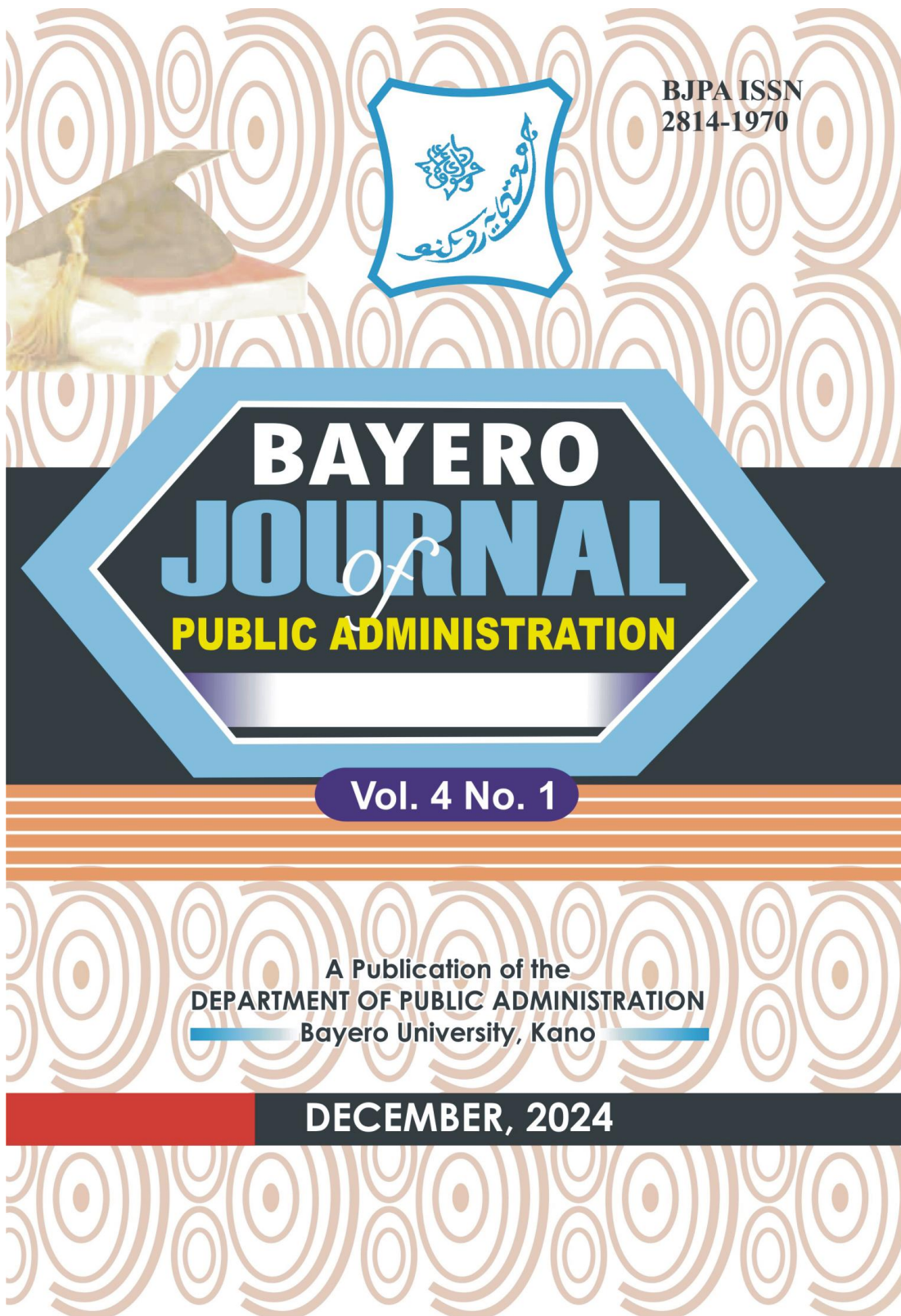


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**THE IMPACT OF E-GOVERNANCE IN ADVANCING DIGITAL
TRANSFORMATION IN PUBLIC SERVICE: A STUDY OF FEDERAL
POLYTECHNIC MUBI**

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Abstract

E-Governance plays a crucial role in fostering digital transformation in public service by improving efficiency, transparency, and service delivery. In developing countries like Nigeria, where bureaucratic inefficiencies and infrastructure gaps hinder effective governance, e-governance has emerged as a strategic tool to enhance administrative processes and digital accessibility. This study investigates the impact of e-governance in advancing digital transformation at Federal Polytechnic Mubi, with a focus on infrastructure development, accessibility, and adoption. A quantitative surveys with academic staff members, administrative staff, and students to assess the institution's level of digital adoption. Secondary data were gathered from government reports, institutional documents, and academic literature to provide a broader context for analysis. Findings indicate that while e-governance initiatives such as online student registration, e-payment systems, and digital record management have improved service efficiency, several challenges hinder full adoption. These include poor ICT infrastructure, limited broadband connectivity, inadequate power supply, digital illiteracy, and cyber security risks. Additionally, gaps in policy implementation and resistance to change among staff further slowdown the transformation process. To maximize the benefits of e-governance, the study recommends enhancing digital literacy programs, strengthening ICT infrastructure investments, implementing cyber security frameworks, and enforcing strict policy regulations. Addressing these challenges will significantly improve governance efficiency, promote digital inclusivity, and accelerate digital transformation at Federal Polytechnic Mubi and other public institutions in Nigeria.

Keywords: E-Governance, Digital Transformation, Public Service, ICT,

1.0 Introduction

The integration of e-governance in public service has significantly transformed governance structures, particularly in developing countries (Heeks, 2022). E-governance involves the application of digital technologies to enhance service delivery, minimize bureaucratic inefficiencies, and promote government transparency and accountability (Mergel et al., 2019). The adoption of e-governance frameworks enables public institutions to improve operational efficiency, increase accessibility to government services, and foster digital inclusivity (Bannister & Connolly, 2023). In Nigeria, the Federal Government has recognized the critical role of digital transformation in public administration through the National Digital Economy Policy and Strategy (NDEPS) 2020-2030 (Federal Ministry of Communications & Digital Economy, 2023). This initiative aims to accelerate e-governance adoption, strengthen ICT

infrastructure, and promote digital literacy among citizens. However, despite these policy advancements, public institutions in Nigeria, including Federal Polytechnic Mubi, continue to face significant challenges in e-governance implementation (Adeyemi & Uche, 2022). Issues such as inadequate ICT infrastructure, unreliable internet connectivity, low digital literacy rates, and weak policy enforcement have hindered the full realization of digital transformation objectives in the public sector (Adeleke & Salisu, 2022).

This study examines the impact of e-governance in advancing digital transformation in public service, using Federal Polytechnic Mubi as a case study. It focuses on three critical dimensions: infrastructure development, accessibility, and adoption of digital services. By identifying the key challenges and opportunities associated with e-governance, this research aims to provide policy recommendations for improving service efficiency, user accessibility, and digital governance adoption within the institution.

The rapid adoption of e-governance in public institutions worldwide has been instrumental in enhancing efficiency, transparency, and service delivery (Heeks, 2022). In Nigeria, the government has introduced policies such as the National Digital Economy Policy and Strategy (NDEPS) 2020-2030 to promote digital transformation across public services (Federal Ministry of Communications & Digital Economy, 2023). However, despite these efforts, many tertiary institutions, including Federal Polytechnic Mubi, continue to struggle with effective e-governance implementation (Adeyemi & Uche, 2022).

At Federal Polytechnic Mubi, e-governance is intended to facilitate administrative processes such as student registration, fee payment, examination result processing, and digital record management. However, challenges such as inadequate ICT infrastructure, unreliable internet connectivity, digital illiteracy, cyber security threats, and policy enforcement gaps hinder the full adoption and efficiency of e-governance systems (Adeleke & Salisu, 2022). These challenges delay administrative workflows, limit accessibility, and reduce the effectiveness of digital governance initiatives (Bannister & Connolly, 2023). Additionally, resistance to change among institutional staff and lack of adequate training programs contribute to the slow adoption of digital transformation (Venkatesh & Bala, 2008). Even though these challenges, this research has provided policy recommendations to enhance service delivery, digital literacy, and infrastructure development within the institution.

Despite the growing body of research on e-governance and digital transformation, gaps exist. Most studies on e-governance in Nigeria have focused on government ministries and agencies, with limited research on its adoption and effectiveness in tertiary institutions (Adeyemi & Uche, 2022). There is a lack of specific studies on Federal Polytechnic Mubi, making it essential to evaluate its unique challenges and opportunities in e-governance implementation. Existing literature highlights infrastructure gaps in Nigerian public institutions but fails to assess their impact on the actual adoption of e-governance platforms (Adeleke & Salisu, 2022). Power supply issues and poor broadband connectivity remain underexplored in institutional e-governance research (Bannister & Connolly, 2023). While studies acknowledge the importance of digital literacy, there is limited empirical evidence on how digital illiteracy affects e-governance adoption in Nigerian polytechnics (Heeks, 2022).

There is a need for research on whether Federal Polytechnic Mubi's staff and students possess the necessary digital skills to effectively use e-governance systems. Most existing research

focuses on technological infrastructure but does not adequately address cyber security risks, data breaches, and privacy concerns associated with e-governance in educational institutions (Venkatesh & Bala, 2008). Given the increasing cyber threats targeting public institutions, it is crucial to evaluate how Federal Polytechnic Mubi safeguards sensitive data within its e-governance framework. Although Nigeria has established digital economy policies, studies indicate that many public institutions fail to fully implement or comply with e-governance regulations (Federal Ministry of Communications & Digital Economy, 2023). Research is needed to examine whether Federal Polytechnic Mubi aligns with national e-governance policies and what institutional reforms are necessary for effective digital transformation.

This study aims to bridge these gaps by conducting an empirical investigation into the challenges and impact of e-governance at Federal Polytechnic Mubi. By analyzing infrastructure, accessibility, adoption, and policy compliance, this research will contribute to developing actionable solutions for improving e-governance efficiency in Nigeria's public institutions. Therefore, this study seeks to analyze the impact of e-governance on digital transformation at Federal Polytechnic Mubi and identify the key barriers limiting its effectiveness. To these issues, the study is guided by the following objectives: To examine the impact of e-governance in improving administrative efficiency and digital service delivery at Federal Polytechnic Mubi (Mergel et al., 2019; Federal Ministry of Communications & Digital Economy, 2023). E-governance enhances institutional governance by automating administrative processes, reducing bureaucratic delays, and improving service delivery. Research indicates that digitization in public institutions fosters transparency, accessibility, and accountability (Heeks, 2022; Bannister & Connolly, 2023). Federal Polytechnic Mubi has adopted online portals for student registration, fee payments, and course management, but infrastructural and digital literacy challenges hinder full-scale adoption (Adeyemi & Uche, 2022).

To assess the challenges hindering the effective implementation of e-governance in advancing digital transformation at Federal Polytechnic Mubi (Adeyemi & Uche, 2022; Adeleke & Salisu, 2022). While e-governance initiatives aim to enhance digital transformation, poor ICT infrastructure, limited internet access, cyber security threats, and resistance to change remain significant barriers (Heeks, 2022; United Nations, 2022). Additionally, inconsistent policy implementation and low levels of digital literacy among staff and students affect the sustainability of e-governance frameworks in Nigerian tertiary institutions (Federal Ministry of Communications & Digital Economy, 2023).

2.0 Literature Review

2.1 Concept of E-Governance

E-Governance is all about the application of Information and Communication Technology (ICT) in government operations to enhance efficiency, transparency, and service delivery (Venkatesh & Bala, 2008). It involves the digitalization of public services to facilitate seamless interaction between government agencies, citizens, and businesses (Heeks, 2022). By leveraging ICT tools such as online portals, electronic payment systems, and digital databases, e-governance aims to streamline administrative processes, improve access to government services, and enhance accountability (Mergel, 2019).

The adoption of e-governance has been recognized as a key driver of public sector modernization, particularly in developing countries where traditional bureaucratic processes

often result in inefficiencies (Adeyemi & Uche, 2022). According to the United Nations E-Government Development Index (EGDI), countries that have successfully implemented e-governance initiatives report higher levels of service efficiency, reduced corruption, and improved citizen engagement (United Nations, 2022).

The implementation of e-governance at Federal Polytechnic Mubi has focused on digitalizing administrative processes, student services, and financial transactions to improve operational efficiency. The institution has adopted online portals for student registration, fee payments, and results processing, aligning with national digital transformation goals (Federal Ministry of Communications & Digital Economy, 2023). According to Heeks (2022), e-governance in educational institutions consists of four key dimensions: E-Administration – The use of ICT to enhance institutional governance, staff management, and decision-making (Bannister & Connolly, 2023). E-Service Delivery – Providing online access to student services such as admissions, results checking, and certificate verification, even if you are far away with the institution (Adeleke & Salisu, 2022). E-Learning – Implementing digital learning platforms, virtual libraries, and online lecture delivery to support academic activities (Mergel, 2019). E-Participation – Enabling students and staff to engage with institutional policies and governance processes through digital feedback systems (United Nations, 2022).

Examining the impact of E-Governance in Improving Administrative Efficiency and Digital Service Delivery at Federal Polytechnic Mubi. E-Governance plays a crucial role in modernizing administrative processes and enhancing digital service delivery in educational institutions. It enables automation, transparency, and efficiency in service provision, reducing bureaucratic challenges and improving institutional performance (Mergel et al., 2019). At Federal Polytechnic Mubi, the adoption of e-governance tools has improved student registration, fee payment systems, results processing, and communication between students and administrators (Adeyemi & Uche, 2022).

According to Bannister and Connolly (2023), e-governance enhances public sector efficiency by eliminating manual paperwork, reducing processing time, and ensuring data accuracy. Similarly, Heeks (2022) argues that digital transformation in governance leads to better accountability and accessibility, which are essential for improving institutional administration and service delivery.

E-Governance significantly improve administrative efficiency and digital service delivery at Federal Polytechnic Mubi. However, addressing ICT infrastructure deficits, improving staff and student digital literacy, and ensuring policy enforcement are key to maximizing the benefits of e-governance.

2.2 Challenges in E-Governance Implementation at Federal Polytechnic Mubi

Despite its benefits, e-governance implementation in Nigeria faces several challenges, including poor ICT infrastructure, low internet penetration, digital illiteracy, and resistance to change among public officials (Federal Ministry of Communications & Digital Economy, 2023). Addressing these issues requires strong policy frameworks, investment in digital infrastructure, and continuous capacity-building programs to enhance public sector digital transformation (Heeks, 2022).

One of the major barriers to e-governance implementation at Federal Polytechnic Mubi is the lack of adequate ICT infrastructure, including modern computers, reliable internet connectivity, and stable electricity supply (Adeleke & Salisu, 2022). The Federal Ministry of

Communications & Digital Economy (2023) highlights that many Nigerian public institutions lack the necessary digital infrastructure to support effective e-governance, leading to inefficiencies in service delivery.

Many staff members and students at Federal Polytechnic Mubi have limited digital skills, which affects their ability to use e-governance platforms effectively (Adeyemi & Uche, 2022). According to Bannister & Connolly (2023), the success of digital transformation in public institutions depends on the ability of employees and users to adopt and utilize digital tools effectively. Without proper training, many administrative staff and students struggle to transition from manual to digital processes, reducing the efficiency of e-governance systems (Heeks, 2022).

E-Governance systems handle large volumes of sensitive institutional data, including student records, financial transactions, and administrative documents. However, weak cyber security frameworks and data protection policies expose these systems to cyber threats, hacking, and data breaches (Mergel et al., 2019). United Nations (2022) warns that without strong cyber security measures, institutions risk compromising the confidentiality, integrity, and availability of digital services.

Resistance to digital transformation among administrators and faculty members poses a significant challenge to e-governance adoption. Some staff prefer traditional, paper-based administrative processes due to a lack of familiarity with digital tools or fear of job displacement (Adeleke & Salisu, 2022). Additionally, bureaucratic delays in decision-making and policy implementation slow down e-governance projects (Heeks, 2022).

While Nigeria has strong national digital policies, such as the National Digital Economy Policy and Strategy (NDEPS) 2020-2030, the implementation of these policies at institutional levels remains weak (Federal Ministry of Communications & Digital Economy, 2023). There is often inadequate funding, lack of coordination between government agencies, and insufficient monitoring of e-governance projects, leading to slow progress in higher education institutions like Federal Polytechnic Mubi (Mergel et al., 2019).

Addressing these challenges in Federal Polytechnic Mubi, requires investment in digital infrastructure, capacity-building initiatives for staff and students, improved cyber security frameworks, and stronger government support. Without tackling these barriers, the full benefits of e-governance in advancing digital transformation will remain unrealized.

2.3 Digital Transformation of Public Service in Federal Polytechnic Mubi

Digital transformation in public service involves the integration of digital technologies to improve efficiency, accessibility, and transparency in government operations (Mergel et al., 2019). In Nigeria, digital transformation is a key policy priority, as outlined in the National Digital Economy Policy and Strategy (NDEPS) 2020-2030, which aims to enhance public sector service delivery through e-governance initiatives (Federal Ministry of Communications & Digital Economy, 2023). Federal Polytechnic Mubi, like other tertiary institutions in Nigeria, is expected to leverage digital technologies to enhance administrative efficiency, student services, and institutional governance (Adeyemi & Uche, 2022).

Federal Polytechnic Mubi has implemented digital platforms to streamline administrative processes such as student registration, fee payments, result processing, and online course management (Adeleke & Salisu, 2022). These initiatives align with global best practices that

emphasize the use of ICT to improve institutional governance (Bannister & Connolly, 2023). However, challenges such as inadequate ICT infrastructure, internet connectivity issues, and low digital literacy continue to hinder full-scale adoption (Heeks, 2022). The COVID-19 pandemic accelerated the need for digital learning solutions, leading to the introduction of e-learning platforms, virtual classrooms, and digital library resources at the institution (United Nations, 2022). However, inconsistent power supply, limited access to smart devices, and inadequate digital training programs have limited the effectiveness of online education (Mergel, 2019).

With the increasing adoption of digital services, concerns about data security, cyber threats, and privacy issues have emerged (Federal Ministry of Communications & Digital Economy, 2023). Federal Polytechnic Mubi must strengthen cyber security frameworks to protect sensitive academic records, student information, and financial transactions (Adeyemi & Uche, 2022).

Digital transformation at Federal Polytechnic Mubi is gradually improving service delivery, efficiency, and transparency in administrative and educational functions. Investment in ICT infrastructure, staff training, cyber security frameworks, and policy enforcement is necessary for sustainable digital transformation at the institution. Despite progress, digital transformation efforts in the institution face several challenges: Poor ICT Infrastructure – Limited access to modern computers, stable electricity, and high-speed internet affects service efficiency (Heeks, 2022). Digital Literacy Gap – Many staff and students lack adequate training in using digital platforms (Adeleke & Salisu, 2022). Resistance to Change – Some administrative staff prefer traditional, paper-based processes, slowing adoption (Bannister & Connolly, 2023). Cyber security Threats – The absence of strong cyber security policies exposes institutional data to risks (Federal Ministry of Communications & Digital Economy, 2023). Policy Implementation Gaps – While Nigeria has national digital policies, implementation at the institutional level remains weak (Mergel et al., 2019).

3.0 Methodology

This study adopts a quantitative study to ensure a comprehensive assessment of e-governance implementation at Federal Polytechnic Mubi. The quantitative method involves surveys to collect numerical data on infrastructure, accessibility, and adoption, (Creswell & Creswell, 2018). A descriptive research approach is employed to analyze the effectiveness of e-governance in advancing digital transformation. The target population for this study are 300, includes administrative staff, ICT personnel, faculty members, and students of Federal Polytechnic Mubi. These groups are selected because they directly interact with e-governance systems, making them valuable sources of information on implementation, challenges, and adoption levels (Bryman, 2021).

A stratified random sampling technique is used to ensure adequate representation of different stakeholder groups in the study. The sample is drawn from the following strata: 50 Administrative staff (including ICT personnel), 50 Academic Staff and 200 Students. A total sample size of 300 respondents is determined using Yamane's (1967) formula for calculating sample size in a finite population: $n = \frac{N}{1 + N(e)^2}$

Where: n = Sample size

N = Total population

e = Margin of error (5%)

Based on institutional records, the population of students and staff is 5,000. Applying the formula: $n = \frac{5000}{1 + 5000(0.05)^2} = \frac{5000}{1 + 12.5} = \frac{5000}{13.5} \approx 370$

To balance feasibility and representation, 300 respondents are selected. Two main sources of data are used: Primary data was collected through: Structured Questionnaires – Distributed to students, schools, academic staff and administrative staff to assess their experiences with e-governance adoption and challenges. Secondary data was obtained from: Institutional Reports (Federal Polytechnic Mubi ICT development plans and administrative records). Government Policies (Nigeria's National Digital Economy Policy and Strategy (NDEPS) 2020-2030). Published Journals and Books on e-governance, digital transformation, and ICT adoption in public service.

The main instruments for data collection include: Questionnaires: Designed with closed-ended and Likert-scale questions to measure perceptions of e-governance efficiency, accessibility, and challenges. To ensure accuracy and credibility, the questionnaire reviewed by ICT and public administration experts to ensure relevance and clarity. To ensure reality a pilot study was conducted with 30 randomly selected respondents to test for consistency. The Cronbach's Alpha coefficient was calculated, aiming for a reliability score above 0.7, which indicates strong internal consistency (Creswell, 2018). For quantitative analysis of data from questionnaires was analyzed using Statistical Package for the Social Sciences (SPSS) software, applying: Descriptive Statistics (Mean, frequency, and percentage analysis). Inferential Statistics (Chi-square tests to determine relationships between e-governance adoption and infrastructure availability).

4.0 Findings

This is the presentation of findings of the study on the impact of e-governance in advancing digital transformation at Federal Polytechnic Mubi. The findings are structured based on the study's key objectives: To examine the impact of e-governance in improving administrative efficiency and digital service delivery in Federal Polytechnic Mubi and to assess the challenges hindering the effective implementation of e-governance.

Table 1: Demographic Characteristics of Respondents

A total of 300 respondents participated in the survey, including administrative staff, academic staff, ICT personnel, and students.

Variable	Category	Frequency (N)	Percentage%
Gender	Male	180	60.0%
	Female	120	40.0%
Age	18-25 years	120	40.0%
	26-35 years	80	26.7%
	36-45 years	60	20.0%
	Above 45 years	40	13.3%
Stakeholders Group	Administrative Staff	50	16.7%
	Academic staff	50	16.7%
	ICT Personnel	50	16.7%
	Student	150	50.0%

Source: Field Survey 2025

Table 2: The Impact of E-Governance in Administrative Efficiency and Digital Service Delivery

Improvement in Service Delivery

Respondents were asked whether e-governance has improved efficiency in registration, fee payment, examination processing, and communication.

Service Area	Improved (%)	Not Improved	Neutral (%)
Student registration	72.5%	20.5%	7.0%
Online Payment	68.0%	25.0%	1.0%
Examination Processing	60.5%	30.0%	9.5%
Communication & Information	65.0%	27.5%	7.5%

Source: Field Survey 2025

Key Observations: Student registration and online fee payment showed the highest levels of 72.5% improvement. Examination processing and digital communication still require enhancements with 30.0% and 27.5%.

Table 3: Challenges Hindering E-Governance Implementation

Infrastructural Challenges

ICT Infrastructure	Adequate (%)	Inadequate (%)	Neutral (%)
Internet Connectivity	45.5%	50.0%	4.5%
Computer Facilities	40.0%	55.0%	5.0%
Power Supply	35.0%	60.0%	5.0%
Digital platforms Usage	48.0%	47.0%	5.0%

Source: Field Survey 2025

Key Observations: Poor internet connectivity and unstable power supply were the most significant infrastructural barriers with 45.5% and 35.0%. Limited availability of computers in administrative and student facilities affected digital service adoption.

Table 4: Digital Literacy Challenges

Category	Sufficient ICT Skills (%)	Limited ICT Skills
Administrative Staff	55.0%	45.0%
Academic staff	40.0%	60.0%
Students	40.0%	60.0%

Source: Field Survey 2025

Key Observations: A large percentage of students (60%) lack digital literacy, affecting the effective use of e-governance platforms. Academic staff and administrative staff have moderate ICT skills, requiring further training with 45.0% and 60.0%.

5.0 Recommendations and Conclusion

Based on the findings of the study, the following were recommended; Strengthening ICT Infrastructure. Upgrade internet bandwidth and expand Wi-Fi coverage and invest in solar energy and alternative power solutions. Improving Digital Literacy. Conduct regular ICT training workshops for staff and students and integrate digital literacy courses into the academic curriculum. Implementing enhanced Cyber security, multi-factor authentication (MFA), strong encryption measures and train staff on cyber hygiene practices.

This study has demonstrated that e-governance significantly improves administrative efficiency and digital service delivery at Federal Polytechnic Mubi. However, infrastructural deficiencies, limited digital literacy, and cyber security concerns hinder full implementation. Addressing these issues will require strategic investments, policy reinforcements, and stakeholder engagement to ensure sustainable digital transformation in public service.

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