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Digitalization And Institutional Advancement In Cross River State, Nigeria

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ABSTRACT

This study examined the relationship between digitalization and institutional advancement in Cross River State, Nigeria. The research adopted a survey design with a population of 450 institutional administrators across 15 public institutions in the state. Using Taro Yamane's formula, a sample size of 212 respondents was determined through stratified random sampling. Data were collected using a structured questionnaire with a reliability coefficient of 0.87, analyzed using descriptive statistics and Pearson correlation coefficient. The findings revealed a significant positive relationship between digital infrastructure and operational efficiency ($r = 0.742$, $p < 0.05$), between digital literacy and service delivery ($r = 0.698$, $p < 0.05$), and between e-governance adoption and decision-making processes ($r = 0.721$, $p < 0.05$). The study concluded that digitalization significantly enhances institutional advancement in Cross River State. Recommendations include increased investment in digital infrastructure, comprehensive digital literacy training programs, and strengthened policy frameworks for e-governance implementation. This study contributes to understanding digital transformation in Nigerian public institutions and provides empirical evidence for policy formulation in Sub-Saharan Africa.

Keywords: Digitalization, Institutional Advancement, E-governance, Digital Infrastructure, Cross River State, Nigeria

INTRODUCTION

The rapid evolution of digital technologies has fundamentally transformed the operational landscape of institutions globally, creating unprecedented opportunities for advancement and improved service delivery (Mergel et al., 2019). In the contemporary era, digitalization has become a critical determinant of institutional effectiveness, efficiency, and competitive advantage across various sectors including education, healthcare, and public administration (Janowski, 2015). The integration of digital tools and platforms has revolutionized traditional institutional processes, enabling real-time communication, data-driven decision-making, and enhanced stakeholder engagement (Dwivedi et al., 2017).

In Nigeria, the imperative for institutional digitalization has gained considerable attention, particularly within the framework of the National Digital Economy Policy and Strategy 2020-2030, which seeks to position Nigeria as a leading digital economy in Africa (National Information Technology Development Agency, 2020). Despite this policy thrust, many state-level institutions continue to grapple with challenges related to digital transformation, including inadequate infrastructure, limited technical capacity, and resistance to change (Abubakar & Bass, 2020). Cross River State, located in the South-South geopolitical zone of Nigeria, presents a unique context for examining digitalization efforts, given its strategic positioning and commitment to technological advancement as articulated in various state development plans.

Institutional advancement, conceptualized as the comprehensive improvement in organizational capacity, performance, and impact, has emerged as a critical priority for public and private institutions seeking to remain relevant in an increasingly digital world (Kettl, 2015). This advancement encompasses multiple dimensions including operational efficiency, service quality, stakeholder satisfaction, transparency, and accountability (Gil-Garcia et al., 2018). The nexus between digitalization and institutional advancement has been explored in various contexts globally, with evidence suggesting that effective digital transformation can lead to significant improvements in institutional outcomes (Twizeyimana & Andersson, 2019).

Statement of the Problem

Notwithstanding the global recognition of digitalization as a catalyst for institutional transformation, many institutions in Cross River State continue to operate with predominantly manual systems, leading to inefficiencies, delays, and suboptimal service delivery (Eze et al., 2019). The state's institutions face persistent challenges including prolonged processing times, limited accessibility to services, poor record management, and inadequate transparency in operations. These challenges have been attributed, in part, to the slow pace of digital adoption and the absence of comprehensive digital transformation strategies (Okunola et al., 2021).

Furthermore, while the Cross River State government has made rhetorical commitments to embracing digital technologies, empirical evidence regarding the actual extent of digitalization and its impact on institutional advancement remains limited. Existing studies have focused predominantly on digital adoption in commercial sectors or in federal-level institutions, with minimal attention to state-level public institutions in Nigeria's geopolitical zones (Nkwe, 2012). This knowledge gap is particularly concerning given the unique socio-economic and infrastructural contexts of different Nigerian states, which may influence digitalization outcomes differently.

The problem is further compounded by questions regarding the readiness of institutional staff to effectively utilize digital tools, the adequacy of existing digital infrastructure, and the alignment of digitalization efforts with strategic institutional goals (Ayo et al., 2016). Without a clear understanding of these dynamics, policy interventions may be misdirected, resources misallocated, and the potential benefits of digitalization unrealized. This study therefore seeks to empirically examine the relationship between digitalization and institutional advancement in Cross River State, providing evidence-based insights to inform policy and practice.

Aim and Objectives

The main aim of this study is to examine the relationship between digitalization and institutional advancement in Cross River State, Nigeria.

The specific objectives are to:

1. Determine the relationship between digital infrastructure and operational efficiency of institutions in Cross River State.
2. Assess the relationship between digital literacy and service delivery in institutions within Cross River State.
3. Examine the relationship between e-governance adoption and decision-making processes in Cross River State institutions.

Research Questions

1. What is the relationship between digital infrastructure and operational efficiency of institutions in Cross River State?
2. What is the relationship between digital literacy and service delivery in institutions within Cross River State?
3. What is the relationship between e-governance adoption and decision-making processes in Cross River State institutions?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

Ho₁: There is no significant relationship between digital infrastructure and operational efficiency of institutions in Cross River State.

Ho₂: There is no significant relationship between digital literacy and service delivery in institutions within Cross River State.

Ho₃: There is no significant relationship between e-governance adoption and decision-making processes in Cross River State institutions.

Literature Review

Digitalization

Digitalization refers to the comprehensive integration of digital technologies into all aspects of organizational operations, fundamentally transforming how institutions function and deliver value to stakeholders (Verhoef et al., 2021). Unlike digitization, which merely involves converting analog information into digital format, digitalization encompasses the broader organizational and societal transformation enabled by digital technologies. In the institutional context, digitalization involves the adoption of technologies such as enterprise resource planning systems, cloud computing, data analytics, artificial intelligence, and digital communication platforms to enhance efficiency, transparency, and responsiveness.

The concept of digitalization in public institutions extends beyond technological adoption to include changes in organizational culture, processes, and structures (Mergel et al., 2019). It represents a paradigm shift from traditional bureaucratic systems to more agile, citizen-centered service delivery models. Key components of institutional digitalization include digital infrastructure (hardware, software, and connectivity), digital competencies (skills and knowledge of personnel), digital processes (automated workflows and procedures), and digital culture (organizational values and attitudes toward technology).

Institutional Advancement

Institutional advancement is a multidimensional construct that encompasses improvements in organizational capacity, performance, and impact across various operational domains (Kettl, 2015). In the context of public institutions, advancement manifests through enhanced operational efficiency, improved service quality, increased stakeholder satisfaction, greater transparency and accountability, and stronger institutional reputation. Operational efficiency refers to the optimization of resource utilization and process effectiveness, typically measured through indicators such as processing time, cost per transaction, and productivity rates.

Service delivery, a critical dimension of institutional advancement, reflects the quality, accessibility, and responsiveness of services provided to citizens and other stakeholders (Twizeyimana & Andersson, 2019). Decision-making processes, another key aspect, involve the mechanisms through which institutions gather information, analyze options, and implement choices, with advanced institutions demonstrating evidence-based, transparent, and inclusive decision-making practices. Other dimensions of institutional advancement include innovation capacity, adaptability to change, and the ability to achieve strategic objectives effectively.

Digital Infrastructure

Digital infrastructure comprises the foundational technological components that enable digital operations, including hardware (computers, servers, networking equipment), software (operating systems, applications, databases), and connectivity (internet, intranets, telecommunications networks) (Hjort & Poulsen, 2019). In institutional contexts, robust digital infrastructure is essential for supporting various digital activities including data management, communication, collaboration, and service delivery. The quality and availability of digital infrastructure directly influence an institution's capacity to implement digital solutions and realize digitalization benefits.

Digital Literacy

Digital literacy encompasses the knowledge, skills, and competencies required to effectively use digital technologies for various purposes (van Laar et al., 2017). In organizational settings, digital literacy extends beyond basic computer skills to include information literacy, media literacy, communication literacy, and critical thinking in digital environments. For institutions, the digital literacy levels of staff members significantly influence the success of digitalization initiatives, as technologically competent personnel are better positioned to leverage digital tools for improved performance.

E-governance

E-governance refers to the use of information and communication technologies to support government operations, engage citizens, and deliver public services (Janowski, 2015). It encompasses various models including government-to-citizen (G2C), government-to-business (G2B), and government-to-government (G2G) interactions. E-governance aims to enhance transparency, reduce corruption, improve efficiency, and increase citizen participation in governance processes. Key components include e-administration (digitizing internal government processes), e-services (delivering services electronically), and e-participation (engaging citizens in policy-making through digital channels).

Theoretical Framework

This study is anchored on two complementary theories: the Technology Acceptance Model (TAM) and the Diffusion of Innovation Theory.

Technology Acceptance Model (TAM)

Developed by Davis (1989), the Technology Acceptance Model provides a theoretical framework for understanding how users come to accept and use technology. The model posits that two primary factors influence technology acceptance: perceived usefulness (the degree to which a person believes that using a particular system would enhance their job performance) and perceived ease of use (the degree to which a person believes that using the system would be free from effort). According to TAM, these perceptions influence attitudes toward technology use, which in turn affect behavioral intentions and actual usage behavior.

In the context of this study, TAM is relevant for understanding how institutional staff perceive and adopt digital technologies in Cross River State. The model suggests that for digitalization to contribute to institutional advancement, technologies must be perceived as both useful and easy to use. Factors such as system quality, training, and support mechanisms influence these perceptions. TAM has been extensively validated across various contexts and has been extended to include additional variables such as social influence, facilitating conditions, and organizational factors. This study draws on TAM to examine how technology acceptance among institutional staff mediates the relationship between digitalization initiatives and institutional outcomes.

Diffusion of Innovation Theory

Rogers' (1962) Diffusion of Innovation Theory explains how new ideas, practices, or technologies spread within social systems over time. The theory identifies five categories of adopters: innovators, early adopters, early majority, late majority, and laggards, each characterized by different attitudes toward innovation. The rate of adoption is influenced by five perceived attributes of innovations: relative advantage, compatibility, complexity, trialability, and observability.

This theory is applicable to understanding digitalization in Cross River State institutions, as it provides insights into the patterns and pace of digital technology adoption. The theory suggests that institutions adopt digital technologies at different rates based on factors such as leadership support, organizational culture, resource availability, and the perceived benefits of digitalization. Understanding these adoption patterns is crucial for designing effective digitalization strategies and anticipating implementation challenges. The theory also highlights the importance of change agents and communication channels in facilitating technology diffusion, which has implications for policy and practice in Cross River State.

Empirical Review

Several studies have examined the relationship between digital infrastructure and institutional operational efficiency across different contexts. A study by Hjort and Poulsen (2019) analyzing the impact of broadband internet infrastructure in African countries found that improved connectivity led to significant increases in employment and firm productivity. The study demonstrated that digital infrastructure serves as a critical enabler of economic and institutional activities. Similarly, Mwantimwa (2019) investigated the role of ICT infrastructure in enhancing operational efficiency in Tanzanian public institutions, finding that institutions with better digital infrastructure demonstrated significantly higher efficiency in service delivery and resource management.

In the Nigerian context, Adesola et al. (2017) examined the impact of ICT infrastructure on operational performance in Lagos State public institutions. The study found a positive correlation between the quality of digital infrastructure and operational efficiency metrics including processing time, error rates, and staff productivity. However, the study also identified challenges related to infrastructure maintenance, power supply, and technical support. Okunola et al. (2021) conducted a comparative study of digital infrastructure across Nigerian states, revealing significant disparities in infrastructure availability and quality, with implications for institutional performance.

Research on digital literacy and institutional service delivery has produced consistent evidence of positive relationships. A study by van Deursen and van Dijk (2019) in European public institutions found that employee digital skills significantly influenced the quality and efficiency of digital service delivery. Institutions with comprehensive digital training programs demonstrated better service outcomes and higher citizen satisfaction. Park et al. (2018) examined digital literacy among South Korean public servants, finding that higher digital competency levels were associated with more innovative service delivery approaches and improved citizen engagement.

In Sub-Saharan Africa, Mutula (2013) investigated digital literacy challenges in public institutions across several countries, identifying significant gaps in staff digital competencies that hindered effective technology utilization. The study recommended systematic capacity building interventions. Specific to Nigeria, Ayo et al. (2016) assessed digital literacy levels among civil servants in southwestern states, revealing moderate to low digital competency levels that constrained e-government implementation. The study found that digital literacy training programs significantly improved service delivery outcomes when combined with supportive organizational policies.

The relationship between e-governance adoption and decision-making has been explored in various institutional contexts. Gil-Garcia et al. (2018) conducted a comprehensive study of e-governance in Latin American countries, finding that data-driven decision-making enabled by digital systems led to more evidence-based policies and improved resource allocation. The study emphasized the importance of data quality, analytical capacity, and leadership commitment. Janowski (2015) developed a framework for understanding e-governance maturity, proposing that advanced e-governance systems enable more transparent, inclusive, and efficient decision-making processes.

Twizeyimana and Andersson (2019) systematically reviewed e-governance studies globally, identifying improved decision-making as a consistent outcome of successful e-governance implementation. The review highlighted factors such as stakeholder participation, information accessibility, and system integration as critical enablers. In the African context, Nkwe (2012) examined e-governance initiatives in Botswana, finding mixed results with challenges related to infrastructure, capacity, and organizational readiness limiting the decision-making benefits. Eze et al. (2019) studied e-governance adoption in Nigerian federal institutions, revealing that successful implementation required strong political will, adequate resources, and comprehensive change management strategies.

METHODOLOGY

This study adopted a correlational survey research design to examine the relationship between digitalization and institutional advancement in Cross River State, Nigeria. The correlational design was deemed appropriate as it allows for the investigation of relationships between variables without manipulation. The population of the study comprised 450 administrators from 15 public institutions in Cross River State, including universities, polytechnics, colleges of education, hospitals, and government ministries. These institutions were selected based on their strategic importance to state development and their varying levels of digital adoption.

The sample size was determined using Taro Yamane's formula: $n = N / (1 + N(e)^2)$, where n represents the sample size, N represents the population size, and e represents the level of precision set at 0.05. Applying this formula: $n = 450 / (1 + 450(0.05)^2) = 450 / (1 + 1.125) = 450 / 2.125 = 211.76$, approximately 212 respondents. Stratified random sampling technique was employed to ensure proportional representation from each institution category. The stratification was based on institution type, with random selection of respondents within each stratum to minimize selection bias.

The research instrument was a structured questionnaire titled "Digitalization and Institutional Advancement Questionnaire" (DIAQ), divided into five sections. Section A collected demographic information, while Sections B, C, D, and E measured digital infrastructure, digital literacy, e-governance adoption, operational efficiency, service delivery, and decision-making processes respectively. The instrument utilized a four-point Likert scale ranging from Strongly Agree (4) to Strongly Disagree (1). This scale was chosen to eliminate neutral responses and encourage definitive opinions from respondents. The questionnaire was validated by three experts in Educational Management, Computer Science, and Research Methodology from the University of Calabar, who assessed the items for clarity, relevance, and appropriateness. Their suggestions led to modifications in item wording and structure. Reliability was established through a pilot study involving 30 administrators from Rivers State (similar context but outside the study area). The Cronbach's alpha reliability coefficients were 0.84 for digital infrastructure, 0.82 for digital literacy, 0.85 for e-governance adoption, 0.88 for operational efficiency, 0.81 for service delivery, and 0.83 for decision-making processes, yielding an overall reliability coefficient of 0.87, indicating high internal consistency.

Data collection involved personal administration of questionnaires to respondents by the researcher and three trained research assistants over a four-week period. Out of 212 questionnaires distributed, 198 were correctly completed and returned, representing a 93.4% response rate. Data analysis was conducted using Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistics including mean and standard deviation were used to answer research questions, with a criterion mean of 2.50 (derived from the average of the scale values: $4+3+2+1 / 4 = 2.50$). Mean scores above 2.50 indicated agreement while scores below 2.50 indicated disagreement. Pearson Product-Moment Correlation Coefficient was employed to test the hypotheses at 0.05 significance level, with correlation coefficients interpreted as follows: 0.00-0.29 (weak), 0.30-0.69 (moderate), and 0.70-1.00 (strong relationship).

RESULTS

The results of the investigation were presented in Tables according to the research questions and hypotheses.

Research Question 1: *What is the relationship between digital infrastructure and operational efficiency of institutions in Cross River State?*

Table 1: Relationship between Digital Infrastructure and Operational Efficiency

S/N	Items	Mean	SD	Decision
1	Availability of computers and digital devices enhances task completion speed in our institution	3.21	0.76	Agreed
2	Reliable internet connectivity improves workflow efficiency	3.45	0.68	Agreed
3	Integrated software systems reduce processing time for institutional operations	3.12	0.82	Agreed
4	Digital record management systems improve information retrieval efficiency	3.38	0.71	Agreed
5	Adequate digital infrastructure reduces operational costs	2.98	0.85	Agreed
6	Network infrastructure enables real-time collaboration among departments	3.15	0.79	Agreed
Cluster Mean		3.22	0.77	Agreed

Table 1 shows that all items had mean scores above the criterion mean of 2.50, with a cluster mean of 3.22 and standard deviation of 0.77. This indicates that respondents agreed that digital infrastructure has a positive relationship with operational efficiency in Cross River State institutions.

Research Question 2: *What is the relationship between digital literacy and service delivery in institutions within Cross River State?*

Table 2: Relationship between Digital Literacy and Service Delivery

S/N	Items	Mean	SD	Decision
1	Staff digital competence improves the speed of service delivery	3.18	0.74	Agreed
2	Employees with higher digital skills provide more accurate services	3.25	0.69	Agreed
3	Digital literacy enables staff to utilize online platforms for efficient service delivery	3.32	0.72	Agreed
4	Staff training in digital tools enhances customer service quality	3.41	0.66	Agreed
5	Digital competence among staff reduces service errors	3.08	0.81	Agreed
6	Staff ability to use digital communication tools improves stakeholder engagement	3.19	0.75	Agreed
Cluster Mean		3.24	0.73	Agreed

Table 2 reveals that all items recorded mean scores above 2.50, with a cluster mean of 3.24 and standard deviation of 0.73, indicating respondents' agreement that digital literacy positively relates to service delivery in Cross River State institutions.

Research Question 3: *What is the relationship between e-governance adoption and decision-making processes in Cross River State institutions?*

Table 3: Relationship between E-governance Adoption and Decision-Making Processes

S/N	Items	Mean	SD	Decision
1	Digital data management systems provide accurate information for decision-making	3.28	0.70	Agreed
2	E-governance platforms enable timely access to relevant information	3.35	0.68	Agreed
3	Digital systems facilitate evidence-based decision-making in our institution	3.17	0.77	Agreed
4	E-governance tools enhance transparency in institutional decisions	3.22	0.73	Agreed
5	Digital platforms enable broader stakeholder participation in decision-making	2.95	0.83	Agreed
6	Automated reporting systems improve the quality of management decisions	3.14	0.76	Agreed
Cluster Mean		3.19	0.75	Agreed

Table 3 shows all items with mean scores above 2.50 and a cluster mean of 3.19 with standard deviation of 0.75, demonstrating respondents' agreement that e-governance adoption positively relates to decision-making processes.

Hypotheses Testing

Hypothesis 1: There is no significant relationship between digital infrastructure and operational efficiency of institutions in Cross River State.

Table 4: Pearson Correlation Analysis of Digital Infrastructure and Operational Efficiency

Variables	N	Mean	SD	r-value	p-value	Decision
Digital Infrastructure	198	3.22	0.77	0.742	0.000	Rejected
Operational Efficiency	198	3.28	0.71			

Table 4 shows a correlation coefficient (r) of 0.742 with a p-value of 0.000, which is less than the 0.05 significance level. The null hypothesis is therefore rejected, indicating a significant strong positive relationship between digital infrastructure and operational efficiency.

Hypothesis 2: There is no significant relationship between digital literacy and service delivery in institutions within Cross River State.

Table 5: Pearson Correlation Analysis of Digital Literacy and Service Delivery

Variables	N	Mean	SD	r-value	p-value	Decision
Digital Literacy	198	3.24	0.73	0.698	0.000	Rejected
Service Delivery	198	3.31	0.68			

Table 5 reveals a correlation coefficient of 0.698 with a p-value of 0.000, which is below the 0.05 significance level. The null hypothesis is rejected, showing a significant moderate-to-strong positive relationship between digital literacy and service delivery.

Hypothesis 3: There is no significant relationship between e-governance adoption and decision-making processes in Cross River State institutions.

Table 6: Pearson Correlation Analysis of E-governance Adoption and Decision-Making Processes

Variables	N	Mean	SD	r-value	p-value	Decision
E-governance Adoption	198	3.19	0.75	0.721	0.000	Rejected
Decision-Making Processes	198	3.26	0.69			

Table 6 indicates a correlation coefficient of 0.721 with a p-value of 0.000, which is less than 0.05. The null hypothesis is rejected, demonstrating a significant strong positive relationship between e-governance adoption and decision-making processes.

DISCUSSION OF FINDINGS

Digital Infrastructure and Operational Efficiency

The finding that digital infrastructure has a significant strong positive relationship with operational efficiency ($r = 0.742$, $p < 0.05$) aligns with contemporary theoretical perspectives on technological determinism and organizational performance. This result corroborates Hjort and Poulsen's (2019) findings in their pan-African study, which demonstrated that improved digital infrastructure, particularly broadband connectivity, substantially enhanced organizational productivity and efficiency. The strong correlation coefficient suggests that investments in digital infrastructure yield considerable returns in terms of operational streamlining and resource optimization.

The high mean score (3.22) recorded for digital infrastructure items indicates that respondents recognize the tangible benefits of digital tools in their daily operations. This perception is consistent with Adesola et al.'s (2017) research in Lagos State, which identified digital infrastructure as a critical determinant of public institutional performance. The finding that reliable internet connectivity received the highest mean score (3.45) reflects the fundamental importance of connectivity as the backbone of all digital operations, supporting Mwantimwa's (2019) assertion that internet access is a prerequisite for effective digitalization in African institutional contexts.

However, the relatively lower mean score for operational cost reduction (2.98) suggests that while digital infrastructure improves efficiency, cost benefits may not be immediately apparent, possibly due to high

initial investment costs and maintenance expenses. This finding extends existing literature by highlighting that efficiency gains may precede financial savings in digitalization processes, particularly in resource-constrained environments like Cross River State.

Digital Literacy and Service Delivery

The significant moderate-to-strong positive relationship between digital literacy and service delivery ($r = 0.698$, $p < 0.05$) provides empirical support for the Technology Acceptance Model's emphasis on user competence as a determinant of technology effectiveness. This finding resonates with van Deursen and van Dijk's (2019) European study, which established that employee digital skills directly influence service quality and citizen satisfaction. The correlation coefficient of 0.698 suggests that approximately 49% of the variance in service delivery quality can be explained by digital literacy levels, highlighting the critical importance of human capital development in digitalization initiatives.

The cluster mean of 3.24 indicates strong recognition among respondents that digital competence enhances service delivery outcomes. This perception aligns with Park et al.'s (2018) findings in South Korea, where digital literacy was identified as a catalyst for innovative service delivery approaches. The highest mean score for staff training in digital tools (3.41) underscores the value placed on continuous professional development, supporting Ayo et al.'s (2016) recommendation for systematic capacity building in Nigerian public institutions.

The finding that digital literacy reduces service errors (mean = 3.08) corroborates Mutula's (2013) assertion that digital competence minimizes mistakes in service delivery processes. However, the relatively lower score for this item compared to others suggests that error reduction may depend on additional factors beyond individual digital literacy, such as system design and organizational processes. This insight contributes to the literature by suggesting that digital literacy operates optimally within supportive organizational ecosystems.

E-governance Adoption and Decision-Making Processes

The significant strong positive relationship between e-governance adoption and decision-making processes ($r = 0.721$, $p < 0.05$) validates the theoretical proposition that digital systems enhance organizational governance and management. This finding is consistent with Gil-Garcia et al.'s (2018) research in Latin America, which demonstrated that e-governance systems enable more evidence-based and transparent decision-making. The correlation coefficient suggests that e-governance adoption substantially influences the quality and efficiency of institutional decisions, supporting Janowski's (2015) e-governance maturity framework.

The cluster mean of 3.19 indicates positive perceptions of e-governance benefits for decision-making. This aligns with Twizeyimana and Andersson's (2019) systematic review, which identified improved decision-making as a consistent outcome of successful e-governance implementation globally. The highest mean score for timely information access (3.35) highlights the critical importance of information availability in decision contexts, supporting the information processing theory's emphasis on data accessibility for organizational effectiveness.

Interestingly, stakeholder participation in decision-making through digital platforms received the lowest mean score (2.95), though still above the criterion mean. This finding partially contrasts with ideal e-governance models that emphasize participatory decision-making, suggesting implementation gaps in Cross River State. This result aligns with Nkwe's (2012) observations in Botswana regarding challenges in achieving full e-governance benefits, particularly in citizen engagement dimensions. The finding extends current literature by highlighting that technological adoption does not automatically translate to democratic participation, requiring deliberate strategies to leverage digital platforms for inclusive governance.

The convergence of findings across all three hypotheses suggests a systemic relationship between various dimensions of digitalization and institutional advancement. This holistic pattern supports the Diffusion of Innovation Theory's perspective that successful technology adoption requires alignment across multiple organizational factors. The consistently strong positive correlations indicate that Cross River State

institutions have achieved meaningful digitalization progress, though the moderate-to-strong (rather than very strong) correlations suggest room for further optimization.

CONCLUSION

This study empirically examined the relationship between digitalization and institutional advancement in Cross River State, Nigeria, revealing significant positive relationships across all investigated dimensions. The findings demonstrate that digital infrastructure, digital literacy, and e-governance adoption each contribute substantially to institutional advancement through enhanced operational efficiency, improved service delivery, and more effective decision-making processes. The strong correlation coefficients across all three hypotheses provide robust evidence that digitalization is not merely a technological upgrade but a fundamental driver of institutional transformation in the Cross River State context.

The research contributes to the existing body of knowledge by providing empirical evidence from a Nigerian state context, addressing the identified gap in state-level digitalization studies in Sub-Saharan Africa. The findings validate theoretical frameworks including the Technology Acceptance Model and Diffusion of Innovation Theory while extending their applicability to public institutions in developing economies. The study reveals that while Cross River State institutions have made commendable progress in digitalization, continued investment in infrastructure, capacity building, and governance systems remains essential for maximizing digitalization benefits.

The convergence of quantitative evidence with existing international literature suggests that digitalization principles are universally applicable, though contextual factors influence implementation approaches and outcomes. The study underscores that successful institutional advancement through digitalization requires a holistic approach that addresses technological, human, and organizational dimensions simultaneously. As Cross River State and similar contexts navigate the digital transformation journey, evidence-based strategies grounded in empirical research become increasingly critical for achieving sustainable institutional advancement and improved public service delivery.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed:

1. The Cross River State Government should substantially increase budgetary allocation for digital infrastructure development across public institutions, with specific focus on reliable internet connectivity, modern computing equipment, and integrated software systems to enhance operational efficiency.
2. Institutional leadership should establish comprehensive and continuous digital literacy training programs for all staff members, incorporating both basic and advanced digital skills development to ensure optimal utilization of digital tools in service delivery.
3. A state-level e-governance policy framework should be developed and implemented with clear guidelines, standards, and timelines for digital transformation across all public institutions to ensure coordinated and effective adoption.
4. Public institutions should create dedicated digital transformation units with adequate personnel and resources to oversee digitalization initiatives, provide technical support, and ensure sustainable implementation of digital systems.
5. The state government should partner with private sector technology providers and academic institutions to access technical expertise, innovative solutions, and best practices in institutional digitalization.
6. Regular assessment and evaluation mechanisms should be instituted to monitor digitalization progress, identify implementation challenges, and measure the impact of digital initiatives on institutional performance and service delivery outcomes.

7. Deliberate strategies should be developed to enhance citizen and stakeholder participation through digital platforms, ensuring that e-governance systems promote inclusive and democratic decision-making processes.
8. Incentive structures should be created to reward institutions and individual staff members who demonstrate excellence in digital innovation and effective technology utilization, fostering a culture of continuous improvement and digital advancement.

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