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Digital Literacy and E-Governance Adoption for Service Delivery in Cross River State Civil Service

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ABSTRACT

The study used a case study technique to investigate why the implementation of e-governance and ICT in government service provisioning has not resulted in a commensurate improvement in service delivery in Cross River State, Nigeria. It specifically investigates the effect of in-service training on civil servants' digital literacy, the consequent impact of e-governance implementation, and service delivery. The study finds that there was inadequate in-service training, which was partly caused by the cognitive disposition of civil servants who did not fully cooperate with the implementation of the e-governance reform. The study aligns with existing theories of institutional and organisational change which requires that organisational change requires realignment of beliefs and behavioral norms of organization members. The study recommends that the implementation of e-governance can only yield better results in effective service delivery if the civil servants are made to accept the reform and their digital literacy levels are significantly enhanced through appropriate in-service training.

KEYWORDS

Cognitive Model of Organizational Change, Digital Literacy, E-Governance, In-Service Training, Service Delivery

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1. INTRODUCTION

The digital revolution has had a huge influence on societies, affecting how people work (United Nations, 2021; Nambisan, 2017). Today, organizations, both businesses, and governments, struggling to keep afloat and excel by adopting technologically propelled services; hence, the use of some dictions such as the computer age, digital age, silicon age, and new media age to describe today's world trend. In public administration and service entities, e-government, e-governance, e-service, and other such 'Es' have become buzzwords to depict the new normal. E-governance entails the use of information and communications technologies (ICT) by governments to enhance the range and quality of information and services provided to citizens, businesses, civil society organizations, and other government agencies in an efficient, cost-effective, and convenient manner, to make government processes more transparent and accountable, and to strengthen democracy and service delivery (The World Bank, 2015).

Nigeria's governments have implemented digital literacy training programs to improve e-governance resources. Cross River State, a sub-national-level government, has implemented initiatives to equip civil servants with digital skills for successful service delivery. In 2007, then-governor Donald Duke launched digitization programs, supported by Global Affairs Canada. Since 2010, in-service training has been provided to enhance digital literacy skills. Despite investments in ICT infrastructure and capacity building, service delivery in the state has not significantly improved. The benefits of digitization and ICT in providing services are not yet felt, leading to dissatisfaction, and increasing operating costs for members of the public as clients. As a result, the government-citizen interface has yet to be bridged, and the gap between service objectives and actual services supplied remains. Yet, some proponents of the adoption of digitization and e-governance often write as if it is a magic wand (Obi, Uzor, Chukwurah, 2020; The Guardian, 2019; Dugbazah, Glover, Mbuli, and Kungade, 2022) that will lead to good governance and effective service delivery once a transition to its deployment is made. Providing insight into the barriers of digitalization has tremendous utility for organizations and policymakers, especially in the digital age where ICT plays a dominant role.

Theoretically, many studies have adduced that administrative reforms are often imitated in developing countries but often fail to achieve their goals (Farazmand, 2002; Ikeanyibe, 2015; Ikeanyibe, 2018). Rodman (1968) and Farazmand (2002) noted that the inadequacy of public administration in these countries is a major obstacle to development, and resistance to reform-induced changes in the bureaucracy likely mounts if fundamental changes are not made in the structure of power perpetuating itself. Despite numerous studies on failed e-governance reforms in developing countries, there is still a gap in understanding why the expected benefits of digitization and e-governance principles have not significantly enhanced service delivery in many countries. Most research on e-governance has focused on establishing the relationship between reforms and corruption reduction in the public sector (Bokhari and Ali, 2022; Alam et al., 2023), predicting digital system acceptance and adoption elements (e.g., perceived ease of use and perceived utility, customers' attitudes, funding, availability of digital resources, etc.) as predictors and determinants of digital technology use (Alomar, 2023; Sumaya et al., 2023), evaluating the relationship between digital literacy, e-governance, and service delivery (Inakefe et al., 2023), assessing issues impeding public sector digitalization (Abdelazyz, 2020), assessing the role of IT-based technologies in human resources management (Vahdat, 2021), and proposing new intelligence algorithms for cloud users and servers with lower traffic loads (Darbandi, 2017a; Darbandi, 2017b). However, research on bureaucrats' cognitive disposition towards e-governance reform implementation is limited. While scholars agree that bureaucrats play a significant role in administrative reforms, there is a lack of investigation into their corruptive interests as a motivator for resistance to e-governance reforms. This study aims to fill this gap. Similarly, while employee training and development have significantly permeated subfields of public administration, digital literacy training is an unexplored area in e-governance. Chohan and Hu (2020) note that there is a lack of research on ICT training efforts supporting e-government service adoption. The study fills

this gap and aims to fill the gap in the literature by incorporating the e-governance reform efforts of developing countries and their peculiarities. Most studies on digital literacy are outside the Sub-Saharan African (SSA) environment and do not consider ecological settings and behavioral norms that affect digital literacy and e-governance program implementation in other climes. The study aims to fill these gaps by examining the impact of digital literacy or illiteracy on the effective deployment of ICT in government services and e-governance.

This study focuses on examining the role of some enablers of digital literacy such as in-service training in enhancing the digital skills levels of civil servants in Cross River Civil service and the effect of digital literacy on e-governance implementation and service delivery in the state. Thus, the specific objectives of the study are:

1. to investigate how in-service training as an enabler of digital literacy has helped the Cross River state civil servants to implement e-governance reforms;
2. to evaluate the disposition of the civil servants towards the implementation of the e-governance reforms in the state civil service; and
3. to find out if the implementation of e-governance reform improved service delivery in the state civil service.

It is envisioned that addressing these objectives would give academic, managerial, and organizational directions to address the impediments of digitalization in the digital era, where e-governance is the much-evoked innovation for public and private sector performance. It is hoped that policymakers who oversee government e-governance initiatives will benefit from this research by way of ideas generated and added by this study.

To accomplish the objectives of the study, the paper is divided into sections. The remaining part of the study is arranged in six sections. The next section is a literature review and theoretical framework. This is followed by a section on the study's methodology. Next is the section on results and discussion. This is followed by the research implication. The conclusion and recommendations section follows next. The last section is about limitations and future directions.

2. LITERATURE REVIEW AND THEORETICAL FOUNDATION

This section explains the key concepts of the study—digital literacy, e-governance, in-service training, and service delivery—and their relationships. It also provides the theoretical framework for the study, which is anchored on Jerri Killian's cognitive model of organizational change.

2.1 Literature Review: Digital Literacy, In-Service Training, E-Governance, and Service Delivery

The Fourth Industrial Revolution (4IR) has significantly transformed the way people live, work, and interact, leading to a shift in traditional government service delivery methods. Emerging technologies like virtual reality, IoT, Artificial Intelligence (AI), 3D printing, robotics, biotechnology, self-driving cars, energy storage, material science, and quantum computing have required greater technical and digital capabilities (National Information Technology Development Agency, 2021). The primary goals of e-governance, however, have been to enhance government operations (e-administration) and link citizens (e-citizens and e-services) during the last 10 years (Brown, 2005). E-governance, which enhances government operations, connects citizens and improves governance, has provided new terminology, theoretical models, and connections between disciplines (Ibid.). It has also offered cost-effective services and evolved a responsible administration (Onuigbo, 2015). Digital technology has been shown to eliminate poverty, raise income, and empower communities, as demonstrated in the World Development Report (2016).

Citizens now assist themselves online, and administrative planning is a challenge due to digital planning tools (Plesner et al. 2018). Digital components have transformed library operations, enabling researchers and students to access digital services (Igajah & Onyekweodiri, 2021). Electric bills, taxes, money transfers, and paperwork can be completed in minutes (Izueke, 2010). The Indian Supreme Court has used online dispute resolution to hear over 7,000 cases, while e-Lok has been live-aired in Chhattisgarh, hearing 3,000 cases across 200 districts (Kant & Saekhiri, 2020). The Multipurpose Electronic Card (MEC) has improved India's voting method through an authentication procedure (Khatun, Bandopadhyay, & Roy, 2017). Blockchain technology, based on smart contracts, has improved data security and integrity in the Electronic Property Record (EPR) in India (Mukhopadhyay & Karforma, 2021). In South Africa, the Independent National Electoral Commission (INEC) adopted an e-procurement system, promoting open and transparent bidding to reduce corruption in government tenders (Mpu & Adu, 2019).

E-governance has frequently taken on the dimensions of interactions between government to government (G2G), government to businesses (G2B), government to citizens (G2C), and government to employees (G2E). Biswass (2022) gives examples of G2G, such as live fingerprint scanning and verification and electronic entry of reports and paperwork; G2B, such as e-taxation and obtaining a license from the government; G2E, such as e-learning methods and knowledge sharing among employees; and G2C, such as registration of motor vehicles, tax, and fee collection through cash and bank challans, online learning platforms for citizens, and online job search platforms. The use of e-governance has altered people's interactions with the bureaucracy. When it comes to the obligations of the various parties, user engagements with government agencies differ greatly between traditional and digital contexts (Lindgren & Van Veenstra, 2018).

However, these expected benefits dislodge some gainers from the traditional processes and are therefore bound to be resisted. In a conventional public encounter, the bureaucrat is usually in charge of ensuring that the appropriate procedure is followed (Safarov, 2023). According to Lindgren et al. (2019), the digitization of public services has significantly changed the nature of public encounters, increasing the demand for diverse competencies and abilities. Governments have taken on responsibility for communicating with residents, leading to the evolution of self-service conditions (Lindgren et al., 2019). However, people may lose authority and privileges. Organizational change scholars such as Jerri Killian (2008:44) argue that traditional public organizations are deeply entrenched in the classical Weberian-type bureaucratic model, which emphasizes control and compliance. Despite the promise of positive changes, e-governance often fails to take place due to resistance from implementers or service recipients. E-governance reform requires enhancing the capacity and attitude of both implementers and recipients. Scholars agree that digital abilities are crucial for electronic services usage (Heponiemi et al., 2021). Killian suggests that the transformation of structures, processes, and cultures within public bureaucracies cannot occur through self-organizing processes. Organizational culture must be seriously altered, or new changes may be resisted.

Digital literacy is crucial for digitizing government services and e-governance, as civil servants must possess the necessary skills to effectively utilize ICT resources. Technology is a tool for achieving goals, and effective service delivery relies on users' ability to acquire and apply skills effectively. Digital literacy is a new type of literacy essential for functioning in twenty-first-century society, equivalent to literacy and numeracy (Organization of Economic Cooperation and Development, 2001; Ferrari, 2012). It involves using cell phones, the internet, and computers to access information and interact with others (Fasasi & Heukelman, 2017). As digitization continues to permeate corporate processes, the demand for digitally savvy individuals will increase for all firms (Thakur, 2022).

Digital literacy was invented by Paul Gilster in 1997 in his book 'Digital Literacy', which he defined as the ability to absorb and utilize information from diverse sources through computers. Wilhelm (2006) defines it as the ability to access, manage, integrate, assess, and produce information. Being digitally literate requires mastering three skill sets: information, media, and technology skills; learning and innovation skills; and life and career skills (Campanozzi et al., 2023). Warschauer and

Matuchniak (2010) emphasize the importance of mastering these skills to thrive in a society focusing on new technology. A summary of digital literacy skills includes:

- Knowing about and understanding computer use;
- Obtaining and analyzing information;
- Managing information;
- Producing and exchanging information;
- Transforming information;
- Creating information;
- Sharing information; and
- Using information safely and securely.

The National Technology Development Agency (NITDA) (2021) also highlighted five essential areas and skills for digital competence:

1. *Data and information literacy*: browsing, searching, and filtering data, information, and digital material; assessing data, information, and digital content; and managing data, information, and digital content.
2. *Communication and collaboration*: interacting with digital technologies, sharing digital technologies, participating in digital citizenship, cooperating with digital technologies, netiquette, and maintaining digital identity.
3. *Digital content creation:* development of digital material, integration and re-elaboration of digital content, copyright, licensing, programming).
4. *Security:* device protection, personal data, and privacy protection, health and well-being protection, and environmental protection).
5. *Problem-solving:* addressing technical difficulties, finding requirements and technology solutions, leveraging digital technologies creatively, and recognizing digital competency gaps.

Norman and Skinner (2006) developed a conceptual model of six literacy domains for interpreting information from technological sources: traditional literacy, health literacy, information literacy, scientific literacy, media literacy, and computer literacy. The authors assert that conventional literacy involves fundamental skills like reading, understanding written passages, and using coherent language on the internet. Information-literate individuals understand how knowledge is organized, obtained, and utilized for learning. They can identify suitable resources, develop effective search tactics, and filter results to extract useful knowledge. Media literacy involves developing metacognitive reflecting methods, cognitive processes, and critical thinking abilities (Feuerstein, 1999; Norman and Skinner, 2006). Health literacy involves communication with the health system and self-care (Norman & Skinner, 2006). A health-literate individual possesses a range of abilities, including basic reading and math skills for the healthcare system, according to the American Medical Association. Döring (2021) defines health literacy as a set of skills needed to use digital public services, including functional literacy, communicative literacy, structural and processual literacy, civic literacy, and media literacy. Digital literacy includes internet and media literacy, which involves finding, evaluating, and analyzing information about public services online (Ibid.). However, digital literacy is often defined within the context of conventional and media literacy in e-governance and ICT literature.

Now, how do these skill sets differ from those of a civil servant, who is expected to be an expert in his or her field—health, education, agriculture, engineering, policymaking, project management, and so on? Scholars argue that employees who are digitally literate are likely to be more productive and efficient because they can easily recognize and apply critical data, information, or trends (Thakur, 2022). However, how do employees who have perhaps performed well in their careers without

knowledge of ICT suddenly become convinced that they require digital literacy to perform well? Civil servants prioritize professional enhancement in essential government administrative systems like financial management, customs, and tax administration (Giri, 2020). Acquiring digital literacy may be anti-organizational for existing civil servants, as they may have reached their career heights. To implement e-governance reforms, either train existing personnel to acquire digital skills or employ new personnel with the capacity. Cooperation between existing personnel and top management is crucial, and well-designed in-service training is essential for ensuring they are in tune with the changes.

In-service training is crucial for improving workers' abilities and influencing their acceptance and implementation of e-governance. It helps employees acquire new job skills and increase their proficiency for efficient and successful performance in their assigned duties. This is especially important in the context of digital transformation, where changes in an organization's structure and culture force people to take on roles that were previously outside of their responsibilities (Vlal, 2019). As digital technologies enable new forms of automation (Neumeier et al., 2017) and decision-making processes, the need to develop the skills of existing and future workers becomes more relevant (Dremel et al., 2017; Hess et al., 2016; Colbert et al., 2016; Watson, 2017). To remain competitive, organizations must engage in continuous education and training while keeping up with rapidly changing global technological trends (Wuttaphan, 2017). Training and development are essential tools for advancing the workforce's mental and psychological capability toward improved performance (Otuaga, George, & Oniani, 2022). To have an impact on a business, knowledge, and skill sets must be successfully applied or transferred on the job. Enhancing service delivery through e-governance requires improving the capacity and attitude of civil servants through in-service training.

Service delivery is the process by which the government or institutions provide products or services to a specific region to meet expectations and fulfill promises (Riekert, 2001). It involves delivering these services to consumers or customers, with a contractual relationship between the customer and the service provider (Ofoma, 2021). The goal is to please the public by implementing policies, enforcing laws, and achieving public welfare, ultimately leading to successful public service delivery (Ogunna, Shittu, 2020).

Governments are transitioning from an agency-centric approach to a citizen-centric approach to providing public services. The agency-centric model leads to inefficiency and annoyance as citizens interact with multiple government offices independently for various objectives (Al-Khouri, 2011; Salam, 2013). As a result, governments are shifting from an agency-centric approach to a citizen-centric approach, with citizens serving as the focal point rather than an operational problem for government agencies (Chhabra & Kumar, 2009; Salam, 2013). This approach is promoted through e-governance reform, which can increase service delivery effectiveness and efficiency by lowering delivery costs, enhancing service quality and coverage, promoting transparency and accountability, and enhancing feedback flows (Søren, 2013; Anh and Bretschneider, 2011). Digitalization also reduces hierarchy and ranking, allowing some services to be decentralized without middlemen or providers (La Porte, de Jong, & Demchak, 2001).

Despite the benefits of e-governance, it faces challenges in its actualization. Scholars (e.g., Lallmahomed et al., 2017; Rehman et al., 2016; Savoldelli et al., 2014) have pointed out that poor infrastructure, power outages, low literacy levels, weak internet connections, and an ICT skills gap among service producers and citizens hinder e-governance implementation. Additionally, reform acceptance among organization members is a challenge due to the classical Weberian-type bureaucratic model, which emphasizes control and compliance. The ICT skills gap also affects the output of e-government reform (Farazmand, 2002; Killian, 2008; Ikeanyibe, 2015; Ikeanyibe, 2018). The traditional public organization is a deterministic system seeking equilibrium and stability, viewing disorder and uncertainty as dysfunctional. Innovative programs that disrupt organizational culture and stability, affecting key stakeholders, are often resisted. The OECD (2009) advises that administrative reforms with concrete results should ensure benefits cannot be easily opposed. The e-governance

reform in the Cross River State Civil Service has not been thoroughly investigated, but it is one of the objectives pursued in this study.

2.2. Theoretical Framework

E-governance and digital skills are crucial for administrative reform as they require modifications in structures, processes, and behavior. These changes may require significant changes in society to achieve social and economic transformation, impacting the entire society (Farazmand, 2002; Ikeanyibe, 2017).

This study utilizes Jerri Killian's (2008) cognitive model of organizational change, which can be classified into the institutional theory of administrative reform or organizational change. Scholars have identified three theories that explain administrative reform, its progression, and its constraints. The features of the theories have been captured in the OECD's (2009:26) barriers to administrative simplification strategies, which are categorized into strategic and technical barriers. Strategic barriers involve challenges from policies and the general administrative cultural environment, while technical barriers are linked to instrumental issues (OECD, 2009:27–28).

No doubt, these barriers are strong variables in administrative reforms in developing countries. However, this study considers the strategic issue of administrative resistance and the technical issue of a lack of human skills and capacities as pivotal to the case study, hence the adoption of Killian's (2008) cognitive model of organizational change as the framework.

Killian's cognitive model of organizational change is part of the theory of institutionalism, which encompasses formal and informal procedures, routines, norms, and conventions within a polity or

Table 1. Barriers to administrative simplification/reform strategies

Strategic Barriers	Actions and Approaches
Lack of political support	Use success stories: start small; while-of-government approach; powerful support; quantify costs and benefits; necessary but not sufficient
Lack of coordination	Trade-off centralization and ownership on reform efforts; Watchdog at the core of government
Resistance to change	Communication and promotion: transparency; Ambassador's programme/ champions; Defining clear targets and making institutions accountable
Lack of an administrative simplification strategy	Planning – action plans and accountability; Public consultation; "No one size fits all"
Limited resource availability	Efficiency gains: Prioritisation based on evidence-based analysis – opportunity cost
Technical Barriers	**Actions and Approaches**
Legal complexity	Regulatory quality improvement – different from deregulation; Multidisciplinary approach to law drafting.
Lack of human skills and capacities	Training, training, and training; Multidisciplinary and focused; Creativity approach. Reform attitude.
Lack of understanding of administrative simplification	Communication
Lack of information and data	Development data collection strategies: Surveys; User/consumer involvement; International co-operation
Digital divide	Reduction of the digital divide as a broad policy priority
Lack of standardisation of procedures	Better regulation
Lack of measurement & evaluation mechanisms	Data collection; Indicators on government performance: Benchmarking, awarding; Monitoring body/institution.

Source: OECD (2009:33-34)

political economy (Hall and Taylor, 1996), a process or set of processes that shape behaviour (Bell, 2002). Institutions shape behavior and cover rules, laws, government entities, and informal social interactions (OECD, n.d.). Most models acknowledge that we are born into a world where structures, establishments, behaviors, and worldviews already have meaning (Jensen, 2000).

Killian's (2008) cognitive model emphasizes the significance of culture in reforms, as institutions are social repositories of values (Rakner, 1996); they constrain individual behaviour and are responsible for the persistence of behaviour within a social, political, or economic context (Ikeanyibe, 2018). Killian (2008:44) observes that advocates and practitioners often offer structural and procedural changes to improve governance while ignoring the need to change the organizational culture for authentic administrative reform. It has become common knowledge since the time of Riggs' prismatic theory (1964) that traditional culture has been known to impact bureaucratization in transitional country administration, making it a crucial aspect of analyzing socio-economic and political efforts to bring about change in developing countries.

Killian (2008:44) posits that authentic administrative reform involves aligning strategies and activities to improve public administration by promoting positive change in beliefs, values, and behavioral norms among organization members. The cognitive theory views organizations as systems of knowledge or beliefs where members develop shared subjective meanings that inform their perception of organizational reality. These meanings facilitate functional order and cooperative action, consistent with the organization's self-image. Organization members may view themselves as cultural collectives, leading to rule-bound behaviors and language.

This entails that if changes in beliefs, values, and behavioral norms of organization members are not made, structural, policy, and procedural changes will fail. Cultural collectives are likely to resist these changes, especially if they do not maintain individual privileges and rights. To adopt and drive reform, strong efforts must be made to modify collective values, culture, and structure, making the organization adaptive and dynamic (Farazmand, 1997).

2.2.1 Application of Theory to the Study

This paper argues that the introduction of e-governance reforms in Cross River State is not enough to lead to the desirable changes necessary to produce effective service delivery. Bringing about such changes requires commensurate changes in the cultural collective of the civil service. Although in-service training was implemented to drive the upscaling of literacy skills, the cognitive aspect of this reform was not paid attention to. The in-service training that would drive the e-governance reform was quite inadequate to lead to the necessary cognitive changes.

3. METHODOLOGY

3.1. Research Design

The study adopted a mixed-methods research design. To supplement the weaknesses associated with the quantitative and qualitative research approaches, the mixed-methods research design was used to answer the question of why the Cross River State civil service is inefficient and ineffective despite the adoption of e-governance and digital literacy training programs. The quantitative approach was utilized to gather and analyze quantitative data, while the qualitative technique gathered and analyzed qualitative data.

3.2. Data Gathering Instruments

Being mixed-method research, the study deployed a closed-ended questionnaire and interview checklist as instruments for data collection and analysis. The sources of data collection are primary and secondary sources. Primary sources for this research include questionnaires and oral interviews. Questionnaires structured on a 5-point Likert scale - SA (Strongly Agree), A(Agree), U (Undecided),

D(Disagree), and SD (Strongly Disagree) were administered to the sampled population drawn from the thirteen (13) Ministries. The researcher sought an appointment for the conduct of face-to-face interviews with the Permanent Secretaries of the thirteen (13) ministries after providing the purpose of the study. Secondary data for the study were obtained through the review of relevant literature on the subject under investigation ranging from books, official documentation newspapers, and online materials.

3.3 Population of the Study

The Cross River State Civil Service is comprised of 17,347 civil servants (Human Resource Department, Office of the Head of Service, Cross River State).

3.4. Sample Size Determination

The study focused only on thirteen (13) Ministries. Ministries were selected for the study through judgmental sampling on the premise that the entire Cross River State Civil Service is controlled, monitored, regulated, and supervised by the Ministries which looks after the functionality and general operation of the entire civil service of the state. Every civil servant in the state is supervised by the ministries they fall under. All agencies, institutions, departments, etc. that comprise the civil service come under the control and supervision of the ministries. The ministries are thus an integral aspect of the civil service. Also, the ministries are directly in charge of the coordination and implementation of E-governance in the entire civil service. Being at the apex of the civil service hierarchy, they possess vital data that vitiated and gave credence to the study. The selection of 13 ministries was also because of resource constraints and the fact that we selected only ministries that have fully implemented the e-governance project and have also done corresponding in-service training of their personnel towards acquiring digital skills.

Thirteen (13) out of thirty-nine (39) ministries were selected for the study. This represents one-third (1/3) of the entire ministries as the target population for the study. Senior officials of the 13 ministries, including the permanent secretaries (administrative heads) of the ministries were interviewed to collect qualitative data. Table 2 below shows the population of each of the thirteen ministries and the corresponding sample selected for the study. Secondary data for the study were gathered through a review of relevant literature on the issue under consideration.

The Taro Yamane formula was used to determine the sample. The formula is represented as follows:

$$n = \frac{N}{1 + N\left(e\right)^2}$$

$$n = N$$

$$1 + N\left(e\right)^2$$

where:

n = sample size
N = finite population
e = allowable error
For this study, $N = 1123$; $e = 0.05$.
$n = 295$

Table 2. Numerical value of the selected ministries

S/N	Ministry	No. of Staff	Proportionate Sample	Source
1.	Ministry of Quality Education	153	40	Office of Director of Admin.
2.	Ministry of Health	371	98	Office of Director of Admin.
3.	Ministry of Justice	176	46	Office of Director of Admin.
4.	Ministry of Information and Communication Technology (ICT)	25	7	Office of Director of Admin.
5.	Ministry of Information and Orientation	50	13	Office of Director of Admin.
6.	Ministry of Local Government Affairs	46	12	Office of Director of Admin.
7.	Ministry of Finance	39	10	Office of Director of Admin.
8.	Ministry of Environment	87	23	Office of Director of Admin.
9.	Ministry of Power	29	7	Office of Director of Admin.
10.	Ministry of Water Resources	30	8	Office of Director of Admin.
11.	Ministry of Lands and Housing	34	9	Office of Director of Admin.
12.	Ministry of Culture and Tourism	52	14	Office of Director of Admin.
13.	Ministry of Training	31	8	Office of Director of Admin.
	Total	**1,123**	**295**	

Source: Authors' Compilation.

3.5. Sampling Procedure

295 copies of the questionnaire were self-administered to randomly selected individuals from the thirteen (13) ministries. A proportional sample was employed to ensure that all types of respondents in the ministries were represented, ensuring logical inferences and fair generalization. The distribution of the sample was done via proportionate sampling after calculating the sample size (295) (based on strata size).

3.6. Instrument Validation

The study instruments (questionnaire and interview checklist) were evaluated for face validity and predictive validity by experts from the University of Nigeria, Nsukka. The study tools were updated in response to challenges discovered, with the assistance of independent comments, critiques, and recommendations from specialists. The final instruments were then put through trial and error before being used.

3.7. Reliability of the Instruments

The internal consistency of the instrument's items was assessed using Cronbach's alpha technique. The instrument's overall correlation is 0.83, which is very near perfect. The following associations were also found for groups of items evaluated across several construct categories: Cluster 1: 0.96, whereas the value for Cluster 2 is 0.76. These results show that the instrument is trustworthy.

3.8. Method of Data Analysis

All quantitative data were coded and entered in Microsoft Excel to assist with data analysis. Responses were evaluated using a 5-point Likert scale. To address the qualitative aspect of the study, interviews were transcribed and analyzed using descriptive evaluation. Each 45-minute interview with one of the 13 permanent secretaries was transcribed using a qualitative method. Quantitative data were analyzed using one-way ANOVA since it examines the differences (association) between two variables. The significance level for testing the hypotheses was set at 0.05. After analysis based on the put-forward hypotheses, a conclusion and recommendations were reached.

4. RESULTS AND DISCUSSION OF FINDINGS

The data presented and discussed in this part were generated from 295 copies of the questionnaire distributed and retrieved for the study, as well as interviews with the thirteen (13) senior administrative officials of the ministries.

The study assessed the civil servants using three major categories based on the data collection approach:

- Performance assessment, where individuals are monitored while engaged in solving authentic, real-life problems by using common software tools (e.g., browser, word processor, spreadsheet) or simulations.
- Knowledge-based assessment, where individuals respond to carefully designed test items that measure both declarative and procedural knowledge.
- Self-assessment, where individuals are asked to evaluate their knowledge and skills with questionnaires that range from structured scales to free-form reflection and an interview checklist to uncover the challenges confronting in-service training, e-governance, and service delivery.

According to the findings of our study, state civil servants are severely lacking in three critical areas of digital literacy because of inadequate in-service training contingent upon administrative resistance to ICT reform. Some of the challenges of inadequate digital literacy include data security, information exchange, and data transformation. These issues have a negative influence on the delivery of state services.

Table 3 shows the ANOVA results on the difference between ICT literacy and service delivery. Table 3 indicates that the P-value is less than 0.05. Since the result is significant, the alternate hypothesis which states that there is a significant relationship between digital illiteracy and service delivery in Cross River State civil service is accepted. This is supported by the results of the thirteen (13) permanent secretaries' interviews, which identified the following as borderline digital literacy-related barriers to e-governance and service delivery in the Cross River State Civil Service:

- Lack of capacity among civil servants; and
- Insufficient ICT training, bureaucratic resistance, and a lack of continuity in training

Table 3. ANOVA analysis of the relationship between digital literacy and service delivery

	Sum of Squares	Df	Mean Square	F	P Value	Sig.
Between Groups	.957	4	.239	3.741	006	.05
Within Groups	18.554	290	.064			
Total	19.512	294				

Source: Fieldwork, 2021.
Key: Df = Degree of freedom, F = ANOVA statistic, Sig. = Significant value; P-Value = Probability Value

4.1 Lack of Capacity Among Civil Servants

According to the permanent secretaries' interviews, despite the use of e-governance, effective service delivery in the Cross River State civil service has not been achieved. According to the permanent secretaries, an instance of a lack of digital capacity is the Ministry of Information and Communication Technology's ICT personnel's lack of skills necessary to install an ICT server that is compatible with the Ubuntu operating system set up by the World Health Organization (WHO) to enable the civil service to manage applications such as an office suite, browsers, email, and media apps. The permanent secretaries also noted that low computer literacy among the populace prevents them from using the mobile hotlines intended to gather feedback from the public concerning pertinent public issues. The permanent secretaries assert that the difficulty in making the switch from analog to digital administration has been caused by civil servants' resistance to embracing the digital age, which can be attributed to an aging analog workforce. They say having an older workforce with inadequate ICT skills makes communication difficult. The failure to hire younger people knowledgeable about new media applications has resulted in an aging workforce bereft of computer skills, they reveal.

4.2 Insufficient ICT Training, Bureaucratic Resistance, and a Lack of Continuity in ICT Training

According to the permanent secretaries, a shortage of information and communication technology (ICT) training is impeding e-governance and service delivery. They emphasized that a lack of ICT training for government servants was impeding the transition from traditional or monologue administration to e-administration. The permanent secretaries cited senior officer resistance to change as well as user acceptability and change management issues. According to the permanent secretaries, the failure of e-governance to provide efficient services was due to civil workers' aversion to adopting ICT tools owing to illiteracy, a lack of suitable orientation, and a problem with change management. The Director of E-governance, Mrs. Mary Ekanem, explained that the bulk of the challenge that confronted the implementation of E-governance principles in the service was that of resistance from the civil servants in the ministries who saw the application of E-governance reducing their level of bureaucrat-citizen interaction and thus reducing the benefits exchanges that come with bureaucrat-citizen interaction in most developing countries.

According to the permanent secretaries, the change management process in the adoption necessitated the modification and replacement of normal duties to affect organizational procedures, systems, and clients. The permanent secretaries revealed that they have not received adequate training because of resistance and the inability of the old civil servants to internalize training. The reasons are that the benefits of e-governance are against the privileges they enjoyed, such as personal interaction with customers, corruptive tendencies, and difficulty in acquiring new skills. Invariably, the inability to acquire effective in-service training led to poor implementation of e-governance and a consequent low level of service delivery. The permanent secretary of the Ministry of ICT asserted that,

Opposition to e-governance, which reduces human interface, results in inadequate in-service training and, as a result, poor service delivery for the bureaucrat, who is accustomed to personal interface and kickbacks (corruption). Bureaucrats are typically reluctant to change; they prefer the status quo due to their own standard processes and culture of doing things, which may conflict with government policy or reform. As a result, they are reluctant to adjust to new realities or may shirk or even sabotage the process, not via open opposition but by bureaucratic, methodical officialdoms that may accidentally block reform initiatives. For example, they may regard IT changes as a method to limit their activities in government agencies and perhaps eliminate human interaction and kickbacks connected with public engagement.

The permanent secretaries explained that this has prevented government officials from using e-governance projects to achieve excellent service performance. To show the pattern and level of civil servant participation in training programs, the two directors of ICT Training and E-Governance, Ministry of Information and Communication Technology, provide details in Table 4 of the ICT training that the state civil service facilitated during the period under consideration.

Twenty-one (21) ICT training programs took place in the Cross River State civil service between 2010 and 2017, according to the data in Table 4. The table shows the number of participants as well as their numbers and the goals of the training courses. Table 5 contrasts this number with the total number of employees in the public service.

The data in Table 5 shows that less than one-third of the 102,175 civil officials in the Cross River State civil service—4,601—were trained over the course of five years (2010, 2011, 2012, 2016, and 2017). No ICT training was offered in 2013, 2014, 2015, 2018, 2019, or 2020. This is severely inadequate and shows inconsistency in ICT training. The data shows that the state civil service's most recent ICT training took place in 2017. Figures 1 and 2 show additional analysis and presentation of the data from Table 5.

According to Figure 1, ICT training was received by 22.52 percent of civil servants in 2010, 21.60 percent in 2011, 19.77 percent in 2012, and 18.78 percent in 2017. Less than 25% of civil servants have consistently participated in ICT training programs over the years in question, which is not enough. Figure 2 depicts the percentage of civil servants who have received IT training in the last five years versus those who have not.

Figure 2 shows that 4.50 percent of Cross River State government servants received ICT training during the five years studied (2010, 2011, 2012, 2016, and 2016), compared to 95.50 percent who did not. Tables 4 and 5 and Figures 1 and 2 show that there is insufficient in-service training, a lack of consistency, and a lack of coverage in training programs. The permanent secretaries revealed that the Cross River State Civil Service's low level of digital literacy is a result of insufficient training in digital skills. According to the permanent secretaries, inadequate digital literacy has created a large pool of unskilled technical civil servants, which has limited their ability to use the existing digital tools. According to them, a lack of adequate funding for digital training, a lack of rules and regulations related to e-service delivery, and a lack of continuity in ICT training have made the issue of digital illiteracy worse. According to Mr. Gabriel Ikang, permanent secretary of the Ministry of Finance (January 2021),

Previous e-governance policies like the State Integrated Financial Management Information System (SIFMIS) introduced in 2017 failed to foster effective service delivery in the Cross River State Civil Service because those who were trained by the program retired from the civil service with the acquired knowledge. SIFMIS had implementation challenges because it took a lot of effort to train civil servants to understand its utilization. People who were trained left the system, which created a knowledge gap that ultimately hindered the implementation of the e-governance policy to achieve optimal service delivery. Aside from this, there were also challenges associated with the in-service training, such as poor planning, inadequate facilities, a lack of proper funding, discrepancies in the techniques and approaches adopted, and a lack of continuity in training programs.

Table 4. Chronology of ICT training between 2010 and 2017

S/N	ICT Training Program	Year	No. of Participants	Training Goal(s)
1	International Computer Driving License	2010	2	To expose civil servants to the basic concepts of information technology, including using computers, managing files, word processing, spreadsheets, databases, and information and communication.
2	Managing and Maintaining HP Systems	2010	4	To train civil servants to acquire ICT-related skills to manage and implement HP proliani servers in the Cross River State Government.
3	Cross River State Executive Council Members Digital Literacy Training	2010	39	To increase ICT awareness and usage among Executive Council Members and to understand the workability and applicability of the State Integrated Financial Management Information System (SIFMIS).
4.	Information Technology Training Program for Cross River State Civil Servants.	2010	1,393	To provide digital training to upgrade civil servants' skills in computer usage.
5.	Digital Literacy for Civil and Public Servants	2011	689	To enhance the digital competency of civil servants in desktop, internet, and computer usage.
6.	Diploma in Advanced Networking	2011	1	To use networking platforms to train civil servants.
7.	Microsoft Office Program Training	2012	17	To enable civil servants to acquire Microsoft package usage skills.
8.	CompTIA A+	2012	15	To equip civil servants with computer maintenance skills.
9.	Cisco Certified Network Association (CCNA)	2012	39	To equip civil servants with the skills required to provide a varied set of networking services or technical support. Such skills include the performance of activities ranging from the design, development, and implementation of network solutions. Activities include support for installation, configuration, customization, and maintenance of networking tools, software, service applications, and enterprise architecture.
10.	Microsoft Certified Desktop Support Technician (MCDST)	2012	47	To acquire skills to support desktop computer usage.
11.	Project Management Professional (PMP)	2012	9	To equip managers with skills to be able to propose projects, give timelines, and give deliverables. To enable managers, understand the dynamics of the environment and the lifecycle of projects.
12.	Digital Literacy and IT Support Training for Cross River State Civil Servants	2012	465	To equip civil servants with knowledge on the usage of Microsoft packages such as Word, Excel, and PowerPoint.
13.	M.S. Excel Package Training	2012	17	To make civil servants specialists in Microsoft Excel for the purpose of M.S. Excel certification.
14.	Certified Fiber Optics Specialist	2012	1	To be able to design, manage, and implement fiber optic initiatives and solutions.
15.	E-business Operations	2012	1	To equip civil servants with ICT skills to be able to manage the operations of projects in the civil service.
16.	Share-Point Configuration and Windows Server	2012	2	To equip civil servants with ICT skills to implement Windows 8 servers.
17.	Digital Literacy Training	2012	924	To equip civil servants with advanced Microsoft Excel, PowerPoint, and Word usage.
18.	Information Technology/CCNA/ Networking Training for the Ministry of Information and Communication Technology	2016	6	To become acquainted with the network topography in Cross River State.
19.	Cisco Academy Training for Master Trainers	2016	72	To enable civil servants to acquire knowledge about networking operations in ministries, departments, and agencies (MDAs).
	IT Essentials.		91	
20	E-Health Training	2016	62	To equip civil servants in the health sector to use digital platforms to collect, compile, analyze, store, and retrieve medical reports in the hospital.
21	State Integrated Financial Management Information System (SIFMIS)	2017	705	To equip managers, permanent secretaries, and accountants with knowledge of the use of SIFMIS software in project management, business intelligence, cash management, purchasing, and inventory.

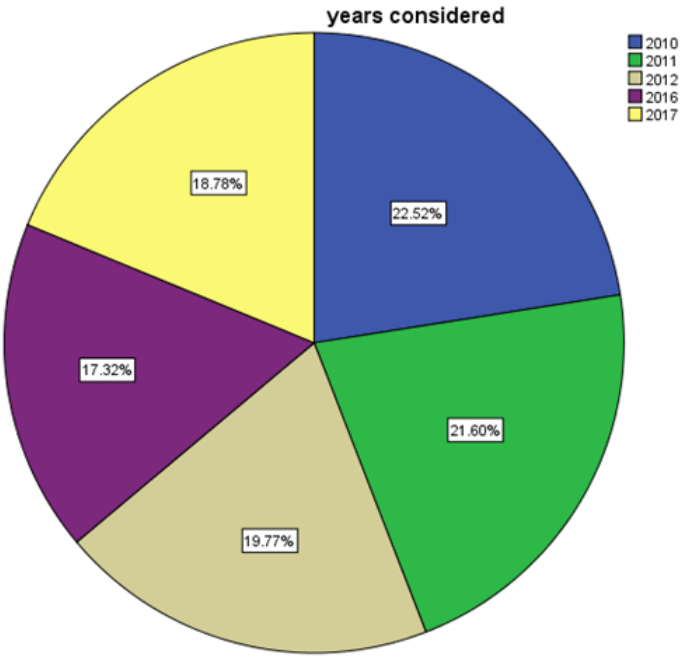
Sources: Authors' Compilation

Table 5. Civil servants trained in ICT programs against the total number of civil servants from 2010 to 2017

S/N	Year	Civil Servants Trained	Total No. of Civil Servants	Source
1	2010	1,438	23,010	Human Resource Department, Office of the Head of Service, Cross River State
2	2011	690	22,070	Human Resource Department, Office of the Head of Service, Cross River State
3	2012	1,537	20,201	Human Resource Department, Office of the Head of Service, Cross River State
4	2016	231	17,704	Human Resource Department, Office of the Head of Service, Cross River State
5	2017	705	19,190	Human Resource Department, Office of the Head of Service, Cross River State
Total		**4,601**	**102,175**	

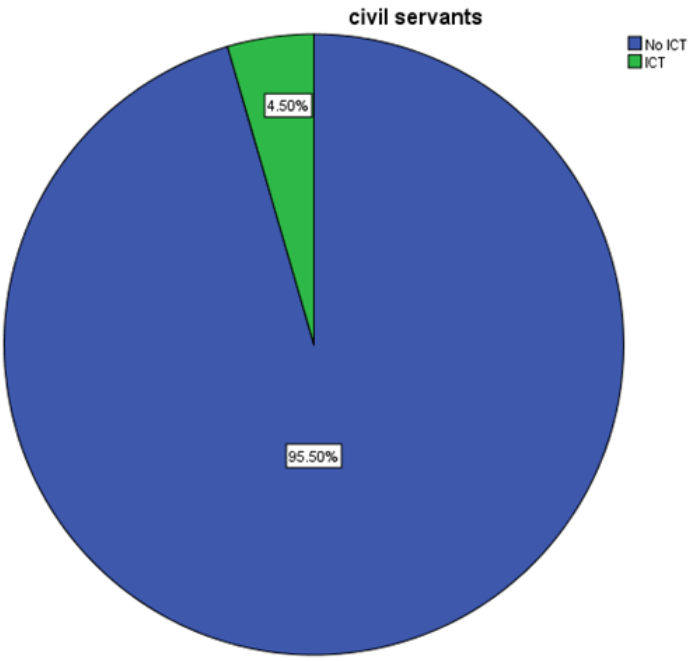
Source: Authors' Compilation

Figure 1. Pie chart showing the percentage distribution of civil servants trained in 2010–2017 (Fieldwork, 2022)



These findings are consistent with those of Abdulkareem (2015), Ogbomo (2011), and Aneke, Bakht, and Desta (2019), who identified a shortage of ICT-skilled workers as a barrier to the implementation of e-governance in the Nigerian public sector. Other studies (e.g., Imogie, 1992; Osamwonyi, 2016) have revealed other issues such as inadequate planning, a lack of uniformity in the manner of delivery, a time factor connected with the training schedule, a huge enrollment number, and a lack of intensity and breadth in training sessions as the main impediments to e-governance implementation for effective service delivery. Among many other studies conducted to identify the challenges confronting in-service training, Njau (2003) and Elgohary and Abdelazyz (2020)

Figure 2. Over a five-year period, a pie chart depicts the percentage of public workers who participated in ICT training VS. those who did not (Fieldwork, 2022)



identified a lack of funding, poor management, poor coordination, fear of loss of control, increased effort to use digital resources, and the exclusion of parochial interests within the bureaucracy as hindrances to organizational reform. The mainstream research in e-governance does not indicate that bureaucratic opposition based on defending corruptive interests is a barrier to public sector e-governance transformation. Studies in the field (e.g., Alomar, 2023; Sumaya et al., 2023) have concentrated more on predicting digital system acceptance and adoption elements such as perceived utility (PU), perceived ease of use (PEOU), and customers' attitudes as predictors of digital technology use. However, our study adds that a lack of continuity of training, aided by administrative resistance, is a major barrier to in-service training, thereby canceling the benefits of in-service training as an enabler of digital literacy.

Much of the research in the field (e.g., Bannister and Connolly, 2011; Auger, 2014; Aftab, Bokhari, and Ali, 2022; Alam et al., 2023) has proved the association between e-governance and transparency and the impact of e-governance initiatives on anti-corruption and by extension, corruption reduction. On the contrary, as highlighted by our research, a coalition within the bureaucracy based on the need to defend some corruptive interests mediates the distinctive e-governance reform agenda development and execution processes, resulting in diverse reform outcomes such as poor service delivery and e-governance failure. Thus, this study adds to the literature that contends that any administrative reform that yields concrete results should ensure that the benefits cannot be opposed by anyone. Administrative resistance uncovered as a barrier to reform aligns with existing theories of institutional and organizational change, which require alignment between changes in organizational members' beliefs, values, and behavioral norms as well as changes in organizational structures, policies, and procedures as emphasized in Killian's (2008) cognitive model as emphasized in Killian's (2008) cognitive model.

According to our findings, the cognitive disposition of civil servants' corruptive tendencies is a shared meaning that informed employee notions of organizational reality and facilitated functional

order, both of which are consistent with the self-image held and shared within the organization, and that provided a framework for cooperative action and coalition against E-governance principles and in-service training. This research contradicts Weber's (1946) bureaucratic theory, which views bureaucrats as neutral, rational, logical, and prejudice-free. It suggests that corruptive interests produce resistance to change and innovation inside the bureaucracy, becoming the primary impediment to organizational transformation. It also suggests that bureaucratic resistance based on the need to defend corruptive interests produces the bare difference between the actual technology and the reality of the technology adopted.

5. RESEARCH IMPLICATIONS

This study contributes to theoretical and practical research on e-government technological innovations for information societies.

5.1. Theoretical Contributions

This study adds to the body of knowledge on ICT development and has major implications for research and theory in public sector e-government services. The results of this study make a range of contributions to the body of knowledge. It primarily addresses and closes an empirical gap. Second, it demonstrated an empirical connection between e-governance, in-service training, digital literacy, and service delivery. It establishes that the failure of e-governance to aid effective service delivery is due to inadequate ICT training attributable to resistance from bureaucrats because the benefits such as transparency and accountability that e-governance promises are at variance with the corruptive interests of bureaucrats. Thus, the study bridges some knowledge gaps and contributes to the body of knowledge on barriers to administrative simplification, reform strategies, and organizational change management. The study's results help to provide answers to public doubts about the workability of e-governance principles and in-service training. The use of a mixed-methods research design has also helped bridge a methodological gap.

5.2 Contributions in Practice

The study highlights several managerial implications for organizations and administrators interested in organizational reforms, especially through equipping their workforce with digital skills through in-service training to meet the demands of the digital age. The study's findings have implications for ICT training development and maintenance, assisting businesses in meeting their short- and long-term training demands and goals. It identifies administrative resistance to change as the major barrier to e-governance reform implementation, thereby providing organizational and managerial directions. According to the study, insufficient digital training is the root cause of low digital literacy and poor service delivery. As a result, consistent and adequate training could be the magic wand. According to Oliver's (2002), Fu's (2013), Lopez's (2017), and Chohan and Hu's (2020) studies, regular and ongoing ICT training is required for businesses to reap and maintain the benefits of ICT. Regular training, according to Chohan and Hu's (2020) research, was found to boost students' confidence in their ability to use e-government services. Hence, our study's results, correlated with these studies, give managerial and organizational direction for ongoing ICT training and re-orientation programs for reforms to ensure an effective organizational change management process.

6. CONCLUSION AND RECOMMENDATIONS

The Cross River State civil service's adoption of e-governance as part of its digitalization strategy for efficient service delivery is being undermined by inadequate digital illiteracy because of inadequate in-service training, which occurred because of administrative resistance to the state's ICT reform

measure. Lack of digital literacy and ICT training prevents the service from performing tasks that require ICT channels, including birth registration, tax collection, and policy feedback. In a state and nation with a significant digital gap, the state's inability to enhance digital literacy is puzzling. High levels of digital illiteracy are caused by inadequate ICT training programs and a lack of continuity in ICT education. The bulk of civil service jobs still rely on antiquated, manual administrative procedures owing to the lack of full implementation of e-governance. Policymakers and individuals in charge of ensuring the adoption of e-governance principles must seek to overcome the issues that impede ICT from helping enterprises offer services effectively.

1. Managers and those in charge of creating and executing in-service training, as well as administrative reforms in general, should create programs to reorient the targeted individuals on the importance and need of adopting such innovations. This should also include breaking ranks among members at all levels of organizations and raising awareness of the inevitability of change. Efforts should also be undertaken to detect and nip any potential coalitions opposing desired organizational improvements. Managers should be aware that failing to reorient the workforce on the necessity and/or value of the desired innovation may result in a lack of support for effective reform implementation. Workforce reorientation is critical because, in certain cases, administrative reforms may necessitate considerable changes in the entire community to achieve the goal of promoting social and economic transformation.
2. Managers and administrators should conduct assessments to determine their ICT needs and the ICT-related skills required by their workforce. Organizations must increase the scope and coverage of ICT in their training programs to accommodate a sizeable number of employees. Training can be supplemented by hiring young people who are conversant with the expectations and realities of the digital age. Governments should increase the financial appropriation in the e-governance budgetary profile to ensure that training needs are satisfactorily met.
3. An ICT policy framework should be designed to create a legal and institutional framework for ICT training. This will provide the staff with the required ICT skills to be effective in utilizing digital platforms. Institutional memos should be provided to new directors, permanent secretaries, and political heads to acquaint them with the existing level of e-governance and ICT adoption.

7. LIMITATIONS AND FUTURE DIRECTIONS

The study was primarily concerned with determining whether inadequate ICT literacy and administrative resistance impede e-governance adoption and service delivery in the Cross River State Civil Service. Future studies can research funding and ICT tools. Because the research context was hypothetical, this study has limitations and raises questions for future research. The strength of this one-of-a-kind study is its uniqueness. Future studies, on the other hand, could be geographically expanded.

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