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RESEARCH ARTICLE

Digital Competence and Attitude Towards ICT Adoption among Business Education Student-Teachers in South-West Nigerian Colleges of Education: A Correlational Study

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This article contributes to:

ABSTRACT

This study examined how self-reported digital competence relates to attitudes towards information and communication technology (ICT) among Business Education student-teachers in colleges of education in South-West Nigeria. Although teacher-education programmes increasingly expect prospective teachers to integrate ICT, evidence from this disciplinary and regional context remains limited. Drawing on the technology acceptance model and social cognitive theory, a cross-sectional correlational survey was conducted with 149 student-teachers. Participants completed a questionnaire comprising 11 digital competence items, 9 attitude-towards-adoption items, and 15 general ICT-attitude items; Cronbach's alpha values were .84, .80, and .85, respectively. Data were analysed using descriptive statistics, Pearson product-moment correlations, and standard multiple regression. Mean self-reported competence was below the five-point scale midpoint ($M = 2.67$, $SD = 0.90$), whereas attitude towards ICT adoption ($M = 2.57$, $SD = 0.49$) and general ICT attitude ($M = 2.61$, $SD = 0.46$) were slightly above the four-point midpoint. Digital competence correlated weakly with attitude towards adoption ($r = .22$, $p = .007$) and general ICT attitude ($r = .20$, $p = .017$); the two attitude measures were strongly related ($r = .59$, $p < .001$). The regression model explained 36.1% of the variance in attitude towards adoption, $F(2, 146) = 41.21$, $p < .001$. General ICT attitude was a significant unique predictor ($\beta = .57$, $p < .001$), whereas digital competence was not ($\beta = .11$, $p = .104$). These findings indicate that general evaluative disposition is more closely associated with adoption attitude than perceived competence in this sample, but they do not establish actual technology use or causal ordering. Teacher preparation should therefore combine discipline-relevant competence development with guided practice, reflective evaluation, and supportive institutional conditions.

KEYWORDS

Digital competence; attitude; ICT adoption; business education; student-teachers

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1. INTRODUCTION

The integration of information and communication technology (ICT) into teaching and learning is now a central expectation of contemporary education systems. Nigeria's national information-technology policy envisaged technology use across all levels of education [1]. Realising that ambition, however, requires more than hardware provision: adoption is also shaped by users' capabilities, beliefs, access to support, and the conditions in which technology is introduced [2]. Student-teachers are therefore a consequential group because the knowledge and dispositions developed during initial teacher preparation can influence whether technology is later used purposefully in classroom practice.

Business Education occupies a strategic position within this agenda because it prepares graduates for digitally mediated office, accounting, marketing, and entrepreneurial work. The technology acceptance model (TAM) identifies attitude as a proximal determinant of behavioural intention, while external variables influence acceptance through perceived usefulness and ease of use [3]. In the present study, digital competence refers to participants' self-reported knowledge and skill; it is related to, but not equivalent to, computer self-efficacy [4]. Attitude refers to an evaluative disposition towards an object or behaviour [5]. Educational extensions of TAM similarly show that capability-related beliefs and perceptions can shape prospective teachers' willingness to use technology [6], [7].

Research in Nigeria has documented student-teachers' competence and attitudes, but studies often report these constructs separately or treat attitude as a single undifferentiated outcome. Evidence specific to Business Education student-teachers in colleges of education in South-West Nigeria remains limited, and it is unclear whether perceived competence contributes uniquely to attitude towards ICT adoption once a broader ICT attitude is considered. This study addresses that gap by estimating construct levels, bivariate associations, and the joint prediction of adoption attitude by self-reported competence and general ICT attitude. Its contribution is contextual and explanatory rather than causal: the analysis clarifies the relative strength of the observed relationships without equating attitude with actual technology use.

1.1. Theoretical Framework and Related Studies

The study draws on two complementary theoretical traditions. TAM proposes that perceived usefulness and perceived ease of use shape attitude and behavioural intention, while external variables influence acceptance indirectly through these perceptions [3]. Social cognitive theory contributes self-efficacy, defined as belief in one's capability to organise and execute the actions required to attain an outcome [8]. The theory of planned behaviour [9], the unified theory of acceptance and use of technology [10], and diffusion of innovations [11] likewise emphasise evaluative beliefs, perceived capability, and facilitating conditions in adoption. In this study, self-reported competence is treated as a capability-related correlate and the two attitude scales as evaluative outcomes; the cross-sectional design does not test mediation, temporal ordering, or behavioural intention.

Empirical evidence generally supports a positive relationship between capability-related beliefs and ICT attitudes. Albirini found computer competence to be among the strongest correlates of favourable ICT attitudes [12], while a Nigerian study reported positive associations between student-teachers' competence, attitude, and prior exposure [13]. Research with pre-service teachers also identifies attitude as a central component of technology acceptance, with skill-related variables often operating through perceived usefulness, ease of use, or related beliefs [6], [7], [14]. Nevertheless, self-efficacy, attitude, and actual use are conceptually distinct and may respond differently to contextual constraints [15]. Nigerian evidence further suggests that favourable attitudes can coexist with limited skill, access,

or opportunities for use [16]. Taken together, these studies support positive associations but leave the unique contribution of perceived competence to adoption attitude uncertain.

1.2. Research Questions and Hypotheses

The study addressed five research questions: (1) What are the levels of self-reported digital competence, attitude towards ICT adoption, and general attitude towards ICT? (2) What is the relationship between digital competence and attitude towards ICT adoption? (3) What is the relationship between digital competence and general attitude towards ICT? (4) What is the relationship between the two attitude measures? and (5) To what extent do digital competence and general ICT attitude jointly predict attitude towards ICT adoption? Four two-tailed null hypotheses were tested at $\alpha = .05$: H01, no significant relationship between digital competence and attitude towards ICT adoption; H02, no significant relationship between digital competence and general ICT attitude; H03, no significant relationship between the two attitude measures; and H04, no significant joint prediction of attitude towards ICT adoption by digital competence and general ICT attitude.

2. METHODS

2.1. Research Design

The study adopted a correlational survey design, which is appropriate where the aim is to determine the existence, direction and magnitude of relationships among variables as they occur naturally, without manipulation. Because the study sought to establish how competence relates to attitudinal dispositions rather than to infer causation, the correlational approach was the most suitable.

2.2. Population and Sample

The target population comprised Business Education student-teachers enrolled in colleges of education in South-West Nigeria. A sample of 149 student-teachers participated, distributed across the Marketing Education, Accounting Education, Office Technology and Management Education, and Entrepreneurial Education options. The demographic profile of the sample is presented in Table 1.

2.3. Research Instruments

Data were collected using a structured questionnaire organised into a demographic section and three measurement scales. The digital competence scale comprised 11 items rated on a five-point scale ranging from not knowledgeable to knowledgeable. The attitude towards ICT adoption scale comprised 9 items, and the general attitude towards ICT scale comprised 15 items, both rated on a four-point scale ranging from strongly disagree to strongly agree. Composite scores were computed as the mean of the constituent items, so that higher scores denote greater competence and more favourable attitudes.

2.4. Validity and Reliability

The instrument was subjected to face and content validation by specialists in educational technology and business education. Internal consistency reliability was estimated using Cronbach's alpha. The coefficients obtained, .84 for digital competence, .80 for attitude towards adoption and .85 for general attitude, all exceed the conventional threshold of .70 [17], indicating that the scales are reliable for research purposes.

2.5. Data Analysis Techniques

Data were analysed using descriptive statistics, Pearson product-moment correlation and multiple linear regression. Mean composite scores were interpreted against the respective scale midpoints to characterise the levels of each construct. Pearson correlation tested the bivariate hypotheses, and standard multiple regression estimated the joint predictive contribution of competence and general attitude to attitude towards adoption. The assumptions of linearity, normality of residuals and absence of multicollinearity were examined and found tenable. All inferential tests were evaluated at the .05 level, and effect sizes were interpreted following established conventions [18].

3. RESULTS

Table 1 presents the demographic profile of the respondents. The sample was predominantly female (61.7%) and drawn mainly from the Marketing Education and Accounting Education options, which together accounted for 88.6% of respondents. Most were in their second year of study, and 87.2% reported being aware of ICT.

Table 1. Demographic profile of respondents (n = 149)

Variable	Category	Frequency	Percent
Gender	Female	92	61.7
	Male	57	38.3
Course of study	Marketing Education	67	45.0
	Accounting Education	65	43.6
	Entrepreneurial Education	10	6.7
	Office Technology and Management	7	4.7
Academic level	Year 2	91	61.1
	Year 3	30	20.1
	Year 1	28	18.8
Awareness of ICT	Aware	130	87.2
	Not aware	19	12.8

As shown in Table 2, digital competence recorded a mean of 2.67 against a five-point midpoint of 3.00, indicating a moderate but slightly below-midpoint level. Attitude towards adoption (M = 2.57) and general attitude (M = 2.61) both fell marginally above the four-point midpoint of 2.50, indicating moderately positive dispositions.

Table 2. Descriptive statistics and reliability of the study constructs

Construct	Items	Mean	SD	Cronbach α
Digital competence	11	2.67	0.90	.84
Attitude towards ICT adoption	9	2.57	0.49	.80
Attitude towards ICT (general)	15	2.61	0.46	.85

Table 3 reports the inter-correlations among the constructs. Digital competence was significantly and positively correlated with attitude towards adoption ($r = .22$, $p = .007$) and with general attitude ($r = .20$, $p = .017$), leading to rejection of H01 and H02. The two attitudinal facets were strongly correlated ($r = .59$, $p < .001$), and H03 was rejected. The relationship between the attitude measures was thus substantially stronger than the relationship of either with competence.

Table 3. Pearson correlation matrix for competence and attitude (n = 149)

Variable	1	2	3
1. Digital competence	—		
2. Attitude towards ICT adoption	.22**	—	
3. Attitude towards ICT (general)	.20*	.59***	—

Note. *p < .05, **p < .01, ***p < .001 (two-tailed).

Figure 1 displays the bivariate relationship between digital competence and attitude towards ICT adoption, with the fitted regression line indicating the positive but modest slope consistent with the correlation in Table 3.

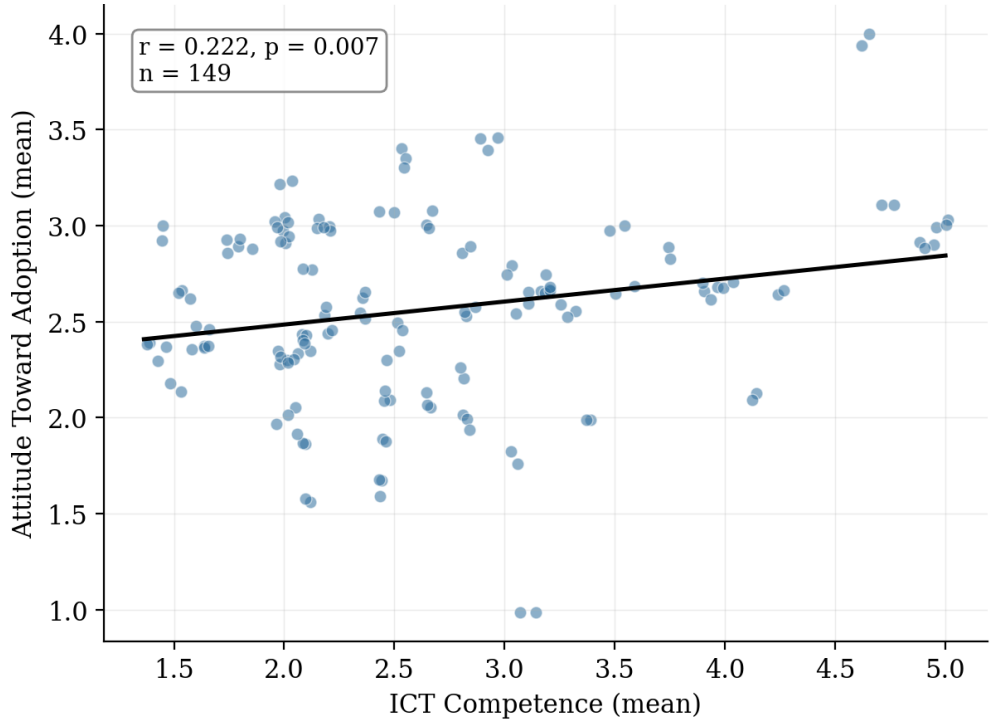

Figure 1. Scatterplot of digital competence and attitude towards ICT adoption

To address the joint prediction, attitude towards adoption was regressed on competence and general attitude. The model was significant, $F(2, 146) = 41.21$, $p < .001$, and accounted for 36.1% of the variance (adjusted $R^2 = .35$). As shown in Table 4, general attitude was a strong unique predictor ($\beta = .57$, $p < .001$), whereas competence was not ($\beta = .11$, $p = .104$) once attitude was controlled; H04 was rejected on the strength of the overall model.

Table 4. Multiple regression predicting attitude towards ICT adoption

Predictor	B	β	t	p
Constant	0.83	—	4.25	< .001
Digital competence	0.06	.11	1.64	.104
Attitude towards ICT (general)	0.60	.57	8.44	< .001

Note. Dependent variable: attitude towards ICT adoption. $R^2 = .36$; $F(2, 146) = 41.21$, $p < .001$.

4. Discussion

Three findings are central. First, all three construct means were close to their scale midpoints: self-reported competence was slightly below its midpoint, and both attitude scores were only slightly above theirs. This pattern is consistent with Nigerian evidence that favourable views of ICT may coexist with limited competence, access, or use [13], [16]. The midpoint comparisons are descriptive rather than criterion-referenced, so they cannot establish whether participants met a professionally meaningful standard. Performance-based benchmarks would be needed for that purpose.

Second, digital competence showed only small positive correlations with the two attitude measures. The direction of these relationships is compatible with TAM and social cognitive accounts linking capability-related beliefs with evaluative perceptions [3], [8], and it accords with earlier evidence connecting competence or self-efficacy to prospective technology integration [12], [14]. Their small magnitude, however, indicates that perceived competence explained little of the variation in attitude when considered alone. This should not be taken to mean that competence is unimportant. The 11-item scale assessed perceived knowledge and did not capture the wider pedagogical, professional, ethical, and contextual dimensions included in contemporary teacher digital-competence frameworks [19].

Third, the strongest relationship was between general ICT attitude and attitude towards ICT adoption. General attitude remained strongly associated with the outcome in the regression model, while digital competence did not make a statistically significant unique contribution. This result is theoretically plausible because a broad evaluative disposition may be closer to adoption attitude than perceived skill. It also warrants caution: both variables were attitudinal self-reports administered in the same questionnaire, so their association may partly reflect overlapping content and common-method variance [22]. The model consequently supports covariation between related attitudes; it does not establish mediation, causal ordering, behavioural intention, or actual ICT use.

The practical implication is not to replace competence development with attitude-focused activities, but to design experiences in which the two reinforce one another. Business Education programmes could integrate spreadsheet-based accounting, digital office workflows, online marketing, and entrepreneurship applications into authentic coursework and practicum tasks. Guided low-stakes practice, feedback, reflection on pedagogical value, and visible modelling by teacher educators may help students connect capability with purposeful use. This approach is consistent with evidence that effective preparation integrates technology, pedagogy, practicum, collaboration, and institutional support rather than relying on isolated skills courses [20], [21]. Adequate access, facilitation, and organisational conditions remain necessary because positive dispositions alone do not remove contextual barriers [2], [15].

Several limitations constrain the interpretation and generalisability of the findings. The cross-sectional design precludes temporal and causal inference, all focal variables were collected through one questionnaire, and no observed or logged measure of ICT use was included. The two attitude scales may overlap conceptually, yet no measurement model was reported to establish discriminant validity. The sample was modest and unevenly distributed across programme options, while the number of participating institutions, sampling frame, recruitment procedure, and response rate were not specified. These omissions make representativeness difficult to assess. Future research should validate the measurement structure, combine self-report with performance-based competence and behavioural indicators, recruit stratified multi-institutional samples, and use longitudinal, experimental, or structural models when testing temporal or mediational processes [22].

5. Conclusion

This study found small positive associations between digital competence and two ICT-attitude measures. General attitude was strongly associated with attitude towards adoption and was the only significant unique predictor in the two-predictor regression model. Because the two attitude scales may share conceptual and measurement content, and because the design was cross-sectional, the results do not show that attitude causes adoption, that competence operates through attitude, or that participants actually use ICT in teaching. Business Education programmes should combine authentic, discipline-relevant digital competence development with teacher modelling, guided practice, reflection, and institutional support. Future research should validate the measurement structure, include performance and behavioural indicators, recruit more representative multi-institutional samples, and use longitudinal or experimental designs to examine temporal and causal processes.

Declarations

Author Contributions

Festus Oladimeji Olafare: Conceptualization, Methodology, Investigation, Formal Analysis, Data Curation, Writing – Original Draft, Writing – Review & Editing, Visualization, and Project Administration. As the sole author, **Festus Oladimeji Olafare** conceived the study, designed the methodology, collected and analysed the data, and prepared and approved the final manuscript.

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Ethics Approval

The manuscript does not report a formal ethics committee approval, exemption determination, or protocol reference.

Informed Consent

Written informed consent was obtained from all participants before data collection.

Consent for Publication

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to applicable ethical and confidentiality restrictions.

Competing Interests

The author declares no competing interests.

Generative AI and AI-Assisted Technologies Statement

During manuscript preparation and revision in 2026, the author used Claude (Anthropic) and ChatGPT (OpenAI) for language editing, structural refinement, and reference-format checking. These tools were not used to generate or modify the study data, statistical analyses, reported results, or conclusions. The author independently reviewed and revised all AI-assisted output, verified the references and substantive content, and accepts full responsibility for the accuracy, originality, analysis, and conclusions of the article.

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