attitude towards using the systems. This is as depicted below:

Figure 1: Technology Acceptance Model (TAM) (Davis, 1986)



TAM hypothesized that attitude towards the system is a considerable factor whether used or rejected by the user. User's attitude is influenced by two primary convictions namely perceived usefulness and perceived ease of use. In 2000, Venkatesh and Davis added social influence processes, cognitive instrumental processes, and a full explanation of the main driving forces to TAM, transforming it into TAM2. Later in 2003, the Unified Theory of Acceptance and Use of Technology was proposed by Venkatesh Morris and Davis (2003), who also identified and examined eight models connected to behavioral intention to utilize information technology (UTAUT) and based on TAM2, Venkatesh and Bala (2008) proposed TAM3 in 2008, including the influence of perceived risk and trust on system use. TAM adoption studies mostly looked at the factors that influence individual such as employees, customers and any other type of

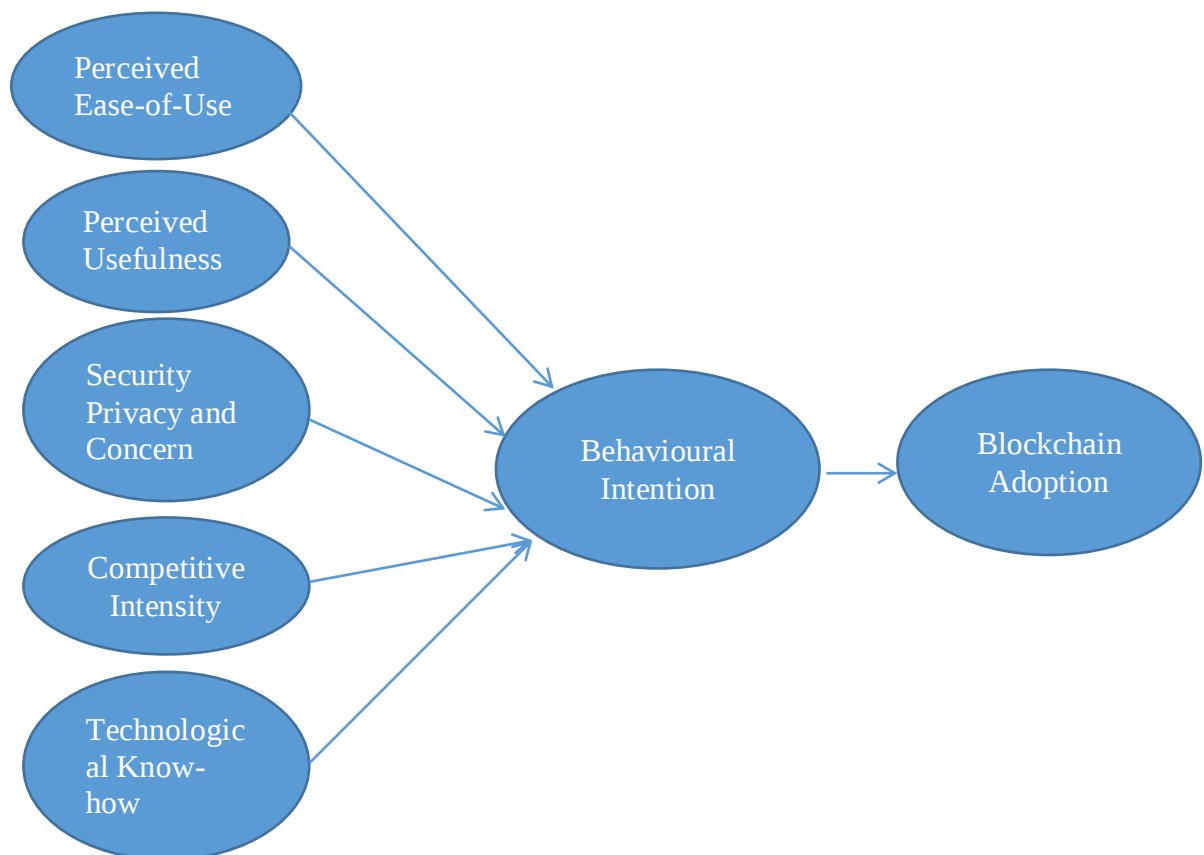
individual users' technological adoption decision Dehghan, Mashatan and Karavidas (2022). TAM had been recently used to study users' intentions to adopt blockchain. For instance, Duan et al. (2025) used a quantitative research approach to identify the key factors influencing the acceptance of blockchain technology implementation and usage among university librarians in Pakistan. In this research Modified Technology Acceptance Model was applied as the theoretical framework to assess the participants' perceptions of various constructs. These include, ease of blockchain technology use, usefulness, librarians' behavioral intentions, skills, organizational infrastructure and performance by the implementations of Blockchain Technology. A cross-sectional survey was conducted targeting 255 university librarians from both public and private institutions in Pakistan. The research findings revealed that all hypotheses based on the Modified Technology Acceptance Model (MTAM) were statistically significant. Mandal (2024) leverages public and open-source software to unlock the full potential of blockchain technology in libraries using a comprehensive literature review that highlight blockchain's benefits in modernizing library services across various areas. Building on this review, the authors developed a research model based on five key measures: optimism, innovativeness, attitude, discomfort, and insecurity. The findings show that the constructs under study foster knowledge sharing and idea generation which drives innovation in academia. Khan (2025) found that adopting blockchain technology in e-libraries is crucial for improving service quality, infrastructure, and resources. The study identified key factors influencing user intention, including optimism, informativeness, perceived usefulness, perceived ease of use, attitude, and intention to use. All the variables significantly impact users' intention to adopt blockchain-based digital libraries. Other studies that have applied TAM in their studies include (Wang, 2022; Kambe, Angappa and Himanshu 2019). The significance of most factors tested in the above studies confirms the Technology Acceptance Model's (TAM) effectiveness in predicting technology adoption intentions.

5.3 Conceptual Model and Hypotheses Development

TAM is a straightforward, adaptable model with few constructs that may be modified or expanded in different ways, thus, there had been several modified TAM studies. The current study will follow suit by modifying TAM constructs to investigate blockchain adoption intention of librarians. In line with some of the extant studies (e.g Troshani, 2021), this study will remove attitude from TAM because according to these studies, the influence of the attitude as a variable

were insignificant. This study identified technological-know-how as a crucial factor that could influence adoption of blockchain in academic libraries because it is believed that successful adoption and implementation of blockchain in libraries is highly dependent on technological expertise of librarians being the end users of the technology. Additionally, security & privacy concern was identified as another factor that could influence blockchain adoption intention because libraries, being reliable sources of information would be particular about the security of their information. Once that is ascertained, their willingness to adopt the technology will be high. Lastly, competitive intensity was considered by this study as a variable that could influence blockchain adoption intention because several other studies have confirmed it as a significant variable that could influence technology adoption intention (Liu, Shi, lyu and Mo, 2022). Research model for the study is as depicted below:

Figure 2: Research Model of the Study



The modified TAM model suggests that librarians' intention to use blockchain technology in Nigerian academic libraries is influenced by their perceptions of its usefulness, ease of use, security and privacy concerns, competitive intensity, and their technology know-how. By understanding these factors, library administrators and policymakers can develop strategies to promote blockchain adoption, address concerns, and provide necessary training and support.

5.4 Hypotheses Development

The proposed hypotheses are shown above and the theoretical explanations of the study's constructs are as given below:

The degree to which a person believes using new technology would be effortless is known as perceived ease of use (PEOU) (Davis, 1989). PEOU acts as a predictor of the desire to utilize a new technology in TAM. The rationale behind the inclusion of PEOU in TAM's constructs is that a user would be driven to intend to utilize a new system if he/she feels comfortable using it. Several studies have found the ease of use predicts whether a person will adopt a new technology. For instance, the study of Kambe, Gunasekaran, Kumar, Belhadi and Foropon (2021) that sought to uncover factors affecting the adoption of blockchain technology identified perceived ease of use as one of the most important explanatory factors for blockchain adoption in organizations. Similar to this, a study by Nadeem, Liu, Pitafi, Younis, and Xu (2021) revealed a favorable association between perceived ease of use and the intention to utilize blockchain in China. Based on the aforementioned data, this study assumes that academic libraries' interest in adopting blockchain technology may increase if they believe it to be simple to integrate into their operations. Hence, it is hypothesized that;

H1: *There is a significant relationship between perceived ease of use and the adoption of blockchain technology*

The degree to which a person thinks employing a certain technology would improve his or her ability to perform a job is known as perceived usefulness (Davis, 1989). The subjective probability that using a system or applying a system may improve the job performance of the users within the setting of an organization is what is meant by perceived usefulness (Davis,

1989). Previous research demonstrated a strong correlation between adoption intention and perceived usefulness in various contexts (Kambe, Gunasekaran, Kumar, Belhadi and Foropon, (2021); Nadeem, Liu, Pitafi, Younis, and Xu (2021). Additionally, it is clear from the body of literature that blockchain can improve librarians' job performance in a variety of ways. For instance, libraries can use blockchain to connect their network of libraries, host digital peer-to-peer sharing, and protect digital first sale rights, as well as to build permission-less metadata to address certain cataloguing limitations. With this justification, it is hypothesized that;

H2: *Perceived usefulness positively influences academic libraries' blockchain adoption intention*

Blockchain has many potentials; however, it comes with its own challenges. The real-time transfer of enormous amounts of data is essential to a blockchain network and its applications. Hackers can use the anonymity of an account to eavesdrop on data being sent to internet service providers. While data transfer and operations continue as usual in the face of a routing attack, participants in the block chain are typically oblivious of the danger. These assaults run the danger of regularly exposing private information without the user's knowledge. Based on this, it is hypothesized that;

H3: *Security & privacy concern will negatively impact academic libraries block chain adoption intention*

Competitive intensity is the amount of pressure rivals put on an organization in a market context where there is fierce competition for resources (Singh and Vibhakar 2019). Organizations frequently adopt innovative practices and further optimize the allocation of production elements in response to competitive pressure to prevent their extinction by the market (Zhu, 2006). Empirical papers such as (Liu, Yan and Wang, 2022) show that competition has a positive impact on information technology adoption. Moreover, the era of libraries as the exclusive repositories of structured knowledge has passed, and with the development of ICT, information searchers now have access to a wealth of data through alternate sources like Google. This has an impact on libraries since it means that if they wish to continue serving as information providers, they must offer material in the format that today's information seekers prefer. Integration of cutting-edge technology like blockchain is essential to achieve this goal because it would enable

higher productivity and, as a result, cost savings. If a substantial number of academic libraries in Nigeria begin to use blockchain, others may feel the need to follow suit. Thus, the next hypothesis is that formulated as follows:

H4. Competitive intensity is positively associated with academic libraries' blockchain adoption intention

The specialized knowledge and abilities required to use the technology being adopted is referred to as technological know-how. Previous studies have found negative correlation between technological expertise and the intention to use an information system in several situations (Dehghani, 2022, Liu, 2022; Choi, 2020). Furthermore, Lack of library personnel with required knowledge in relation to blockchain adoption may create a setback in the deployment of blockchain in academic libraries. During the process of gathering data for this study, the researchers learned that the majority of the academic libraries under investigation only have one system librarian, and some of them lack the expertise required to drive the cutting-edge technology. The implication of this is that the blockchain adoption idea may fail at the proposal stage because the library personnel must have a thorough understanding of blockchain functionality as it relates to academic library operations in order for them to fully adopt the technology. Following this line of reasoning, it is hypothesized that;

H5: Technology know-how is negatively related to academic libraries' blockchain adoption

6. RESEARCH METHODOLOGY

6.1 Design

This study adopts a survey and correlational methods to identify the adoption factors for blockchain technology. All Federal, State, and Private Polytechnic libraries in southwestern, Nigeria made up the study's population. The choice to examine several libraries was motivated by the need to have a comprehensive and broad perspective. The study focused on academic librarians of the selected libraries because it is believed that they have more experience in implementing cutting-edge technology like blockchain in libraries. A total of 292 professional librarians were drawn from all the polytechnic libraries (Federal, State and private) across Southwestern, Nigeria. Total enumeration sample technique was used because the study's population is minimal.

6.2 The Instruments for Data Collection

Questionnaire was used to collect data for this study. The question items were constructed in a way that respondents were able to select the responses that applied to them the most. The use of a 4-point Likert scale in this study was encouraged by some prior studies (e.g. Paravantis, 2009) who reported that the scale increases response rates and lowers respondents' levels of frustration.

6.3 Data collection and Analysis

Participants selected from outside the study population were used in a pilot study. Librarians across all Nigerian Polytechnics were the participants. The questionnaire was administered to the respondents after the instruments had been modified in response to inputs from the pilot study. The researchers included a link to the questionnaire via whatsapp platforms and e-mails of the respondents for online completion. The survey remained open to the responded for four weeks. Out of the 292 copies of questionnaire administered to the respondents, 265 were returned and found usable giving 90.7% returned rate, data was analyzed using descriptive statistics and Pearson Correlation Coefficient.

7. RESULT

Table 1: **Intention to Use Blockchain Blockchain (N=292)**

SN	Items	SA	A	D	SD
	I support the adoption of blockchain technology in my library	96	124	41	31
	I'm willing to actively participate in the promotion and blockchain application of technology in my library	66	127	54	45
	I hope to use blockchain technology more in my future work as a librarian	47	128	67	50

The table displays the opinions of 292 Nigerian librarians who were asked about their plans to use blockchain technology in their libraries. On a four-point Likert scale (Strongly Agree, Agree, Disagree, and Strongly Disagree), the respondents were asked to rate how much they agree with the three statements. Majority of respondents (56.2%) agreed with the first statement, this finding demonstrates the respondents' favourable attitude and support toward the deployment of blockchain technology. On the second statement, 54.8% of respondents showed readiness to

actively promote and use blockchain technology in their libraries. This implies that librarians are not only interested in the technology; they are also willing to contribute towards its adoption and promotion in their libraries. The majority of respondents (55.5%) agreed/strongly agreed with the third statement, indicating that they recognize the potentials of blockchain technology in their profession and are hopeful about its future application. Overall, the findings imply that librarians in Nigerian academic libraries are open to implementation of blockchain in their libraries because they are aware of its potentials. Undoubtedly, the future of blockchain technology in Nigerian libraries looks bright given the high level of support for the technology and the librarians' eagerness to actively participate in its adoption and implementation.

Table 2: Perceived Ease of Use (PEOU) of Blockchain (N=292)

SN	Items	SA	A	D	SD
	It is easy to apply the functions of blockchain to my work	42	120	90	40
	System software related to blockchain technology are easy to learn and operate.	36	109	95	52
	Learning to use blockchain for library services would not be easy for me	32	88	103	69

The above table showed a varied opinion on how easy it is to use blockchain technology for library service delivery. Less than 50% of respondents agreed with the first statement. Similarly, just about 40% of respondents strongly agreed that they find it simple to understand and use blockchain-related software. For the third item, the responses suggest a higher degree of difficulty in using blockchain technology for library services. This finding implies that librarians believe that adopting and implementing blockchain technology in libraries may present some difficulties.

Table 3: Correlation between Perceived Ease of Use and Academic Libraries' Blockchain Adoption Intention

Perceived Ease of Use Adoption Intention		
Perceived Ease of Use	1.000	0.634**
Adoption Intention	0.634**	1.000

**Correlation is significant at the 0.01 level (2-tailed)

The correlation coefficient between Perceived Ease of Use and Academic Libraries' Blockchain Adoption Intention is 0.634, which is significant at the 0.01 level (2-tailed). This indicates a positive and moderate correlation between these two variables. The intention to adopt blockchain technology in academic libraries grows along with perceived ease of usage. This shows that academic librarians are more inclined to adopt blockchain technology in their libraries if it is user-friendly.

Table 4: Perceived Usefulness (PU) of Blockchain (N=292)

SN	Items	SA	A	D	SD
	Using blockchain will enable library to serve its users in a better manner	76	128	47	41
	Using blockchain would enhance my effectiveness in library service delivery	60	133	51	48
	Using blockchain improves my job performance	52	126	59	55
	Using blockchain meets my job related-needs	62	122	56	52

The table displays the opinions of respondents on how valuable they believe blockchain technology will be for librarians. It is clear from the table that most respondents agree with all the four statements, which demonstrates a high level of perceived usefulness of blockchain technology in their line of work. Specifically, 64.4% of the respondents agreed that implementing blockchain would improve their ability to serve their users better. Also, 61.3% agreed that using blockchain would enhance their effectiveness in library service delivery. For

the third statement, 60.3% agreed or strongly agreed that using blockchain improves their job performance. For the fourth statement, 59.9% agreed that using blockchain meets their job-related needs. Overall, these findings imply that the respondents are open to blockchain adoption. The capacity of blockchain technology to offer a secure and transparent platform for maintaining and sharing information may be the reason for its anticipated usefulness in the library environment.

Table 5: Correlation between Perceived Usefulness and Academic Libraries' Blockchain Adoption Intention

Item	Pearson's r	p-value
H5 Perceived usefulness → adoption intention	0.673	<0.001

The results show a significant positive correlation between perceived usefulness and academic libraries' blockchain adoption intention, with a Pearson's r of 0.673 and a p-value of less than 0.001. Research shows that academic libraries are more likely to adopt blockchain technology as its perceived usefulness rises. The findings imply that if academic libraries can see the potential advantages and utility of blockchain technology for their operations and services, they will be more inclined to adopt it.

Table 6: Security and Privacy of Block chain (N=292)

SN	Item	SA	A	D	SD
	Investing in blockchain for libraries is comparable to making their data accessible to anybody without authorization.	29	89	96	78
	Investing in blockchain for libraries is comparable to making their data accessible to hackers	23	74	105	90

Among the 292 respondents, the majority (56%) disagreed that investing in blockchain for libraries is tantamount to granting unrestricted access to their data. On the other side, this statement was supported by 44% of respondents. Similarly, while 45% of respondents agreed with this assertion, 55% of respondents disagreed. These findings imply that a significant

proportion of those surveyed are worried about the security and privacy of blockchain technology use in library services.

Table 7: **Correlation between Security and Privacy Concern and Academic Libraries’ Blockchain Adoption Intention**

Correlation	-0.567	
Sig. (2-tailed)	0.000	
N	292	292
Block chain adoption		Mean = 2.49, SD = 0.881
Security and privacy	Mean = 2.91, SD = 0.780	

The correlation coefficient between security and privacy concern and blockchain adoption intention is -0.567, which is statistically significant at the 0.01 level indicates a negative relationship between the two variables, suggesting that as security and privacy concerns increase, the intention to adopt blockchain technology in academic libraries decreases. The findings suggest that security and privacy concerns are a significant factor in academic libraries' decision to adopt blockchain technology. Academic libraries that have high concerns about the security and privacy of their users' information are less likely to adopt blockchain technology. This may be due to the perception that blockchain technology is not secure enough to handle sensitive user information, or due to the lack of understanding of how blockchain technology can enhance security and privacy. Therefore, it is important for stakeholders to address security & privacy concerns and educate academic libraries about the potential benefits of blockchain technology in enhancing security and privacy.

Table 8: **Lack of technology know-how (N=292)**

SN	Items	SA	A	D	SD
1	Librarians in my libraries do not have sufficient level of Blockchain technology-related knowledge	108	95	40	49
2	Librarians in my library are familiar with Blockchain technology	76	65	80	71
3	Blockchain is an understood technology by librarians in libraries	85	55	80	72

The above table presents the responses of the respondents on the items related to the lack of technology know-how among librarians in relation to blockchain. As indicated in the table, 69.5% of the respondents agreed to the first question item while 30.5% responses were divided between the options of "disagree" and "strongly disagree". This suggests that a significant portion of the respondents think that librarians at their libraries lack blockchain technology expertise. On the item 2, 48.2% of the respondents agreed to the statement while 51.8% disagreed. On the item 3, 47.9 % of the respondents agreed while 52.1 % disagreed. Overall, the finding shows that there is a perceived lack of expertise and familiarity with blockchain technology among librarians in Nigerian polytechnic libraries, which suggests a substantial need for education and training in this area. This emphasizes how crucial it is to fund training and development programs for librarians in order to provide them with the expertise required for successful integration of the technology into library services.

Table 9: Correlation between Lack of Technology know-how and Academic Libraries' Blockchain Adoption Intention

Lack of technology know-how Blockchain Adoption Intention	
Pearson r	-0.328
p-value	<0.001

The correlation analysis shows a significant negative correlation between Lack of technology know-how and academic libraries' blockchain adoption intention ($r = -0.328$, $p < 0.001$). This indicates that academic libraries with lower levels of technology know-how are less likely to

adopt blockchain technology. The strength of the correlation is moderate indicating that the deployment of blockchain in Nigerian academic libraries could significantly hampered by a lack of technological expertise. This research emphasizes the significance of giving library professionals proper blockchain technology training and education to improve their knowledge and skills, which may raise their intention to utilize blockchain technology.

Table 10: Competitive Intensity (N=292)

SN	Items	SA	A	D	SD
1	Competition will make it necessary for my library to implement blockchain	14	73	118	87
2	To be a leader of all the information providers, libraries need to implement blockchain	17	71	110	94
3	My library has to adopt blockchain in order maintain its position among other information providers	72	127	30	63

Table 6 above shows that 29.8% of the respondents agreed to the first statement while 31.5% disagreed. This finding reveals some ambiguity among the respondents regarding how competition will affect the need for blockchain implementation in libraries. Data collected on items 2 and 3 respectfully reveal that 28.1% and 31.8% of respondents agreed to the statements while 34.6% and 68.2 disagreed. This indicates that there is disagreement among the respondents as to whether competitive intensity is a critical driver for blockchain adoption in libraries.

Table 11: Correlation Coefficient Analysis for Competitive Intensity and Block Chain Adoption Intention in Academic Libraries

Hypothesis	Variable	N	Mean	SD	Correlation	t-value	p-value	Result
H7	Competitive intensity	292	2.17	0.91	0.32	7.21	<0.001	Significant

For this hypothesis, the correlation coefficient between competitive intensity and blockchain adoption intention is 0.32, indicating a moderate positive relationship. The t-value of 7.21 is statistically significant with a p-value less than 0.001, indicating that competitive intensity is a

significant predictor of academic libraries' intention to adopt blockchain technology. Thus, it may be inferred that the likelihood of academic libraries to adopt blockchain technology is strongly correlated with the degree of competition. As a result, academic libraries in Nigeria are more likely to adopt blockchain technology if they see other information providers as competitors or feel pressure to dominate their field. It is important to remember that correlation does not necessarily imply causality and that there may be other factors influencing academic libraries' intention to use blockchain technology. Nonetheless, the findings imply that the level of competition is a strong predictor of blockchain adoption among polytechnic libraries in Nigeria.

8. DISCUSSION

This study sought to investigate the predictors of adoption of blockchain technology in Nigerian polytechnic libraries within the lens of adapted TAM framework. This study employs a survey-based correlational approach to examine the relationships between five key factors. All the five constructs under study (perceived ease of-use, perceived usefulness, security & privacy concern and competitive intensity and technological know-how have significant influence on blockchain adoption which confirms that all the constructs are good predictors of academic library blockchain adoption intention. The finding of this study suggests that if librarians perceive blockchain technology as difficult to use, they may be less likely to intend to use it. Conversely, if blockchain technology is perceived as easy to use, librarians may be more likely to adopt it which implies that complexity issues that surround the usage of block chain technology must be addressed to improve the overall user experience. The results also suggest that perceived usefulness is a strong predictor of academic libraries' intention to adopt blockchain technology. When librarians perceive blockchain as being useful and beneficial for their operations and services, they're more likely to adopt it. By highlighting the usefulness of blockchain, libraries can increase adoption rates and leverage its potential to improve operations and service. The study reveals that competitive intensity, technology know-how, and security concerns are also key factors influencing decisions to adopt blockchain technology. These factors collectively suggest that successful blockchain adoption in academic libraries requires not only technological readiness but also strategic alignment with institutional goals and a thorough assessment of security implications. Understanding these dynamics can help libraries navigate the challenges and opportunities presented by blockchain technology. The study confirms that the Modified

Technology Acceptance Model (TAM) effectively predicts blockchain adoption in academic libraries and emphasizes the need to consider key factors for successful integration. Stakeholders should consider these key elements beyond just software and hardware to ensure successful adoption. This result agrees with the finding of Tella (2023) who discovered a similar finding between blockchain adoption and adoption intention. Theoretical domains have benefited greatly from this study. To begin with, this study created a new model using the TAM theoretical framework to examine blockchain adoption intention in Nigerian academic libraries settings. The model was empirically examined, and the results of the study validate it as a reliable model that may be applied in the adoption of information systems studies in the future. Secondly, this study is one of the few to examine blockchain adoption using an adapted TAM model in the context of academic libraries in Nigeria. Like other previous research, this study also has some limitations that could be addressed in future research. The factors selected in this study may not cover all that could influence the adoption of blockchain in academic libraries; future studies can consider other factors that can influence the adoption blockchain.

9. CONCLUSION

This study is one of the few to examine blockchain adoption intention within the perspective of modified TAM model in the context of Nigerian academic libraries. In addition to the existing blockchain adoption constructs that might had been identified by various scholars in the context of academic libraries, this study has uncovered other constructs (security & privacy, technology-know-how, perceived usefulness, perceived ease of use and competition intensity) as the constructs that could affect the adoption intention of the technology. Decision-makers in academic libraries, having taken into account these factors when planning for block chain adoption would definitely record success in their block chain project.

RECOMMENDATIONS

The following recommendations were made based on the findings of this study:

1. The library management should provide training and development opportunities to enhance staff's technical expertise in blockchain technology.

2. Blockchain should be positioned by academic libraries as a tool for staying ahead in a competitive environment.
3. The Management should provide resources and funding for blockchain training and development programs for library staff.
4. The management should establish guidelines and best practices for blockchain security in academic libraries.
5. There is need for the library management to showcase practical examples and case studies of blockchain's usefulness in library operations and services.

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