

Mediating Role of Cognitive Unlearning in the Relationship between Digital Readiness and Digital Transformation Preparedness

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ABSTRACT

Purpose: This study examines whether cognitive unlearning mediates the relationship between digital readiness and digital transformation preparedness in higher education institutions. **Methodology:** Guided by the Behavioural–Institutional Framework for Transformation (BIFT), the study analysed survey data from 384 academic and management staff across 30 polytechnics and universities in Northeast Nigeria using structural equation modelling and multi-group analysis in JASP. **Findings:** Digital readiness significantly predicted transformation preparedness ($\beta = .284$, $p < .001$), but the effect was partially mediated by cognitive unlearning (indirect effect $\beta = .299$). The model explained 52.4% of the variance in preparedness, and the unlearning–preparedness link was stronger in Federal than in State-owned institutions ($\Delta\beta = .14$, $p = .032$). **Originality/value:** The study validates BIFT in a resource-constrained, post-conflict context and shows that digital transformation depends not only on infrastructure, but also on cognitive unlearning as a micro-foundational condition for preparedness.

Keywords: Digital Readiness, Digital Transformation Preparedness, Cognitive Unlearning, Higher Education, BIFT Framework.

INTRODUCTION

Digital transformation in higher education has moved from a peripheral innovation to a structural imperative. The rapid diffusion of Learning Management Systems (LMS), the rise of generative artificial intelligence, and the expansion of digital governance have compelled institutions to reconfigure both academic delivery and administrative processes (Adiwijaya et al., 2025). Accelerated by the COVID-19 pandemic (Chikaji et al., 2024), this shift has revealed not only the promise of digital technologies but also the fragility of the systems expected to implement them (Nair & Sandip, 2023). Yet many institutions still struggle to convert digital capacity into sustained transformation outcomes (Niemiec & Zerbst, 2025).

Current scholarship suggests that technical skills and hardware alone are not enough. Readiness is increasingly associated with a broader combination of skills, confidence, adaptability, and support (Höyng & Lau, 2023; Trenerry et al., 2021). In policy and research, however, digital readiness is still often defined mainly in terms of infrastructure and technical competence (Soomro et al., 2020). Measurement frameworks built on this logic tend to privilege technological capacity, producing “infrastructural determinism” by capturing what institutions possess without explaining how that capacity becomes effective (Chounta et al., 2024; Salisu, 2026). The result is “illusory readiness”: institutions appear prepared on paper, but struggle to translate capacity into transformation (Salisu, 2026).

This problem is especially visible in Northeast Nigeria, where universities and polytechnics operate under resource constraints and the lingering effects of conflict. In this setting, digital tools are often undermined by unstable power supplies, weak support systems, and limited contextualised training (Ogbonna et al., 2025). Even where infrastructure is available, digital technologies may produce only superficial adoption rather than real institutional change (Zhong et al., 2025). The key challenge, therefore, is not only resource expansion but the alignment of existing capacities so that preparedness can emerge despite constraint.

A further limitation of prevailing models is that they under-specify the mechanism through which individual capability becomes institutional action. This study identifies the “burden of the past” as a major barrier to that conversion. Digital change requires cognitive restructuring and the abandonment of entrenched habits, a process captured by cognitive unlearning (Zhao et al., 2026; Zhou et al., 2025). Unlearning involves letting go of obsolete knowledge, beliefs, and routines so that new technologies and workflows can take hold (Schiuma et al., 2024). Where technical debt accumulates in the form of rigid procedures and legacy systems, the institution itself becomes a source of friction that slows transformation (Park, 2025).

To address this issue, the study adopts the Behavioural–Institutional Framework for Transformation (BIFT) developed by Salisu (2026). BIFT reconceptualises readiness as a multilevel, interactional phenomenon and distinguishes it from digital transformation preparedness. Readiness refers to the latent presence of behavioural, leadership, and institutional attributes, whereas preparedness refers to their functional alignment and activation in support of sustained outcomes (Salisu, 2026). The framework suggests that transformation gaps are often misalignments across levels: high micro-level competence may be constrained by weak leadership orchestration or rigid governance structures at higher levels (Kim & Park, 2025).

Against this background, the study examines the direct effect of digital readiness on transformation preparedness and the mediating role of cognitive unlearning among academic and management staff. By shifting attention from possession of resources to coordination of capabilities, it offers a more precise explanation for digital change in Nigerian higher education. Theoretically, it extends BIFT by specifying cognitive unlearning as the mechanism linking latent capacity to operative transformation. Practically, it provides senior polytechnic/university academics and administrators with a diagnostic lens for identifying bottlenecks and directing investment towards human and organisational alignment rather than hardware alone (Salisu, 2026; Zhao et al., 2026).

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The persistence of the digital transformation gap in higher education indicates that the problem is not simply one of digital investment, but of theoretical mis-specification. Substantial resources may expand technical capacity, yet institutions still struggle to convert that capacity into sustained organisational change. Anchored in the BIFT, this section explains how digital readiness becomes transformation preparedness through cognitive unlearning.

The Behavioural–Institutional Framework for Transformation

BIFT reconceptualises digital readiness as a multilevel socio-technical capability rather than a static inventory of assets (Salisu, 2026). It critiques readiness models that equate institutional preparedness with the presence of infrastructure and digitally literate staff. Such models capture capacity, but they do not explain how capacity becomes effective.

Within BIFT, digital transformation emerges from alignment across three interdependent domains (Salisu, 2026). At the micro level, behavioural readiness refers to individual dispositions such as self-efficacy, adaptability, and willingness to engage with change (Ben Ghrbeia & Alzubi, 2024). At the meso level, leadership readiness concerns the ability to coordinate resources, provide strategic direction, and translate intent into action (Castro Benavides et al., 2026). At the macro level, institutional readiness captures the cultural and structural conditions that support or constrain transformation, including psychological safety, policy coherence, and the burden of technical debt (Laaber et al., 2023). The framework therefore treats alignment, not isolated readiness, as the mechanism through which transformation occurs (Salisu, 2026).

Digital Readiness and Digital Transformation Preparedness

Digital readiness in this study refers to the combination of technical skills, digital literacy, self-efficacy, and openness to new tools that gives individuals and institutions the capacity to engage with digital change (Höyng & Lau, 2023; Salisu, 2026). It is necessary because transformation cannot proceed without a basic foundation of competence and confidence. Yet readiness alone is insufficient, because possession does not guarantee coordinated use.

For this reason, BIFT distinguishes readiness from digital transformation preparedness. Preparedness is the functional activation of readiness: the point at which behavioural, leadership, and institutional conditions reinforce one another to produce sustained change. It is therefore an integrated state, not merely a higher level of capacity. In practical terms, an institution may be digitally equipped and personally competent, yet still fail to transform if leadership coordination is weak or if the organisational environment discourages experimentation. Preparedness is thus the more immediate precursor of sustained innovation, adaptability, and digital integration.

Cognitive Unlearning

Cognitive unlearning is the central mechanism linking latent readiness to operative preparedness (Cubillas-Para *et al.*, 2024). It refers to the deliberate abandonment of obsolete beliefs, routines, and administrative habits in order to make room for new digital practices. In higher education, this matters because digital change often requires not only learning new skills, but also relinquishing familiar ways of working that no longer fit the digital environment.

The burden of the past can take the form of technical debt, rigid procedures, or entrenched pedagogical habits. These conditions produce inertia and make it difficult for institutions to move beyond symbolic adoption. Cognitive unlearning reduces that inertia by weakening resistance and enabling individuals to re-evaluate assumptions about work, teaching, and administration (Zhao *et al.*, 2026). Digital readiness supports this process by increasing confidence and lowering the psychological cost of change. Where staff feel capable and supported, they are more likely to let go of obsolete routines and engage with new systems. Unlearning therefore acts as the bridge that converts digital capacity into functional preparedness.

Hypotheses Development

The preceding arguments suggest that digital readiness should influence preparedness directly, while also fostering cognitive unlearning, which in turn contributes to preparedness. The proposed relationships are summarised in Table 1.

Table 1. Hypotheses and Theoretical Rationale

HP	Expected path	Rationale
H1	Digital Readiness → Digital Transformation Preparedness	Digital readiness provides the behavioural and cognitive foundation needed for transformation, making preparedness more likely.
H2	Digital Readiness → Cognitive Unlearning	Greater readiness increases confidence, reduces technostress, and creates openness to abandoning obsolete routines.
H3	Cognitive Unlearning → Digital Transformation Preparedness	Unlearning reduces behavioural inertia and enables the functional activation of digital capacity.
H4	Digital Readiness → Cognitive Unlearning → DTP	Cognitive unlearning mediates the relationship by converting latent readiness into coordinated and sustained preparedness.

Digital readiness is expected to predict digital transformation preparedness because skills, confidence, and openness provide a necessary basis for change (Muduli & Choudhury, 2025). However, this effect should not be understood as purely direct. Institutions with high digital readiness are also more likely to support cognitive unlearning, because staff who feel competent are better positioned to question established habits and experiment with alternatives. Readiness therefore creates the conditions under which unlearning can occur.

Cognitive unlearning is expected to predict preparedness because transformation depends on more than technical competence (Höyng & Lau, 2023). Unless staff are willing to discard outdated assumptions and routines, digital tools remain layered onto old practices rather than reshaping them. Unlearning is therefore the active process through which readiness is translated into organisational change.

Taken together, these arguments imply a mediating relationship. Digital readiness does not produce preparedness automatically; it does so through cognitive unlearning, which functions as the conversion mechanism between latent capacity and operational alignment. This is particularly relevant in higher education systems where technical debt, administrative rigidity, and uneven support structures make transformation difficult. In such contexts, preparedness is not simply a matter of having digital tools, but of reworking the cognitive and organisational habits that determine how those tools are used.

Accordingly, the study tests whether cognitive unlearning explains how digital readiness becomes digital transformation preparedness among academic and management staff in Northeast Nigerian higher education institutions.

RESEARCH METHODOLOGY

This study adopts a post-positivist quantitative design and a cross-sectional survey approach to test the BIFT model (Salisu, 2026). It examines whether digital readiness predicts digital transformation preparedness and whether cognitive unlearning explains that relationship.

Research Design

A multilevel design (Dosek, 2020) was used to test the hypothesised mediated relationship in a higher education context. The quantitative approach was appropriate because it allowed the study to estimate direct and indirect effects across a heterogeneous institutional setting and to assess the predictive logic of BIFT empirically.

Population and Research Context

The research was conducted within polytechnics and universities of Northeast Nigeria, a region facing significant resource constraints and technical debt. The population consists of academic and management staff across 30 institutions, stratified by type (12 Polytechnics, 18 Universities) and ownership (Federal, State, and Private). Respondents were selected because they are directly involved in implementing digital initiatives and are therefore positioned to experience both digital readiness and the need for cognitive unlearning.

Sampling Strategy

A multi-stage stratified random sampling technique was employed, treating the 30 regional institutions as clusters. Given the absence of a verified centralized staff payroll and the seasonal fluctuation of personnel, the population was treated as unknown. Consequently, the sample size was determined using Cochran's (1977) formula for unknown populations, resulting in a minimum target of 388 respondents to ensure statistical power for the mediation analysis conducted in JASP (Version 0.97.1). The first stage stratified clusters by institution type (Polytechnic vs. University), while the second stage stratified by ownership (Federal vs. State/Private) to capture variations in digital culture and governance.

Measures

All constructs were measured using validated scales adapted to the higher education context and rated on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The full item wording, construct dimensions/descriptions, and source adaptations are provided in Appendix A, Tables A1–A3.

Digital readiness was operationalised as staff confidence and behavioural competence in using institutional digital systems. It drew on established indicators of digital literacy, self-efficacy, and tool adoption, and the adapted items are listed in Appendix A, Table A1. Cognitive unlearning captured the willingness to abandon obsolete beliefs, routines, and pedagogical habits in response to digital change. The adapted items are presented in Appendix A, Table A2. Digital transformation preparedness was defined as the functional alignment and activation of behavioural, leadership, and institutional conditions supporting sustained transformation. The item set is provided in Appendix A, Table A3, where each item is framed to capture respondents' experience of strategic coordination, institutional support, and operational integration rather than mere access to technology.

Data Analysis Strategy

The analysis proceeded in two stages. First, Confirmatory Factor Analysis (CFA) was used to assess the measurement model, including internal consistency, convergent validity, and discriminant validity (Mueller & Hancock, 2015). Second, structural path analysis was conducted using Partial Least Squares Structural Equation Modelling logic to test the direct and indirect effects proposed by BIFT. Bootstrapping with 5,000 resamples was used to evaluate the significance of the mediating effect of cognitive unlearning (Hair et al., 2021). This approach enabled the study to test the hypothesised transformation pathway with both measurement and structural rigour.

RESULTS

Respondent Characteristics

The final sample comprised 388 respondents from polytechnics and universities in Northeast Nigeria; the full demographic profile is reported in Appendix B, Table 1B. After data screening, four cases were removed for multivariate outliers, leaving 384 valid responses for the main analysis.

Missing Data, Outliers and Common Method Bias

Missing data were minimal and were handled with expectation-maximisation (Newman, 2014). Common method bias was not a major concern (Podsakoff *et al.*, 2024): Harman's single-factor test explained 32.4% of the variance. Full collinearity VIFs were 1.84 for Digital Readiness, 2.11 for Cognitive Unlearning, and 1.96 for Digital Transformation Preparedness, all below the recommended threshold (Salmerón-Gómez *et al.*, 2025).

Descriptive Statistics and Correlations

Descriptively, the three constructs were positively associated with one another (Table 1). Digital Readiness correlated with Cognitive Unlearning ($r = .62, p < .01$) and Digital Transformation Preparedness ($r = .58, p < .01$), while Cognitive Unlearning also correlated with Digital Transformation Preparedness ($r = .65, p < .01$).

Measurement Model Assessment

The measurement model demonstrated acceptable reliability and validity (Table 2). All factor loadings exceeded .70. Internal consistency was strong, with Cronbach's alpha (α) ranging from .852 to .912, McDonald's omega (ω) from .855 to .914, and composite reliability (CR) from .864 to .922. Average variance extracted (AVE) exceeded the .50 threshold for all constructs, ranging from .585 to .648. Discriminant validity was also satisfactory, as all HTMT values remained below .85 (Hair *et al.*, 2021).

Table 1. Means, Standard Deviations, and Correlations

Variable	Mean	SD	1	2	3
1. Digital Readiness	3.68	0.72	(.88)		
2. Cognitive Unlearning	3.52	0.81	.62**	(.85)	
3. DT Preparedness	3.44	0.78	.58**	.65**	(.91)

Note. $n = 384$. Cronbach's alpha coefficients are on the diagonal in parentheses. $p < .01$.

Table 2. Reliabilities and Convergent/Discriminant Validities

Construct	Reliability & Convergent Validity Statistics					Discriminant Validity		
	Loadings (Range)	α	ω	CR	AVE	1	2	3
1. Digital Readiness	.74 – .88	0.884	0.886	0.890	0.612	—		
2. Cognitive Unlearning	.71 – .85	0.852	0.855	0.864	0.585	0.702	—	
3. DT Preparedness	.78 – .92	0.912	0.914	0.922	0.648	0.648	0.744	—

The CFA results indicated good fit for the three-factor model: $\chi^2(114) = 242.45$, $\chi^2/df = 2.13$, CFI = .962, TLI = .955, RMSEA = .054 (90% CI [.046, .063]), and SRMR = .038.

Structural Model Assessment

The structural model supported all direct hypotheses (Table 3). Digital Readiness positively predicted Digital Transformation Preparedness ($\beta = .284$, $p < .001$), supporting H1. Digital Readiness also positively predicted Cognitive Unlearning ($\beta = .621$, $p < .001$), supporting H2. Cognitive Unlearning, in turn, positively predicted Digital Transformation Preparedness ($\beta = .482$, $p < .001$), supporting H3. The model explained 38.6% of the variance in Cognitive Unlearning ($R^2 = .386$) and 52.4% of the variance in Digital Transformation Preparedness ($R^2 = .524$).

Table 3. Direct Path Estimates

Hypotheses	Path	β	SE	t-value	p-value	Decision
H1	DR $\rightarrow$ DTP	.284	.052	5.461	< .001	Supported
H2	DR $\rightarrow$ CU	.621	.048	12.937	< .001	Supported
H3	CU $\rightarrow$ DTP	.482	.055	8.763	< .001	Supported

Bootstrapped mediation analysis confirmed a significant indirect effect of Digital Readiness on Digital Transformation Preparedness through Cognitive Unlearning ($\beta = .299$, SE = .042, 95% CI [.221, .385]). Because both the direct and indirect effects were significant, the mediation was partial, supporting H4. Figure 1 summarises the structural relations and mediation pathway.

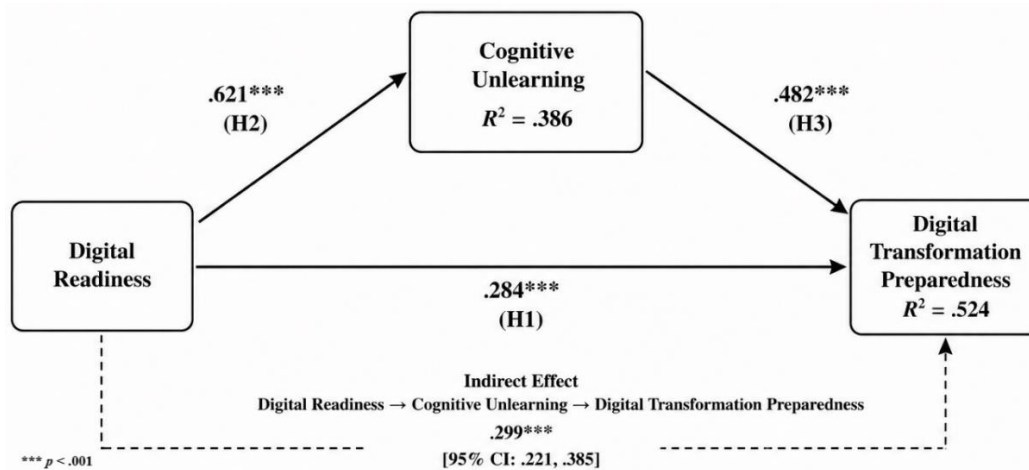


Figure 1. Structural Model Results

The model explained 38.6% of the variance in Cognitive Unlearning ($R^2 = .386$) and 52.4% of the variance in Digital Transformation Preparedness ($R^2 = .524$).

Robustness and Additional Analyses

Robustness tests reinforced the main findings. Multi-group analysis (Table 4) showed that the path from Cognitive Unlearning to Digital Transformation Preparedness was stronger in Federal institutions than in State institutions ($\Delta\beta = .14$, $p = .032$), while the Digital Readiness $\rightarrow$ Cognitive Unlearning path did not differ significantly between groups ($\Delta\beta = .04$, $p = .425$). Model comparison (Table 5) also favoured the proposed mediation model over the two alternatives, with the lowest information criteria and the best fit indices (AIC = 4250; BIC = 4410; CFI = .96; RMSEA = .054).

Table 4. Multi-Group Structural Comparisons (Federal vs. State)

Path	Federal (β)	State (β)	$\Delta\beta$	p-value
DR $\rightarrow$ CU	.64	.60	.04	.425
CU $\rightarrow$ DTP	.55	.41	.14	.032

Table 5. Comparison of Competing Models

Model	χ^2	df	AIC	BIC	CFI	RMSEA
Proposed (Mediation)	242.4	114	4250	4410	.96	.054
Direct-Effects Only	385.2	116	4580	4730	.88	.082
Alternative Causal Order	312.8	114	4390	4550	.92	.068

Results Summary

Overall, the results show that Digital Readiness matters, but its effect on transformation preparedness is partly channelled through Cognitive Unlearning. The evidence therefore supports the BIFT logic that preparedness is not simply a function of capacity, but of the cognitive and institutional conversion of that capacity into sustained action.

DISCUSSION

The findings reinforce the growing consensus that digital transformation in higher education cannot be explained by technological resources alone. Recent scholarship increasingly portrays digital readiness as a multidimensional construct in which technical competence must be complemented by digital confidence (Höyng & Lau, 2023), adaptability and readiness for change (Trenerry et al., 2021), and supportive organisational conditions (Basalamah & Basalamah, 2025). The present study converges with this broader perspective but advances it by demonstrating that readiness, while necessary, is insufficient for generating digital transformation preparedness. In the Northeast Nigerian context, digital readiness created the conditions for change, yet its effects were substantially strengthened when individuals were willing to abandon entrenched routines and assumptions. This finding suggests that the persistent gap between digital investment and transformation outcomes is not simply a resource problem but also a behavioural and organisational challenge.

The most significant contribution of the study lies in its validation of cognitive unlearning as a key mechanism linking readiness to preparedness. Prior research has associated digital capability with employee learning and adaptation (Fu et al., 2023), employee unlearning during digital transformation (Zhou et al., 2025), readiness for organisational change (Kim & Park, 2025), and workforce agility in digitally transforming organisations (Sharma et al., 2024). However, these studies generally treat unlearning, adaptability, and readiness for change as related but distinct constructs. The present findings extend this literature by demonstrating that cognitive unlearning occupies a more central role: it functions as the process through which digital readiness is translated into transformation preparedness. In doing so, the study provides empirical support for the BIFT proposition that transformation depends not only on the possession of capabilities but also on the capacity to disengage from obsolete ways of working.

This interpretation is consistent with evidence that digitally ready employees are more likely to engage with new technologies and practices (Vijayarani et al., 2025), develop intentional readiness for transformation (Höyng & Lau, 2023), and overcome behavioural resistance to change (Zhao et al., 2026). It also aligns with research showing that organisational unlearning facilitates agility and digital adaptation (Cubillas-Para et al., 2024). Yet the present findings move beyond these studies by identifying unlearning as a mediating process rather than merely a correlating factor. The implication is that digital transformation requires more than the acquisition of new knowledge; it also requires the abandonment of routines, assumptions, and procedural habits that anchor organisations to legacy modes of operation. This distinction is particularly important in higher education, where institutional practices often persist long after technological alternatives become available.

The findings also challenge the explanatory sufficiency of conventional technology adoption frameworks. Models such as TAM and UTAUT have proven valuable in explaining technology acceptance and early-stage use, but they offer a less complete account of how digital initiatives become embedded within organisational systems. The present results suggest that acceptance alone is insufficient to sustain transformation. Individuals may perceive technologies as useful and easy to use while continuing to rely on familiar routines that limit institutional change. By highlighting the mediating role of cognitive unlearning, the study shifts attention from adoption to transformation, thereby extending existing readiness research beyond questions of usage and intention.

The ownership-based differences observed in the multi-group analysis provide further insight into the contextual nature of transformation. The stronger relationship between cognitive unlearning and preparedness in Federal institutions suggests that behavioural change produces greater organisational returns when supported by enabling institutional conditions. This finding is consistent with critiques of conventional readiness assessments, which often overlook the interaction between individual and organisational factors (Chounta et al., 2024). It also resonates with evidence that digital outcomes in Nigerian tertiary institutions are shaped by infrastructural reliability, governance arrangements, and institutional support systems (Ogbonna et al., 2025). The implication is that individual willingness to abandon obsolete routines is necessary but not

always sufficient; its effectiveness depends on whether the institutional environment can absorb, reinforce, and sustain that change.

This contextual interpretation is further supported by research on technical debt and organisational rigidity. Park (2025) argues that legacy systems and accumulated procedural constraints frequently inhibit digital transformation despite substantial technological investment. The present findings lend empirical support to that argument. Even when staff exhibit readiness and a willingness to unlearn, transformation may remain constrained if institutional structures continue to reward legacy practices or require parallel manual and digital processes. Consequently, the results strengthen the BIFT proposition that transformation is fundamentally a multilevel phenomenon arising from the interaction of behavioural, leadership, and institutional conditions rather than from any single factor in isolation.

The practical implications are equally significant. For higher education leaders, the findings suggest that digital transformation strategies should move beyond procurement-led approaches that prioritise infrastructure acquisition and technical training. While such investments remain necessary, they are unlikely to generate sustainable transformation unless accompanied by interventions that address behavioural and organisational barriers. Training programmes should therefore incorporate opportunities for reflective practice, experimentation, and unlearning rather than focusing exclusively on technical proficiency. Similarly, leaders should cultivate psychologically safe environments in which staff can test new digital approaches without fear of penalty, thereby reducing the behavioural costs associated with abandoning established routines. Institutions should also address procedural debt by systematically retiring redundant manual workflows that compel staff to maintain parallel systems and reinforce legacy habits.

Taken together, the findings provide empirical support for the central claim of BIFT: digital transformation preparedness emerges not from the accumulation of digital resources but from the successful conversion of those resources into coordinated action. By demonstrating the mediating role of cognitive unlearning, the study contributes to a growing body of research that places human agency at the centre of digital transformation. It shows that the critical challenge facing higher education institutions is not simply learning new technologies but learning to let go of the assumptions, routines, and practices that prevent those technologies from becoming transformative. Future research should build on this insight through longitudinal designs that examine how unlearning evolves over time and through qualitative investigations that explore the institutional conditions under which cognitive change is most effectively translated into organisational transformation.

CONCLUSION

This study examined how digital readiness translates into digital transformation preparedness among higher education institutions in Northeast Nigeria. The findings demonstrate that readiness alone is insufficient to produce sustained transformation outcomes. Instead, cognitive unlearning serves as a key mechanism through which digital capacity is converted into preparedness. The study thus extends the BIFT by providing empirical evidence that transformation depends not only on technological resources and competencies, but also on the willingness of individuals to abandon obsolete routines and adapt to new ways of working. In doing so, it challenges technology-centred accounts of digital change and supports a multilevel view in which preparedness emerges from the interaction of behavioural, leadership, and institutional conditions.

The practical implication is that higher education leaders should complement investments in digital infrastructure with interventions that promote unlearning, reduce procedural debt, and create environments supportive of experimentation and adaptation. Institutions that focus exclusively on technology acquisition risk accumulating digital capacity without achieving meaningful transformation.

Future research should test the BIFT model in other institutional and national contexts, particularly through longitudinal designs that can capture how cognitive unlearning and transformation preparedness evolve over time.

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Appendix A. Measurement Instruments

Table A1. Digital Readiness Scale

Dimension	Code	Item Statement	Source Basis
Skills and Confidence	DSC1	I am confident in my ability to perform all core professional duties using the institution's digital platforms.	Inferred from Neunaber et al. (2025)
	DSC2	When a new digital application is introduced, I can master its functions quickly and independently.	Adapted from Scherrenberg et al. (2023)
	DSC3	I possess the necessary digital literacy to troubleshoot basic technical challenges encountered during my work.	Inferred from Bhavsar et al. (2025)
	DSC4	I have a clear understanding of which digital tools are most appropriate for specific tasks in my role.	Adapted from Neunaber et al. (2025)
Usage and Adoption	DTA1	Digital tools and platforms are an essential and integrated part of my daily routine work practices.	Adapted from Scherrenberg et al. (2023)
	DTA2	I prioritise using institutional digital systems over manual or paper-based methods for professional documentation and communication.	Adapted from Pingali et al. (2023)
	DTA3	I regularly utilise digital platforms to collaborate with colleagues on teaching, research, or administrative projects.	Inferred from Laaber et al. (2023)
	DTA4	I actively explore and adopt new features within institutional software to improve the efficiency of my workflow.	Inferred from Kadoić et al. (2024)

Table A2. Cognitive Unlearning Scale

Dimension	Code	Item Statement	Source Basis
Challenge of Prior	CU1	I actively question the long-held professional assumptions that guide my teaching or administrative work.	Inferred from Ryder et al. (2019)

Assumptions	CU2	I reconsider established institutional practices when evidence suggests they are no longer effective in a digital context.	Inferred from Ryder et al. (2019)
Openness to Alternative Perspectives	CU3	I am willing to let go of familiar pedagogical or administrative approaches if better digital alternatives exist.	Inferred from Ryder et al. (2019)
	CU4	I seek out viewpoints and workflows that challenge my traditional way of thinking about institutional processes.	Inferred from Ryder et al. (2019)
Reflection and Re-evaluation	CU5	I regularly reflect on whether my professional beliefs and habits still align with the current digital realities of higher education.	Supported indirectly by Ryder et al. (2019)
	CU6	I am able to revise my professional judgments quickly after being exposed to new digital information or systems.	Supported indirectly by Ryder et al. (2019)
Discarding Outdated Practices	CU7	I can consciously stop using manual or ad hoc methods once institutional digital systems have replaced them.	Supported by Sharafi et al. (2024)
	CU8	I recognise when an old routine should no longer influence my decision-making process.	Supported by Sharafi et al. (2024)
Context-Sensitive Adaptation	CU9	I adapt my thinking and behaviour when institutional priorities shift toward digital innovation and configuration.	Inferred from Sharafi et al. (2024)
	CU10	I am comfortable abandoning previous strategies when they no longer serve the strategic digital transformation of the institution.	Inferred from Sharafi et al. (2024)

Table A3. Digital Transformation Preparedness Scale

BIFT Level	Descriptor	Code	Item Statement	Source Basis
Meso (Leadership)	Digital Leadership and Planning	DTP1	I am well-informed about the priorities and strategic plans our leaders have established for digital transformation.	Castro Benavides et al. (2026); Silva et al. (2025)
	Digital Leadership and Planning	DTP2	I receive the necessary support and resources from management to coordinate digital changes within my area of work.	Salisu (2026); Silva et al. (2025)
Macro (Institutional)	ICT Infrastructure	DTP3	I find our institution's digital infrastructure reliable and effective for exchanging information with other units.	Al-Ali & Marks (2022); Özşahin et al. (2022)
	Digital Culture	DTP4	I perceive a shared willingness among my immediate colleagues to embrace digital change and innovation.	Laaber et al. (2023); Pingali et al. (2023)
	Operational	DTP5	I utilise digital tools that are well-integrated into my daily academic and	Al-Ali & Marks (2022);

	Integration		administrative routines.	Özşahin et al. (2022)
	Data and Analytics	DTP6	I am aware of how our institution utilises digital data and analytics to inform decisions that affect my work.	Castro Benavides et al. (2026); González Pérez et al. (2025)

Appendix B. Demographics

Table 1B. Demographic Profile of Respondents ($n = 384$)

Variable	Category	Frequency	Percentage
Gender	Male	236	61.5
	Female	148	38.5
Age	25–35	82	21.4
	36–45	162	42.2
	46–55	104	27.1
	Above 55	36	9.4
Institution Type	University	212	55.2
	Polytechnic	172	44.8
Ownership	Federal	224	58.3
	State	160	41.7
State	Bauchi	68	17.7
	Adamawa	56	14.6
	Borno	76	19.8
	Yobe	64	16.7
	Gombe	66	17.2
	Taraba	54	14.1