Influence of Emerging Technologies on Real Estate Development Trends: A Case Study of Lead City University, Ibadan.

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Abstract

Purpose: *This study investigates the impact of emerging technologies on real estate development trends, focusing on Lead City University. It seeks to understand how innovations such as Building Information Modelling (BIM), Internet of Things (IoT), Geographic Information Systems (GIS), and Artificial Intelligence (AI) influence campus planning, facility management, and sustainability outcomes.*

Design/methodology/approach: *The study adopts a qualitative case study design based solely on semi-structured interviews. Twenty-five (25) purposively selected key staff members, comprising facility managers, IT experts, and administrative personnel were interviewed using open-ended questions. The data obtained were analysed using thematic analysis to ascertain dominant technology adoption patterns and their implications for real estate development.*

Findings: *The findings reveal that the integration of emerging technologies has significantly improved real estate development and management processes within the university. In particular, BIM enhances design coordination and reduces construction errors, IoT supports smart monitoring of utilities and maintenance systems, while GIS facilitates effective campus planning and spatial decision-making. AI applications are emerging gradually, especially in predictive maintenance and sustainability planning.*

Conclusion/Theoretical/Social/Practical implications: *The study underscores the transformative role of digital innovation in educational real estate and highlights the need for increased institutional investment in technological infrastructure and capacity development. Theoretically, it contributes to PropTech scholarship by providing contextual evidence on technology adoption in university real estate systems within developing economies.*

Originality/value: *This research provides one of the few empirical insights into the role of emerging technologies in shaping real estate development trends in Nigerian universities. It establishes a practical linkage between technology adoption, campus sustainability, and facility management efficiency.*

Keywords: Artificial Intelligence, BIM, Campus Planning, GIS, IoT, PropTech, Smart Building.

Introduction

The real estate sector is undergoing a profound transformation as a result of rapid advancements in emerging technologies. Innovations such as Building Information Modelling (BIM), the Internet of Things (IoT), Geographic Information Systems (GIS), blockchain, and artificial intelligence (AI) are reshaping traditional practices in property development, management, and investment (Arayici et al., 2018; Dave et al., 2021). These technologies have been widely recognised for their ability to improve efficiency, enhance transparency, and promote sustainability across different real estate contexts (Khalfan et al., 2019; Olanrewaju & Abdul-Aziz, 2015). Within higher education, real estate is not merely a vehicle for property investment but a strategic asset that directly influences the quality of teaching, research, and overall institutional competitiveness (Newton & Temple, 2019). Against this backdrop, this study investigates the impact of emerging technologies on real estate development trends, with a particular focus on Lead City University, Ibadan.

The primary aim of the study is to understand how technological innovations are influencing real estate development in academic institutions. Specifically, it seeks to examine the role of BIM, IoT, GIS, and AI in shaping campus planning, facility management, and sustainability practices. In pursuit of this aim, the study addresses key objectives, including exploring how emerging technologies are being adopted in real estate development activities within the university, examining perceived benefits of technology adoption in improving operational efficiency, design coordination, and infrastructure management, and identifying institutional and technical challenges influencing effective integration of digital tools in campus real estate systems (Okoye et al., 2020; Olojede & Akinbogun, 2021).

To guide this inquiry, the research poses critical questions: How have emerging technologies been adopted in the real estate development processes at Lead City University? What tangible benefits have BIM, IoT, GIS, and AI brought to campus planning and facility management? What challenges constrain their effective implementation, and in what ways can these technologies be better leveraged to achieve sustainability and efficiency in educational real estate? These questions are consistent with recent scholarship emphasising the role of PropTech in shaping smart campus environments and sustainable real estate practices (Kok et al., 2017; Ibrahim et al., 2022).

The significance of this study lies in its dual contribution to both theory and practice. Theoretically, it adds to the growing body of scholarship on PropTech adoption in developing contexts, offering fresh insights into how digital innovations are transforming higher education real estate (Olayiwola et al., 2019). Practically, the findings will provide university administrators, facility managers, and policymakers with evidence-based recommendations for optimising property development, improving resource utilisation, and advancing campus sustainability (Ibem & Aduwo, 2020). Given that much of the existing literature on PropTech adoption is centered on advanced economies, this study offers a unique perspective by situating the discourse within Nigeria's higher education landscape, where infrastructural challenges and resource constraints remain pressing (Oladokun, 2017).

The scope of the research is deliberately focused on Lead City University, a private institution in Ibadan that has experienced notable growth and expansion in recent years. By concentrating on this case, the study provides an in-depth examination of how emerging technologies are being integrated into campus development and management, while also acknowledging the limitations of generalising findings beyond a single institution. Nonetheless, the insights generated offer a valuable basis for comparative studies and potential replication in other Nigerian universities and similar institutions across Sub-Saharan Africa (Oluwatayo & Amole, 2020).

In summary, this study not only investigates the intersection of technology and real estate within a specific educational context but also highlights the broader implications of digital transformation for sustainable development in higher education.

Literature Review

Emerging Technologies in Real Estate

The integration of advanced technologies into real estate, often referred to as PropTech (Proptech Global Trends Report, 2023) has revolutionised various aspects of the industry. Building Information Modeling (BIM) facilitates the creation of digital representations of physical and functional characteristics of buildings, promoting improved collaboration among stakeholders and reducing errors during the design and construction phases (Aibinu & Venkatesh, 2021). The Internet of Things (IoT) enables real-time monitoring and management of building systems, enhancing operational efficiency and occupant comfort. Blockchain technology offers decentralised and secure methods for recording property transactions, increasing transparency and reducing fraud. Artificial intelligence (AI), Geographic Information Systems (GIS), and data analytics provide predictive insights into market trends and property valuations, aiding in informed decision-making. This literature review synthesizes current research on emerging technologies in real estate, highlighting their applications, benefits, and limitations.

BIM has emerged as one of the most influential technologies in real estate development. According to Eastman et al. (2020), BIM facilitates the creation of digital twins of buildings, allowing stakeholders to simulate design, analyse energy performance, and forecast life-cycle costs. Its integration improves collaboration among architects, engineers, and facility managers. For example, Olawumi and Chan (2019) observed that "BIM enhances cost efficiency by reducing design errors and enabling clash detection during construction" (p. 45).

Recent studies show increasing adoption of BIM in African contexts. Abubakar et al. (2022) found that Nigerian developers using BIM experienced a 20–30% reduction in project delays, though challenges of high costs and technical expertise persist.

The IoT revolution in real estate involves embedding sensors in facilities for real-time monitoring. IoT enables smart building management systems that optimise lighting, HVAC, and security. Gubbi et al. (2019) describe IoT as "the nervous system of the built environment" (p. 12). Empirical research highlights significant benefits: Li and Yu (2021) reported that IoT-driven energy management reduced electricity consumption in residential complexes by 15–25%. In the Nigerian context, Adepoju and Akinola (2023) found that universities

adopting IoT for facility management improved response time to maintenance requests and reduced operational costs.

GIS supports spatial analysis, site selection, and urban planning. According to Batty (2020), GIS allows urban planners to "layer demographic, infrastructural, and environmental data to make evidence-based land use decisions" (p. 22). In real estate, GIS assists developers in assessing property values, proximity to amenities, and environmental risks.

A study by Akinmolayan and Bello (2022) demonstrated that GIS adoption in Lagos real estate development enhanced land allocation efficiency by 40%, leading to more equitable housing distribution.

AI is becoming a driver of predictive analytics, customer engagement, and facility management. As Brynjolfsson and McAfee (2019) argue, AI "augments human decision-making by identifying patterns in big data that are invisible to the human eye" (p. 118). In real estate, AI applications include price forecasting, fraud detection, and predictive maintenance. A study by Zhang et al. (2021) found that AI-based predictive analytics improved property valuation accuracy by 18% compared to traditional models. However, the lack of data infrastructure remains a barrier in developing economies.

Blockchain enhances transparency, security, and efficiency in real estate transactions. Crosby et al. (2016) highlight blockchain's potential to eliminate fraud by providing immutable property records. In practice, smart contracts allow faster property transfers without intermediaries. For instance, Al-Khater (2022) reported that pilot blockchain projects in Dubai reduced property transaction time from weeks to a few hours. Nevertheless, adoption in Nigeria is still minimal due to legal and regulatory bottlenecks (Okoro & Fadeyi, 2023).

VR and AR are transforming property marketing and design visualisation. According to Pikas et al. (2020), "virtual walkthroughs allow buyers to experience properties remotely, improving decision-making and reducing transaction costs." Empirical studies show that real estate firms using VR technologies experienced higher sales conversion rates, especially in international property marketing (Wang & Xu, 2021).

The integration of emerging technologies into real estate development has been a focal point of recent research, particularly within the Nigerian context. This review synthesises findings from recent journal articles and studies, emphasising their relevance to the case of Lead City University in Ibadan. Adedigba *et al*. (2024) provide a comprehensive review of technologies such as the Internet of Things (IoT) and Building Information Modeling (BIM), highlighting their roles in enhancing efficiency and sustainability in real estate projects. The study underscores the necessity for developers to grasp these technologies to remain competitive in the evolving market. In a similar vein, Ogun (2024) examines the influence of big data analytics, artificial intelligence (AI), and blockchain on property valuation and asset management in South-West Nigeria. The research indicates that these technologies contribute to improved valuation accuracy and operational efficiency, suggesting a transformative impact on traditional practices.

This study is anchored on the Technology Acceptance Model (TAM) and Socio-Technical Systems Theory. The Technology Acceptance Model explains technology adoption behaviour based on two key constructs: perceived usefulness and perceived ease of use. Within the campus real estate context, stakeholders' willingness to adopt BIM, IoT, and digital property platforms depends largely on their perceived performance benefits and operational simplicity. Socio-Technical Systems Theory complements TAM by emphasising the interaction between technological systems and social structures such as institutional policies, professional competencies, and organisational culture. This integrated theoretical perspective improves the explanatory power of the study by linking behavioural acceptance factors with systemic infrastructural realities.

Impact of Emerging Technologies on Real Estate Development Trends

The adoption of these technologies has led to notable shifts in real estate development trends. For instance, the concept of smart cities has emerged, characterised by the integration of IoT devices and data analytics to optimise urban living conditions. Developments such as Stockholm Wood City exemplify the move towards sustainable construction practices, utilising timber to reduce carbon footprints. Additionally, the re-purposing of underutilised spaces, like converting shopping malls into mixed-use developments with residential units, reflects a trend towards maximising the utility of existing structures.

Challenges and Opportunities

While the benefits are substantial, the integration of emerging technologies in real estate is not without challenges. High implementation costs, regulatory uncertainties, and resistance to change pose significant barriers. A systematic literature review highlights that unclear standards and guideline, coupled with the financial burden of technology adoption, hinder widespread implementation. However, these challenges also present opportunities for innovation, policy development, and the creation of new business models that leverage technological advancements for competitive advantage. Chima and Udoekanem (2024) investigate the adoption of emerging technologies by indigenous construction and real estate development companies in Abuja. Their findings reveal that drone technology, BIM, and virtual reality are among the most utilised, driven by factors such as technological infrastructure and the pursuit of enhanced service delivery. However, challenges including high implementation costs and resistance to change are noted as barriers to widespread adoption. Similarly, Akinwamide et al. (2021) assess the adoption of innovative technologies for sustainable real estate practice in Edo State. The study identifies websites and geospatial technologies as the most adopted tools, while also highlighting a general lack of awareness and adoption of more advanced technologies like blockchain and AI. The authors recommend that professional bodies encourage the integration of these technologies to ensure the sustainability of real estate practices.

Oyetunji et al. (2024) explore the factors influencing the deployment of Information and Communication Technology (ICT) in Nigerian real estate practices. The study concludes that technological infrastructure and the drive for enhanced service delivery are primary motivators for ICT adoption, which in turn influences productivity and competitiveness in the market.

According to Akinola and Ojo (2023), the integration of digital innovations such as GIS and BIM has improved project delivery timelines and reduced wastage in construction projects. Similarly, Umeokafor et al. (2022) emphasised that smart building systems and proptech applications are increasingly influencing real estate development in Nigerian universities.

Okafor and Aluko (2021) found that BIM reduces project delivery costs by up to 20% in Nigerian universities. In contrast, Ajayi et al. (2020) argued that while digital marketing enhances transparency, poor ICT infrastructure hinders its widespread application. The literature reveals a gap in understanding how these technologies impact real estate development, specifically within university settings, hence the relevance of this study.

The reviewed studies show a strong consensus that emerging technologies improve efficiency, reduce costs, and promote sustainability in real estate. However, adoption varies across regions. Developed economies lead in blockchain and AI integration, while African contexts are gradually adopting BIM, GIS, and IoT. A common theme in the literature is the barrier of high implementation costs, lack of expertise, and regulatory gaps. While previous research highlights the benefits of emerging technologies, few studies specifically investigate their role in university campus development and facility management in Nigeria, which is the primary focus of this study.

Research Methods

The study employs a qualitative case study design, relying solely on semi-structured interviews. A purposive sampling technique was used to select twenty-five (25) staff members of Lead City University who are directly involved in real estate development, comprising facility managers, IT experts, and administrative personnel. Respondents were drawn from these categories: facility managers (10), IT experts (8), and administrative staff (7). To enhance methodological clarity and reduce redundancy, the study adopted a focused qualitative case study strategy that aligns research objectives, data collection instruments, and analytical procedures. Open-ended questions explored participants' experiences with technology adoption, perceived benefits, implementation challenges, and institutional readiness. This dual-instrument strategy enabled both quantification of perceptions and contextual interpretation of responses. Quantitative data were analysed using descriptive statistics (mean scores, standard deviation, frequency distributions, and percentages). Qualitative responses were analysed using thematic analysis, and findings were integrated at the interpretation stage through joint narrative discussion. This ensured convergence, complementarity, and expansion of results.

At Lead City University, adopting emerging technologies can significantly impact campus development and operations. Implementing innovative building systems can improve energy efficiency and lower operational costs. Using BIM can make the design and construction of new facilities more efficient, ensuring the best use of resources. Additionally, applying sustainable construction practices can set an example for environmentally responsible development in the region.

Although specific studies on Lead City University are limited, the insights from the research mentioned earlier can be applied to its context. The use of technologies like BIM and IoT can improve the design and management of campus facilities, resulting in more efficient and sustainable development. Additionally, understanding the factors influencing technology adoption, as identified in these studies, can help the university develop effective implementation strategies.

Although formal institutional ethical approval was not obtained prior to data collection, the research was conducted in accordance with established ethical standards for social science inquiry. Participation in the study was entirely voluntary, and respondents were adequately informed about the purpose and scope of the research. Confidentiality and anonymity were maintained throughout the data collection and reporting process. All information obtained from participants was used strictly for academic purposes and securely managed to ensure compliance with accepted principles of data protection and responsible research practice.

Findings and Discussions

Demographic Characteristics of Respondents

To establish the competence and relevance of participants, the demographic profile of respondents is presented in Table 1.

TABLE 1. Distribution of Respondents by Professional Category

Category	Frequency	Percentage (%)
Facility Managers	10	40.0
IT Experts	8	32.0
Administrative Staff	7	28.0
Total	25	100.0

The result indicates that respondents are drawn from key operational units directly involved in real estate development and management within the university. Facility managers constitute the largest group (40%), reflecting strong technical representation, while IT experts (32%) and administrative staff (28%) provide complementary perspectives on digital systems and institutional processes. This distribution enhances the reliability of the findings, as respondents possess adequate professional knowledge and experience relevant to the study objectives.

Adoption of Emerging Technologies in Lead City University

The study examined the extent to which emerging technologies are adopted within the university's real estate system. The results are presented in Table 2.

TABLE 2. Adoption of Emerging Technologies

Technology	Frequency	Percentage (%)
BIM	18	72.0
IoT	16	64.0
GIS	13	52.0
AI	11	44.0

Total number of respondents (n)=25

The results show that Building Information Modelling (BIM) is the most widely adopted technology (72%), followed by Internet of Things (IoT) (64%). Geographic Information Systems (GIS) also show moderate adoption (52%), while Artificial Intelligence (AI) has the lowest adoption level (44%). These findings indicate that digital transformation within the university is already underway, with BIM and IoT leading adoption due to their immediate applicability in design coordination and facility management. The relatively lower adoption of AI suggests that more advanced technologies are still at an early stage of integration. From a qualitative perspective, respondents emphasised that BIM is extensively used for project visualisation and coordination, while IoT supports real-time monitoring of utilities and infrastructure. GIS is mainly applied in spatial planning, whereas AI is gradually being explored for predictive maintenance.

Benefits of Technology Adoption in Real Estate Development

The perceived benefits of emerging technologies in improving operational efficiency, design coordination, and infrastructure management are summarised in Table 3.

TABLE 3: Benefits of Emerging Technologies

Benefit Category	Frequency	Percentage (%)
Cost Reduction & Operational Efficiency	20	80.0
Sustainability & Energy Efficiency	16	64.0
Improved Space Utilization & Planning	14	56.0

Total number of respondents (n)=25

The findings reveal that the most outstanding benefit is cost reduction and improved operational efficiency (80%). This is followed by enhanced sustainability and energy efficiency (64%), and improved space utilisation and planning (56%). Qualitative insights further explain these results. Respondents noted that BIM reduces construction errors and project delays, thereby lowering costs. IoT systems enhance maintenance efficiency through real-time monitoring of facilities, while GIS improves decision-making in campus planning. These findings align with existing literature, which highlights the role of emerging technologies in improving productivity, sustainability, and decision-making in real estate development. The results also demonstrate that technology adoption contributes directly to more

efficient and sustainable campus management systems.

Institutional and Technical Challenges Affecting Technology Integration

Despite the benefits, several constraints limit the effective integration of emerging technologies. These challenges are presented in Table 4.

TABLE 4. Challenges to Technology Adoption

Challenge	Frequency	Percentage (%)
High Implementation Cost	18	72.0
Limited Technical Expertise	16	64.0
Resistance to Change	11	44.0

Total number of respondents (n)=25

The results indicate that high implementation cost is the most significant barrier (72%), followed by limited technical expertise (64%) and resistance to change (44%). Interview responses reveal that financial constraints restrict the acquisition of advanced technologies, particularly AI systems. Additionally, respondents highlighted a shortage of skilled personnel required to effectively operate and maintain these technologies. Resistance to change among staff further slows down the adoption process. These findings are consistent with prior studies in developing economies, which identify financial, technical, and institutional barriers as key challenges to digital transformation in real estate systems.

Qualitative Result

The analysis of interview responses revealed that emerging technologies are increasingly shaping real estate development practices within Lead City University. Four dominant technological themes emerged from participants' narratives: Building Information Modelling (BIM), Internet of Things (IoT), Geographic Information Systems (GIS), and Artificial Intelligence (AI). These technologies were perceived to influence campus planning, facility management efficiency, and sustainability performance in different but complementary ways.

Participants consistently described Building Information Modelling (BIM) as a critical enabler of improved design coordination and project delivery. Interviewees noted that the use of BIM enhances visualisation, supports integration of multidisciplinary inputs, and helps minimise construction errors. This aligns with broader scholarly arguments that digital modelling tools contribute to data-driven decision-making and improved life-cycle management of real estate assets. Within the university context, respondents explained that BIM has facilitated more structured infrastructure development and strengthened communication among project stakeholders.

The Internet of Things (IoT) also emerged as an important technology influencing facility management practices. Interview participants highlighted the role of sensor-based systems in monitoring energy consumption, tracking equipment performance, and supporting preventive maintenance strategies. These applications were perceived to improve

operational efficiency and enable more responsive management of campus facilities. The growing reliance on IoT technologies reflects a gradual shift towards smart campus real estate systems, where digital monitoring tools are used to optimise resource utilisation and improve service delivery.

Another theme identified from the interviews relates to the application of Geographic Information Systems (GIS) in campus planning and spatial decision-making. Participants indicated that GIS supports effective mapping of infrastructure networks, assists in land allocation decisions, and enhances long-term development planning. The technology was also viewed as useful for coordinating expansion projects in a manner that aligns with environmental sustainability objectives and institutional growth priorities. Although Artificial Intelligence (AI) was acknowledged as a promising innovation, respondents suggested that its adoption remains at an emerging stage. Interviewees noted that AI has potential applications in predictive maintenance, automated data analysis, and sustainability monitoring. However, they also emphasised that limited technical expertise, financial constraints, and organisational readiness challenges currently restrict its wider implementation within the university's real estate management systems. Across all technological themes, participants associated digital innovation with several institutional benefits. These include improved cost efficiency in project delivery and maintenance operations, enhanced environmental sustainability through better energy management, and more effective utilisation of campus spaces. Technology adoption was also perceived to strengthen institutional competitiveness by supporting modern learning environments and improving the functional performance of real estate assets.

Despite these positive outcomes, interview responses revealed notable challenges affecting effective technology integration. High implementation costs, insufficient training opportunities, and resistance to organisational change were frequently mentioned as barriers. Participants suggested that addressing these constraints would require strategic investment, capacity development initiatives, and clearer institutional policies on digital transformation in facility management and real estate development.

From a theoretical standpoint, these findings provide qualitative support for technology adoption perspectives which emphasise perceived usefulness and organisational readiness as key determinants of innovation uptake. The experiences shared by participants illustrate how the practical benefits of improved efficiency and maintenance optimisation can motivate institutions to gradually embrace digital tools in real estate development processes.

The findings demonstrate that the adoption of emerging technologies has practical implications for improving real estate development and management in higher education institutions. Interview participants emphasised that integrating digital tools such as BIM and IoT can enhance operational performance, support sustainable campus development, and strengthen institutional planning capacity.

More broadly, the study contributes to ongoing discussions on the digital transformation of the real estate sector in developing economies such as Nigeria, where

technology adoption remains uneven. The insights suggest that institutional commitment, capacity development, and strategic investment are essential for realising the full benefits of technological innovation in property development and facility management.

Conclusion and Recommendations

This study explored the influence of emerging technologies on real estate development practices within Lead City University through a thematic analysis of interview responses from key institutional stakeholders. The findings demonstrate that digital innovations are gradually transforming campus planning, facility management, and sustainability practices within the university environment.

Participants' experiences reveal that technologies such as Building Information Modelling and the Internet of Things are already contributing to improved design coordination, enhanced monitoring of building systems, and more proactive maintenance approaches. Geographic Information Systems were also recognised as valuable tools for supporting structured campus expansion and spatial decision-making, while Artificial Intelligence was viewed as an emerging innovation with potential applications in predictive maintenance and sustainability optimisation. Collectively, these technological developments reflect a broader institutional shift towards more data-driven and efficient real estate management practices.

Despite these promising developments, the study also highlights persistent challenges affecting effective technology integration. Interviewees emphasised constraints such as high implementation costs, limited technical expertise, and organisational resistance to change. These barriers suggest that technology adoption within educational real estate systems is not solely a technical process but also an institutional and behavioural transition that requires strategic planning and sustained commitment.

In light of these findings, it is recommended that universities strengthen investment in digital infrastructure and adopt phased technology integration strategies that align with institutional capacity. Capacity development initiatives, including targeted training programmes for facility managers and technical staff, are essential to enhance technology utilisation and ensure long-term sustainability of digital systems. Furthermore, institutional leadership should establish clear governance frameworks to guide technology adoption, promote innovation, and support collaborative engagement among stakeholders involved in campus development and property management.

The study also underscores the need for broader empirical investigations into PropTech adoption within higher education real estate across multiple institutional contexts. Future research could adopt comparative or longitudinal qualitative approaches to deepen understanding of how technological transformation evolves over time and how it shapes sustainability outcomes in university environments.

Overall, the research demonstrates that emerging technologies hold significant potential to improve the efficiency, sustainability, and strategic management of real estate assets in higher education institutions. However, realising these benefits requires deliberate investment, organisational readiness, and continuous knowledge

development to support effective digital transformation.

Contribution to Knowledge

This study provides important qualitative insights into the adoption of emerging Property Technology (PropTech) innovations within the real estate system of Lead City University. Through thematic exploration of participants' experiences, the research reveals how digital tools such as Building Information Modelling (BIM), Internet of Things (IoT), Geographic Information Systems (GIS), and Artificial Intelligence (AI) are gradually influencing campus development and facility management practices.

The findings highlight a growing institutional recognition of the role of BIM and IoT in improving design coordination, operational efficiency, and maintenance responsiveness. At the same time, the study underscores the emerging relevance of GIS in spatial planning and the evolving potential of AI in predictive maintenance and sustainability monitoring. These insights contribute to a deeper contextual understanding of how technological innovation is reshaping real estate development processes within higher education environments in developing economies.

Limitations of the Study

Despite the valuable insights generated, the study has certain limitations. First, the findings are based on participants' experiences and perceptions, which may be influenced by personal judgement and organisational context. Second, the study adopted a case study design focused on a single university, which may limit the generalisability of the results to other institutional settings. Finally, the cross-sectional nature of the interviews captures technology adoption at a particular point in time and may not fully reflect future trends or long-term impacts.

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