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Implementation of Digital Educational Technology, the Issues for Managerial Consideration

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ABSTRACT

The advent of Information Communication Technology (ICT) and the increasing popularity of digital systems have necessitated many educational institutions globally to transition towards using digital technology to facilitate learning and digital transactions with their stakeholders. This study aimed to identify the latent issues faced by students who use digital educational technology for learning and transactions. The study collected quantitative data from 210 students sampled from selected universities in Ghana. A survey questionnaire instrument with close-ended questions was developed and administered online. A descriptive statistical analysis was performed to find the modal frequencies of the identified issues to achieve the aim of the study. The findings suggest that the most pressing hidden concerns that need managerial attention when implementing digital systems for academic purposes are technological infrastructure, convenient access, and acceptability and adoption of digital educational technology. Digital educational technology offers convenience and traceability, making it attractive to students and stakeholders. However, the potential risks and drawbacks in the use of digital educational technology need attention from the management of educational institutions. This study enhances understanding of the use and issues of digital educational technologies for application in Management Information Systems research and practice. A further study should explore cross-border issues faced by international students who use digital educational technologies for the consideration of educational institution management.

Keywords: Digital Technology, Digital Transactions, Education, Managerial

Background

The growth of digital systems and ICT has driven educational institutions worldwide to adopt digital educational technologies (DETech) for learning and transactions. Tools like Learning Management Systems, Zoom, and Microsoft Teams enhance teaching and collaboration (Tulinayo, Ssentume, & Najjuma, 2018). In Ghana, digital transformation in education and finance has accelerated, partly due to the COVID-19 pandemic's impact (Koi-Akrofi *et al*., 2023). The Unified Theory of Acceptance and Use of Technology highlights factors influencing adoption, including security, trust, and ease of use (Venkatesh, 2022). Successful implementation requires addressing administrative challenges, with trust and privacy concerns boosting digital engagement.

Educational institutions increasingly incorporate digital transaction platforms into their systems to enable cashless transactions, offering operational efficiency and reduced cash handling costs (Seshadrinathan & Chandra, 2021). These platforms provide 24/7 access through online banking, Point of Sale (PoS), and ATMs, but service charges apply (Oh & Zhang, 2022). However, international students often face challenges due to differing regulations and payment systems across countries, highlighting the need for institutional management to address these complexities (Goel *et al*., 2019); (Romero-Martínez & García-Muiña, 2021).

Digital Educational Technology (DETech) has transformed education, requiring ongoing maintenance, updates, and strategic budgeting to ensure functionality (AlNuaimi *et al*., 2022; Madanaguli *et al*., 2023). Issues such as poor internet connectivity can frustrate users, reducing system adoption. Legal and regulatory compliance is a critical but often overlooked aspect of DETech deployment. Institutions must navigate complex laws on data privacy, consumer rights, and collaborate with regulatory bodies to mitigate legal risks. Efficient service support is crucial for sustaining user engagement with DETech systems. Features like responsive complaint resolution, technical assistance, user-friendly interfaces, and data analytics can enhance user experiences and retention. Despite its advantages, such as traceability and simplicity, digital technology integration in education poses challenges that require careful management.

A study in Ghana emphasized the need for administrators to address these concerns when implementing DE Tech. Future research should explore cross-border challenges faced by international students, offering insights into effective management of digital technologies in diverse educational contexts.

Despite the growing adoption of digital instructional technology in Ghanaian educational institutions, its effective integration faces several challenges. With over 43.88 million mobile users and 70% internet penetration at a median speed of 27.7 MB/s, digital tools have facilitated learning and business. However, students and stakeholders encounter issues such as platform user fees, erratic internet connectivity, and the 1% E-levy. Furthermore, latent issues—problems not explicitly identified—affect the adoption and functionality of these systems. This study explores these hidden concerns, including acceptance barriers, economic constraints, infrastructural deficiencies, ethical implications, and inadequate service support. Factors like perceived risk, value, social influence, and utility significantly impact behavioral intentions toward digital technology adoption. Security and privacy risks, including identity theft and data breaches, further undermine trust. Educational institutions must address these concerns by implementing robust security measures, promoting inclusiveness, and educating users on digital safety. Using a quantitative survey and descriptive analytics, this research identifies critical issues that management should address to ensure the effective deployment of digital educational technologies.

When using digital learning tools, what are some hidden issues that students have that managers should be aware of?

Literature Review

Digital instructional technology is increasingly used in education due to its accessibility and global reach, but several factors affect its adoption. In Ghana, challenges include platform user fees, erratic internet connections, and a 1% e-levy, alongside other unaddressed student concerns. Despite Ghana's 43.88 million mobile users and 70% internet penetration with a median speed of 27.7 MB/s (Datareportal), latent issues surrounding digital technology integration in education remain underexplored, particularly post-COVID-19 (Koi-Akrofi *et al*., 2023); (Hai, Van & Thi Tuyet, 2021).

Latent issues—unrecognized but impactful problems—often arise during the transition to digital platforms. These include adoption barriers, budgetary constraints, infrastructure limitations, social consequences, and inadequate service support. Factors such as perceived risk, value, social influence, and performance expectancy significantly shape behavioral intentions to use digital educational technology (Singhraul & Garwal, 2018; Koi-Akrofi *et al*., 2023). Additionally, personal attributes like age, education, and income also influence adoption. Security concerns, including identity theft and unauthorized data access, exacerbate challenges. To mitigate these, educational institutions must adopt robust encryption, multifactor authentication, and real-time monitoring while educating stakeholders on security protocols (Akgun & Greenhow, 2022).

This study highlights the need for educational management to address inclusivity, accessibility, and hidden concerns during digital technology implementation. Employing surveys and descriptive analytics, it underscores the importance of addressing both visible and latent challenges to ensure effective digital transformation in Ghanaian education (Vial, 2021).

Methods

This study employed a quantitative methodology to analyse data collected through an online survey of 210 undergraduate and graduate students in Ghanaian universities with digital educational technology (DETech) experience. A pilot test involving 21 students led to the inclusion of "payment anywhere" and "payment anytime" components to improve measurement of the Convenient Access dimension. The study used cluster sampling to categorize participants by public relations, information technology, and business disciplines. Data was analysed descriptively using Microsoft Excel, calculating central tendencies and presenting modal frequencies and percentages in tables and bar charts. The survey addressed latent issues faced by students using DETech, aiming to inform management decisions for effective technology integration in education. The sample size was determined using (Krejcie, 1970) table with a 95% confidence level and a precision of 0.05, confirming a valid representation of the 462 population. Statistical methods facilitated a reliable interpretation of results (Bukhari, 2021).

The study at a Ghanaian university involved undergraduate and diploma students in IT, communications, or business, focusing on their use of learning management systems and online tools. Gender and age were excluded, aligning with (Udam & Mohammed, 2024), who found no gender-based differences in IT resource utilization.

A conceptual framework links digital educational technology (DETech) use to management challenges in traditional institutions adapting to the digital economy. Contemporary theories, like contingency

management and systems theory, are vital for implementing digital systems. Seven key management issues are highlighted, focusing on enhancing learning through DETech (Bernhard-Skala, 2019).

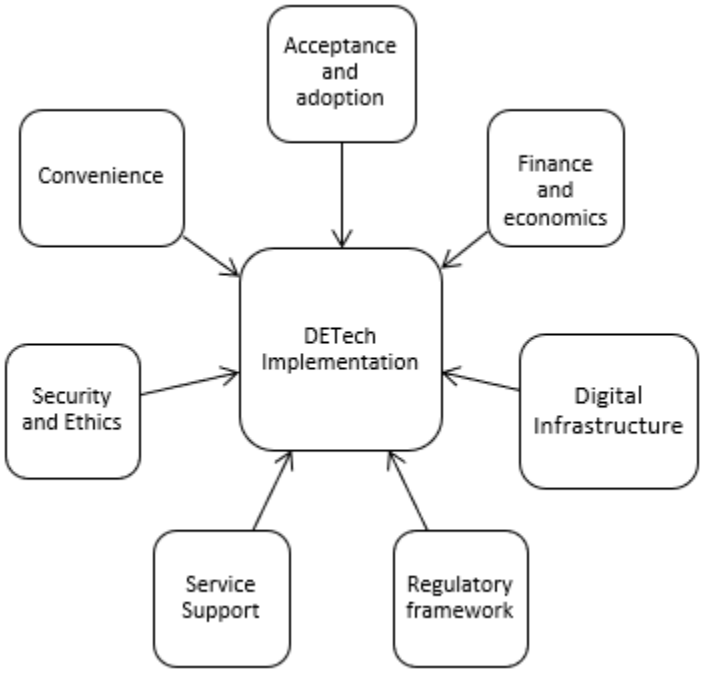

Figure 1. Conceptual Framework: Issues for Managerial Consideration in DeEdutech Implementation

Three theories—Technology Acceptance Model, UTAUT, and modified UTAUT—explain user acceptance of technology. Factors like perceived security, ease of use, trust, and familiarity shape adoption. Behavioral intentions are influenced by perceived risk, value, social influence, and performance expectancy (Singh & Srivastava, 2020). Institutions must address these for effective implementation (Venkatesh, 2022).

The survey asked respondents ten questions on issues students face with digital instructional technology, using Yes, No, or Not Sure responses. Before these, a general question assessed whether their university uses digital technology for academics and transactions.

Table 1: Study Dimensions and Survey Statements/Questions

Dimension	**Statements/Questions**
Acceptance and adoption	Trust, security, and ease of use are factors that will influence your use of your institution's digital technology.
Finance and economics	The use of digital technology adds to the cost of your education.
Technological Infrastructure	Your university's existing technological infrastructure can support teaching, learning and transactions activities.
Social and Ethical Implications	Have you experienced security breaches in using digital technology at your institutions?

Legal and regulatory compliance	The digital technology used in your university complies with the legal and regulatory framework of your Country.
Service support	The management of your university provides the needed support for the use of digital technology.
Convenient Access	Can you conveniently access the learning resources of digital technology anywhere?
	Can you conveniently access the learning resources of digital technology anytime needed?
	Can you conveniently do digital transactions (payments) with your institution's digital technology anywhere?
	Can you conveniently do digital transactions (payments) with your institution's digital technology at any time?

Results & Discussion

Digital Educational Technology (DETech) integrates Fintech with partner banks to support cashless transactions in educational institutions, addressing financial concerns through cost-saving measures like reduced cash handling and enhanced efficiency (Goel *et al*., 2019). Surveys highlight DETech's financial dimension, aiding management in evaluating investments in infrastructure, technology, and training for effective implementation. Advancing digital technology fosters a new educational ecosystem, but challenges in infrastructure, especially in developing nations, demand quantitative studies to address implementation and updates in educational institutions.

A key managerial concern for cashless transaction systems is ensuring compliance with complex legal and regulatory requirements. Organizations must collaborate with regulators, maintain legal counsel, and address laws on consumer rights, data privacy, and anti-money laundering to mitigate risks.

Efficient customer support is critical for digital payment systems, requiring prompt issue resolution, technical assistance, multi-channel services, user-friendly interfaces, and data analytics to improve customer experience, boost retention, and attract new users. The usability of digital instructional technology, encompassing timelessness, traceability, and boundarylessness, enhances convenience by enabling anytime, device-independent access to services (Seshadrinathan & Chandra, 2021).

Digital educational technology enhances convenience through timeless accessibility, traceability, and location-independent usability, as examined in this study on its impact and effectiveness in facilitating transactions (Seshadrinathan & Chandra, 2021).

The sample produced a 95% confidence level with a 0.05 margin of error for a 462 population. Using the z-score, the sample's standard deviation was 1.96. On average, 65% of respondents said "yes," confirming the importance of every issue noted for managerial attention while implementing digital technology in educational institutions. However, an average of 24% of the sampled students did not consider the concerns to be important, while 11% were not sure. The 210 respondents stated that they have used their respective colleges digital technology for learning and transactional purposes. Table 2 below presents the frequency (Freq) and percentage (percent) of the responses obtained for the descriptive statistical analysis of the dimensions being studied. Table 2 identifies acceptance and adoption, technological infrastructure, and convenient access as critical elements in the use of digital educational technology.

The frequency of 179 responses, or 85% of the total, suggested that when educational institutions implement digital educational technology, they should consider the issue of acceptance and adoption. Convenient access to digital educational technology was also more frequently answered yes (167 or 80% of the population) than security and ethical concerns (123 or 80% of the sample) according to the results. The findings showed that 162 respondents, or 77 percent, believed that managerial attention should be paid to technology infrastructure. The respondents did not see timely payment as an issue regardless of the time or place. They were given a lower score than the other dimensions, which reflects how well the current system performs for these dimensions.

Table 2: Results

Dimensions	**Responses**						
	Yes		**No**		**Not Sure**		**N**
	Freq	%	Freq	%	Freq	%	
Acceptance and adoption	179	85	19	9	12	6	210
Financial and economics	129	61	58	28	23	11	210
Infrastructure and Technology	162	77	23	11	25	12	210
Security and Ethical Implications	123	59	62	30	25	12	210
Legal and Regulatory Framework	150	71	46	22	14	7	210
Customer Service and Support	122	58	45	21	43	20	210
Convenient Access Anywhere	167	80	28	13	15	7	210
Timeless Access	109	52	76	36	25	12	210
Payment Anywhere	109	52	76	36	25	12	210
Payment Anytime	111	53	80	38	19	9	210
Average	**136.1**	**65%**	**51.3**	**24%**	**22.6**	**11%**	

Universities in Ghana are promoting digital educational systems in the wake of the COVID-19 pandemic in an effort to increase enrollment while simultaneously making digital infrastructure easily accessible to facilitate learning and record transactions instantly with their stakeholders (Koi-Akrofi *et al*., 2023). These colleges primarily use Learning Management Systems (LMS) and online collaboration tools like Zoom, Microsoft Teams, and Google Meetings to share resources, collaborate on learning, and communicate effectively regardless of physical location. Measured characteristics are shown in Figure 2, which answers the research question. What are the latent issues students' face that require managerial consideration in the implementation of digital educational technology? According to the results, acceptance and adoption, accessibility, and technology infrastructure were the three primary hidden issues that students reported having an impact on their use of digital educational technology. The unified theory of acceptance and use of technology has generally been used in research to identify factors that influence consumer adoption, such as perceived security, ease of use, trust, and technological familiarity (Venkatesh 2022). According to Table 2, the study's acceptance and adoption findings, which accounted for 85% of all responses, bolster Srivastava's (2020) assertion that use and perceived satisfaction have a significant impact on the intention to use digital technology. This high score suggests that students are more likely to use digital technology effectively if they have a positive attitude toward it. Considering, digital engagement is positively impacted by reachability, privacy concerns and technological trust. Therefore, when implementing digital instructional technology, Ghanaian university administration should give priority to these concerns.

According to Sharif & Pal, (2020), the ease of cashless transactions greatly exceeds the possibility of negative social and ethical effects. Evaluation of the digital systems outcomes and measurable advantages. Additionally, 80 percent of the 167 participants in this study confirmed that convenient access is a feature that users value. This entails management ensuring that digital platforms are always accessible, compatible with a range of devices, and have minimal login limitations. Interoperability with devices and systems from third parties can enhance the availability and convenience that most digital transaction systems aspire to provide. Through increased participation and better meeting student needs, accessibility can raise the overall effectiveness of digital technology in educational settings. This suggests that concerns about convenient access should be taken into account by educational institution management.

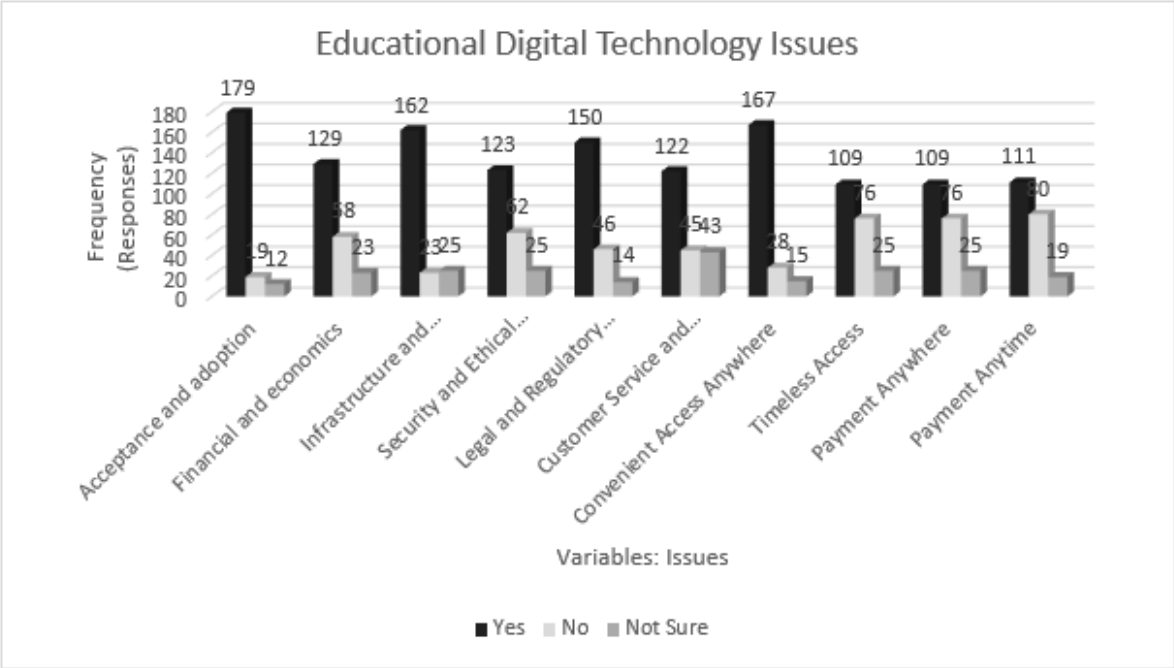

Figure 2. Responses on Issues for Digital Technology Implementation in Educational Institutions.

77 percent of respondents (162) identified technological infrastructure as a critical component, demonstrating the obvious importance of having a robust infrastructure for seamless digital integration. The institutions may need to prioritize reliable internet, updated software, and maintenance support in order to prevent disruptions. To support the academic operations of the university, management should consider investing in scalable and resilient infrastructure that can accommodate current and future digital technology (Ferreira, Mueller & Papa, 2018).

Given their lack of concern for payment methods, it would seem that most students find the current approaches adequate. Unless specific feedback indicates otherwise, organizations may choose to deprioritize this area in order to free up more resources for areas like infrastructure and accessibility that have a bigger impact. Despite the fact that 11% of respondents were unsure and 24% did not consider all issues to be urgent, management should consider these opinions. Targeted messages and help can help create a user base that is more generally supportive by addressing concerns or reservations. This study measured the legal and regulatory framework with a remarkable score of 71% from the sampled population. Management should keep on emphasising security and social and ethical impacts in implementing digital educational technology to ensure that the regulatory framework and cybersecurity issues are addressed.

The findings agree with those of, who discovered that the acceptance and adoption of digital innovation are influenced by factors such as trust, security, and ease of use. Thus, the studys conclusions suggest that when integrating digital technology in educational institutions, managers should take these underlying challenges into account rather than concentrating only on the technology.

Theoretical and Practical Implications

The findings in Figure 3 offer a strong basis for management strategies that prioritize user acceptability, infrastructure, and accessibility in the digital transformation of educational services. The study supports research that has identified factors that influence consumer adoption of technology, such as perceived security, ease of use, trust, and technological familiarity, using the unified theory of acceptance and use of technology (Venkatesh 2022). These issues have been highlighted for management concerns, as have their practical implications for the use of digital technology in the classroom.

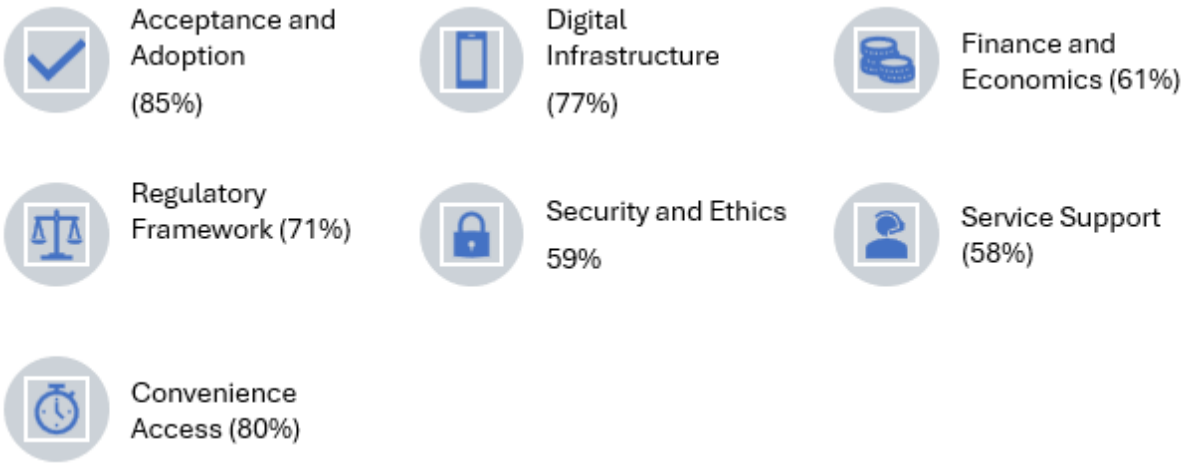

Figure 3. Study Dimensions and Percentage Measure for Consideration

Management should place a high premium on adoption and acceptance when utilizing digital educational technologies. 179 out of 210 respondents or 85% of the sample, concurred that acceptance and adoption of digital technology are important considerations. Considering the overwhelming support for the adoption and use of digital technology, managers should provide funding for initiatives such as training programs that increase users comfort level and familiarity with online platforms.

According to 80% of respondents (167), easy access is a crucial feature for users. For managers, this entails ensuring that digital platforms are always accessible, multi-device compatible, and have minimal login limitations. Through increased participation and better meeting of student needs, accessibility can raise the overall effectiveness of digital tools in educational settings. The administration of the university must strengthen its technology infrastructure in order to implement digital teaching tools. It is evident that a robust infrastructure is necessary for smooth digital integration, as 162 respondents, or 77% of the sample, highlighted technological infrastructure as a crucial element. To avoid disruptions and meet students expectations for digital technology both now and in the future, university administration can prioritize dependable internet, current software, and maintenance support by investing in strong, scalable infrastructure.

The low level of concern regarding payment systems indicates that students generally think the current systems are sufficient. This can therefore be deprioritized unless particular feedback suggests otherwise, freeing up more resources to concentrate on areas like infrastructure and accessibility that have a bigger impact. Minor ambiguity (11 percent) and non-critical viewpoints (24 percent) can be addressed by

management. A more universal user base support system can be developed by addressing reservations or uncertainties through targeted communications and care. Even though the response was only moderate (123 affirmative), the focus on security and moral principles is crucial and continues to be a fundamental requirement for the use of digital technologies. Security and ethical standards should be rigorously adhered to by management without compromising usability.

Conclusion

These findings point to a strong basis for management strategies that prioritize user acceptability, infrastructure, and accessibility in the digital transformation of educational services. Students and stakeholders find digital educational technology appealing because of its ease-of-use traceability, and cross-border capabilities, which enable it to facilitate remote teaching and learning. The management of educational institutions should consider the possible risks and drawbacks of digital educational technology when implementing it. This study adds knowledge about the issues and uses of digital learning technology that can be considered in Management Information Systems (MIS) research and practice. The difficulties this study found when integrating digital educational technologies in colleges and other institutions may have an impact on management decision-making processes. Further research on the cross-border issues faced by international students utilizing digital educational technology is necessary to gain a better understanding of educational institution administration.

Declarations

Ethics Approval and Consent to Participate: Before any data was collected the participants and the dean of the university where the study was conducted provided their consent. The students were promised privacy and the demographic portion of the survey did not ask for any personal information to preserve anonymity.

Conflicts of Interest: Not applicable.

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References

Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics, 2*(3), 431-440. DOI: https://doi.org/10.1007/s43681-021-00096-7

AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research, 145*, 636-648. DOI: https://doi.org/10.1016/j.jbusres.2022.03.038

Bernhard-Skala, C. (2019). Organisational perspectives on the digital transformation of adult and continuing education: A literature review from a German-speaking perspective. *Journal of Adult and Continuing Education, 25*(2), 178-197. DOI: https://doi.org/10.1177/1477971419850840

Bukhari, S, A, R. (2021). Sample Size Determination Using Krejcie and Morgan Table. DOI: https://doi.org/10.13140/RG.2.2.11445.19687

Ferreira, J., Mueller, J., & Papa, A. (2018). Strategic knowledge management: theory, practice and future challenges. Journal of knowledge management, 24(2), 121-126. DOI: https://doi.org/10.1108/JKM-07-2018-0461

Goel, M., Sun, H., Jiao, W. B., & Schneeberger, K. (2019). SyRI: finding genomic rearrangements and local sequence differences from whole-genome assemblies. *Genome biology, 20*, 1-13. DOI: https://doi.org/10.1186/s13059-019-1911-0

Hai, T. N., Van, Q. N., & Thi Tuyet, M. N. (2021). Digital transformation: Opportunities and challenges for leaders in the emerging countries in response to COVID-19 pandemic. *Emerging Science Journal*, 5(1), 21-36. DOI: https://doi.org/10.28991/esj-2021-SPER-03

Koi-Akrofi, G. Y., Aboagye-Darko, D., Nyame, J., Gaisie, E., & Danquah, I. O. (2023). Students' Acceptance of Learning Management Systems at the Peak of Covid-19 Pandemic by Employing a Modified Technology Acceptance Model. *IJST*, 16, 2451. DOI: https://doi.org/10.17485/IJST/v16i14.2451

Krejcie, R. V. (1970). Determining sample size for research activities. *Educational Psychol Meas*. DOI: https://doi.org/10.1177/001316447003000308

Madanaguli, A., Parida, V., Sjödin, D., & Oghazi, P. (2023). Literature review on industrial digital platforms: A business model perspective and suggestions for future research. *Technological Forecasting and Social Change, 194*, 122606. DOI: https://doi.org/10.1016/j.techfore.2023.122606

Oh, E. Y., & Zhang, S. (2022). Informal economy and central bank digital currency. *Economic inquiry*, 60(4), 1520-1539. DOI: https://doi.org/10.1111/ECIN.13105

Romero-Martínez, A. M., & García-Muiña, F. E. (2021). Digitalization level, corruptive practices, and location choice in the hotel industry. *Journal of Business Research, 136*, 176-185. DOI: https://doi.org/10.1016/j.jbusres.2021.07.032 [NOT USE IN TEXT]

Seshadrinathan, S., & Chandra, S. (2021). Exploring factors influencing adoption of blockchain in accounting applications using technology–organization–environment framework. *Journal of International Technology and Information Management*, *30*(1), 30-68. DOI: https://doi.org/10.58729/1941-6679.1477

Sharif, M., & Pal, R. (2020). Moving from cash to cashless: A study of consumer perception towards digital transactions. PRAGATI: *Journal of Indian Economy*, 7(1), 1-13. DOI: https://doi.org/10.17492/pragati.v7i1.195425

Singh, S., & Srivastava, R. K. (2020). Understanding the intention to use mobile banking by existing online banking customers: an empirical study. *Journal of Financial Services Marketing*, 25(3), 86-96. DOI: https://doi.org/10.1057/s41264-020-00074-w

Singhraul, B. P., & Garwal, Y. S. (2018). Cashless economy–challenges and opportunities in India. *Pacific Business Review International, 10*(9).

Tulinayo, F. P., Ssentume, P., & Najjuma, R. (2018). Digital technologies in resource constrained higher institutions of learning: a study on students' acceptance and usability. *International Journal of Educational Technology in Higher Education, 15*(1), 1-19. DOI: https://doi.org/10.1186/s41239-018-0117-y

Udam, M. U., & Mohammed, L. A. (2024). Cloud Resources Utilisation and Science Teacher's Effectiveness in Secondary Schools in Cross River State of Nigeria. *International Journal of Emerging Issues in Social Science, Arts and Humanities (IJEISSAH), 2*(2), 79-90. DOI: https://doi.org/10.60072/ijeissah.2024.v2i02.008

Venkatesh, V. (2022). Adoption and use of AI tools: a research agenda grounded in UTAUT. *Annals of Operations Research, 308*(1), 641-652. DOI: https://doi.org/10.1007/s10479-020-03918-9

Vial, G. (2021). Understanding digital transformation: A review and a research agenda. *Managing digital transformation*, 13-66. DOI: https://doi.org/10.4324/9781003008637-4

www.datareportal.com/reports/digital-2024-ghana. Accessed in October 2024