



## Impact of Digital Media Tools on Academic Delivery and Administrative Efficiency at Federal Polytechnic Orogun Delta State Nigeria

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### ABSTRACT

**Background:** Effective institutional communication is central to academic delivery and administrative efficiency in tertiary institutions. However, the integration of digital media tools in emerging Nigerian polytechnics remains inconsistent, limiting their transformative potential.

**Objective:** This study examined the impact of digital media tools on academic delivery and administrative efficiency at Federal Polytechnic, Orogun, with a view to assessing usage patterns, benefits, and constraints.

**Method:** The study adopted a descriptive survey design using a mixed-methods approach. Data were collected from academic staff, administrative personnel, and students through structured questionnaires, key informant interviews, and document analysis. A stratified random sampling technique ensured adequate representation of stakeholder groups, while data were analysed using descriptive statistics and thematic analysis.

**Results:** Findings revealed that WhatsApp, Google Classroom, Zoom, institutional email, and portals enhance timely information sharing and lecturer–student engagement. Nevertheless, adoption remains uneven due to unreliable internet connectivity, limited digital literacy, inadequate ICT infrastructure, and absence of structured policy implementation.

**Conclusion:** The study concludes that although digital media tools significantly improve communication processes, their effectiveness is constrained by infrastructural, policy, and capacity gaps, thereby limiting optimal institutional performance.

**Unique Contribution:** The study provides empirical evidence on digital transformation within a newly established Nigerian polytechnic and advances understanding of how organizational readiness and media suitability shape digital adoption in higher education.

**Key Recommendation:** Institutional leaders should develop comprehensive ICT policies, invest in sustainable digital infrastructure, and implement continuous capacity-building programmes to ensure coordinated and effective integration of digital communication systems.

**Keywords:** Digital media tools, Institutional communication, Academic delivery, Administrative efficiency, Digital transformation, Nigerian polytechnics.



## **1. INTRODUCTION**

Communication is fundamental to the functioning of educational institutions, shaping how information flows between stakeholders, how decisions are communicated, and how knowledge is disseminated. In the context of higher education, institutional communication serves as the backbone for academic delivery, administrative coordination, student engagement, and institutional governance (Robson & Tourish, 2005). Traditionally, communication in Nigerian tertiary institutions was largely dependent on physical mechanisms, notice boards, printed circulars, face-to-face meetings, and manual record systems (Selwyn, 2016). However, such conventional means have increasingly proven inadequate in addressing the demands of contemporary academic environments characterized by growing enrolments, complex administrative processes, and diverse stakeholder needs.

Over the past decade, digital media tools have profoundly reshaped institutional communication worldwide. These tools, ranging from emails, learning management systems (LMS), WhatsApp groups, Zoom, Telegram, and institutional websites, offer faster, more flexible, and more accessible channels of interaction (Ng'ambi et al., 2021). In higher education, digital platforms are no longer supplementary but are integral to instructional delivery, administrative coordination, and stakeholder engagement (Anderson, 2020; Nwafor et al., 2022). They enable real-time messaging, online collaboration, asynchronous learning, and data archiving, thereby supporting both academic and non-academic operations. For instance, studies have shown that tools like Google Classroom and Moodle enhance learner participation and provide platforms for dynamic instructional feedback (Bates, 2019; Okafor & Ajadi, 2020).

In the Nigerian context, the adoption of digital communication tools has accelerated, especially in the aftermath of the COVID-19 pandemic, which forced many higher institutions to transition to remote learning and virtual administration (Adu, Eze, & Osagie, 2022). Yet, the shift has been uneven. While some universities and older polytechnics have made significant progress in institutionalising digital processes, many emerging institutions still grapple with infrastructure deficits, limited digital literacy, and policy gaps (Ajadi, 2020). These challenges are compounded by inconsistent internet access, inadequate training, and organizational resistance, which hinder the full potential of digital platforms in enhancing institutional efficiency (Ibrahim & Musa, 2019).

Federal Polytechnic, Orogun, established in 2021 in Ughelli North Local Government Area of Delta State, represents one of Nigeria's newest federal tertiary institutions. As it strives to strengthen its academic programmes and administrative systems, the Polytechnic is concurrently integrating digital tools such as institutional email systems, WhatsApp communication groups, bulk SMS services, and platforms like Google Classroom for academic communication. These interventions present a valuable opportunity to explore how digital media tools are being leveraged, or underutilized, to facilitate institutional functions.

Despite this growing trend, there remains limited empirical research on how digital media is being utilised within newly established polytechnics like Federal Polytechnic, Orogun, particularly in terms of its impact on both academic delivery and administrative efficiency. Most extant studies in Nigeria have focused on older universities or polytechnics, leaving a gap in knowledge regarding emerging institutions where digital transformation is still nascent (Ayoade,



2021; Robson & Tourish, 2005). Evidence suggests that digital communication can enhance organizational responsiveness, improve stakeholder engagement, and streamline administrative workflows (Daft & Lengel, 1986; Ng'ambi et al., 2021), yet the contextual factors unique to institutions such as Orogun require investigation. Therefore, this study sought to reimagine institutional communication by evaluating the impact of digital media tools on academic delivery and administrative efficiency at Federal Polytechnic, Orogun. It examines the adoption patterns, effectiveness, challenges, and potentials of digital platforms to inform strategies that can enhance institutional performance. By doing so, the research aims to contribute to both scholarly literature and practical policy frameworks, offering insights that can guide digital communication integration in similar emerging tertiary institutions across Nigeria and beyond.

## **2. STATEMENT OF RESEARCH PROBLEM**

Effective communication is central to academic delivery and administrative coordination in higher institutions. Globally, tertiary institutions increasingly rely on digital media tools to enhance communication efficiency and learning experiences (Anderson, 2020; Ng'ambi et al., 2021). In many Nigerian institutions, especially newly established ones, the integration of these tools remains inconsistent and underdeveloped. Federal Polytechnic, Orogun, founded in 2021, is still building its academic and administrative structures. Although the institution has introduced platforms such as email, WhatsApp, Google Classroom, and virtual meeting tools, communication often still depends on traditional methods. This mixed approach may lead to delays, information gaps, and limited engagement among staff, students, and management.

Empirical evidence on digital communication practices in emerging polytechnics is limited, as most Nigerian studies focus on older universities (Adu et al., 2022; Okafor & Ajadi, 2020). As a result, institutional leaders may lack data to guide ICT investment, training, and communication policy decisions. Additionally, variations in digital literacy, infrastructure, and internet access may hinder effective usage of digital tools (Ajadi, 2020; Ibrahim & Musa, 2019). The central problem, therefore, is the unclear effectiveness and uneven utilization of digital media tools in supporting academic and administrative communication at Federal Polytechnic, Orogun. A systematic evaluation is needed to assess adoption levels, determine impacts, identify barriers, and propose sustainable integration strategies.

## **3. RESEARCH QUESTIONS**

1. To what extent are digital media tools used for academic communication between lecturers and students at Federal Polytechnic, Orogun?
2. How effective are digital media platforms in improving administrative communication and workflow within the institution?
3. What challenges affect the adoption and consistent use of digital media tools among staff and students?
4. What are the digital literacy levels of academic and administrative staff regarding digital communication tools?
5. What strategies can enhance the sustainable integration of digital media tools in academic and administrative communication?



## **4.0 LITERATURE REVIEW**

### **4.1 Digital Media Tools: A Conceptual Review**

Digital media tools refer to electronic platforms and applications that facilitate the creation, sharing, and exchange of information in digital formats. These tools include email systems, social messaging platforms (e.g., WhatsApp, Telegram), collaboration and learning environments (e.g., Google Classroom, Moodle), and video conferencing applications (e.g., Zoom, Microsoft Teams). Their growing use in education reflects a global shift toward technology-enabled communication and engagement (Ng'ambi, Brown, Bozalek, & Gachago, 2021; Nwonyi et al., 2024). Digital media tools enhance instructional delivery, enable remote interaction, support collaborative learning, and provide administrative coherence in complex institutional environments (Anderson, 2020; Nwosu et al., 2018). The functionality of these tools spans synchronous communication (real-time interaction), asynchronous communication (delayed but flexible exchange), and hybrid modes. For instance, WhatsApp groups and institutional email facilitate quick updates and announcements, while platforms like Zoom enable live lectures and meetings. Despite the acknowledged benefits, the effectiveness of these tools depends on factors such as infrastructure quality, digital literacy, and organizational readiness (Ajadi, 2020).

#### **4.1.2 Institutional Communication**

Institutional communication encompasses the formal and informal exchange of information that supports decision-making, coordination of functions, and stakeholder engagement (Robson & Tourish, 2005). In a tertiary context, this includes communication between management and staff, lecturers and students, administrative units, and external stakeholders. Effective institutional communication ensures that information flows accurately, transparently, and timely, thereby fostering institutional cohesion. Traditionally, communication in Nigerian higher education relied on notice boards, printed circulars, and face-to-face interactions. However, these methods have limitations in speed and reach. Digital media tools now complement or replace traditional channels, offering immediate dissemination, broader reach, and interactive capabilities (Adu, Eze, & Osagie, 2022; Oginyi et al., 2023). For emerging institutions like Federal Polytechnic, Orogun, understanding how digital communication is used institutionally is crucial for improving responsiveness and operational efficiency.

#### **4.1.3 Academic Delivery**

Academic delivery refers to the mode and manner through which curriculum content, instructional materials, and feedback are transmitted to learners. It involves lectures, tutorials, assessments, and other structured learning activities. The dawn of digital media tools has transformed academic delivery from exclusively face-to-face formats to blended and fully online models (Selwyn, 2016). Digital tools like Google Classroom, Moodle, and Zoom enable flexible learning environments where students can access materials, interact with instructors, and submit assignments remotely (Bates, 2019). Multiple studies have shown that when effectively implemented, digital learning environments enhance student engagement, facilitate personalized instruction, and support diversified learning methods (Okafor & Ajadi, 2020). However, uneven infrastructure and digital disparities can limit the potential benefits of such tools.



#### **4.1.4 Administrative Efficiency**

Administrative efficiency refers to how well an institution carries out its administrative functions, such as record management, scheduling, reporting, and internal communications. Digitalization of administrative processes is widely recognized as a pathway to organisational speed, transparency, and accountability (Daft & Lengel, 1986; Nwafor et al., 2023). Digital tools can automate tasks such as memo dissemination, data storage, and workflow approvals, reducing bureaucratic delays and human error (Adu et al., 2022). Studies have demonstrated that institutions with integrated digital administrative systems report improved coordination, reduced redundancy, and faster decision-making (Ayoade, 2021). Nonetheless, infrastructure challenges, staff readiness, and policy gaps can limit the realization of these benefits in many Nigerian tertiary institutions.

### **4.2 THEORETICAL FRAMEWORK**

Theoretical frameworks guide research by providing explanatory lenses through which phenomena are understood and interpreted. This study draws on two complementary theories: Media Richness Theory and Diffusion of Innovations Theory.

#### **4.2.1 Media Richness Theory**

Media Richness Theory (MRT) was proposed by Daft and Lengel (1986) to explain how communication media differ in their capacity to convey information effectively. According to MRT, communication channels vary in “richness,” defined by the medium’s ability to handle multiple cues, provide immediate feedback, and facilitate personal interaction. Rich media (e.g., video conferencing, face-to-face) are better suited for ambiguous, complex messages, while lean media (e.g., email, text messages) are appropriate for routine, unambiguous communication. In this study, MRT helps assess the suitability of different digital tools for institutional communication. For example, platforms like Zoom and Microsoft Teams may be rich enough for complex academic discussions and administrative coordination, whereas emails and notice announcements may be more appropriate for routine updates.

#### **4.2.2 Diffusion of Innovations Theory**

The Diffusion of Innovations Theory (Rogers, 2003) explains how new ideas, practices, or technologies spread within a social system over time. Adoption is influenced by five attributes: *relative advantage*, *compatibility*, *complexity*, *trialability*, and *observability*. Innovations offering clear advantages, aligned with user needs, and relatively easy to adopt are more likely to be accepted. This theory is useful for understanding how digital media tools are adopted within educational institutions. Staff and students may adopt tools like WhatsApp or Google Classroom if they perceive them as beneficial and easy to use. Conversely, resistance may occur if tools are seen as complex or incompatible with existing practices.

#### **4.2.3 Relevance to the Study**

Combined, these theories offer a comprehensive lens: MRT explains which tools are best suited for specific communication tasks, while Diffusion of Innovations explains why some tools are widely adopted and others are resisted. Together, they guide analysis of digital media tools in academic and administrative settings at Federal Polytechnic, Orogun.



### **4.3 Empirical Review**

Empirical studies reveal significant findings on digital media usage in educational settings both globally and within Nigeria:

#### **4.3.1 Digital Media Tools and Academic Communication**

Okafor and Ajadi (2020) investigated digital tool use in Nigerian public universities. Their study found WhatsApp, Telegram, and Google Classroom improved lecturer-student interactions and feedback timeliness, though inconsistent internet access and low digital competence were significant constraints. Similarly, Bates (2019) reported improved learner engagement and flexibility in Canadian universities using LMS platforms, suggesting that well-integrated digital tools enhance instructional quality.

#### **4.3.2 Digital Tools and Administrative Efficiency**

Ayoade (2021) examined administrative communication in Nigerian polytechnics and found that while WhatsApp and email were frequently used, lack of integration with formal administrative systems led to inefficiencies and duplicated efforts. Adu, Eze, and Osagie (2022) found that institutions using enterprise-level tools for administrative functions showed improved transparency and faster decision-making, though effective training and infrastructure remain crucial.

#### **4.3.3 Institutional Communication and Staff Competence**

Ibrahim and Musa (2019) observed that while most staff had access to digital communication platforms, many lacked adequate competence, reducing tool effectiveness. Robson and Tourish (2005) noted in a UK context that digital tools improved internal communication only when supported by trust, clear leadership, and communicative culture.

### **4.4 Gaps in Literature**

Despite extensive research, gaps remain. Most studies focus on older universities and established polytechnics (Adu et al., 2022; Okafor & Ajadi, 2020), leaving new institutions like Federal Polytechnic, Orogun underexplored. Also, few studies examine academic and administrative communication together. In the same vein, limited empirical evidence exists on digital literacy's role in tool adoption. Again, institutional policy and cultural factors influencing tool use are under-investigated. This review shows that while digital media tools hold great promise for improving communication in higher education, contextual challenges and adoption patterns vary widely. There is a clear need to investigate how these tools are used in emerging polytechnics to inform policy, training, and institutional planning.

## **5. METHODOLOGY**

This study adopted a descriptive survey design with a mixed-methods approach, combining quantitative and qualitative techniques to investigate the use, effectiveness, and challenges of digital media tools in academic and administrative communication at Federal Polytechnic, Orogun (Creswell & Plano Clark, 2018). The mixed-methods design allowed for a comprehensive understanding of communication practices by integrating measurable trends with in-depth perspectives from key stakeholders. The study was conducted at Federal Polytechnic, Orogun, a newly established institution in Ughelli North Local Government Area of Delta State, Nigeria.



Founded in 2021, the Polytechnic currently offers nineteen NBTE-approved programmes, including Business Administration, Accounting, Mass Communication, Multimedia Technology, Crime Management, Public Administration, Procurement and Supplies Chain Management, Science Laboratory Technology, Statistics, Hospitality Management, Library and Information Science, Mechanical Engineering, Civil Engineering, Mechatronics Engineering, Welding and Fabrication Engineering, Computer Engineering, Computer Science, and Marketing. The institution has begun integrating digital platforms such as email systems, Google Classroom, and WhatsApp groups, providing a suitable context for assessing digital transformation in academic and administrative operations. The population comprised academic staff (lecturers, instructors, technicians and technologists), administrative staff (registry, ICT personnel, and other non-teaching units), and students at the ND level, totalling approximately 1,362 individuals. Using stratified random sampling, a sample of 150 respondents was selected to ensure proportional representation across all groups.

Data were collected using three instruments: a semi-structured questionnaire for quantitative information on tool usage, effectiveness, challenges, and digital literacy; key informant interviews (KIIs) with department heads, ICT staff, and student leaders to explore institutional policies and infrastructure constraints; and document analysis of ICT policies, memos, and digital records to triangulate findings. Instruments were reviewed by experts for content validity, piloted with 10 respondents from a nearby polytechnic, and tested for internal consistency using Cronbach's alpha ( $\alpha \geq 0.70$ ). Quantitative data were analysed using descriptive statistics (frequencies, percentages, means) and inferential statistics (Chi-square and Pearson correlation) via SPSS Version 25. Qualitative data from interviews were transcribed, coded, and analyzed thematically to identify emerging patterns. Ethical considerations were observed, including informed consent, confidentiality, voluntary participation, and approval from the institutional ethics committee. This methodology ensured a rigorous, systematic, and ethically sound approach to examining how digital media tools influence academic delivery and administrative efficiency at an emerging Nigerian polytechnic.

## 6. RESULTS

### 6.1 Demographic Profile of Respondents

Category	Frequency (n=150)	Percentage (%)
<b>Gender</b>		
Male	82	54.7
Female	68	45.3
<b>Stakeholder Group</b>		
Academic Staff	30	20.0
Administrative Staff	20	13.3
Students	100	66.7
<b>Age (years)</b>		
18–25	95	63.3
26–35	40	26.7
36 and above	15	10.0



## 6.2 Extent of Digital Media Tool Usage

Digital Tool	Daily (%)	Weekly (%)	Monthly (%)	Rarely/Never (%)
WhatsApp	85	10	3	2
Email	50	25	15	10
Google Classroom	60	20	10	10
Zoom / MS Teams	40	30	20	10
Institutional Portal	35	25	25	15
Bulk SMS / Noticeboard	30	30	25	15

## 6.3 Perceived Effectiveness of Digital Media Tools in Communication

Aspect	Very Effective (%)	Effective (%)	Neutral (%)	Ineffective (%)	Very Ineffective (%)
Academic Communication (Lecturer → Student)	45	40	10	3	2
Administrative Communication	40	35	15	7	3
Feedback & Interaction	38	42	12	5	3
Interdepartmental Coordination	35	40	15	7	3

## 6.4 Challenges to Digital Media Adoption

Challenge	Frequency (n)	Percentage (%)
Poor Internet Connectivity	85	56.7
Limited Digital Literacy (Staff)	70	46.7
Insufficient Institutional Policy	60	40.0
Resistance to Change	45	30.0
Digital Fatigue / Overload	25	16.7

## 6.5 Digital Literacy Levels of Respondents

Stakeholder Group	High (%)	Moderate (%)	Low (%)
Academic Staff	50	40	10
Administrative Staff	35	50	15
Students	60	30	10

## 6.6 Qualitative Findings from Key Informant Interviews

The qualitative data obtained from key informant interviews with Heads of Departments, ICT personnel, and student representatives revealed important insights into the state of digital communication at Federal Polytechnic, Orogun. Regarding institutional policy and digital infrastructure, most Heads of Departments indicated that the Polytechnic does not yet operate under a fully developed and formally enforced ICT policy. While digital tools are being used, their deployment appears to be guided more by informal practices than by structured institutional frameworks. ICT personnel further explained that infrastructural capacity remains limited,



particularly in terms of server strength and campus-wide Wi-Fi coverage. These limitations reportedly affect the consistency and reliability of digital communication across departments.

In relation to staff and student competence, academic staff acknowledged varying levels of digital proficiency among lecturers. Some are comfortable using platforms such as Google Classroom and Zoom for lecture delivery and interaction, while others rely primarily on WhatsApp or email for communication. Student representatives noted that although many students are familiar with social media platforms, they require additional orientation and training to effectively utilize academic digital tools for structured learning.

The interviews also highlighted several perceived benefits of digital tools. Respondents consistently mentioned faster dissemination of information, reduced dependence on paper-based communication, and simplified submission of assignments as key advantages. Platforms such as Zoom and Google Classroom were specifically identified as useful for remote lecture delivery and facilitating interactive engagement beyond the physical classroom. However, significant barriers and constraints were also identified. Poor internet connectivity and intermittent power supply were frequently cited as major obstacles to consistent digital usage. Additionally, the absence of centralized coordination for communication platforms has resulted in fragmented practices across departments. Some respondents further observed that resistance to digital adoption among certain staff members is influenced by limited technological confidence and concerns about increased workload. Overall, the qualitative findings suggest that while digital media tools are recognized as beneficial and increasingly utilized, their integration remains uneven, constrained by infrastructural limitations, policy gaps, and varying levels of digital competence.

## **7. DISCUSSION**

The findings of this study reveal important dynamics in the adoption and utilization of digital media tools for academic and administrative communication at Federal Polytechnic, Orogun. The results show that WhatsApp, email, Google Classroom, Zoom, and the institutional portal constitute the primary digital tools in use. Academic staff predominantly relied on WhatsApp and email for communication, students showed stronger preference for Google Classroom and WhatsApp for learning-related activities, while administrative staff mainly used email and the institutional portal for official correspondence. This pattern reflects differentiated usage based on role and communication needs within the institution. The findings further indicate that digital platforms have contributed to improved information dissemination, lecturer–student interaction, and coordination of academic activities. Google Classroom and Zoom supported lecture delivery and assignment management, while email and WhatsApp facilitated administrative communication. However, some platforms remain underutilized due to limited training, inconsistent adoption across departments, and absence of a fully implemented institutional ICT policy. These gaps explain why communication processes are still partially dependent on traditional or hybrid systems.

These outcomes align with Media Richness Theory (Daft & Lengel, 1986), which suggests that communication effectiveness depends on matching the richness of the medium to the complexity of the task. Synchronous platforms such as Zoom were found effective for lectures and meetings, while leaner tools like email were more suited for routine information sharing. Where inappropriate media were used for complex communication, inefficiencies emerged, supporting



MRT assumptions. The findings also reflect Diffusion of Innovations Theory (Rogers, 2003). Early adopters, particularly among younger lecturers, ICT staff, and students, demonstrated strong engagement with digital platforms. Conversely, varying levels of digital competence among staff, resistance to adoption, and perceived complexity slowed wider institutional diffusion. The uneven distribution of digital skills highlights the importance of structured training and leadership support in accelerating innovation adoption.

Key challenges identified, including unreliable internet connectivity, insufficient ICT infrastructure, limited digital skills, lack of formalised policies, and occasional resistance to change, mirror findings from Nigerian studies by Ajadi (2020), Okafor and Ajadi (2020), and Adu et al. (2022). These studies similarly argue that digital tools enhance academic delivery and administrative efficiency only when supported by coherent policy frameworks, capacity building, and stable infrastructure. Document analysis strengthened these conclusions by revealing incomplete ICT policy guidelines, hybrid memo dissemination practices, and partial digital record usage. This triangulated evidence confirms that while digital tools are present and beneficial, their application remains inconsistent and insufficiently institutionalised.

A notable insight from the integrated findings is that students appear more proactive in digital engagement than some staff members, suggesting that digital transformation is partly student-driven rather than fully policy-led. This underscores that infrastructure alone does not guarantee effective digital integration; sustained institutional commitment, training, and enforcement mechanisms are essential.

Overall, the discussion demonstrates that digital media tools at Federal Polytechnic, Orogun function as valuable but under-optimized communication resources. Their impact on academic delivery and administrative efficiency depends on strategic alignment with communication needs, enhanced digital literacy, and formal institutional frameworks. By integrating quantitative results, qualitative insights, and document analysis, this study contributes nuanced evidence on the realities of digital transformation in emerging Nigerian polytechnics.

## **8. CONCLUSION**

Based on the results, the study concludes that digital media tools have not yet been optimally institutionalized for academic delivery and administrative efficiency at Federal Polytechnic, Orogun, despite their evident potential and growing relevance in contemporary educational management. This conclusion is drawn from the observed disparities in adoption levels across departments, the moderate digital competence among staff, infrastructural constraints, and weak enforcement of existing ICT policies. While digital platforms are available and in use, their effectiveness remains largely dependent on individual initiative rather than structured institutional integration. Therefore, the study establishes that the challenge is not the absence of digital tools, but the absence of a coordinated framework that ensures consistent usage, capacity development, infrastructure support, and policy compliance. Until these structural and organizational gaps are addressed, the transformative potential of digital media in enhancing academic and administrative performance will remain only partially realized. In essence, digital readiness at the institution is emerging but not yet consolidated, requiring deliberate strategic action to move from adoption to full integration.



## **9. Unique Contribution**

This study is important to Federal Polytechnic, Orogun as it provides evidence-based guidance for improving digital communication, ICT policies, and staff/student capacity development. It also supports national digital transformation goals in polytechnic education and offers useful insights for policy and institutional planning. Academically, the study fills a research gap by focusing on a newly established polytechnic, contributing fresh knowledge to mass communication and educational technology. Additionally, it identifies digital literacy needs and provides practical recommendations for enhancing academic delivery, administrative efficiency, and overall institutional effectiveness through improved use of digital media tools.

This study provides new insights into how digital media tools are adopted and utilized in a newly established Nigerian polytechnic, an area previously underexplored. It highlights the interplay between digital literacy, infrastructure, and communication efficiency, offering both theoretical and practical implications. Academically, it expands the literature on institutional digital transformation in emerging tertiary institutions, while practically, it guides policymakers, administrators, and educators on strategies to enhance academic delivery and administrative effectiveness through sustainable digital integration.

## **10. RECOMMENDATIONS**

Based on the study's findings, the following recommendations are proposed to enhance the use of digital media tools for academic delivery and administrative efficiency at Federal Polytechnic, Orogun:

1. **Strengthen Institutional ICT Policies:** The Polytechnic should develop clear policies outlining preferred digital platforms, usage protocols, and timelines for information dissemination. Policies should be regularly updated to reflect technological advances and institutional needs.
2. **Capacity Building and Training:** It is suggested also that the Polytechnic should implement structured digital literacy programmes for academic and administrative staff to improve competence with platforms like Google Classroom and Zoom. Conduct student orientation on effectively using digital tools for learning and engagement.
3. **Infrastructure and Technological Improvements:** There is the need to upgrade internet bandwidth and ensure stable network connectivity campus-wide. Provide institutional access to learning management systems, collaborative platforms, and shared digital resources for all departments.
4. **Encourage Adoption and Usage Monitoring:** The Management of the Polytechnic should establish a monitoring framework to track digital tool usage, identify gaps, and encourage consistent adoption. Consider incentives for staff and departments actively integrating digital tools into academic and administrative processes.
5. **Future Research Directions:** Future researcher may wish to conduct longitudinal studies to evaluate the long-term impact of digital media tools on teaching, learning, and administration. Explore comparative studies across emerging polytechnics in Nigeria to identify best practices for digital transformation.

Implementing these measures will foster a stronger digital communication culture, improve operational efficiency, and enhance academic delivery in line with global standards.



## **11. Limitations of the Study**

This study acknowledges several limitations. First, the sample size, while representative, may not capture the perspectives of all staff and students at Federal Polytechnic, Orogun. Second, the research is confined to a single institution, which may limit the generalizability of findings to other polytechnics in Nigeria. Finally, time constraints affected the depth of data collection and follow-up interviews, potentially restricting the exploration of long-term digital adoption trends. Despite these limitations, the study provides valuable insights into digital media integration in emerging tertiary institutions.

## **Ethical Clearance**

Ethical clearance was obtained from the appropriate authority at Federal Polytechnic Orogun prior to the commencement of this study. Participants were duly informed of the objectives of the research and assured that the study was conducted strictly for academic purposes. Participation was voluntary, and respondents were guaranteed anonymity, confidentiality, and the right to withdraw at any point without any consequences.

## **Informed Consent**

Informed consent was obtained from all participants involved in the study. They were adequately briefed on the nature and scope of the research, and their consent was given freely without coercion.

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## **Conflict of Interest**

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## **Authors' Contributions**

Efetobor, O. Elijah, PhD conceived and designed the study, coordinated the research process, participated in data collection, supervised data analysis, and prepared the initial manuscript draft. Andrew C. Apeh, Ph.D. contributed to the conceptual framework, research design, data interpretation, and critically reviewed the manuscript for intellectual content. Ekemini Udo assisted in data collection, data organization, preliminary analysis, and contributed to manuscript



drafting and editing. All authors critically reviewed, approved the final manuscript, and accept responsibility for the content and integrity of the work.

### **Data Availability Statement**

The datasets generated and analysed during this study are available from the corresponding author upon reasonable request.

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