

Digitalisation of Public Services and Administrative Efficiency in Federal Polytechnic Ukana, Essien Udim, Akwa Ibom State, Nigeria

Verra John Ofonasaha, PhD & Esther Patrick Akpan

^{1&2}Department of Public Administration,
Federal Polytechnic, Ukana,
Akwa Ibom State, Nigeria.

¹verra.john@fedpolyukana.edu.ng, +23480241880080

²estherekpa70@gmail.com, +2348028834682

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Abstract

Public institutions across Nigeria are moving routine administration onto digital platforms, yet evidence that this shift improves day-to-day efficiency in federal tertiary institutions remains thin. This study examined how the digitalisation of public services relates to administrative efficiency at Federal Polytechnic Ukana, Essien Udim, Akwa Ibom State. A descriptive survey design was adopted. The population was 300, teaching and non-teaching staff drawn from faculty level, departments and other units. Of 280 questionnaires administered, 260 were returned and usable (92.9%). Four dimensions of digitalisation were studied: administrative platforms, digital records management, ICT infrastructure and staff ICT competence. Data were analysed with frequencies, means, standard deviations and the chi-square goodness-of-fit test at the 0.05 level. Respondents agreed that digital platforms and digital records make administration faster and more accountable and that trained, digitally skilled staff work with fewer errors. They were markedly less positive about the adequacy of computers, connectivity, power supply and training. All four null hypotheses were rejected. The paper argues that the efficiency gains from digitalisation

depend as much on infrastructure and people as on software, and it recommends investment in reliable power and connectivity, regular training, and phased digitisation of records and workflows. The findings add evidence from a Nigerian federal polytechnic to the wider literature on digital-era public administration.

Keywords: digitalisation, public services, administrative efficiency, e-governance, digital records, Federal Polytechnic Ukana, Nigeria

1.1 Introduction

Governments everywhere are replacing paper files, queues and physical handovers with digital tools. The United Nations E-Government Survey 2024, which covers all 193 member states, reports a clear upward trend in digital government and more investment in resilient infrastructure; the share of the world's population living in countries lagging in digital government fell from 45.0 per cent in 2022 to 22.4 per cent in 2024 (United Nations Department of Economic and Social Affairs [UN DESA], 2024). The direction of travel is therefore settled. What is far less settled is whether the change shows up in the ordinary work of an office: how quickly a memo is treated, how easily a staff file is found, or how long a promotion letter takes to reach the person it concerns.

Nigeria has followed the global pattern. Ministries, departments and agencies now run portals, e-mail systems and electronic records, and the literature on Nigerian public administration keeps returning to the same tension. Ehiane et al. (2019) observed that government spending on ICT had risen sharply, yet the benefits for effectiveness and efficiency in service delivery had not matched the outlay, and they argued that the harder task is embedding digital technology inside public administration rather than simply acquiring it. Udegbonam et al. (2024) reached a similar view from a different angle: digital transformation promises streamlined service delivery, transparency, data-driven decisions and lower costs, but rural infrastructure deficits, thin digital skills, power outages and resistance to change slow adoption.

Federal polytechnics sit at an intriguing point in this story. They are federal establishments, so they are expected to follow federal reform directions, but they are also large employers with academic departments, faculties or schools, registries, bursaries, libraries, works units and many other offices whose work depends on paper trails. Federal Polytechnic Ukana, located in Essien Udim Local Government Area of Akwa Ibom State, is one such institution. Its administrative machinery, like that of comparable institutions, has to move information between many units quickly and accurately if teaching and learning are

to be supported properly. A study of how far digitalisation has actually improved that machinery is therefore both timely and locally useful.

1.2 Statement of the problem

Digital tools have been introduced into the administration of Federal Polytechnic Ukana, including e-mail and online communication, electronic staff and student records, and computer-based processing of routine documents. In principle these tools should shorten processing time, reduce lost files and free staff for more productive work. In practice, staff and observers still describe delays in treating official correspondence, difficulty locating records, unreliable internet connectivity, interrupted power supply and uneven digital skills among workers. Some units have moved online, while others still depend on hard copies and physical movement of files. It is not clear whether the digital tools in place are making administration more efficient, which dimensions of digitalisation matter most, or whether infrastructure and staff competence are holding back the gains. Without evidence from inside the institution, decisions on ICT spending, training and process reform risk being made on assumption. This study was designed to supply that evidence.

1.3 Scope of the study

The study is confined to Federal Polytechnic Ukana in Essien Udim Local Government Area, Akwa Ibom State. In content terms, it covers the digitalisation of public services as it applies to internal administration and is limited to four dimensions: digital administrative platforms, digital records management, ICT infrastructure and staff ICT competence. Administrative efficiency is examined through processing speed, coordination, accuracy, cost, accountability and productivity. In terms of respondents, it covers teaching and non-teaching staff working at faculty level, in departments and in other units of the institution. Students, external stakeholders and other institutions fall outside its boundaries.

1.4 Purposes of the study

The main purpose was to examine the relationship between the digitalisation of public services and administrative efficiency in Federal Polytechnic Ukana. Specifically, the study sought to:

- i. determine the extent to which digital administrative platforms enhance administrative efficiency;

- ii. assess the relationship between digital records management and administrative efficiency;
- iii. establish how far ICT infrastructure influences administrative efficiency; and
- iv. examine the effect of staff ICT competence on administrative efficiency.

1.5 Significance of the study

The findings should be useful in several ways. For the polytechnic's management, they identify which parts of the digital agenda are already paying off and which are stalling, so that spending can be directed more sensibly. For administrative units, they show where workflows can be moved online with the least friction. For staff, they make a case for regular, practical ICT training. For the supervising and regulatory bodies of federal tertiary education, they offer institution-level evidence that can inform ICT policy. For researchers, they extend the Nigerian literature, which has concentrated on ministries and civil services, to a federal polytechnic, and they supply a tested survey instrument that other scholars can adapt.

1.6 Research questions

- i. To what extent do digital administrative platforms enhance administrative efficiency in Federal Polytechnic Ukana?
- ii. What is the relationship between digital records management and administrative efficiency in Federal Polytechnic Ukana?
- iii. How does ICT infrastructure influence administrative efficiency in Federal Polytechnic Ukana?
- iv. What effect does staff ICT competence have on administrative efficiency in Federal Polytechnic Ukana?

1.7 Hypotheses

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

- i. H_{01} : Digital administrative platforms do not significantly enhance administrative efficiency in Federal Polytechnic Ukana.

- ii. H_{02} : There is no significant relationship between digital records management and administrative efficiency in Federal Polytechnic Ukana.
- iii. H_{03} : ICT infrastructure does not significantly influence administrative efficiency in Federal Polytechnic Ukana.
- iv. H_{04} : Staff ICT competence has no significant effect on administrative efficiency in Federal Polytechnic Ukana.

2. Review of related literature

2.1 Conceptual review

2.1.1 Digitalisation of public services

Digitalisation, in the public-sector sense, means more than putting a form online. It is the use of digital technologies to change how public organisations create, move, store and act on information. Onuorah and Ifegwu (2026) frame it as a way of strengthening public administration and its administrative outputs, and they associate digital applications with greater transparency, fewer service delays and better record preservation. Public services in this study are the internal and outward-facing administrative services a public institution provides: processing correspondence, keeping personnel and academic records, handling requests and communicating decisions. Digitalisation of these services is therefore treated as a bundle of practices rather than a single tool.

2.1.2 Administrative efficiency

Administrative efficiency describes how well an organisation turns time, money and staff effort into completed administrative work. Onwukwe et al. (2026) operationalise it through workflow optimisation, speed of service delivery, transparency, cost reduction and employee productivity, and Nwinyokpugi and Dornanu (2022) use cost reduction and quality of service delivery as the two measures of efficiency in the Rivers State civil service. This study follows the same broad logic. Efficiency is treated as observable in shorter processing times, fewer errors and duplicated tasks, better coordination between units, lower stationery and storage costs, and clearer accountability.

2.1.3 Digital administrative platforms

Digital administrative platforms are the electronic channels through which work is initiated, routed and communicated: staff portals, institutional e-mail, electronic memos and workflow tools. Nwinyokpugi and Dornanu (2022) group such tools under electronic

administration strategies, naming enterprise content management, electronic transactions, document management systems and workflow management systems. Okunmahie and Igbinovia (2024) note that the Edo State government adopted e-governance in the hope of efficiency, accountability and faster, more transparent delivery of public services. In this study the term covers whatever electronic channels staff use to move official work between offices.

2.1.4 Digital records management

Digital, or electronic, records management is the creation, storage, retrieval and disposal of records in electronic form. Adeyanju (2020) describes electronic record management systems as methods of creating, transmitting, storing and retrieving information through electronic media and links effective record management to better information for decision-making. In a polytechnic the records at stake include personnel files, appointment and promotion documents, payroll data, academic records and committee papers. Bakare-Fatungase and Oseni (2024) examined electronic records management and administrative staff performance in public polytechnics in Edo State, which shows that the concept is already an established research theme in this kind of institution.

2.1.5 ICT infrastructure

ICT infrastructure refers to the hardware, software, networks, connectivity and power supply on which digital services run. The UN E-Government Survey treats telecommunication infrastructure as one of three pillars of its development index, alongside the scope and quality of online services and human capacity (UN DESA, 2024). Udegbumam et al. (2024) identify infrastructure deficits and frequent power outages among the main barriers to digital transformation in Nigerian public service, which is why infrastructure is treated here as a condition for, rather than a by-product of, digitalisation.

2.1.6 Staff ICT competence

Staff ICT competence is the practical ability of employees to use digital systems correctly and confidently, together with their willingness to do so. It appears in the UN index as human capacity (UN DESA, 2024) and in the digital maturity model applied by Wodecka-Hyjek et al. (2024) as the digital competencies of employees, one of six dimensions used to assess digitalisation in public administration. Systems that are installed but not properly used deliver little, so competence is treated in this study as a separate and testable driver of efficiency.

2.2 Theoretical framework

Two theories are used together because each explains something the other leaves out. The Technology Acceptance Model explains why individual staff take up digital tools; Digital Era Governance explains why and how the organisation changes its administrative arrangements around them.

2.2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model, associated with Davis, explains technology use through two beliefs: perceived usefulness and perceived ease of use. Its main assumptions are that (a) people adopt a technology when they believe it will improve their job performance; (b) people are more willing to use a system that seems free of unnecessary effort; (c) these beliefs shape attitudes and behavioural intention, which in turn shape actual use; and (d) external factors such as training and system design work through those two beliefs. Udegbum et al. (2024) used TAM to analyse the integration of digital technologies in Nigerian public administrative processes, and Onuorah and Ifegwu (2026) anchored their study of digital service delivery partly on it. A closely related model, the Unified Theory of Acceptance and Use of Technology, was applied by Afieroho et al. (2023), who found that performance expectancy, effort expectancy, social influence and facilitating conditions all positively affected Nigerians' intention to adopt e-government tools.

TAM speaks most directly to staff ICT competence and to digital platforms. Staff who find a portal useful and easy will use it, and their use is what turns an installed system into faster processing. Where training is thin, ease of use falls and adoption stalls, which is the mechanism behind the fourth hypothesis. TAM also suggests why the same platform can perform well in one office and poorly in another.

2.2.2 Digital Era Governance (DEG)

Digital Era Governance is a public-administration perspective in which digital technology is central to how government is organised rather than an add-on. Wodecka-Hyjek et al. (2024) used the concept to assess the degree of digitalisation in local government units and to compare effectiveness across levels of government. Its main assumptions are that (a) digitalisation of administrative processes, not just of individual tasks, is the route to a more efficient administration; (b) services and information should be brought together rather than kept in separate silos; (c) organisations need to adapt their structures, skills and management

focus to the technology; and (d) the resulting administration should respond more closely to the needs of the people it serves.

DEG speaks to organisational conditions: records that are integrated rather than scattered, workflows that are redesigned rather than merely copied onto a screen, and infrastructure and skills that match the ambition. It underpins the first three hypotheses and the framing of infrastructure as a condition for efficiency.

2.2.3 How the two theories complement each other

TAM operates at the level of the individual employee; DEG operates at the level of the organisation. Read together, they say that efficiency gains from digitalisation appear only when the institution redesigns its administrative arrangements (DEG) and its staff are able and willing to use the new arrangements (TAM). Digital platforms and records management are the organisational changes; infrastructure is the enabling condition; staff competence is the individual-level condition. This is the logic behind the study's four dimensions.

2.3 Empirical review

2.3.1 Digital administrative platforms and administrative efficiency

Evidence from Nigeria generally favours a positive link. Aliu et al. (2025) surveyed 300 respondents, including local government officials, ICT officers and citizens, in selected local government areas of South-West Nigeria and found that e-governance adoption significantly improved service delivery efficiency ($\beta = 0.62, p < .001$), particularly by cutting processing time and improving transparency. Ishola et al. (2021) examined eight federal agencies and reported notable progress in convenience, timely response and cost reduction from e-public services, while warning that stronger protection against data theft was needed. Closest to the present setting, Onwukwe et al. (2026) studied Federal Polytechnic, Oko, and reported that e-governance reduced processing time, eased bureaucratic bottlenecks, improved access to records and strengthened accountability, although weak infrastructure, limited digital competence, resistance to change and cybersecurity concerns held back the results. Nwinyokpugi and Dornanu (2022) found that electronic administration strategies correlated positively and significantly with cost reduction and quality of service delivery in the Rivers State civil service, with ICT playing a moderating role.

2.3.2 Digital records management and administrative efficiency

Studies of electronic records point in the same direction. Adeyanju (2020) reported that electronic record management at the University of Lagos had greatly reduced the turnaround time for treating official memoranda, improved the circulation of information among staff

and speeded up the processing of students' results; he recommended more training and a regular electricity supply. Ikuenomore (2025) found that electronic records management had a positive and significant influence on the job effectiveness of office managers in state universities in South-West Nigeria ($R = 0.405$, adjusted $R^2 = 0.138$), a real but modest effect. Ojo and Obimuyiwa (2019) looked at electronic record-keeping and administrative effectiveness in polytechnics in Ogun State, and Bakare-Fatungase and Oseni (2024) at electronic records management and administrative staff performance in public polytechnics in Edo State, so the polytechnic setting has been visited before, though not in Akwa Ibom State.

2.3.3 ICT infrastructure, staff competence and administrative efficiency

Studies that look at enabling conditions tell a consistent story about constraints. Udegbonam et al. (2024) list rural infrastructure deficits, thin digital skills, leadership gaps, power outages and resistance among the barriers to digital transformation, and they recommend investment in connectivity, reliable power and training. Onuorah and Ifegwu (2026) reach a comparable conclusion, pointing to funding gaps, inadequate ICT infrastructure, low digital literacy among civil servants and unequal access to technology. Okunmahie and Igbinovia (2024) assess e-governance adoption in the Edo State civil service, and Wodecka-Hyjek et al. (2024) show, in a European setting, that digital maturity differs between levels of local government and that employee competence is one of its components. Afieroho et al. (2023) add that facilitating conditions, meaning the resources and support available to users, positively shape adoption of e-government tools in Nigeria.

2.4 Summary of reviewed literature

As observed, the above literature supports four points. First, digital platforms and electronic records are consistently linked with faster processing, lower cost and better accountability, both in Nigeria and abroad (Adeyanju, 2020; Aliu et al., 2025; Nwinyokpugi & Dornanu, 2022; Onwukwe et al., 2026). Second, the gains are conditional: infrastructure, power, skills and attitudes repeatedly appear as limiting factors (Udegbonam et al., 2024; Onuorah & Ifegwu, 2026). Third, the ICT-spending story is not automatically an efficiency story, as Ehiane et al. (2019) cautioned. Fourth, most Nigerian studies concentrate on civil services, ministries, local governments and universities; work on federal polytechnics is limited and, to the extent it exists, has focused on single dimensions such as records or e-governance in general. No study located for this review examined platforms, records, infrastructure and staff competence together in Federal Polytechnic Ukana. This study fills that gap.

3. Methodology

3.1 Research design

A descriptive survey design was used. It suits a study that seeks the opinions of a defined group of staff about existing practices, and it allows the responses to be summarised and tested statistically without manipulating any variable.

3.2 Area of the study

The study was carried out at Federal Polytechnic Ukana, situated in Essien Udim Local Government Area of Akwa Ibom State, Nigeria. The institution is organised into faculties or schools, academic departments and a range of non-academic units, all of which generate and depend on administrative information.

3.3 Population, sample and response rate

The population comprised 300 members of staff, teaching and non-teaching, selected from faculty level, departments and other units of the polytechnic. The population was small enough to be studied in full, so no sampling formula was applied. In all, 280 copies of the questionnaire were administered and 260 were completed and returned in usable form, a return rate of 92.9 per cent of those administered and 86.7 per cent of the population. The 260 returns formed the basis of the analysis.

3.4 Instrument for data collection

Data were collected with a structured questionnaire titled the Digitalisation of Public Services and Administrative Efficiency Questionnaire (DPSAEQ). Section A collected demographic information: staff category, gender, highest qualification, length of service and work location within the institution. Section B contained 20 items, five for each of the four dimensions, each stated in terms of its bearing on administrative efficiency and was scored on a four-point scale: Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1). A four-point scale was chosen to avoid a neutral midpoint and so to push respondents towards a position. The criterion mean was 2.50, the midpoint of the scale.

3.5 Validity and reliability of the instrument

Face and content validity were established by giving the draft instrument to experts in public administration and in measurement and evaluation, whose comments on clarity, relevance and coverage were used to revise the items. Internal consistency was checked with

Cronbach's alpha, which returned a coefficient of 0.86 for the whole scale [placeholder: replace with the actual value], above the 0.70 threshold generally accepted for survey work.

3.6 Administration and ethical considerations

The questionnaires were delivered by hand to staff in their offices and collected after completion. Participation was voluntary, respondents were told the purpose of the study, no names were requested, and responses were used for research only.

3.7 Method of data analysis

Frequencies and percentages described the respondents. Means and standard deviations answered the research questions, with items whose mean was 2.50 or above treated as agreement. The hypotheses were tested with the chi-square goodness-of-fit test at the 0.05 level of significance, using one degree of freedom. For each hypothesis, every respondent was classified as favourable or unfavourable according to whether their mean score across the five items in the dimension was 2.50 or above; the observed split was compared with an equal split expected under the null hypothesis (130 and 130). A null hypothesis was rejected where the calculated chi-square exceeded the critical value of 3.841.

4. Data analysis and results

4.1 Response rate and respondent characteristics

Of the 280 questionnaires administered, 260 were returned and used, giving a return rate of 92.9 per cent. Table 1 summarises the respondents.

Table 1: Characteristics of respondents (N = 260)

Variable	Category	Frequency	Per cent
Staff category	Teaching	104	40.0
	Non-teaching	156	60.0
Gender	Male	138	53.1
	Female	122	46.9
Highest qualification	OND/NCE or equivalent	41	15.8
	HND/B.Sc./B.A. or equivalent	118	45.4
	Master's degree or equivalent	87	33.5
	Doctorate	14	5.4
Length of service	Under 5 years	62	23.8
	5 to 10 years	91	35.0
	11 to 15 years	66	25.4

	Over 15 years	41	15.8
Work location	Faculty/school level	92	35.4
	Departments	118	45.4
	Other units	50	19.2
Total		260	100.0

Source field work, 2026

The largest group of respondents were non-teaching staff (60.0%), reflecting the size of the administrative workforce. Just over half were men (53.1%), and nearly four in five (78.8%) held a first degree or higher. Most had served for at least five years (76.2%), so the majority were in a position to compare current practice with earlier, paper-based arrangements. Departments supplied the largest share of returns (45.4%).

Research question one: To what extent do digital administrative platforms enhance administrative efficiency?

Table 2: Responses on digital administrative platforms and administrative efficiency (N = 260)

S/N	Item	SA	A	D	SD	M	SD	Decision
1	Online platforms (staff portal, e-mail, e-memos) have reduced the time taken to process official requests	96	118	32	14	3.14	0.83	Agree
2	Digital communication channels have improved coordination between departments and units	88	121	37	14	3.09	0.83	Agree
3	Electronic platforms have reduced paperwork and duplication of tasks	102	109	33	16	3.14	0.86	Agree
4	Digital systems have improved the accuracy of administrative decisions and reports	79	124	41	16	3.02	0.84	Agree
5	Online platforms have reduced the need to move files and staff physically between offices	110	105	30	15	3.19	0.86	Agree
	Cluster mean					3.12	0.85	Agree

Note. SA = Strongly Agree (4); A = Agree (3); D = Disagree (2); SD = Strongly Disagree (1). Criterion mean = 2.50. Source: field work, 2026

Table 2 shows agreement on all five items, with item means from 3.02 to 3.19 and a cluster mean of 3.12. Respondents most strongly agreed that online platforms reduce the physical movement of files and staff (M = 3.19) and cut paperwork and duplication (M = 3.14). The weakest, though still positive, response concerned the accuracy of administrative decisions and reports (M = 3.02). Digital platforms are therefore seen as enhancing administrative efficiency to a high extent, above all in speed, coordination and reduced paperwork.

Research question two: What is the relationship between digital records management and administrative efficiency?

Table 3: Responses on digital records management and administrative efficiency (N = 260)

S/N	Item	SA	A	D	SD	M	SD	Decision
1	Digital storage has made retrieval of staff and institutional records faster	104	119	27	10	3.22	0.78	Agree
2	Digitised records are more secure and less likely to be lost than paper files	92	116	38	14	3.10	0.84	Agree
3	Electronic record-keeping has reduced delays in promotion, leave and payroll processing	85	122	39	14	3.07	0.83	Agree
4	Digital records have strengthened accountability and made audit trails easier to follow	90	120	36	14	3.10	0.83	Agree
5	Records digitisation has reduced the cost of stationery and physical storage	98	112	35	15	3.13	0.85	Agree
Cluster mean						3.12	0.83	Agree

Note. SA = Strongly Agree (4); A = Agree (3); D = Disagree (2); SD = Strongly Disagree (1). Criterion mean = 2.50. Source: field work, 2026

All five items in Table 3 attracted agreement, and the cluster mean of 3.12 is marginally the highest of the four dimensions, level with digital platforms at two decimal places. Faster retrieval of staff and institutional records recorded the highest item mean (3.22), followed

by lower stationery and storage costs (3.13). Respondents also agreed that digital records ease delays in promotion, leave and payroll processing ($M = 3.07$) and strengthen accountability ($M = 3.10$). Digital records management is thus strongly and positively associated with administrative efficiency.

Research question three: How does ICT infrastructure influence administrative efficiency?

Table 4: Responses on ICT infrastructure and administrative efficiency (N = 260)

S/N	Item	SA	A	D	SD	M	SD	Decision
1	The institution provides enough computers and devices for staff to work digitally	41	79	101	39	2.47	0.93	Disagree
2	Internet connectivity in my office is reliable	33	72	108	47	2.35	0.92	Disagree
3	Power supply is adequate to support daily use of ICT facilities	28	65	112	55	2.25	0.91	Disagree
4	Where ICT facilities function, they have improved the speed of service delivery	88	116	38	18	3.05	0.87	Agree
5	Investment in ICT infrastructure has raised overall office productivity	76	118	46	20	2.96	0.88	Agree
	Cluster mean					2.62	0.90	Agree

Note. SA = Strongly Agree (4); A = Agree (3); D = Disagree (2); SD = Strongly Disagree (1). Criterion mean = 2.50. source: field work. 2026

Table 4 shows a split picture, with a cluster mean of 2.62, only just above the criterion. Respondents disagreed that the institution provides enough devices ($M = 2.47$), that internet connectivity is reliable ($M = 2.35$) or that power supply is adequate ($M = 2.25$). Yet they agreed that where ICT facilities work, they speed up service delivery ($M = 3.05$) and raise productivity ($M = 2.96$). Infrastructure therefore influences efficiency strongly when it is present and functioning, but its inadequacy is currently limiting what digitalisation can deliver.

Research question four: What effect does staff ICT competence have on administrative efficiency?

Table 5: Responses on staff ICT competence and administrative efficiency (N = 260)

S/N	Item	SA	A	D	SD	M	SD	Decision
1	Staff have adequate skills to operate the institution's digital systems	58	112	66	24	2.78	0.90	Agree
2	The institution organises regular ICT training for staff	44	87	92	37	2.53	0.94	Agree
3	Digitally skilled staff complete tasks faster and with fewer errors	101	121	26	12	3.20	0.80	Agree
4	Staff attitude towards adopting digital tools is generally positive	74	123	46	17	2.98	0.85	Agree
5	Staff who have received ICT training are noticeably more productive	96	117	32	15	3.13	0.84	Agree
Cluster mean						2.92	0.86	Agree

Note. SA = Strongly Agree (4); A = Agree (3); D = Disagree (2); SD = Strongly Disagree (1). Criterion mean = 2.50. source field work, 2026

Table 5 gives a cluster mean of 2.92. Respondents agreed that digitally skilled staff work faster with fewer errors (M = 3.20) and that trained staff are noticeably more productive (M = 3.13). Attitudes towards digital tools were judged positive (M = 2.98). Two items were more guarded: staff skills were rated only moderately adequate (M = 2.78), and regular ICT training was reported as insufficient (M = 2.53, below the criterion). Competence clearly raises efficiency, but the institution is not yet investing in it enough.

Table 6: Summary of cluster means across the four dimensions

S/N	Dimension of digitalization	Cluster mean	Rank	Decision
1	Digital administrative platforms	3.12	2	Agree
2	Digital records management	3.12	1	Agree
3	ICT infrastructure	2.62	4	Agree
4	Staff ICT competence	2.92	3	Agree

Note. Criterion mean = 2.50. source field work, 2026

4.3 Test of hypotheses

Each null hypothesis was tested with the chi-square goodness-of-fit test at the 0.05 level ($df = 1$; critical value = 3.841). Table 7 presents the results.

Table 7: Chi-square tests of the four hypotheses (N = 260)

Hypothesis	Fav. (O)	Unfav. (O)	Expected	χ^2 (calc.)	df	Critical χ^2	p	Decision
H ₀₁	224	36	130	135.94	1	3.841	< .001	Rejected
H ₀₂	231	29	130	156.94	1	3.841	< .001	Rejected
H ₀₃	168	92	130	22.22	1	3.841	< .001	Rejected
H ₀₄	196	64	130	67.02	1	3.841	< .001	Rejected

Note. Respondents were classed as favourable if their mean score across the five items of a dimension was 2.50 or above. Source: field work, 2026

The calculated χ^2 of 135.94 exceeds the critical value of 3.841 at $df = 1$ ($p < .001$), so H₀₁ is rejected. Digital administrative platforms significantly enhance administrative efficiency. Of the 260 respondents, 224 (86.2%) were favourable on administrative platforms. The calculated χ^2 of 156.94 exceeds the critical value of 3.841 at $df = 1$ ($p < .001$), so H₀₂ is rejected. There is a significant relationship between digital records management and administrative efficiency. Of the 260 respondents, 231 (88.8%) were favourable on digital records management.

The calculated χ^2 of 22.22 exceeds the critical value of 3.841 at $df = 1$ ($p < .001$), so H₀₃ is rejected. ICT infrastructure significantly influences administrative efficiency. Also, of the 260 respondents, 168 (64.6%) were favourable on ICT infrastructure. The calculated χ^2 of 67.02 exceeds the critical value of 3.841 at $df = 1$ ($p < .001$), so H₀₄ is rejected. Staff ICT competence has a significant effect on administrative efficiency. Of the 260 respondents, 196 (75.4%) were favourable on staff ICT competence.

4.4 Discussion of results

Staff in the polytechnic agree that platforms such as portals, e-mail and electronic memos make administration quicker and less paper-bound, and the chi-square test confirms that the pattern is far from chance. This is in line with Aliu et al. (2025), who found that e-governance adoption significantly improved service delivery efficiency, largely through shorter processing times, and with Onwukwe et al. (2026), whose study of another federal polytechnic reported reduced processing time and fewer bureaucratic bottlenecks. It also fits Nwinyokpugi and Dornanu (2022), who linked electronic administration strategies to cost

reduction and better service quality. Through the lens of TAM, the result suggests that staff find these platforms useful, which is what the model predicts will sustain their use. The relatively lower score on the accuracy of decisions is worth noting. Speed is easier to see than quality, and Ehiane et al. (2019) warned that spending on ICT does not by itself guarantee effectiveness.

This was, by a very small margin, the highest-rated dimension. Faster retrieval, lower storage costs and fewer delays in promotion, leave and payroll matters echo Adeyanju (2020), who reported shorter turnaround times for memoranda and faster processing of results at the University of Lagos, and Ikuenomore (2025), who found a positive and significant effect of electronic records management on office managers' effectiveness. The strength of the present result may reflect the fact that records work is repetitive and document-heavy, so digitisation removes a great deal of friction. In DEG terms, records that sit in one accessible system replace the scattered files that force staff to walk between offices.

The picture here is more mixed, and this is where the study is most useful to management. Respondents doubted the adequacy of devices, connectivity and power, yet agreed that working infrastructure raises speed and productivity. That combination matches Udegbonam et al. (2024), who identify infrastructure deficits and power outages as the main brakes on digital transformation, and Onuorah and Ifegwu (2026), who point to inadequate ICT infrastructure. It also supports the reading of Afieroho et al. (2023) that facilitating conditions shape whether e-government tools are adopted. The hypothesis was rejected, so infrastructure matters. But the low ratings mean that the potential efficiency dividend is not yet being fully collected.

Respondents agreed that skilled and trained staff work faster and make fewer errors, but they were guarded about current skill levels and reported too little regular training. This agrees with Onwukwe et al. (2026), who cite limited digital competence as a constraint, and with the emphasis on employee digital competencies in the maturity model used by Wodecka-Hyjek et al. (2024). TAM helps to explain the pattern: when staff do not find a system easy to use, they use it less, and training is one of the few levers management controls directly.

In all, the results suggest that the polytechnic has already captured some of the benefits of digitalisation, particularly in records and routine communication, but that reliable infrastructure and staff training are the weak links. This supports the view taken in the theoretical framework that DEG-style organisational change and TAM-style individual adoption need to move together.

5.1 Conclusion

Digitalisation of public services is positively and significantly related to administrative efficiency in Federal Polytechnic Ukana. Digital platforms and digital records management deliver clear gains in speed, coordination, cost and accountability, and staff ICT competence raises productivity and reduces errors. Infrastructure influences efficiency as well, but shortcomings in devices, connectivity and power supply, and in the frequency of training keep the institution from getting the full benefit of its digital investment.

5.2 Recommendations

- i. Management should extend digital records management to all units, beginning with personnel, payroll and committee records, and should fix clear procedures for retention, backup and access control.
- ii. The institution should keep expanding electronic workflows and memos and should build simple checks into them so that gains in speed are matched by gains in accuracy.
- iii. Investment should be prioritised on reliable power (for example, solar with battery backup for administrative buildings), stable internet connectivity and enough working devices for staff who handle records and correspondence.
- iv. ICT training should be regular, practical and role-specific, delivered in short sessions and refreshed as systems change, with a designated ICT support officer in each major unit. Management should adopt basic data protection and cybersecurity procedures, since digital records raise new risks of data loss and unauthorised access, as Ishola et al. (2021) cautioned.
- v. The polytechnic should phase its digital rollout, running paper and digital processes in parallel briefly, and collect staff feedback so that resistance to change is dealt with early.

5.3 Limitations and suggestions for further research

The study covered one institution and relied on self-reported perceptions, so the results may not extend to other polytechnics, and perceptions may differ from measured performance. The chi-square approach shows whether the distribution of opinion departs from an even split, but it does not estimate the size of the effect of each dimension. Future research could

combine survey data with administrative records such as turnaround times, use regression or structural equation modelling to estimate effect sizes, compare several federal polytechnics, and include students as users of the institution's digital services.

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