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ASSESSING THE PERCEPTION OF EDUCATORS ON DIGITAL TRANSFORMATION IN NIGERIAN HIGHER EDUCATION

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ABSTRACT

Digital technology in the modern education system has expanded resources, eliminated barriers, improved the pedagogical context, and equipped students with 21st-century digital abilities during the learning process. Numerous studies examined how teachers perceived utilizing digital tools and the benefits and challenges of incorporating them into teaching. However, there is still no in-depth investigation of how educators view HEIs' digital transition. This study empirically examines educators' perceptions of the use of digital technology in teaching and learning activities via a quantitative research approach. The study collected data from educators at Nigerian HEIs using a survey questionnaire. The data was analyzed using descriptive and multivariate analyses. The results of the demographic analysis show that there are more male teachers (67%) than female teachers (33%), and 85% of them are between the ages of 18 and 50. Additionally, 44% of the teachers have been in the teaching profession for more than ten years. The results of descriptive analysis show that educators in HEIs support the use of digital technology in research, teaching, and learning. The results of regression analysis show that the main determinants of educators' support for the digital transformation of Nigerian HEIs are educational value, institutional culture, and ease of use. The three factors are statistically significant and explain 45% of the variance.

Keywords: Educational Technology, Digital Transformation, Technology Integration

INTRODUCTION

Digital transformation in higher education institutions (HEIs) has promoted teaching, learning, research, and decision-making activities (Hwang, 2020). This transformation has changed the paradigm of learning from educator-centered to student-centered learning (Kumbo et al., 2023), enhanced the quality of education and academic administration, and improved stakeholders' experiences. Seres et al. (2018) noted that one of the goals of digital transformation of HEIs is the change in delivery of service to a robust, flexible, and quality method that is focused on its intended users (students).

Existing studies have shown the presence of support by educators on the use of digital technology in pedagogy, especially at basic and secondary levels (Karkouti, 2023; Belinda et al., 2023; Akram et al., 2022; Chiu, 2022; Mbodila, 2022; Akram, 2021, Hartman et al., 2019; Mahdum et al., 2019). Nonetheless, Feng et al. (2025) has reported that several developing countries are faced with challenges that hinder digital transformation of HEIs (Feng et al. 2025). The challenges were categorized into first-order and second-order barriers (Ertmer, 1999). The first-order barriers are impediments that are not within the control of educators such as lack of infrastructure, training, technical support, funding, etc. The second order barriers are rooted within teacher's attitudes such as anxiety, compatibility, prior experience and cultural norms. Additionally, Tsai & Chai (2012) considered design thinking, which is the ability of an educator to plan how technology will be used in pedagogy, as a third-order barrier. Whereas Gkrimpizi et al. (2023) classified the challenges into seven, namely, environmental, strategic, organizational, technological, people-related, and cultural.

Thus, the perceptions of educators in HEIs need to be assessed, being the key stakeholders for the success of digital transformation of HEIs, which is the aim of this study. This will lead to the provision of appropriate supports, policies, and recommendations for an effective digital transformation process.

The remainder of this paper is organized as follows. Section 2 explores relevant literature on the benefit, challenges of digital technology integration in teaching and learning activities, and factors that motives digital transformation in education sector. Section 3 explains the method use for data collection and analysis. Section 4 presents and discusses the results obtained. Section 5 concludes the paper and highlights directions for future work.

Literature Review

Numerous studies have revealed the benefits and challenges of integrating digital technology into teaching and learning activities, along with the factors that motivate educators to support digital transformation in HEIs. Among the benefits established by earlier research are providing educators a strong sense of value, boosting their motivation and digital skills (Akram et al., 2022), improving their creativity, pedagogical skills, and quality of education, and improving students' learning experiences (Su et al., 2025), especially when institutional support is offered (Panakaje et al., 2024).

Despite the benefits of digital transformation at HEIs, numerous challenges, including a lack of curriculum that supports the need for digital education and digital literacy and technological barriers, limit the extent to which educators are adopting this approach (Alenezi et al., 2023). According to Bell and Barr (2024), there are numerous obstacles to integrating technology into A-level history classes throughout Northern Ireland, including a lack of equipment, inadequate time, teachers' technological beliefs, students' attitudes and abilities, and limited access to computer suites. Other barriers to integrating digital technology include a lack of professional development, training, and subject understanding (Christina

and Georgiou, 2024), and a lack of institutional coherence, stakeholder involvement, and leadership (Singun, 2025).
Furthermore, the perceptions of educators towards digital transformation of HEIs are influenced by values, beliefs, social influence, ease of technology use (Sharma & Srivastava, 2020), technical support (Akram et al., 2022; Chiu, 2022), basic technological skills, digital content availability, career enhancement, and self-confidence (Deroncele-Acosta, Palacios-Núñez, & Toribio-López 2023; Belinda et al., 2023; Karkouti, 2023). Anat et al. (2022), Begoña et al. (2022), and Mather et al. (2022) show that students who are subjected to the use of digital technology in their learning have better performance compared to those without technology in their learning process.

Thus, the reviewed literature has shown the benefits, presence of barriers, and existence of positive perceptions towards digital technology integration among educators of HEIs in developing countries. However, there is no in-depth exploration of the factors that affect digital transformation in HEIs and the perception of educators towards the transformation.

MATERIALS AND METHODS

This section presents the method used in the study: the research tool and strategy, the sampling technique used, the analysis process, and the test of validity and reliability. Moreover, figure 1 presents the research procedure used for the research.

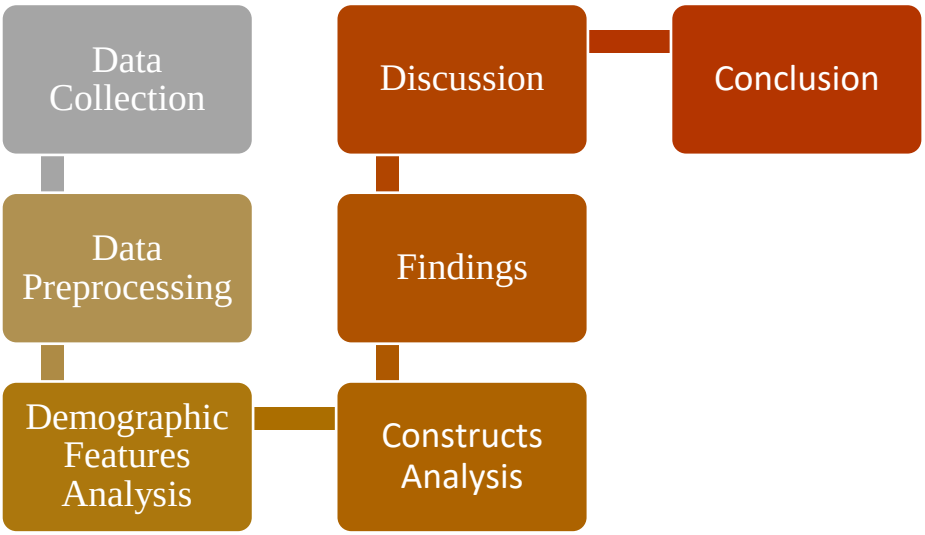

Figure 1: Research Procedure

Research Tool and Strategy

A questionnaire was developed to collect information that will assist in achieving the research objectives. The survey questions were adapted from the study of Mahdum et al. (2019). The questionnaire comprises 70 items organized in two sections. Section one comprises seven questions on demographic information of the respondents, such as age, gender, highest qualification, years of teaching, and college/faculty of the respondents. Section two comprises 60 close-ended questions, with a Likert scale of 5 (strongly agree, agree, neutral, disagree, and strongly disagree) to assess the perceptions of respondents on digital transformation in HEIs. The questions are divided into 10 categories: perceived usefulness, ease of use, self-efficacy, workload, institutional culture, educational value, teaching impact, learning environment, professional development, and technology integration.
The questionnaire was prepared in Google Forms and distributed electronically (by email and WhatsApp) to educators in Nigerian HEIs. A total of one thousand three hundred and thirty-three (1333) responses were recorded. The few missing values were filled with the most frequent values. Furthermore, responses were coded and aggregated for quantitative data. Outliers were detected visually using the box model and were replaced with the mean of the features. The qualitative data was subjected to descriptive and inferential analyses.

Sampling Technique and Population

A probability sampling technique, specifically random sampling, was used to choose the number of respondents for the study. The target population for the research are individuals residing in Nigeria, where the sample frame contained educators from Nigerian HEIs.

Validity and Reliability Test

As noted by Akeem (2015), a test of validity is the degree to which the test measures what is intended to be measured (constructs), while reliability refers to the degree of dependability and consistency of a research instrument. Convergent validity was used to assess the extent to which the questionnaire measures what is intended. Similarly, the Cronbach's alpha test was used to assess the reliability of the items. Each of the constructs was subjected to a test of validity and reliability to measure the accuracy and internal consistency of the constructs, followed by an overall test of validity and reliability.

Analysis

A descriptive analysis was conducted on the quantitative data to explore the distribution of demographic information and

the responses from the six constructs that describe the general perception of educators toward digital transformation in HEIs. The study analyzed and discussed the results from each component using the mean and standard deviation. The average, or mean (M), is calculated by dividing the total number of outcomes by the sum of all observed outcomes from each construct. The degree of variability or dispersion between the individual data values and the mean is measured by the standard deviation (S.D.).

The mean was derived using the five-point Likert scale. To find the minimum and maximum length of a 5-point Likert scale, a range was calculated by subtracting 1 from 5 (5-1=4) and dividing by 5 (4/5=0.8), which is the highest number on the scale. One represents the value on the scale; thus, it was included to designate the maximum of each item in the construct as follows:

i. From 1 to 1.80 is (strongly disagree)
ii. From 1.81 to 2.60 is (disagree)
iii. From 2.62 to 3.40 is (neutral)
iv. From 3.41 to 4.20 is (agree)
v. From 4.21 to 5.00 is (strongly agree)

For the standard deviation, SD >= 1 indicates a relatively high variation, while SD < 1 can be considered low.

The quantitative data were then tested for outlier detection, multivariate normality, multicollinearity, and homogeneity in preparation for regression analysis. Then multivariate regression analysis was conducted to determine factors that influence educators to support the digital transformation of Nigerian HEIs.

RESULTS AND DISCUSSION

This section presents the results of the descriptive analyses and regression analysis.

Demographic Analysis

This section presents the results of the demographic analysis of the respondents, such as their age, gender, qualifications, years of teaching, and institution type. Table 1 presents the demographic information of the respondents. The data show that 67% of the educators are males (894 respondents), whereas 33% are females (439 respondents). The age distribution indicates four categories: 5% were from the ages of 18 to 28 years, 50% were from the ages of 29 to 39 years, 29% were from the ages of 40 to 50 years, and 16% were 51 years of age or older. The distribution of educators by their highest qualification shows that 54% owned a master's degree as their highest qualification (717 respondents), whereas 32% owned a doctoral degree (422 respondents). The educators with a bachelor's degree as their highest qualification constitute 14% (194 respondents). As for the students, the data show that 62% are males (875 respondents), whereas 38% are female (537 respondents). Additionally, data shows that 28% of the sample population (355 respondents) had between 0 and 5 years of teaching experience, which is similar to those who had between 6 and 10 years of teaching experience. Additionally, the results show that 18% (240 respondents) of the studied population had taught for 16 years or more, whereas 26% (344 respondents) had 11 to 15 years of experience. The data suggest that as the number of years spent teaching increases, the population is declining, and at least 50% of the respondents have 0 to 10 years of teaching experience. The data show that 34% of the respondents are from the Faculty of Science, 18% are from Education, 14% are from Arts and Humanities, 12% are from Management Sciences, 9% are from Pharmaceutical Sciences, 5% are from Allied Health Sciences, 2% are from Engineering, and 6% are from other faculties/colleges. These respondents numbered 458, 244, 190, 153, 116, 64, 24, and 84, respectively.

Table 1: Educators Demographic Information

S/N	Item	Category	Distribution
1	Gender	Female	33%
		Male	67%
2	Age	18-28	5%
		29-39	50%
		40-50	29%
		51 and more	16%
3	Qualification	BSc	14%
		MSc	54%
		PhD	32%
4	Teaching Experience	0-5	28%
		6-10	28%
		11-15	26%
		16-Above	18%
5	Faculty Distribution	Science	34%
		Education	17%
		Arts & Hum.	14%
		Management	12%
		Pharmacy	9%
		Others	6%
		Allied Science	5%
		Engineering	2%

Analysis of Constructs

This section presents the results of descriptive analysis of the 60 items across six constructs, namely perceived usefulness, ease of use, self-efficacy, workload, institutional culture, educational value, teaching impact, learning environment, professional development, and technology integration. Table 2 displays the mean and standard deviation values of the 60 items. Additionally, Table 2 displays the results of convergent validity. Finally, Table 3 displays the results of the reliability test.

Table 2: Mean and Standard Deviation Scores of the Constructs

Construct	Mean	SD	Overall	Construct	Mean	SD	Overall
PU1	3.98	0.14	Mean = 3.98	EV1	3.98	0.14	Mean = 3.89
PU2	2.5	1.42	S.D. = 0.50	EV2	4	0.00	S.D. = 0.24
PU3	3.99	0.12		EV3	3.99	0.10	
PU4	3.52	0.50		EV4	3.92	0.31	
PU5	3.9	0.30		EV5	3.99	0.01	
PU6	3.75	0.46		EV6	3.37	0.81	
EU1	3.9	0.33	Mean = 3.88	TI1	3.82	0.50	Mean = 4.28
EU2	3.57	0.57	S.D. = 0.27	TI2	3.96	0.20	S.D. = 0.19
EU3	4	0.01		TI3	3.93	0.26	
EU4	3.99	0.10		TI4	5	0.00	
EU5	3.92	0.27		TI5	3.96	0.19	
EU6	3.91	0.35		TI6	5	0.00	
SE1	5	0.00	Mean = 3.72	LE1	3.98	0.14	Mean = 3.58
SE2	3.88	0.36	S.D. = 0.45	LE2	4	0.00	S.D. = 0.57
SE3	3.65	0.47		LE3	5	0.00	
SE4	3.93	0.25		LE4	2.58	1.37	
SE5	3.52	0.58		LE5	2.32	1.20	
SE6	2.36	1.05		LE6	3.58	0.62	
WL1	3.98	0.14	Mean = 3.74	PD1	4	0.00	Mean = 3.61
WL2	2.91	0.95	S.D. = 0.38	PD2	2.5	1.42	S.D. = 0.46
WL3	3.82	0.39		PD3	3.99	0.10	
WL4	3.99	0.13		PD4	3.52	0.50	
WL5	3.98	0.14		PD5	3.9	0.30	
WL6	3.98	0.14		PD6	3.75	0.46	
IC1	2.16	1.06	Mean = 3.54	TIN1	3.65	0.54	Mean = 3.93
IC2	3.44	0.49	S.D. = 0.50	TIN2	3.97	0.17	S.D. = 0.45
IC3	5	0.00		TIN3	3.99	0.10	
IC4	4	0.01		TIN4	3.62	0.92	
IC5	3.34	0.68		TIN5	3.95	0.21	
IC6	3.31	0.76		TIN6	4.41	0.73	

Table 3: Result of Validity Test

Constructs	Convergent Validity
PU	0.788
EU	0.729
SE	0.478
IC	0.806
EV	0.765
LE	0.694
TIN	0.774

Table 4: Result of Reliability Test for Retained Constructs

Constructs	Cronbach's Alpha
PU	0.822
EU	0.728
SE	0.713
IC	0.842
EV	0.839
LE	0.736
TIN	0.70

Perceive Usefulness

Perceived usefulness refers to individual believe or perception of how a technology can improve individual task in terms of efficiency and effectiveness (Boledeoku, et al., 2022). Table 5 displays the distribution of responses to the perceived usefulness items. The results indicate that the majority of respondents agreed that the use of digital technologies enhances learning effectiveness (98%), teaching performance (99%), student comprehension (90%), and concept explanation (76%). Additionally, 52% of respondents agreed that digital technologies help create various learning concepts, whereas 48% were undecided. Furthermore, 12% of respondents agreed, 16% were undecided, and 55% disagreed that digital technologies had no benefit when it comes to delivering instruction. The overall results indicate that educators agreed that digital technologies are beneficial in teaching and learning activities, as shown by the mean score of 3.61 (S.D. = 0.57) for the items under perceived usefulness.

Table 5: Responses to the Perceived Usefulness Items

ID	Items	Responses				
		SA	A	N	D	SD
PU1	The use of digital technologies makes learning process more effective	0	98	2	0	0
PU2	Digital technologies have no benefit in instructional delivery	12	16	17	20	35
PU3	Digital technologies can improve teaching performance	0	99	1	0	0
PU4	Digital technologies assist in the creation of various learning activities	0	52	48	0	0
PU5	Students comprehend better when digital technologies are used in teaching	0	90	10	0	0
PU6	Digital technologies facilitate the explanation of concepts	0	76	23	1	0

Ease of Use

Ease of use refers to individuals believe that using a particular technology will be free of challenges (Luo et. al., 2024). Table 6 displays the distribution of responses to the ease-of-use items. The results indicate that all the respondents agreed that digital technologies make assessment easier (100%), whereas the majority of respondents agreed that digital technologies make learning activities easier (91%), make it easier to monitor and control student activities (61%), meet the needs of learning resources (99%), and facilitate communication (93%). However, 92% of respondents said that using the technologies can present technical difficulties. The overall results indicate that respondents agreed that the ease of using digital technologies influences their integration into teaching and learning activities, as shown by the mean score of 3.88 (S.D. = 0.23) for the items under ease-of-use.

Table 6: Responses to the Ease-of-Use Items

ID	Items	Responses (%)				
		SA	A	N	D	SD
EU1	Digital technologies provide ease in learning activities	0	91	8	1	0
EU2	Digital technologies provide ease of controlling and monitoring student activities	0	61	35	4	0
EU3	Digital technologies make assessment easier	0	100	0	0	0
EU4	Digital technologies provide ease of meeting the needs of learning resources	0	99	1	0	0
EU5	Technical challenges often arise when using Digital technologies	0	92	8	0	0
EU6	Digital technologies enhance effective communication with students	0	93	5	2	0

Self-Efficacy

Self-efficacy refers to individuals believe and ability to use technology towards accomplishing a task (An et. al., 2022). Table 7 displays the distribution of responses to the self-efficacy items. The results indicate that all the respondents agreed that ability and knowledge of digital technologies influence their integration into teaching (100%). Majority of respondents agreed that educators' confidence determines the use of digital technologies (89%), their capacity to select the tools they desire (65%), and their ability to use the technology to address problems (93%). Furthermore, while 36% of respondents were undecided, the majority agreed that consistent usage of digital technologies demonstrates an educator's ability and skills to use the tools. The respondents' opinions vary on whether or not an educator's knowledge of digital technologies does not affect how they are used in the classroom; 58% disagreed (34% disagreed and 24% strongly disagreed), 26% were undecided, and 16% agreed (2% strongly agreed and 14% agreed). Finally, the results suggest that the majority of respondents agreed that knowledge of digital technologies influences its usage. The overall results indicate that respondents agreed that self-efficacies influence digital technology integration into teaching and learning activities, as shown by the mean score of 3.75 (S.D. = 0.45) for the items under self-efficacy.

Table 7: Responses to the Self-Efficacy Items

ID	Items	Reponses (%)				
		SA	A	N	D	SD
SE1	Ability and knowledge of digital technologies determine its integration into teaching and learning activities	100	0	0	0	0
SE2	Educators' confidence of digital technology use can lead to better learning	0	89	10	1	0
SE3	Ability to choose digital technology tools for teaching influence learning outcome	0	65	35	0	0
SE4	Ability to solve problems when using digital technologies influence its usage	0	93	7	0	0
SE5	Continuous usage of digital technologies in learning activities demonstrates educator's capacity and skills	0	59	36	4	0
SE6	An educator's knowledge of digital technologies does not influence its usage	2	14	26	34	24

Workload

Educators' workload refers to the teaching hours allotted, teaching preparation, students' supervision, and evaluation of their assessments (Ujir et al., 2020). Table 8 displays the distribution of responses to the workload items. The results indicate that the majority of respondents agreed that using digital technology simplifies teaching (98%) because it makes it easier for students to understand (82%). They also agreed that using digital technologies simplifies research/projects (99%), supervision (98%), and community services (79%). Regarding the notion that digital technologies work best in courses with a large number of students, respondents' opinions vary: 32% disagreed (23% disagreed and 9% strongly disagreed), 36% were undecided, and 32% agreed. The overall results indicate that the respondents agreed that digital technologies have a favorable impact on the workload of educators in HEIs, as shown by the mean score of 3.74 (S.D. = 0.38) for the items under workload.

Table 8: Responses to the Workload Items

ID	Items	Responses (%)				
		SA	A	N	D	SD
WL1	Using digital technologies simplify the whole teaching processes	0	98	2	0	0
WL2	The use of digital technologies is best suited for large size of class	0	32	36	23	9
WL3	Students comprehend quickly when digital technologies are used	0	82	18	0	0
WL4	It is simple to do research/project with the aid DT tools	0	99	1	0	0
WL5	I can supervise many students with the support of digital technologies	0	98	2	0	0
WL6	My services to community are mediated by the use of digital technologies	0	79	18	2	1

Institutional Culture

Institutional culture encompasses the rewards, teaching methodologies, policies, grading systems, research policies, and other guidelines that influence how an institution operates (Tierney & Michael, 2018). Table 9 displays the distribution of responses to the institutional culture items. The results indicate that all the respondents agreed that ongoing training on digital technology innovation is necessary (100%), and all respondents agreed that internet connectivity should be provided throughout the campus to facilitate learning and research (100%). However, 44% agreed that sending exam questions by email is safe, while 56% were undecided. Regarding the alignment of current digital technology tools with course contents, respondents' opinions vary; 46% agreed, 42% were undecided, and 12% disagreed. The respondents also have various perspectives on allowing educators to source digital technology resources for education; 47% agreed, 39% were undecided, and 12% disagreed. The overall results indicate that institutional culture has a positive impact on educators' motivations to integrate digital technologies in teaching and learning activities, as shown by a mean score of 3.54 (S.D. = 0.50) for the items under institutional culture.

Table 9: Responses to the Institutional Culture Items

ID	Items	Responses (%)				
		SA	A	N	D	SD
IC1	There should be penalty for not using digital technologies in teaching	0	15	20	31	34
IC2	Exam questions are safe to be shared via email	0	44	56	0	0
IC3	Trainings on new Digital technology innovation should always be organized	100	0	0	0	0
IC4	Internet connectivity across the campus eases learning and research.	0	100	0	0	0
IC5	The available digital technologies align with all the course content needs.	0	46	42	12	0
IC6	Educator is best suited for sourcing digital technologies for teaching	0	47	39	12	2

Educational Value

Educational value refers to perceived impact of digital technologies towards improving the quality education (Haleem, 2022). Table 10 displays the distribution of responses to the educational value items. The results indicate that all respondents agreed that using digital technology in teaching prepares students for their future careers (100%). The results also indicate that the majority of respondents agreed that integrating digital technologies into teaching and learning activities facilitates student-centered learning (98%), improves students' comprehension of educational activities (99%), improves educators' teaching quality (93%), and enables educators to stay current on its use in pedagogy (99%). Additionally, the majority (55%) agreed that students' performance is dependent on their ability to use digital technology effectively, while 30% were undecided and 15% disagreed. The overall results indicate that the respondents have agreed that the use of digital technology in teaching and learning activities has educational value, as shown by a mean score of 3.88 (S.D. = 0.24).

Table 10: Responses to the Educational Value Items

ID	Items	Responses (%)				
		SA	A	N	D	SD
EV1	The use of digital technologies in teaching can facilitate students centered learning	0	98	2	0	0
EV2	The use of digital technologies in teaching can prepare students for their career	0	100	0	0	0
EV3	Digital technologies improve student understanding of educational activities	0	99	1	0	0
EV4	The use of digital technologies improves my teaching quality	0	93	6	1	0
EV5	The use of digital technologies keeps me up to date on its application in teaching	0	99	1	0	0
EV6	Students' performance depends on effective use of digital technologies	0	55	30	12	3

Teaching Impact

Teaching impact refers to the role digital technologies play in simplifying the teaching process, enhancing the learning experience, and improving the quality of instructional delivery. Table 11 displays the distribution of responses to the teaching impact items. The results indicate that all the respondents agreed that using digital technologies enhances learning quality (100%) and makes preparation and delivery of instruction easier (100%). The majority agreed that using digital technologies increases student engagement (86%), boosts students' confidence and skills (96%), improves educators' pedagogical skills (96%), and makes learning more meaningful (93%). The overall results indicate that the respondents agreed that digital technologies have a positive impact on teaching and learning activities, as shown by a mean score of 4.28 (S.D. = 0.19).

Table 11: Responses to the Teaching Impact Items

ID	Items	Responses (%)				
		SA	A	N	D	SD
TI1	The use of digital technologies in teaching and learning makes students more active.	0	86	11	2	1
TI2	Digital technologies usage improves student confidence and skills	0	96	4	0	0
TI3	Learning is made more meaningful when digital technologies is incorporated	0	93	7	0	0
TI4	Digital technologies improve quality of learning	100	0	0	0	0
TI5	The use of Digital technologies has improved my pedagogical skills	0	96	4	0	0
TI6	Digital technologies simplify preparation and conduct of instructional delivery	100	0	0	0	0

Learning Environment

The learning environment refers to the place where teaching and learning are taking place. Table 12 displays the distribution of responses to the learning environment items. The results indicate that all respondents agreed the learning environment must comply with the digital technology requirements for a successful integration (100%). They also agreed that the nature of the environment dictates the level of integration (100%). The majority of respondents agreed that students should have constant access to labs, whether educators are present or not (65%), and that the availability of digital technological tools promotes their integration (98%). Regarding the separation of laboratories and classes, respondents' opinions vary; 43% agreed, 10% were undecided, and 47% disagreed. Additionally, majority (60%) disagreed that digital technology should only be available during class sessions, while 19% of respondents were undecided. The overall results indicate that the respondents agreed that the learning environment is crucial for the success of digital technology integration in teaching and learning activities, as shown by the mean score of 3.58 (S.D. = 0.56) for the items under learning environment.

Table 12: Responses to the Learning Environment Items

ID	Items	Responses (%)				
		SA	A	N	D	SD
LE1	Availability of digital technologies encourages technology integration	0	98	2	0	0
LE2	Learning environment must be compliant for digital technology for integration into teaching and learning to be successful.	0	100	0	0	0
LE3	The nature of learning environment determines the level of digital technology use for teaching and learning.	100	0	0	0	0
LE4	Laboratories should always be separated from classes	0	43	10	9	38
LE5	Technological tools should be made available during lecture period only	3	19	18	27	33
LE6	Students should always have access to laboratories with or without educators	0	65	28	7	0

Professional Development

Professional development encompasses formal training and learning opportunities aimed at improving the knowledge and skills of educators (Dysart & Weckerle, 2015). Table 13 displays the distribution of responses to the professional development items. The results show that all the respondents agreed that professional training in digital technologies has an impact on teaching and learning outcomes (100%). Additionally, majority agreed that educators should be responsible for their own self-development in digital technology skills (76%), and that continuous training is proportionate to integration (90%). While 52% of respondents felt that academic discipline-specific digital technology training enhances integration, 48% were undecided, and 90% of respondents agreed that pedagogical training on digital technologies has no effect on the integration process. Finally, 55% of respondents disagreed that the integration process is impacted by the training development that educators choose, with 35% strongly disagreeing and 25% disagreeing. The overall results indicate that respondents perceived professional development as a vital factor for digital technology integration, as shown by a mean score of 3.61 (S.D. = 0.46) for the items under professional development.

Table 13: Responses to the Profession Development Items

ID	Items	Responses (%)				
		SA	A	N	D	SD
PD1	Training on digital technologies impacts teaching and learning outcomes	0	100	0	0	0
PD2	Educator's choice of digital technology training impact its integration	12	16	17	20	35
PD3	Pedagogical training on digital technologies has no impact on integration process	0	99	1	0	0
PD4	Digital technologies trainings that are related to academic discipline improves integration process	0	52	48	0	0
PD5	Continuous training on digital technology use ensures its integration	0	90	10	0	0
PD6	Self-development of digital technology skills is educator's responsibility	0	76	23	1	0

Technology Integration

Technology integration refers to a well-coordinated use of digital tools such as computers, projectors, smart devices, PDAs, and other computing tools for problem solving, deeper understanding and learning (Christensen, 2019). Table 14 displays the distribution of responses to the technology integration items. The results indicate that the majority of respondents agreed that using digital technologies has improved student comprehension (68%), contributed to the development of educators' skills (97%), made teaching easier (99%), increased educators' willingness to use these tools going forward (72%), and facilitated communication with students (95%). Eighty-nine percent of respondents agreed that HEIs should digitally change their research, teaching, and learning activities (32 percent agreed, and 57 percent strongly agreed). The overall findings indicate that educators were in agreement with the digital transformation of activities in HEI**s**, as shown by the mean score of 3.93 (S.D. = 0.45) for the items under technology integration.

Table 14: Responses to the Technology Integration Items

ID	Items	Responses (%)				
		SA	**A**	**N**	**D**	**SD**
IN1	Student comprehend faster when digital technologies are used to support the learning process	0	68	29	3	0
IN2	I develop new skills while using digital technologies in teaching	0	97	3	0	0
IN3	Using digital technologies has simplify my teaching process	0	99	1	0	0
IN4	I should always use LMS for management of class activities	0	72	22	5	1
IN5	My communication with students has always been effective using digital technologies	0	95	5	0	0
IN6	Technology integration in teaching, research and learning should be the norm of modern teaching	57	32	9	2	0

Regression Analysis

Initially, the dimension of the dataset was reduced by removing samples that could act as noise. Then an exploratory factor analysis was conducted, which is a statistical technique used to reduce the amount of data to a smaller sample and explore the theoretical structure of the phenomena (Lütfi, İbrahim, & Ahmet, 2022). The reduced data was used for regression analysis.

To prepare for the regression analysis, the predictors were observed across the 10 latent constructs. Principal component analysis was used, with varimax as the method of rotation. Table 15 displays the results of the analysis, where 17 predictors were retained and others rejected across the nine constructs. The results indicate that Workload Capacity (WC), Teaching Impact (TI), and Professional Development (PD) were completely inadmissible for further analysis.

Table 15: Retained and Rejected Predictors

S/N	Constructs	Indicators	
		Retained	**Rejected**
Independent Variables			
1	Perceived Usefulness (PU)	1, 3 and 4	2, 5 and 6
2	Ease of Use (EU)	1, 2 and 4	3, 5 and 6
3	Self-Efficacy (EF)	1 and 3	2, 4, 5 and 6
4	Workload Capacity (WC)	None	1, 2, 3, 4, 5 and 6
5	Institutional culture (IC)	2, 3 and 4	1, 5 and 6
6	Educational Value (EV)	1, 2 and 3	4, 5 and 6
7	Learning Environment (LE)	1, 2, and 3	4, 5 and 6
8	Teaching Impact (TI)	None	1, 2, 3, 4, 5 and 6
9	Professional Development (PD)	None	1, 2, 3, 4, 5 and 6
Dependent Variable			
10	Technology Integration (IN)	1, 3 and 6	2, 4 and 5

Thus, a multivariate regression analysis was conducted with six (6) independent variables and one dependent variable. The independent variables are perceived usefulness, ease of use, self-efficacy, institutional culture, educational value, learning environment, teaching impact, and professional development. The dependent variable is educator perception on digital transformation in HEIs.

Table 16 displays a summary of the results of the multivariate regression analysis. A significant regression equation was found, $f(6, 127) = 18.388$, $p < 0.001$, which indicates that the model was statistically significant ($b = 0.495$, $p < 0.000$). Additionally, the value of $R^2 = 0.465$ depicts that the model explains 46.5% of the variance in the dependent variable (digital transformation in HEIs).

Table 16: Summary of Regression Analysis Result

Regression Weights	Beta Coefficient	R^2	F	p-value
Dependent	**.495**	**.465**	**18.388**	**.000**

Furthermore, Table 17 displays the regression coefficient of the predictors for digital transformation in HEIs

Table 17: Regression Coefficients for Predictors of Digital Technology Integration

S/N	Predictor	β (Standardized)	t	p-value	Significant
1	Perceived Usefulness	-0.022	-0.0276	0.783	No
2	Ease of Use	0.270	3.336	0.001	Yes
3	Self-Efficacy	-0.006	-0.078	0.938	No.
4	Institutional Culture	0.170	2.043	0.432	Yes
5	Educational Value	0.452	5.401	0.000	Yes
6	Learning Environment	-0.031	-0.381	0.704	No

The contributions of three constructs, namely ease of use, educational value, and institutional culture, and were statistically significant. Educational value is the strongest predictor with a coefficient (β) value of 0.452 (p = 0.000). Ease of use has a coefficient (β) value of 0.270 (p = 0.001), and institutional culture has a coefficient (β) value of 0.170 (p = 0.043). The contributions of the other three constructs, namely perceived usefulness, self-efficacy, and learning environment, are statistically insignificant to the model. The overall results indicate that educators support digital transformation of HEIs based on their perception of its ease of use, institutional culture, and educational value.

Discussion of Findings

According to the demographic analysis, there is a substantial gender gap among educators in HEI, with the male population (67%) doubling the female population (33%). This is consistent with the findings of Etejere et al. (2023) and Kaymakcioglu and Thomas (2024), who showed a high disparity between male and female educators in HEIs. The Nigeria National Policy on Gender in Education (2021) encourages inclusive and high-quality education for all while guaranteeing equitable access to education for girls. The policy has enabled gender equality in basic education because female teachers have not only equalized but also outweighed their male counterparts (Etejere et al., 2023). As a result, female teachers in basic education have not only equalized but surpassed their male counterparts (Etejere et al., 2023). Nonetheless, gender disparity exists in HEIs due to several factors: the qualification factor, as only a few women pursue master's and doctoral degrees, and personal factors, such as a fear of teaching in HEIs. In addition, the aspirations of some women to continue their education are impeded by financial factors and religious, traditional, and cultural barriers, including family decisions, marital decisions, home maintenance, and lack of role models (Etejere et al., 2023; Kaymakcioglu and Thomas, 2024). Therefore, the government should do more to orient women to increase their educational achievement and raise awareness of family support. Additionally, as demonstrated in certain regions of Nigeria, women should be eligible for tuition fee waivers, grants, and scholarships from governmental organizations, agencies, and non-governmental organizations to reduce the gender disparity in HEIs (Lawan, 2023). The demographic analysis also reveals that nearly 80% of the studied population is between the ages of 29 and 50. The analysis shows that most of the educators are in the technological age (18 to 50 years), which could facilitate digital transformation in HEIs. The analysis further shows that over half (54%) of the respondents have a master's degree, while 32% of the respondents have a doctorate degree, and 82% of respondents have taught for 0 to 15 years. These findings are similar to those of Yushau and Nannim (2020), who found that 89% of educators at Abubakar Tafawa Balewa University have fewer than 16 years of instructional experience, with 70% having master's degrees, and at least 74% are under the age of 50.

According to the descriptive analysis of the responses to the 60 survey items, the respondents agreed that digital technologies are useful in teaching and learning activities (mean score of 3.98) because they have educational value (mean score of 3.89), reduce workload (mean score of 3.74), and positively impact the teaching processes (mean score of 4.28). This is especially true when the digital technologies are easy to use (mean score of 3.88), and the learning environments (mean score of 3.58) and institutional culture (mean score of 3.54) support their integration and provide ongoing professional development (mean score of 3.61). These results are consistent with those of Karkouti (2023), Belinda et al. (2023), Akram et al. (2022), and Clever and Mbodila (2022). Furthermore, based on the demographic data, educators in Nigerian HEIs are more likely to have a favorable opinion of the digital transformation of HEIs since the majority of educators are between the ages of 29 and 39. These findings showed that educators at Nigerian HEIs support the use of digital technology in teaching and learning activities.

According to the multivariate analysis, the main determinants of educators' support for the digital transformation of HEIs in Nigeria are educational value, ease of use, and institutional culture. These results are in line with those of Alenezi et al. (2023), Chen et al. (2025), and Aldogiher et al. (2025). According to the work of Alenezi et al. (2023), digital technologies have educational value for students, teachers, and the institution as a whole. Chen et al. (2025) reported that perceived usefulness and ease of use are important factors that influence digital transformation in HEIs. Aldogiher et al. (2025) discovered that institutional culture played a part in the change. Duterte (2024) and Schubatzky et al. (2025) showed the positive impact of learning environment and self-efficacy on digital transformation in education, which are supported by the results of the descriptive analysis. However, the multivariate analysis in the Nigerian context shows that the combined influence of the two factors is statistically insignificant. Therefore, the findings of multivariate regression analysis showed that institutional culture, educational value, and ease of digital technology use all significantly influence support for digital transformation in Nigerian HEIs.

CONCLUSION

The paradigm of teaching and learning has been altered by digital technologies, which have improved learning quality, opened up educational access, eliminated resource constraints, and encouraged collaboration between students and researchers, equipped students with digital skills, and much more. As the most important stakeholder in HEIs, educators play a crucial part in all of these enormous advantages, and their contribution to the successful digital transformation of any HEI cannot be overlooked.

This study used a quantitative research design approach to investigate how HEI educators view the use of digital technology in teaching and learning. The results show that the majority of educators are within the technological age of 29

to 50 years old; they are holders of master's and doctoral degrees with up to 15 years of working experience. However, there is a significant gender gap in Nigerian HEIs, with male educators doubling their female counterparts. Furthermore, the findings of this study indicate that educators in Nigerian HEI support the use of digital technologies in teaching, learning, and research. The multivariate regression analysis emphasized the impact of educational value, institutional culture, and ease of using digital technologies. Therefore, relevant stakeholders must implement regulations to achieve full digital transformation of HEIs in Nigeria.

Finally, there is a need for more thorough analysis using machine learning and large-scale data to identify factors that hinder digital transformation in Nigerian HEIs based on the behavior, resistance, and competence of educators and organizational culture.

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