Received: 25.06.2026| Accepted: 29.09.2026 |Published: OCT.2026
Citation: Ebinum, O. V., & Isichei, M. (2026). **Adoption of digital transformation and administrative effectiveness in Delta State universities. GAIJASS, 3(1), 1-15. https://globreshub.org/index.php/gaijass/art**
DOI: https://doi.org/10.5281/zenodo.24011937

ADOPTION OF DIGITAL TRANSFORMATION AND ADMINISTRATIVE EFFECTIVENESS IN DELTA STATE UNIVERSITIES

Oghenevese Vivian Ebinum[1] Isichei Mmakwe[2]
Department of Educational Administration, DELSU Business School, Asaba
Delta State University, Abraka, Nigeria
mrsvivianebi@gmail.com

ABSTRACT

Digital transformation has become a fundamental shift in higher education institutions, characterized by the use or adoption of advanced technologies in administrative, academic, and operational processes. This article examines staff perceptions of organisational culture, collaboration and communication in four universities in Delta State, Nigeria. A descriptive survey involved 228 selected academic and non-academic staff, with 57 respondents reported for each university and a reported questionnaire return rate of 100%. Data were collected using the Digital Transformation and Administrative Effectiveness Questionnaire, validated by three experts; a reliability coefficient of 0.75 was reported for the full instrument. The article analyses ten items using the reported frequencies and recalculated percentages, means and item-level standard deviations. Agreement with the organisational-culture statements ranged from 92.1% to 96.5%, with an overall item mean of 3.51. Agreement with the collaboration and communication statements ranged from 92.1% to 96.5%, with an overall item mean of 3.49. Respondents endorsed unified spaces for interaction and data sharing, cloud-based record management, modernisation of university operations and improved computer proficiency. These findings describe favourable perceptions rather than demonstrated improvements in administrative performance. The article concludes that digital transformation should be approached as an organisational process connecting technology, information sharing and institutional practices. It recommends integrated communication and records systems, staff development and evaluation of service outcomes. Recruitment ambiguities, broad questionnaire wording and the absence of respondent-level data limit inference.

Keywords: digital transformation; organisational culture; collaboration; communication; university administration; Delta State

1 Introduction

Digital transformation has become a fundamental shift in higher education institutions (HEIs), characterized by the use or adoption of advanced technologies in administrative, academic, and operational processes. This transformation involves the adoption of digital administrative systems that aim to enhance efficiency, transparency, and communication within educational institutions. The adoption of digital systems often includes the use of online platforms, data management systems, and communication tools that redefine the way educational institutions manage information and interact with their stakeholders. The implementation of digital administrative systems plays a crucial role in modernizing institutional operations (Castro Benavides et al., 2020; Alenezi, 2023).

Digital transformation has become an important concept in contemporary organizations because of the increasing use of digital technologies in organizational operations, communication, service delivery, decision-making, and administration. In higher education, digital transformation refers to the process through which universities integrate digital technologies into their academic and administrative activities with the objective of improving institutional processes, creating new ways of working, and enhancing the experiences of staff and students. It is therefore broader than simply acquiring computers, installing software, or converting paper documents into electronic formats. Digital transformation involves a fundamental change in how an institution operates and creates value through the strategic application of technology.

Digital transformation also changes the nature of communication within universities. Traditional communication often relies on circulars, memoranda, physical meetings, notice boards, and face-to-face interaction. Digital transformation introduces electronic mail, institutional portals, instant messaging, video conferencing, social media, mobile applications, and electronic notification systems. These platforms can improve the speed and reach of institutional communication. An administrative announcement, for example, can be distributed to hundreds or thousands of staff and students almost immediately.

The increased speed of communication can improve administrative responsiveness. Staff members can receive information without having to visit administrative offices physically. Students can submit applications and enquiries electronically, while administrators can respond through digital platforms. This can reduce delays and improve service delivery. However, rapid communication also requires appropriate information-management practices because inaccurate or poorly verified information can spread quickly through digital platforms.

Digital transformation also facilitates collaboration across university departments. In a traditional system, departments may operate independently and maintain separate records. Digital platforms can facilitate information sharing across units. For example, information from the admissions department can be connected with registration, finance, academic affairs, and examination systems. Such integration can reduce duplication and improve coordination.

Cloud computing has further expanded the possibilities of digital transformation. Cloud-based systems allow authorized users to access information and applications through Internet-connected devices. This can facilitate remote working and collaboration. University employees can work on shared documents, access institutional resources, and participate in virtual meetings without necessarily being physically present on campus.

The integration of digital educational administrative systems in higher institutions of learning has the potential to revolutionize institutional practices and culture. In an ideal situation, higher institutions of learning would successfully align these digital systems with their existing organizational cultures, creating an environment where faculty and staff embrace technological advancements. This alignment would foster enhanced collaboration, transparency, and accountability, allowing digital systems to serve as both tools for efficiency and catalysts for cultural transformation.

However, the reality often diverges significantly from this ideal. Many higher institutions of learning face substantial challenges in integrating digital educational administrative systems with their established organizational cultures. Existing organizational cultures may lack the openness and adaptability required to cultivate the collaborative and transparent environments that digital systems aim to promote, resulting in conflicts and misalignment between technology and cultural norms (Rodríguez-Abitia & Bribiesca-Correa, 2021).

Within this context, the article asks two questions: How do surveyed staff perceive digital transformation in relation to organisational culture? What mechanisms do they endorse for enhancing collaboration and communication? It focuses on perceptions in the four participating universities rather than estimating the causal effect of technology adoption. Administrative effectiveness provides the practical context, but the questionnaire does not separately measure objective service performance.

2 Conceptual and theoretical background

2.1 Digital transformation and administrative processes

The concept of digital transformation should therefore be distinguished from simple digitization and digitalization. Digitization generally refers to converting analogue information into digital form, such as scanning paper documents into electronic files. Digitalization involves using digital technologies to improve existing processes, such as using an electronic student registration system instead of a manual registration process. Digital transformation goes further by fundamentally changing organizational processes, structures, cultures, services, and value creation through digital technologies.

This distinction is important for the present study because the introduction of computers into university offices does not necessarily mean that the university has achieved digital transformation. A university may possess computers but continue to rely heavily on manual processes. Similarly, an institution may have an online portal but maintain disconnected systems that require employees to duplicate information

manually. Genuine digital transformation requires integration and organizational change. This distinction is consistent with Verhoef et al. (2021).

In higher education institutions, business process digital transformation involves the application of digital technologies to academic and administrative processes such as admission, registration, fee payment, student records management, course allocation, examination administration, staff management, procurement, financial management, communication, document processing, and reporting. According to Castro Benavides et al. (2020), digital transformation in higher education encompasses changes in institutional processes and practices through the adoption and integration of digital technologies.

Business process digital transformation can also improve process integration. University activities are interconnected, and information generated in one department may be required by another. For example, information from the admission process may be required for student registration, financial management, academic records, and examination administration. When these activities are supported by integrated digital systems, information can flow between relevant units more efficiently.

System integration can reduce duplication and improve data consistency. When departments operate independent manual systems, the same information may be recorded repeatedly, increasing the possibility of discrepancies. An integrated digital environment allows information to be captured once and used by authorized units for legitimate institutional purposes.

Another important aspect is electronic workflow management. A workflow represents the sequence of activities through which a task or document passes before completion. Digital workflow systems can assign responsibilities, monitor progress, record approvals, and provide notifications. This can make administrative processes more transparent and easier to monitor.

Process visibility is particularly relevant to administrative effectiveness. When managers can identify where delays occur, they can take corrective measures. For example, if electronic records show that applications are consistently delayed at a particular approval stage, management can investigate the reason and redesign the process.

2.2 Organisational culture and institutional coordination

Cultural/organizational digital transformation refers to the changes that occur in an organization's culture, structures, values, leadership practices, employee behaviours, skills, and ways of working as a result of the adoption and integration of digital technologies. It recognizes that digital transformation is not only a technological process but also an organizational and human process. The successful implementation of digital technologies requires changes in the way employees think, collaborate, communicate, make decisions, and perform their responsibilities. Vial (2019) explains that digital transformation involves organizational changes resulting from the use of digital technologies, while Verhoef et al. (2021) emphasize that transformation affects organizational structures, capabilities, processes, and strategies.

Organizational culture refers to the

shared values, beliefs, assumptions, norms, attitudes, and practices that influence how members of an organization behave. In a university, organizational culture can influence how employees respond to technological innovation. An institution whose culture encourages innovation and experimentation may be more receptive to digital transformation than one where employees strongly prefer established procedures.

In Delta State Universities, the introduction of electronic administrative systems may require employees who have traditionally relied on paper-based procedures to adopt digital platforms. This may involve changes in how records are maintained, how documents are approved, how information is communicated, and how services are delivered. Employees need to understand not only how to operate the technology but also why the new approach is necessary.

Cultural transformation also involves innovation. Digital technologies create opportunities for employees to experiment with new methods of performing their responsibilities. Universities can encourage innovation by providing employees with opportunities to propose, test, and evaluate new digital approaches.

An innovative culture does not mean that every technological idea should automatically be implemented. Rather, it involves creating an environment where employees can identify problems, propose solutions, and learn from successful and unsuccessful experiments.

Organizational culture refers to the values, beliefs, norms, assumptions, and practices shared by members of an institution. A culture that values innovation, learning, collaboration, accountability, and adaptability can facilitate effective administration. Cameron and Quinn (2011) provide a framework for diagnosing and changing organisational culture; the present survey does not administer their diagnostic instrument or classify the universities into culture types.

Another important factor is institutional vision and strategy. Digital transformation should be linked to the overall mission and strategic objectives of the university. Without a clear strategic direction, different departments may adopt technologies independently, leading to duplication, incompatibility, and inefficient use of resources.

Kane et al. (2015) argue that successful digital transformation is fundamentally driven by organizational strategy rather than technology alone. University leaders therefore need to develop coherent digital strategies that guide technological investment and organizational change.

Rodríguez-Abitia and Bribiesca-Correa (2021) assess university digital transformation through an integrated maturity model and highlight leadership, culture, innovation and financial support. Their approach distinguishes institutional capability from the availability of digital tools. Castro Benavides et al. (2020) likewise review digital transformation as an emerging, multidimensional field in higher education. These studies provide context for examining staff perceptions, although they do not establish the conditions in the participating Delta State universities.

2.3 Connectivism and the study contribution

The present study is informed by

connectivism theory because the theory provides a useful perspective for understanding how digital technologies influence educational institutions. Connectivism emphasizes networks, connections, information sources, and the ability of individuals to navigate changing knowledge environments (Siemens, 2005).

From the perspective of digital transformation in higher education, universities can be understood as interconnected networks. Administrators, lecturers, students, departments, digital systems, government agencies, professional bodies, and external stakeholders form networks through which information flows.

Digital transformation can strengthen these connections by providing systems that enable information to move more quickly and efficiently across institutional boundaries.

Connectivism is therefore useful in explaining why digital competence and networking are important in contemporary higher education. Employees must be able to identify relevant information, connect with appropriate sources, use digital systems, and adapt to changes in technology.

The theory also recognizes that knowledge is not necessarily located in one individual. Rather, knowledge can be distributed across networks. This is particularly relevant to universities where administrative information may be distributed among different departments and digital systems.

Digital administrative systems can bring these sources of information together and facilitate more effective decision-making.

The theory is also relevant to collaboration practice. Digital platforms allow employees and students to create and maintain connections with others. These connections can facilitate knowledge sharing, teamwork, professional development, and innovation.

Connectivism is used as an interpretive lens for information sharing and learning across institutional networks. The survey is not a formal test of the theory, and endorsement of digital platforms does not demonstrate that better network connections or administrative outcomes have occurred. The contribution is a contextual description of the cultural and collaborative possibilities that surveyed staff associate with digital transformation.

3 Methods

3.1 Design setting and participants

The study adopted a descriptive survey research design, utilizing a census enumeration approach involving academic and non-academic staff members of the selected Delta State Universities. The design was considered appropriate because it enabled the researcher to obtain information directly from the respondents concerning digital transformation and administrative effectiveness in the institutions under study.

The study involved 228 selected academic and non-academic staff members drawn from four universities in Delta State, Nigeria: Delta State University, Abraka; University of Delta, Agbor; Dennis Osadebay University, Asaba; and Southern Delta University, Ozoro. The study reports 57 respondents from each institution and 228 completed questionnaires from 228

administered, representing a reported response rate of 100%.

The recruitment account describes both census enumeration of an identified group and stratification into academic and non-academic staff. These descriptions do not establish a census of the total staff populations of the universities, and the numbers recruited within each staff category are not specified. The findings are therefore interpreted as the perceptions of the 228 surveyed staff, without a claim of probability-based representativeness for all university employees. No institution-specific comparisons are undertaken.

3.2 Instrument and measurement

The instrument used for data collection was a structured questionnaire titled Digital Transformation and Administrative Effectiveness Questionnaire (DTAEQ). The questionnaire was developed by the researcher based on the objectives, research questions, hypotheses, and variables of the study.

The instrument adopted a four-point Likert-type response scale consisting of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The corresponding numerical values were 4, 3, 2, and 1, respectively.

The present article reports items 1–5 on organisational culture and items 6–10 on collaboration, communication and administrative operations. The wording of the corresponding results-table items is retained. Some statements combine digital transformation with administrative effectiveness or combine several organisational outcomes; responses are consequently interpreted as agreement with those statements rather than as validated measures of separate causal constructs.

The instrument was subjected to face and content validation by three experts. One expert was from the Educational Administration and Planning Unit, Delta State University, Abraka; one was from the Department of Sociology of Education, Department of Educational Foundations, University of Delta, Agbor; and one was from the Department of Research, Measurement and Evaluation, Faculty of Education, Delta State University, Abraka.

The experts examined the questionnaire items in terms of their clarity, relevance, adequacy, appropriateness, and coverage of the variables under investigation. Their observations and corrections were incorporated into the final version of the instrument before it was administered to the respondents. This process helped to enhance the credibility and validity of the research instrument.

A reliability coefficient of 0.75 was reported for the full questionnaire. The methodological account refers to both test–retest and Cronbach's alpha, while the summary identifies the coefficient as test–retest reliability. Its precise basis, pilot sample size, retest interval and subscale coefficients are not established. The coefficient is retained as reported and is not presented as proof that the thematic item sets are independently reliable scales.

3.3 Administration and ethical considerations

Data were collected using the structured questionnaire titled Digital Transformation and Administrative Effectiveness Questionnaire (DTAEQ). The questionnaire was developed by the researcher and administered to the selected academic and non-academic staff of the four universities.

The researcher was assisted by trained research assistants during the distribution and retrieval of the questionnaires. The research assistants were properly briefed on the purpose of the study, the procedure for administering the instrument, and the importance of ensuring that respondents completed the questionnaire independently.

The respondents were given adequate time to complete the questionnaire, after which the completed copies were retrieved for coding and analysis. The researcher ensured that the information obtained from the respondents was treated confidentially and used strictly for academic purposes.

The accompanying participant letter states that respondents were not required to write their names and that responses would be used for academic purposes. The letter is dated 19 June 2026; it does not establish the complete fieldwork period. Formal ethics approval or exemption and the procedure used to record consent are not documented in the study account and require confirmation before journal submission.

3.4 Descriptive analysis

Frequency counts and percentages were used to summarise responses. The descriptive analysis presented here retains the item frequencies and recalculates percentages, weighted means and item-level sample standard deviations using the four-point response codes. For each item, the mean is the sum of frequency multiplied by response score, divided by 228. The standard deviation uses the sum of frequency multiplied by the squared deviation from the item mean, divided by 227, followed by the square root. Agreement is the combined proportion selecting strongly agree or agree.

A mean of 2.50 is retained as the original descriptive agreement benchmark. Where a five-item domain is summarised, the overall mean is the arithmetic average of its item means. Pooled agreement uses 1,140 item responses, representing five answers from each of 228 respondents; it is not a count of independent participants. Respondent-level composite standard deviations, associations and between-university differences cannot be recovered from marginal frequency tables.

The original one-sample t-test summaries are not used to support inference. They report a mean of 3.81 with a negative t statistic against a test value of 2.50, which is inconsistent with the direction of a one-sample test; their reported p values also require checking. Moreover, a one-sample mean test cannot establish a relationship between digital transformation and administrative effectiveness. The present analysis therefore answers descriptive research questions and does not report significance decisions or causal effects.

4 Results

4.1 Respondent profile

All 228 questionnaires were reported as completed and returned. Both male and female respondents were represented, although male respondents constituted the larger proportion. Respondents aged 41 years and above formed the largest recorded age group, and HND/B.Sc. qualifications constituted the largest qualification group. These characteristics describe the responding group and do not establish its representativeness.

Table 1 Demographic characteristics of respondents

Characteristic	Category	Frequency	Percent
Sex	Male	128	56.1
Sex	Female	100	43.9
Age	Below 30 years	38	16.7
Age	31–40 years	50	21.9
Age	41 years and above	140	61.4
Marital status	Single	78	34.2
Marital status	Married	150	65.8
Qualification	OND/NCE	48	21.1
Qualification	HND/B.Sc.	120	52.6
Qualification	Postgraduate degree	60	26.3

Note. n = 228. Age categories are retained as recorded; the questionnaire does not explicitly allocate respondents aged exactly 30 years. OND = Ordinary National Diploma; NCE = Nigeria Certificate in Education; HND = Higher National Diploma; B.Sc. = Bachelor of Science.

4.2 Perceptions of organisational culture

Table 2 Staff perceptions of digital transformation and organisational culture

Item	Statement	SA	A	D	SD
1	Digital transformation and administrative effectiveness are innovative systems in Delta State Universities.	120 (52.6)	100 (43.9)	6 (2.6)	2 (0.9)
2	Digital transformation and administrative effectiveness have influenced the organizational culture of the four universities in the State.	130 (57.0)	90 (39.5)	6 (2.6)	2 (0.9)
3	Digital transformation and administrative effectiveness involve the adoption of advanced technologies.	140 (61.4)	80 (35.1)	6 (2.6)	2 (0.9)
4	Digital transformation and administrative effectiveness enhance transparency and efficiency within Delta State Universities.	140 (61.4)	70 (30.7)	10 (4.4)	8 (3.5)
5	Adoption of digital transformation leads to significant changes in organizational culture in Delta State Universities.	130 (57.0)	80 (35.1)	8 (3.5)	10 (4.4)

Note. Values are frequency (percentage); n = 228 for each item. SA = strongly agree; A = agree; D = disagree; SD = strongly disagree. Percentages are recalculated from the reported frequencies and may not sum to 100 because of rounding.

Table 2 shows that a grand total of 660 item responses (57.9%) were recorded as strongly agree, while 420 item responses (36.8%) were recorded as agree. On the other hand, 36 item responses (3.2%) were disagree and 24 (2.1%) were strongly disagree. The denominator is 1,140 item responses, not 1,140 individual respondents. Pooled agreement was 94.7%, and the overall item mean was 3.51.

The result indicates that the majority of the respondents agreed that digital transformation and administrative effectiveness constitute innovative systems, influence organizational culture, involve the adoption of advanced technologies, enhance transparency and efficiency, and lead to changes in organizational culture. These responses express staff views about the statements; they do not document measured cultural change over time.

4.3 Collaboration communication and administrative operations

Table 3 Endorsed mechanisms for collaboration and communication

Item	Statement	SA	A	D	SD
6	Unified spaces for interaction and data sharing enhance collaboration and communication through digital transformation and administrative effectiveness in Delta State Universities.	110 (48.2)	100 (43.9)	10 (4.4)	8 (3.5)
7	Integration of cloud-based systems has allowed universities to manage students' records effectively.	120 (52.6)	90 (39.5)	8 (3.5)	10 (4.4)
8	The implementation of digital transformation and administrative effectiveness plays a crucial role in modernizing university operations.	130 (57.0)	80 (35.1)	9 (3.9)	9 (3.9)
9	Digital transformation and administrative effectiveness are instruments that shape organizational ethos in universities.	150 (65.8)	70 (30.7)	4 (1.8)	4 (1.8)
10	Digital transformation and administrative effectiveness boost employees' computer proficiency in universities.	160 (70.2)	50 (21.9)	12 (5.3)	6 (2.6)

Note. Values are frequency (percentage); n = 228 for each item. SA = strongly agree; A = agree; D = disagree; SD = strongly disagree. Percentages are recalculated from the reported frequencies and may not sum to 100 because of rounding.

Table 3 shows that 670 item responses (58.8%) strongly agreed and 390 (34.2%) agreed with the statements relating to mechanisms for enhancing collaboration and communication. Conversely, 43 (3.8%) disagreed, while 37 (3.2%) strongly disagreed. Pooled agreement was 93.0%, and the overall item mean was 3.49. The statement about organisational ethos had the highest mean in this set (3.61), followed by computer proficiency (3.60).

Unified spaces for interaction and data sharing and cloud-based management of students' records each attracted 92.1% agreement. Their means were 3.37 and 3.40, respectively. The result indicates that respondents regarded these mechanisms as relevant to collaboration and administration. Since several items address modernisation or ethos rather than communication directly, the set is not treated as a validated collaboration scale.

Table 4 Item level descriptive statistics

Item	Mean	Standard deviation	Agreement percent
1	3.48	0.60	96.5
2	3.53	0.60	96.5
3	3.57	0.59	96.5
4	3.50	0.74	92.1
5	3.45	0.76	92.1
6	3.37	0.73	92.1
7	3.40	0.76	92.1
8	3.45	0.75	92.1
9	3.61	0.62	96.5
10	3.60	0.71	92.1

Note. Means use SA = 4, A = 3, D = 2 and SD = 1. Standard deviations are sample standard deviations reconstructed from each item's response frequencies. Agreement combines SA and A. These are item statistics, not standard deviations of respondent-level composite scores.

5 Discussion

5.1 Cultural endorsement and institutional practice

The respondents generally agreed that digital transformation constitutes an innovative system that encourages the adoption of advanced technologies and promotes transparency and administrative efficiency. The findings indicate favourable perceptions of changes in traditional administrative procedures and new ways of working. The high agreement across items is consistent with the organisational breadth discussed by Castro Benavides et al. (2020), but endorsement alone does not establish the degree of institutional transformation.

Digital transformation can therefore require a shift from a traditional organizational culture to a more digitally oriented culture. A digitally oriented culture encourages employees to use technology, learn continuously, share information, collaborate across departments, and adapt to changing circumstances. Kane et al. (2015) argue that organizational culture and leadership are important determinants of successful digital transformation and that technology alone does not guarantee transformation. The present

findings make this distinction practically relevant: support for digital systems should be followed by an assessment of how people actually work with them.

The transparency and efficiency item received 92.1% agreement, while its standard deviation was 0.74. This variation indicates that favourable views were not unanimous. It should not be assumed that a shared endorsement means that departments experience the same access, workflow or service quality. A culture-oriented implementation plan therefore requires consultation across administrative units as well as investment in software.

5.2 Shared information and collaboration

The respondents identified unified spaces for interaction and data sharing, cloud-based systems, digital communication platforms, and improved computer proficiency as important mechanisms for strengthening collaboration. These mechanisms can facilitate faster information exchange and enable academic and non-academic staff to work together more effectively. Connectivism draws attention to the connections through which knowledge and information become available; here, it offers a way to interpret why staff value shared platforms (Siemens, 2005).

Digital transformation also involves the integration of data into administrative decision-making. In traditional administrative systems, information may be stored in separate files and departments, making it difficult to obtain a comprehensive picture of institutional activities. Digital transformation can facilitate the integration of information from different organizational units. For example, student information, academic records, financial information, attendance data, and examination results can be connected through appropriate information systems. Such integration can provide administrators with timely information for planning and decision-making.

Digital transformation also has implications for administrative accountability. When processes are automated and digitally recorded, managers can monitor activities and identify delays or irregularities. Digital dashboards may provide information about student registration, financial transactions, academic activities, or administrative workloads. This can help administrators identify areas requiring intervention.

Nevertheless, the survey did not measure network quality, actual platform use, response times, record accuracy or student satisfaction. The findings justify prioritising these issues for institutional assessment rather than claiming an improvement in all of them. An integrated information environment should also retain clear access rights and responsibility for the accuracy of records. Collaboration depends on trustworthy information and usable procedures, not on communication speed alone.

5.3 Implications for university administration

Digital transformation may also influence administrative effectiveness through several mechanisms. First, it can improve efficiency by reducing the time required to complete administrative tasks. Second, it can improve accuracy through automated calculations and standardized processes. Third, it can improve communication through electronic platforms. Fourth, it can

improve access to information by allowing authorized users to retrieve records quickly. Fifth, it can improve coordination by connecting different departments and units. Finally, it can improve decision-making by providing administrators with timely and relevant information.

To evaluate those possibilities, university managers could monitor the time required to complete selected administrative requests, the frequency of duplicate entry, the accuracy of record retrieval and the experience of staff and students. These are proposed evaluation measures, not outcomes observed in this survey. They would help establish whether favourable perceptions correspond to changes in administrative effectiveness.

Unified spaces for interaction and data sharing should be enhanced in Delta State Universities to promote collaboration and effective communication among academic and non-academic staff.

Cloud-based systems should be adopted by the universities to improve the management of students' records and other administrative operations.

Universities should organize regular digital skills and computer proficiency training programmes for employees to improve their ability to use modern digital technologies effectively.

Implementation should connect these priorities with a coherent institutional strategy. Shared platforms should be selected around actual information flows, while training should address the records, permissions and communication tasks performed by each staff group. This approach preserves the study's emphasis on collaboration while avoiding the assumption that a single technology will meet every administrative need.

6 Limitations and directions for further research

The study is cross-sectional and relies on self-reported agreement. Its recruitment descriptions do not establish the sampling frame, the selection of staff within universities or the academic/non-academic allocation. The institution-allocation table also repeats an institution although the narrative names four; verified institution-level counts are therefore needed before comparative analysis. The recorded age categories omit age 30, and the full-instrument reliability coefficient cannot establish reliability for the article's two thematic sets.

The original instrument and results tables contain some differences in wording, including whether digital transformation has become part of culture or has influenced it. The article retains the results-table wording, but the version actually administered should be checked. Several statements combine technology and administrative effectiveness, and no independent performance measure is available. Marginal frequencies permit descriptive reconstruction but not analysis of individual-level relationships. The reported 100% return rate and the repeated response patterns should be checked against the original questionnaire records.

Future research could employ a verified sampling frame, assess digital maturity using an appropriate instrument and combine staff surveys with interviews, service records or observation. Longitudinal research could examine whether improvements in shared information systems precede changes in processing time and service quality.

Such designs would offer a stronger basis for assessing the administrative consequences of transformation.

7 Conclusion

Surveyed staff expressed favourable perceptions of digital transformation in relation to organisational culture, collaboration and communication. The findings support attention to shared information spaces, cloud-based record management and staff computer proficiency. They describe endorsement of these possibilities rather than a demonstrated causal relationship between digital transformation and administrative effectiveness. Universities should connect technological investment with institutional coordination, staff development and evaluation of service outcomes.

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