Empowering Transformative Leadership and Institutional Development through Digital Innovations in Oyo State, Nigeria

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Abstract
In the swift and profound digital transformations taking place on the vast African continent, it is evident that a significant shift has occurred with the emergence of digital innovations, which are proving to be powerful catalysts for change. These technological advancements are reshaping traditional leadership paradigms and driving the development of institutions in unprecedented ways. This paper focuses on the role of transformative leadership in fostering institutional development through the adoption and integration of digital innovations in Ibadan Metropolis. This study employed a mixed method approach to select 250 participants through purposive sampling techniques from various sectors in Ibadan, including government officials, business leaders, educators, civil society members, and 20 key informants, to evaluate the impact of digital innovations on institutions and leadership. Through this, leaders utilise digital tools to manoeuvre through details and multifaceted challenges effectively, ultimately fostering a culture of positive transformation and progress. The findings highlighted the potential of digital technologies to enhance governance processes, foster economic growth, and promote inclusive development. This paper contributes to a deeper understanding of the dynamics of digital transformations in the Ibadan metropolis and provides insights into strategies for maximising their benefits while mitigating risks. Based on the analysis, the paper recommends prioritising investments in digital infrastructure, capacity-building initiatives, and fostering collaboration between public and private sectors to ensure equitable access to and utilisation of digital technologies.

Keywords: Digital Innovations, Transformative Leadership, Institutional Development, African Continent, Inclusive Development

Introduction
Transformative leadership and institutional development are fundamental to the advancement of any civilisation. Transformative leadership is essential for harnessing digital tools to foster inclusive growth, enhance operational efficiency, and create a participatory environment for

citizens. Transformative leaders possess the vision, creativity, and adaptability to integrate digital technologies into existing structures and processes. Digital technologies can drive significant economic growth and social development if effectively implemented and supported by strong leadership. Such leadership can catalyse the adoption of digital innovation, ensuring its benefits are broadly distributed across society (Ndung'u & Signé, 2020).

Adopting and adapting to a new cultural ethos where technology is leveraged for social change, economic prosperity, and institutional integrity is essential (Fasinu et al., 2024). Heeks (2018) discusses how digital governance can bridge gaps between citizens and the state, promoting more inclusive and responsive governance structures.

In the heart of West Africa, Ibadan stands as a resilient metropolis on the brink of transformative change by adopting digital innovation. Digital innovation is the application of new technologies to existing problems and processes, rapidly becoming the cornerstone of contemporary governance and economic advancement. Its role in enhancing public administration's transparency, accountability, and service delivery is well-documented (Twizeyimana & Andersson, 2019). This evolving background offers unprecedented opportunities across public administration, business, education, and civil society.

Digital innovation encompasses many technologies, including big data analytics, artificial intelligence, blockchain, and the Internet of Things (IoT). These technologies have the potential to streamline processes, reduce costs, and improve service delivery. For instance, in public administration, digital platforms can facilitate more efficient tax collection, better resource management, and enhanced citizen engagement.

The dynamic nature of governance and institutional operations in Oyo State, Nigeria, has shifted towards a more innovative approach to leadership. Despite the potential of digital innovations to revolutionise leadership and institutional development, there is a significant gap. This gap has resulted in suboptimal performance, a lack of adequate infrastructure, poor digital literacy, and a slow pace of development.

This paper examines how digital tools and platforms are becoming fundamental in reshaping leadership paradigms and reconstructing the fabric of institutional development across Africa, focusing on Ibadan Metropolis. To achieve this aim, the following objectives are to assess the demographic characteristics, evaluate the perception and impact of digitalisation, analyse digital technologies used, identify the challenges and opportunities of digital innovations, and know the relationship between transformative leadership, institutional development, and digital innovation.

Literature Review

Conceptualizing Transformative Leadership in the Digital Age
At the vertex of institutional development lies transformative leadership, a style of leadership that is fluid, adaptive, and able to engender profound change within organisations and

communities. Transformative leadership is particularly crucial in the digital age, where rapid technological advancements and complex environments require leaders to possess unique capabilities and strategies. Transformative leadership, as conceptualised by James MacGregor Burns (1978), involves leaders who elevate the interests and morale of their followers, inspiring them to achieve extraordinary outcomes. Burns differentiates between transactional and transformational leadership, where the former is based on exchanges between leaders and followers, and the latter is focused on higher-order intrinsic motivations and the transformation of followers.

Transformative leaders can inspire and mobilise diverse stakeholders towards a shared vision of digital transformation. The digital age introduces new challenges and opportunities for leadership. Leaders must navigate a technologically complex environment with rapid innovation, data proliferation, and evolving digital tools. Bennis and Thomas (2002) expand on Burns' work by emphasising the importance of adaptive capacity and learning agility in leaders. Learning from experiences and applying this knowledge to new situations is crucial. Leaders who have promoted digital literacy programs and encouraged continuous learning within their organisations have seen enhanced performance and innovation (Okunola & Rowley, 2019).

The characteristics of transformative leaders drawing on the work of Bass and Avolio (1994), transformative digital leaders possess several key characteristics: visionary leadership, inspirational motivation, intellectual stimulation and individualised consideration (Chukwu & Uzoma, 2020; Olajide, 2019; Olanrewaju & Aremu, 2017; Ayo et al., 2015). Likewise, the role of transformative leadership in Institutional development is critical in driving Institutional development, particularly in digital transformation. Leaders who embody transformative qualities can effectively guide their organisations through the complexities of digital innovation, fostering a culture of continuous improvement and adaptation. Transformative leaders have driven digital transformation across various sectors, from public administration to healthcare and education. Their ability to articulate a clear vision, motivate stakeholders, and foster innovation has significantly improved service delivery and operational efficiency (Ayo et al., 2015; Olajide, 2019).

Institutional Development

Institutional development is a complex and multifaceted process that can be examined through various theoretical lenses. One prominent background is new institutionalism, which postulates that institutions evolve in response to changing socioeconomic landscapes. This section explores key concepts, mainly focusing on the works of Douglass North and the idea of institutional entrepreneurship.

New institutionalism emphasises the importance of institutional environments in shaping the behaviour of individuals and organisations. According to North (1990), institutions are the "rules of the game" in a society, consisting of formal constraints (laws, regulations) and informal constraints (norms, conventions). Traditional norms and values sometimes challenge adopting new technologies, necessitating targeted efforts to shift mindsets and attitudes

towards digital innovation (Okunola & Rowley, 2019). These institutions provide the framework within which economic activity occurs and evolve in response to shifts in socio-economic conditions.

Another is institutional entrepreneurship, as developed by DiMaggio (1988) and further elaborated by Battilana, Leca, and Boxenbaum (2009), which focuses on the role of actors within institutions who initiate and guide transformational change. Institutional entrepreneurs leverage resources, networks, and innovative ideas to reshape institutional frameworks and drive change. These individuals champion digital initiatives, secure funding, and mobilise support to implement new technologies (Adeniran & Johnston, 2016; Olanrewaju & Aremu, 2017).

Another critical aspect of institutional development is path dependency, a concept highlighted by Pierson (2000). Path dependency suggests that historical legacies and initial conditions significantly influence the trajectory of institutional evolution, often leading to the persistence of specific institutional patterns over time. Historical factors such as colonial administrative structures and post-independence governance models influence institutional frameworks. Understanding these legacies is essential for designing effective digital transformation strategies that acknowledge and address entrenched practices (Falola & Heaton, 2008). While path dependency can create inertia, strategic interventions and innovative policies can shift trajectories.

Digital Innovations

The rapid ascent of digital innovations has become a central theme in scholarly discourse across various academic domains. Esteemed thought leaders in information systems define digital innovation as implementing novel digital technologies that transform existing practices and generate new avenues for value creation and capture (Yoo et al., 2010).

Digital technologies have precipitated significant changes in organisational behaviour and strategy. Scholars like Bharadwaj et al. (2013) have developed the concept of digital business strategy, emphasising the strategic use of digital resources to create competitive outcomes. Digitalisation has enabled organisations to improve operational efficiency and service delivery. Implementing digital health records in public hospitals has enhanced patient care by providing quick access to medical histories and reducing paperwork (Ayo et al., 2015). However, the strategic integration of these technologies requires strong leadership and a clear vision, which sometimes needs to be improved in local institutions.

Digital Innovation Ecosystems

The concept of digital ecosystems extends beyond individual organisations, encompassing networks of stakeholders and complementary elements that collectively enable and sustain digital transformations. Moore's (1993) work on business ecosystems provides valuable insights into how digital technologies catalyse the creation of new ecosystems and redefine boundaries within existing ones. Transformation through digital innovations can be viewed as developing an emergent digital ecosystem. This ecosystem includes government officials,

entrepreneurs, citizens, and international partners. The collaboration between the Government and tech startups has led to initiatives like the Smart City Project, aimed at improving urban management through IoT and big data analytics (Olajide, 2019).

However, sustaining this ecosystem requires addressing challenges such as digital literacy and infrastructure deficits. Efforts to improve digital literacy through community training programs have shown positive results, increasing the participation of citizens in the digital economy (Okunola & Rowley, 2019).

Theoretical Framework

System Theory

Systems theory offers a holistic framework to comprehend the dynamic and interdependent interactions between digital technology, leadership, and institutions. As articulated by Von Bertalanffy (1968), this theory posits that systems are interconnected structures where changes in one part impact the whole. This conceptualisation helps to understand that digital tools and innovations are not isolated but part of a broader ecosystem involving various stakeholders, processes, and institutional frameworks. Feedback loops are crucial in this context, as they help maintain and improve system performance by continuously refining digital strategies to meet institutional goals. Institutions utilise digital surveys, user feedback systems, and performance metrics to assess the effectiveness of digital initiatives, aiding leaders in making informed decisions and adapting strategies as needed (Ayo et al., 2015).

Diffusion of Innovations Theory

Rogers' Diffusion of Innovations theory is fundamental to the study of digital innovation, outlining how innovation is communicated through specific channels over time among social system members (Rogers, 2003). The theory emphasises the characteristics of innovations—relative advantage, compatibility, complexity, trialability, and observability—and the role of decision-making in the adoption process. Research indicates that relative advantage and compatibility are significant predictors of digital tool adoption. For example, integrating mobile payment systems in local markets shows a high relative advantage by reducing transaction costs and increasing efficiency (Mbogo, 2010). However, complexity remains a barrier, especially in public administration, where bureaucratic inertia can slow adoption processes.

Case Studies
Selection and Rationale for Chosen Case Studies
The chosen case studies focus on instances where digital innovation has led to transformative outcomes in Nigeria and other regions of Africa, offering localised insights and broader continental perspectives applicable to Ibadan. Research by Adebayo et al. (2020) and Okoli et al. (2018) illustrates the significant impact of digital innovations on various sectors in Nigeria, such as healthcare, agriculture, and governance. These insights provide valuable lessons. Additionally, reports from the African Development Bank (AfDB) and the World Bank offer broader perspectives on the potential of digital technologies to drive transformative change

across Africa. The case studies selected exemplify diverse contexts and sectors, such as mobile banking solutions in Kenya, ensuring a comprehensive exploration of digital innovation's opportunities and challenges.

Detailed Analysis of Each Case Study
Case Study 1: Nigeria's Digital Health Initiative – "mHealth"
The Nature of Digital Innovation Implemented
Nigeria's "mHealth" initiative utilises mobile technology to enhance healthcare delivery, particularly in underserved and rural areas. Key components include mobile health applications, telemedicine services, and health data management systems. Implementing "mHealth" involved strategic collaboration between the government, private sector, and international organisations, with key strategies including policy support, public-private partnerships, capacity building, and institutional developments. The initiative has increased access to healthcare services in remote areas, reducing patient travel time and costs. Studies by Michael (2009) and Labrique et al. (2013) show that mobile health solutions have improved overall health outcomes by bridging the gap between healthcare providers and underserved populations. Additionally, digital platforms for scheduling and consultations have enhanced healthcare delivery efficiency, as Källander et al. (2013) noted. Digital health tools have also improved disease management and treatment adherence by providing timely health information and reminders, helping patients manage their conditions and adhere to treatment regimens more effectively. Research by Free et al. (2013) indicates that digital interventions facilitate patient engagement and adherence to treatment plans. Effective stakeholder communication and collaboration are crucial for successfully implementing digital health initiatives.

Case Study 2: Kenya's Mobile Payment System – "M-Pesa"
The nature of Digital Innovation Implemented
M-Pesa revolutionised financial transactions in Kenya by offering mobile-based money transfer and financial services, with key components including mobile wallets and financial inclusion. The implementation of M-Pesa involved inclusive policy-making and robust public-private partnerships. The digital financial innovations introduced by M-Pesa have extended banking services to millions of previously unbanked individuals, particularly in remote and underserved areas. This expansion has enabled communities to engage in previously inaccessible financial activities, contributing to poverty reduction and economic development, as evidenced by studies by Mas and Radcliffe (2010) and Jack and Suri (2011). The success of M-Pesa has provided valuable lessons for future digital financial inclusion initiatives, emphasising the need for adaptable regulations to foster innovation and ensure the security and reliability of financial services, as highlighted by research from Fintech Nigeria (2018) and the World Bank (2019). Effective partnerships between the private and public sectors are essential for resource mobilisation and service delivery, demonstrated by the collaboration between Safaricom, financial institutions, and government agencies that underpinned M-Pesa's success. Insights from case studies by CGAP (2011) and the Consultative Group to Assist the Poor (2013) stress such partnerships' importance in driving global digital financial inclusion.

Research Methodology

This study employed a mixed methods approach to understand the impact of digital innovations on institutions and leadership in the Ibadan metropolis. Combining quantitative and qualitative techniques, the study aimed to leverage the strengths of both methods for a comprehensive analysis. Structured surveys with closed-ended and Likert-scale questions were developed to gather quantitative data on digital innovation, leadership practices, and institutional development. Purposive sampling was used to select 250 participants from various sectors in Ibadan, including government officials, business leaders, educators, and civil society members. Surveys were distributed online via Google Forms and social media platforms and in person at strategic locations such as government offices, business centres, and educational institutions. The quantitative data were analysed using statistical software, employing descriptive statistics for an overview and inferential statistics, like correlation analysis, to explore relationships.

Qualitative data were gathered through interviews. Twenty key informants, including digital innovation experts, policymakers, business executives, and sector leaders, were selected via purposive sampling. A semi-structured interview guide facilitated in-depth discussions in person or by phone. Transcriptions of these interviews were analysed using thematic analysis, with NVivo software aiding in coding and identifying key themes and patterns. The integration of quantitative and qualitative findings provided a holistic perspective. Triangulation was employed to cross-verify results, enhancing the study's validity and reliability. The combined insights from surveys and interviews illustrated how digital innovations affect leadership and institutional development in Ibadan.

Data Analysis

Demographic Characteristics

The Figures present the demographic characteristics of the participants in the Ibadan metropolis. The data reveals insights into the distribution across various categories. Figure 1 shows that the largest group, aged 18 to 25, comprises 80 participants (32.0%). The 26-35 age group follows closely with 70 participants (28.0%), while those aged 36 to 45 account for 50 participants (20.0%). Aged 46 to 55 constitute 30 participants (12.0%), and those aged 56 and above represent 20 participants (8.0%). The study includes 150 male participants (60.0%) and 100 female participants (40.0%), illustrating a balanced gender representation as shown in Figure 2. Figure 3 revealed that Ninety participants are Government Employees (36.0%), 80 participants are Private Sector Employees (32.0%), 40 participants are Business Owners (16.0%), 20 are Students (8.0%), and another 20 are NGO workers (8.0%). Figure 4 revealed that 50 participants (20.0%) have 0-5 years of experience, 130 (52.0%) have 6-10 years, 30 (12.0%) have 11-15 years, and 20 (8.0%) each have 16-20 years and 21+ this shows that the years of experience among participants vary widely.
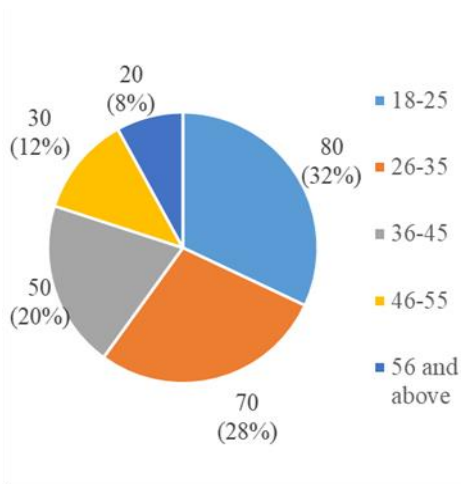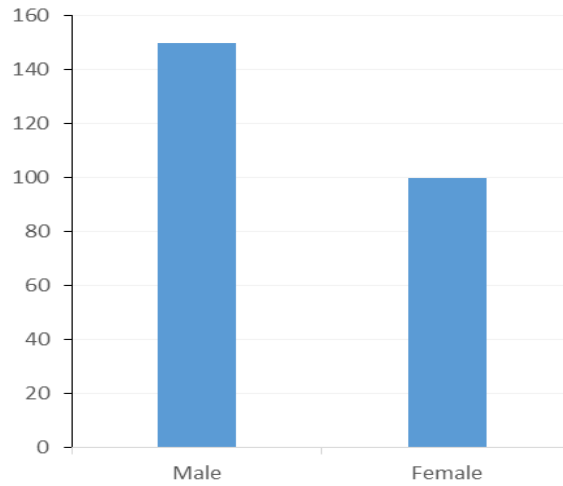
Fig 1: Age distribution
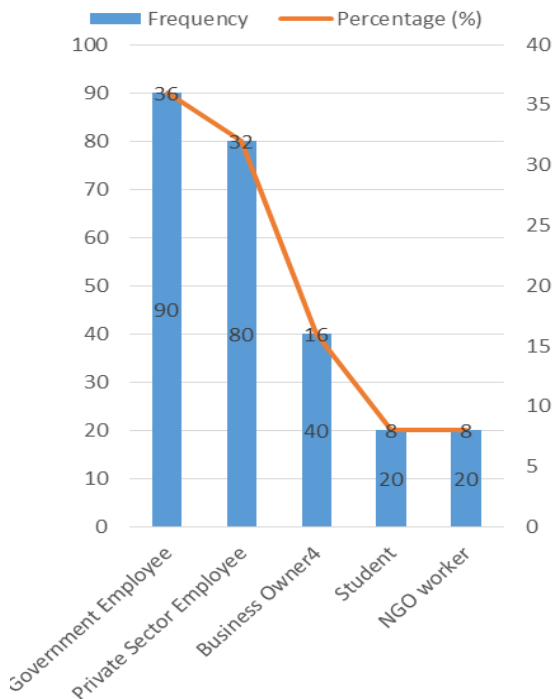

Fig 2: Gender distribution
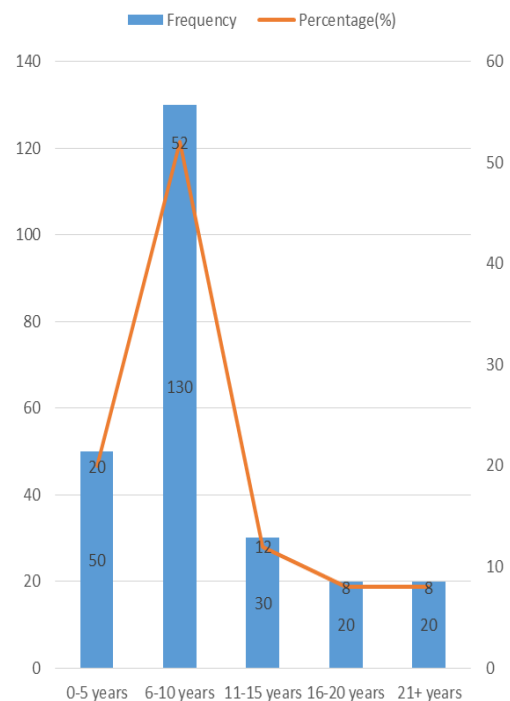

Fig 3: Occupation distribution

Fig 4: Years of experience distribution

Perception and Impact on Digitalisation

Table 2 shows that 100 participants (40%) strongly agree, and another 100 (40%) agree that they are familiar with digital technologies. Only 40 participants (16%) disagreed, and 10 participants 4% strongly disagreed. The perceived level of digitalisation varies among 120 participants (48%), which is considered high, followed by 70 participants (28%) at a moderate level. A smaller percentage of 30 participants (12.0%) perceived it as low, and another 30 participants (12.0%) thought it was very low. Regarding the impact on service delivery efficiency, opinions are divided. 24.0%, representing 60 participants, agreed that digitalisation has significantly improved, while 44.0%, representing 60 participants, decided that it has moderately improved. 20.0%, representing 50 participants, said there were no significant

changes, and 12.0%, representing 30 participants, firmly held that the impact is moderately worsened.

Participants generally perceive digitalisation positively for transparency and accountability; 36.0%, representing 90 participants, strongly agree, and 52%, representing 130 participants, agree. Conversely, 12.0%, representing 30 participants, disagree that impacts. Also, 24.0%, representing 60 participants, strongly agree, and 60.0%, representing 150 participants, agree that digital innovations have a positive effect. Only 16%, representing 40 participants, disagree with this view.

Table 1: Perception and Impact on Digitalisation

Variable	Statement		Response				Total	Mean	SD
Perception on Digitalisation	Familiarity with Digital Technologies		SA	A	D	S D			
		F	100	100	40	10	250		
		%	40.0	40.0	16.0	4.0	100	3.92	1.038
			VL	L	M	H			
	Level of Digitalisation.	F	30	30	70	120	250		
		%	12.0	12.0	28.0	48.0	100	3.08	1.060
Impact on Digitalisation			MW	NSC	MI	SI			
	Efficiency of Service Delivery	F	30	50	110	60	250		
		%	12.0	20.0	44.0	24.0	100	3.80	0. 957
			SA	A	D	S D			
	Transparency and Accountability	F	90	130	30	-	259		
		%	36.0	52.0	12.0	-	100	3.85	0. 959
			SA	A	D	S D			
	Influence on Leadership Practices	F	60	150	40	-	250		
		%	24.0	60.0	16.0	-	100	3.41	0. 494

Digital Technologies Used

Figure 5 shows the digital technologies that participants use, revealing a varied landscape of technological adoption and integration. Among the respondents, a significant portion, comprising 24.0%, representing 60 participants, predominantly employs Digital Records Systems. Also, 8.0%, representing 20 participants, utilise both Data Analytics Tools and Digital Records Systems, while another 8.0%, representing 20 participants, combine Mobile Apps with

Data Analytics Tools. Furthermore, 12.0%, representing 30 participants, use Online Platforms alongside Digital Records Systems, and 20.0%, representing 50 participants, integrate both Online Platforms and Mobile Apps into their operations. Moreover, 12.0%, representing 30 participants, leverage a combination of Mobile Apps, Online Platforms, and Data Analytics Tools, and 16.0%, representing 40 participants, integrate Mobile Apps, Online Platforms, and Digital Records Systems. These findings highlight the diverse approaches taken by participants in adopting and incorporating digital technologies to support their organisational processes and objectives.
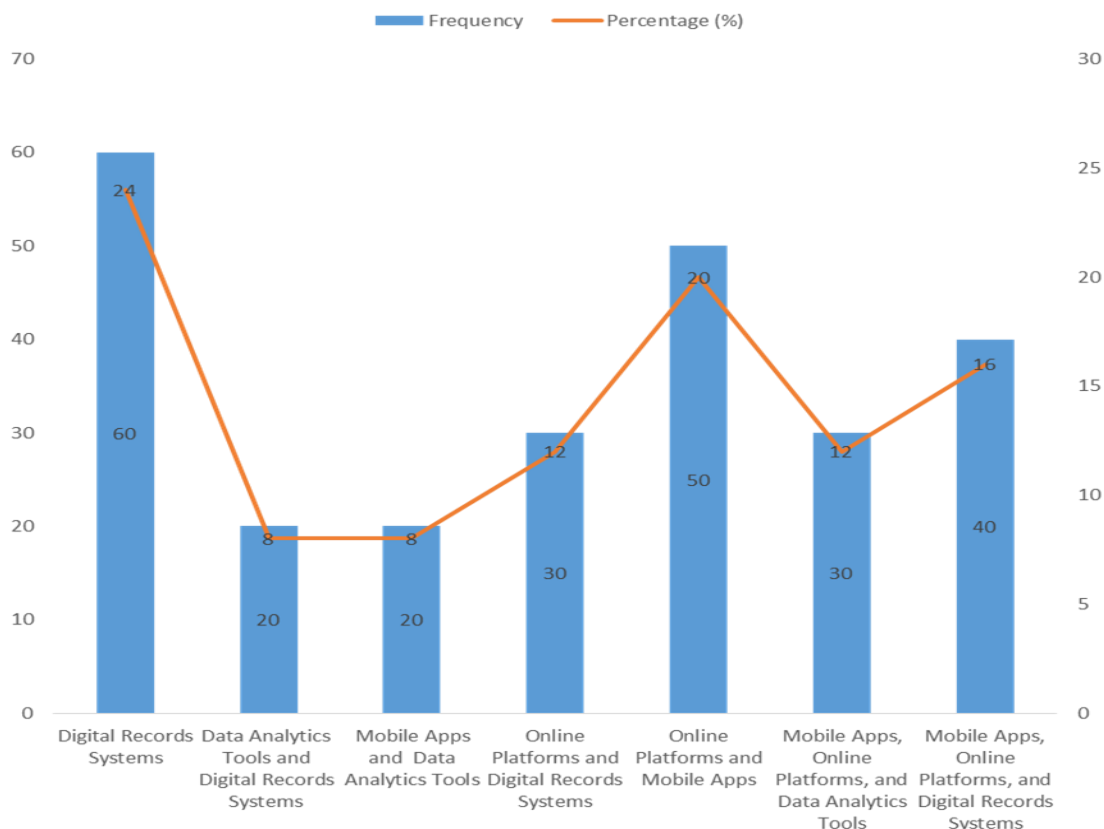

Fig 5: The distribution of digital technologies used

Challenges and Opportunities of Digital Technologies

Table 2 analyses participants' perspectives on the challenges and opportunities of digital innovations. Regarding challenges, participants widely acknowledge the lack of adequate infrastructure; 48.0%, representing 120 participants, strongly agree, and 32.0%, representing 80 participants, agree, while 16.0%, representing 40 participants, disagree, and 4.0%, representing 10 participants, strongly disagree. Resistance to change among staff is also prominent; 40.0%, representing 100 participants, strongly agree, and 40.0%, representing 100 participants, agree. Conversely, 20.0%, representing 50 participants, disagreed. Budget constraints are also highlighted as a challenge, and 48.0%, representing 120 participants, strongly agree; 32.0%, representing 80 participants, agree, whereas 12.0%, representing 30 participants, disagree; and 8.0%, representing 100 participants, strongly disagree. Cybersecurity concerns are prominently noted; 52.0%, representing 130 participants, strongly

agree, and 34.0%, representing 85 participants, agree, while 14.0%, representing 35 participants, disagree. The challenge of limited digital literacy was held differently by the respondents. 8.0%, representing 20 participants, strongly agree, and 74.0%, representing 185 participants, agree, though 16.0%, representing 40 participants, disagreed, and 2.0%, representing 5 participants, strongly disagreed, indicating a significant portion recognised this as a barrier.

Despite the challenges, participants also see numerous opportunities in digital innovation. Enhanced openness and responsibility are highly regarded. 48.0%, representing 120 participants, strongly agree, and 40.0%, representing 100 participants, agree. Meanwhile, 14.0%, representing 35 participants, disagreed, and 6.0%, representing 15 participants, strongly disagreed, suggesting some reservations. Enhanced citizen engagement is another promising opportunity. 48.0%, representing 120 participants, strongly agree, and 44.0%, representing 110 participants, agree, although 8.0%, representing 20 participants, disagreed. Improved service delivery efficiency is also viewed positively. 40.0%, representing 100 participants, strongly agree, 56.0%, representing 140 participants, agree, while only 4.0% strongly disagree. Similarly, 48.0%, representing 120 participants, strongly agree, and 44.0%, representing 110 participants, agree that digital innovations strengthened decision-making processes, while 8.0%, representing 20 participants, disagree. Lastly, 40.0%, representing 100 participants, strongly agree, and 52.0%, representing 130 participants, agree that digital innovations enhance better resource allocation, though 8.0%, representing 20 participants, disagreed, reflecting a varied opinion on this opportunity.

Table 2: Challenges and Opportunities of Digital Technologies

Variable	Statement		SA	A	D	S D	Total	Mean	SD
Challenges of Digitalisation	Lack of Adequate Infrastructure	F	120	80	40	10	50		
		%	48.0	32.0	16.0	4.0	100	4.20	0.866
	Resistance to Change Among Staff.	F	100	100	50	-	250		
		%	40.0	40.0	20.0	-	100	4.04	0.889
	Insufficient Budget/Funding	F	120	80	30	20	250		
		%	48.0	32.0	12.0	8.0	100	4.00	1.118
	Cyber security Concerns	F	130	85	35	-	250		
		%	52.0	34.0	14.0	-	100	4.28	0. 843
	Limited Digital Literacy	F	20	185	40	5	250		
		%	8.0	74.0	16.0	2.0	100	3.56	0. 821
			120	100	35	15			

Opportunities of Digitalisation	Enhanced Openness and Responsibility	F %					250		4.24	0.831
			48.0	40.0	14.0	6.0	100			
	Enhanced Citizen Engagement	F	120	110	20	-	250			
		%	48.0	44.0	8.0	-	100		4.36	0.700
	Improved Service Delivery Efficiency	F	100	140	-	10	250			
		%	40.0	56.0	-	4.0	100		4.16	0.898
	Strengthened Decision-Making Processes	F	120	110	20	-	250			
		%								
			48.0	44.0	8.0	-	100		4.36	0. 700
	Better Resource Allocation	F	100	130	20	-	250			
		%	40.0	52.0	8.0	-	100		3.60	1. 000

Correlation Analysis

The correlation analysis reveals several significant relationships between the variables, providing valuable insights into how digital technologies and related factors impact institutional development and leadership practices in the Ibadan metropolis.

Table 2 shows that familiarity with digital technologies is strongly associated with the level of digitalisation, the efficiency of service delivery, and transparency and accountability. Specifically, there is a high positive correlation between familiarity with digital technologies and the level of digitalisation ($r = 0.898$, $p < 0.01$), indicating that those more familiar with digital technologies tend to operate in more digitalised environments. Additionally, familiarity with digital technologies correlates strongly with the efficiency of service delivery ($r = 0.924$, $p < 0.01$), suggesting that increased digital familiarity enhances service delivery efficiency. Similarly, a strong correlation exists between familiarity with digital technologies and transparency and accountability ($r = 0.924$, $p < 0.01$), highlighting that increased digital familiarity contributes to greater transparency and accountability within institutions.

Furthermore, the level of digitalisation shows extremely high correlations with several outcomes, including transparency and accountability ($r = 0.993$, $p < 0.01$), citizen engagement ($r = 0.974$, $p < 0.01$), service delivery efficiency ($r = 0.957$, $p < 0.01$), and decision-making processes ($r = 0.974$, $p < 0.01$). This implies that more digitalised institutions are better at engaging citizens, delivering services efficiently, and making informed decisions.

The influence of digital technologies on leadership practices is also notable. There is a high positive correlation between the influence on leadership practices and familiarity with digital technologies ($r = 0.906$, $p < 0.01$), indicating that digital familiarity significantly impacts leadership practices. Additionally, there is a strong correlation between the influence on

leadership practices and limited digital literacy (r = 0.863, p < 0.01), suggesting that the impact of digital technologies on leadership is more pronounced when digital literacy is high.

On the other hand, cybersecurity concerns show strong negative correlations with familiarity with digital technologies (r = -0.845, p < 0.01), the level of digitalisation (r = -0.632, p < 0.01), and the influence on leadership practices (r = -0.759, p < 0.01). This suggests that as familiarity with digital technologies and levels of digitalisation increase, cybersecurity concerns tend to decrease, likely due to better implementation of security measures in more digitalised environments. Moreover, limited digital literacy strongly correlates negatively with cybersecurity concerns (r = -0.684, p < 0.01), implying that higher digital literacy is associated with fewer cybersecurity issues.

Other factors, such as the lack of adequate infrastructure and resistance to change among staff, generally show low or insignificant correlations with other variables, indicating that these factors may not strongly influence the other measured variables in this study. Insufficient budget or funding shows moderate correlations with limited digital literacy (r = 0.412, p < 0.05) and enhanced citizen engagement (r = 0.408, p < 0.05), suggesting that budget constraints can impact digital literacy and citizen engagement to some extent.

Table 3 **Correlation Analysis**

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Familiar with Digital Technologies	1														
2	Level of Digitalization	.898**	1													
3	Efficiency of Service Delivery	.924**	.847**	1												
4	Transparency and Accountability	.924**	.847**	1.000**	1											
5	Influence on Leadership Practices	.906**	.872**	.790**	.790**	1										
6	Lack of Adequate Infrastructure	0.103	0.229	-0.034	-0.034	-0.015	1									
7	Resistance to Change Among Staff	0.112	0.200	-0.030	-0.030	0.223	.721**	1								
8	Insufficient Budget/Funding	0.168	0.304	0.336	0.336	0.050	0.368	0.355	1							
9	Cyber-security Concerns	-.845**	-.632**	-.702**	-.702**	-.759**	-0.140	-0.207	0.000	1						
10	Limited Digital Literacy	.806**	.818**	.808**	.808**	.863**	0.011	0.301	.412*	-.684**	1					
11	Increased Transparency and Accountability	.889**	.993**	.836**	.836**	.857**	0.255	0.304	.408*	-.642**	.846**	1				
12	Enhanced Citizen Engagement	.878**	.974**	.813**	.813**	.861**	0.267	0.216	0.274	-.614**	.750**	.956**	1			
13	Improved Service Delivery Efficiency	.910**	.957**	.863**	.863**	.868**	0.327	0.366	0.392	-.670**	.862**	.968**	.940**	1		
14	Strengthened Decision-Making Processes	.878**	.974**	.813**	.813**	.861**	0.267	0.216	0.274	-.614**	.750**	.956**	1.000**	.940**	1	
15	Better Resource Allocation	.772**	.934**	.775**	.775**	.820**	0.150	0.188	0.363	-.414*	.755**	.911**	.953**	.896**	.953**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Thematic Analysis Identify the Challenges and Opportunities of Digital Technologies

The interview responses provided valuable insights into the impact of digital innovations on transparency and accountability within public institutions in Ibadan Metropolis. A significant majority, 60% of the participants, observed that digital tools, such as online procurement systems, have improved transparency by providing public access to bid information. Additionally, 30% highlighted enhanced accountability through implementing digital audits and accessible financial reporting, which have streamlined governmental processes. However, 10% of the participants said they had not noticed substantial changes from digital innovations. In the interviews, 50% of respondents identified a lack of digital literacy among staff as a critical barrier to adopting digital technologies, noting the need for more skills to utilise new

systems fully. Additionally, 40% highlighted inadequate infrastructure and budget constraints as significant obstacles. To overcome these challenges, 70% suggested public-private partnerships and targeted training programs to enhance digital literacy and infrastructure. Also, The role of transformative leadership has emerged as a crucial factor in facilitating the adoption of digital technologies. 65% of the interviewees emphasised that visionary leaders who actively promote digital innovation are essential for driving change. They noted that leaders often provide a clear vision and motivation, inspiring their teams to embrace digital transformation. In contrast, 25% discussed the importance of leaders who focus on inspiring and motivating staff, while 10% felt that leadership had not significantly impacted their institution's digital transformation efforts.

Regarding enhancing digital literacy and infrastructure, 55% of the participants suggested that increasing digital literacy through educational programs would be beneficial. They emphasised equipping the workforce with the skills needed to thrive in a digitally-oriented environment. 35% recommended investing in robust digital infrastructure to support the widespread adoption of digital services. A smaller group, 10%, believed that public awareness campaigns could play a key role in increasing digital literacy and encouraging the use of digital technologies.

Learning from case studies of digital innovation, 45% of the respondents cited the importance of robust regulatory frameworks, as seen in the success of mobile payment systems like M-Pesa in Kenya. It was noted that the frameworks are crucial for fostering innovation while ensuring security and reliability. 35% emphasised the role of partnerships between the government and private sector in driving these innovations. Additionally, 20% mentioned the necessity of adapting successful models from industries like healthcare and finance to other areas in Ibadan, ensuring scalability and relevance to local needs.

Generally, the responses indicate a positive perception of the potential for digital innovations to enhance transparency, accountability, and service delivery in Ibadan. However, challenges such as digital literacy gaps, infrastructure deficits, and leadership roles must be addressed to realise these benefits fully. The insights gathered from the participants provide a clear direction for future strategies, emphasising the need for a collaborative approach involving the public and private sectors to overcome existing barriers and capitalise on the opportunities presented by digital transformation.

Discussion of Findings
The results suggest that younger professionals, who are also more likely to be digitally literate, perceive a higher degree of digitalisation within their organisations. This highlights the importance of targeting digital literacy initiatives in the emerging workforce to support digital innovation, as younger employees are often more adaptable to digital tools and processes (Zhao et al., 2023; Murray et al., 2022).

Investments in digital technologies can improve service delivery efficiency and accountability, contributing to a more transparent and agile system, as seen in studies on e-governance (Hassan & Okafor, 2023; Nnajiet al., 2023). Recent research supports this view, showing that digital

technologies enhance public sector efficiency and transparency, fostering greater trust in government operations (Johnson et al., 2021; Maleka, 2023).

Identified barriers highlight areas requiring attention for successful digital transformations. Addressing these challenges through strategic planning, stakeholder engagement, and resource allocation is essential, as overcoming technological infrastructure gaps and inadequate training is vital for success (Hanelt et al., 2021; Kitsios et al., 2022).

The negative correlation between cybersecurity concerns and digital familiarity suggests that organisations must focus on cybersecurity measures to maintain trust and protect data as they mature digitally. Recent literature underscores the growing importance of cybersecurity, requiring robust frameworks to protect against evolving threats (Von Solms & Van Niekerk, 2013; Westerman et al., 2014).

The high correlation between digital literacy and digitalisation levels points to the integral role of education and continuous learning in digital transformation efforts. Enhancing digital literacy improves workforce capability and increases the perception and adoption of digital processes, supported by studies highlighting the importance of continuous digital education and training programs (Yoo et al., 2010; Brynjolfsson & McAfee, 2014).

The strong positive correlation between familiarity with digital technologies and improvements in service delivery underscores the need for organisational leaders to prioritise digital skills development. Encouraging a culture that embraces technology can lead to more efficient operations and greater transparency, with recent evidence supporting the critical role of digital skills in enhancing organisational performance and citizen satisfaction (Mergel et al., 2019; OECD, 2020).

High agreement rates on enhanced citizen engagement and strengthened decision-making through digital means indicate that e-governance tools can deepen participatory governance and improve the democratic process. Modern research confirms that e-governance can significantly increase citizen participation and make decision-making more inclusive and transparent (Twizeyimana & Andersson, 2019; UNEC Africa, 2020).

Lastly, these findings suggest actionable insights for Ibadan's leadership. Emphasising digital literacy programs, investing in robust digital infrastructure, navigating change management challenges, and ensuring cybersecurity are fundamental components of a holistic digital strategy. Instituting these measures can pave the way for a more inclusive, efficient, and transparent governance system. Comprehensive digital strategies are essential for modernising urban governance and improving public service delivery (Ndung'u & Signé, 2020; Okunola & Rowley, 2019).

Conclusion
This study highlights digital innovations' significant role in transforming leadership and institutional development in urban environments, as demonstrated by the data collected from

various professionals. It contributes to the growing body of knowledge for future policymakers, scholars, and practitioners seeking to optimise the benefits of the digital era while also cautioning against its potential pitfalls.

The positive correlations between familiarity with digital technologies, the perceived level of digitalisation, and the improvements in service delivery, transparency, and leadership practices suggest a compelling link between digital proficiency and institutional performance. Despite these promising trends, the research uncovers challenges such as inadequate infrastructure, resistance to change, budgetary constraints, and cybersecurity threats that could impede progress. Moreover, the critical importance of digital literacy cannot be overstated, given its strong positive correlation with the beneficial outcomes of digitalisation. These insights point to a need for a nuanced approach to leveraging digital technologies for institutional development, one that is both aware of and prepared for the challenges that accompany such transformative endeavours.

Recommendations

Based on the findings of this research, the following recommendations are made for leaders in Ibadan and similar urban areas seeking to capitalise on digital technologies for improved governance and development:

1. **Invest in Digital Literacy**: Enhance educational programs at all levels to improve digital skills among current and future professionals, ensuring the workforce can thrive in a digitally-oriented environment.
2. **Strengthen Infrastructure:** Allocate resources to develop and upgrade digital infrastructure to support widespread access to digital services and seamless technology integration in institutional practices.
3. **Foster a Culture of Change:** Develop change management initiatives encouraging adaptability and openness to digital innovation among institutional staff, minimising resistance to new technologies.
4. **Enhance Cybersecurity Measures:** Prioritize investments in cybersecurity to protect against digital threats and maintain public trust as services are increasingly digitised.
5. **Allocate Adequate Resources**: Ensure that budgets reflect the importance of digital transformation, providing sufficient funding to support digital initiatives and infrastructure improvements.

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