

International Journal of Learning, Teaching and Educational Research
 Vol. 25, No. 7, pp. 955-980, July 2026
<https://doi.org/10.26803/ijlter.25.7.43>
 Received Apr 18, 2026; Revised Jun 2, 2026; Accepted Jul 5, 2026

Cultural Acceptance and Social Pathways as Predictors of Technology-Mediated Translanguaging Adoption in African Higher Education

Oluwarotimi Randle* 

MIND INSTITUTE, University of Witwatersrand
 Johannesburg, South Africa

Ajayi David 

GAIC-LAB, University of Witwatersrand
 Johannesburg, South Africa

Abstract. The conditions for adopting technology for translanguaging in African higher education remain poorly understood, particularly with respect to cultural and social factors. This study therefore examines how cultural acceptance determines technology use for translanguaging among lecturers and students at two Nigerian universities. It pays keen attention to the social pathways through which cultural acceptance translates into technology adoption for translanguaging. Premised on translanguaging theory, the sociocultural theory of learning, and the Technology Acceptance Model, the study employed a quantitative cross-sectional survey design with a purposively selected sample of 98 participants, using a structured four-point Likert scale questionnaire. Data were analysed using partial least squares structural equation modelling (PLS-SEM) in Jamovi v2.6 with 5,000 bootstrap resamples. The structural model explained 78.3% of variance in technology adoption for translanguaging. The acceptance of indigenous languages was the strongest cultural predictor of technology adoption. In contrast, attitude toward multilingual practices was not a significant predictor of technology adoption. Collaboration and peer-to-peer communication also emerged as notable social pathways supporting technology adoption. Technology adoption significantly predicted both multilingual proficiency and engagement in translanguaging practices. The study advances a culturally contextualised extension of the Technology Acceptance Model and provides practicable implications for language policy, institutional design, and educational technology development in postcolonial multilingual university settings in sub-Saharan Africa.

Citation :
 Randle, O., & David, A.
 (2026). Cultural
 Acceptance and Social
 Pathways
 as Predictors of
 Technology-Mediated
 Translanguaging
 Adoption in African
 Higher Education.
*International Journal of
 Learning, Teaching and
 Educational Research*, 25(7),
 955-980.
<https://doi.org/10.26803/ijlter.25.7.43>

*Corresponding author: Oluwarotimi Randle; rotimirandle@gmail.com

Keywords: cultural acceptance; technology adoption; translanguaging; indigenous languages; multilingual education; social pathways; African higher education; PLS-SEM

1. Introduction

Africa's linguistic environment is among the most complex on the planet. It comprises over 2,000 distinct languages that serve as repositories of cultural memory, identity, and social organisation. Despite its vastness, the continent's formal higher education systems have historically operated within monolingual systems inherited from colonial governance. This privileges English, French, and Portuguese languages as the primary means of instruction while indigenous languages are technically marginalised from academic discourse (van Pinxteren, 2022).

The consequence of this linguistic imbalance is beyond communicative inconvenience; it is a barrier to epistemic access, reduces learner engagement, and gradually erodes indigenous knowledge systems that have been carefully cultivated over numerous years of cultural evolution (Skutnabb-Kangas, 2017). The urgency of this challenge is strengthened by projections from the United Nations Department of Economic and Social Affairs (2023), which warns that accelerating globalisation and the younger generation's preference for global languages significantly place Africa's indigenous languages at imminent risk of extinction.

Translanguaging has emerged as a theoretically detailed and educationally promising response to this crisis. The concept of translanguaging was introduced by Williams (1994) in the Welsh English bilingual schooling context and later elaborated into a detailed multilingual theory by García and Wei (2014). The concept reconceptualises language not as a set of bounded, discrete systems but as a free-flowing, integrated repertoire of semiotic resources that multilingual individuals strategically use to infer meaning, deepen understanding, and affirm cultural identity. The role of Translanguaging cannot be overstated, especially in African higher education where students routinely inhabit multiple linguistic worlds.

Students utilise indigenous languages at home, colonial languages in schools, and lingua francas in peer interaction (Makalela, 2015). Empirical work by Charamba (2023) and Omidire and Ayob (2022) records how translanguaging practices in multilingual classrooms can considerably enhance cognitive engagement, improve understanding of complex academic content, and foster inclusive learning environments that validate the full linguistic repertoires of students. These findings therefore place translanguaging not as a remedial strategy for students who are linguistically marginalised, but as a principled educational orientation capable of transforming the nature of higher education in postcolonial settings.

The proliferation of digital technologies within African tertiary institutions has opened new avenues through which translanguaging practices can be more

purposefully institutionalised. Platforms such as Google Classroom, Moodle, and a growing array of mobile language-learning applications (Duolingo, Babbel, and WhatsApp-enabled multilingual channels) have created technical affordances that support the delivery of multilingual content, cross-linguistic peer interaction, and the digital documentation of indigenous languages (Godwin-Jones, 2018; Mlambo & Matfunjwa, 2024).

However, the availability of digital tools does not automatically translate into their adoption for translanguaging purposes. The Technology Acceptance Model (TAM) developed by Davis (1989) establishes that technology adoption is primarily determined by users' perceptions of usefulness and ease of use, which are constructs that were developed in predominantly Western, monolingual organisational settings. However, in multilingual postcolonial educational environments, this framework requires critical extension. Perceived usefulness cannot be divorced from whether a technology affirms or suppresses the languages users hold as central to their identity.

Cultural acceptance of indigenous languages is precisely the variable that the original TAM omits yet is theoretically indispensable in settings where the cultural legitimacy of a tool determines whether it is adopted for translanguaging. Technology Acceptance Model is a framework that has been long extended and validated in diverse educational settings (Lin & Yu, 2023; Venkatesh & Davis, 2000). Beyond technical perception, adoption in multilingual educational settings is conditioned by institutional, social, and notably, cultural variables that TAM, in its original formulation, did not fully account for.

For clarity, it is pertinent to define three constructs used in this study. Cultural acceptance refers to the degree to which educators and students actively affirm indigenous languages as legitimate academic and communicative resources within formal institutional settings. It extends beyond a mere tolerance of linguistic diversity. Cultural readiness denotes the broader institutional and community preparedness to integrate indigenous languages into digitally mediated educational practice. Social pathways describe the relational mechanisms (specifically collaborative lecturer–student interaction and peer-to-peer communication) through which cultural dispositions are enacted and reinforced in everyday digital educational behaviour.

As a propeller of technology adoption for translanguaging, the distinct role of cultural and indigenous languages acceptance remains insufficiently theorised in literature. Existing studies have tended to examine technological factors (infrastructure, digital literacy) and organisational factors (institutional policy, funding) in relative isolation from the cultural and social dynamics that affect how African university communities relate to their own multilingual heritage (Ndibalema, 2025; Nordmeyer & Bettney, 2022). This omission has significant effects, because technology adoption in linguistically diverse postcolonial settings cannot be fully explained without understanding whether and how cultural readiness is digitally mediated into academic spaces.

No existing study has modelled the independent structural contribution of cultural acceptance to translanguaging technology adoption, nor traced the social pathways through which this relationship operates. It is this significant void that the present study addresses directly. Hence, utilising a quantitative cross-sectional survey design involving 98 lecturers and students in two Nigerian higher education institutions, the present study investigates how cultural acceptance affects technology use for translanguaging. It also examines the social pathways through which this relationship operates. In doing this, the study is guided by the following research questions:

RQ1: To what extent does cultural acceptance of indigenous languages predict technology adoption for translanguaging among lecturers and students in Nigerian higher education institutions?

RQ2: What social pathways, especially collaboration between lecturers and students and peer-to-peer communication, mediate the relationship between cultural acceptance and the adoption of technology for translanguaging?

RQ3: How does technology adoption for translanguaging influence multilingual proficiency and engagement in translanguaging practices, and what role do cultural and social factors play in sustaining these outcomes?

2. Literature Review

The intersection of cultural acceptance, technology use, and translanguaging in African higher education connects with diverse scholarly conversations that encompass applied linguistics, educational technology, sociocultural theory, and postcolonial studies. This section reviews the existing theoretical and empirical literature in four interrelated segments. The first addresses translanguaging as an educational and linguistic practice. The second takes a look at the role of cultural attitudes and indigenous language acceptance in determining educational behaviour. The third focuses on the adoption of technology in multilingual academic settings while the fourth explores the social dynamics, especially collaboration and peer interaction that mediate how cultural dispositions translate into digital practice.

2.1 Translanguaging as Pedagogy and Practice in African Higher Education

Empirical work in African university classrooms gives credence to the educational value of translanguaging. Charamba (2023) and Omidire and Ayob (2022) evince measurable advantages of incorporating the home languages of students into instruction which include conceptual comprehension and cognitive engagement. Canagarajah (2011) extends this evidence into academic writing, showing that codemeshing, the intentional weaving of multiple languages within a single text, is a sophisticated, teachable academic strategy rather than a compensatory measure. Collectively, these studies position translanguaging as a principled educational strategy that affirms learners' cultural identities while advancing their academic competencies in formal institutional settings.

A notable gap in this literature is the limited attention given to digital mediation as a vehicle for institutionalising translanguaging. Makalela (2015) notes that translanguaging remains largely confined to informal and face-to-face contexts.

Also, its systemic embedding requires institutional and cultural conditions that most African universities are yet to cultivate. It is important to distinguish between translanguaging and code-switching because code-switching describes alternation between separately bounded language systems, while translanguaging treats the speaker's entire semiotic repertoire as a unified, integrated resource (García & Wei, 2014). This distinction underscores why cultural acceptance of indigenous languages is central to any meaningful technology adoption model in this context.

2.2 Cultural Acceptance, Indigenous Language Attitudes, and Technology Behavior

The role of cultural values and language attitudes in affecting technology-related behaviour has attracted growing scholarly interest. The Theory of Reasoned Action by Fishbein and Ajzen's (1975) established the foundational premise that behavioural intentions are determined by attitudes, which are in turn rooted in beliefs. Applied to the context of multilingual education technology, this means that the feelings of educators and students about indigenous languages condition their adoption of digital tools that support those languages. Gardner (1985) socio-educational model supports this by linking motivational orientation to language use, arguing that integrative motivation, which is identifying with the linguistic and cultural community, is a stronger predictor of language learning engagement than instrumental motivation alone.

In African higher education, cultural attitudes toward indigenous languages are complicated by deep colonial legacies that have systematically devalued them in formal settings (Skutnabb-Kangas, 2017). Lockett and Hurst-Harosh (2021) examine the digitalisation of isiXhosa at South African universities and find that while individual faculty members held genuinely positive attitudes toward multilingualism, institutional cultures remained predominantly Anglocentric, thus creating a gap between attitudinal endorsement and actual practice. Furthermore, Mlambo and Matfunjwa (2024), in their examination of mobile applications for South African indigenous language preservation, conclude that sustained engagement depended less on general digital enthusiasm and more on users' cultural ownership of the content.

Collectively, these findings establish a theoretically productive foundation. Cultural attitudes toward indigenous languages are not just background variables but active determinants of technology-related behaviour in multilingual educational settings. The present study builds directly on this insight by modelling cultural acceptance as a structural predictor of technology adoption for translanguaging. Thus, it provides a quantitative test of the relationship that prior qualitative and descriptive work has consistently pointed toward.

2.3 Technology Adoption in Multilingual Educational Contexts

Davis's (1989) TAM and its extension into the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) have generated a substantial empirical literature on technology adoption in education. UTAUT usefully extends TAM's core constructs of perceived usefulness and ease of use by adding social influence and facilitating conditions as determinants of adoption

behaviour. Lin and Yu (2023) confirm that these constructs remain robust predictors of student engagement with digital tools in contemporary higher education contexts. However, these studies were conducted in settings where the language of instruction and that of digital tools aligned, a condition that does not hold in postcolonial African universities.

Warschauer (2004) challenges purely techno-centric adoption models by arguing that social embeddedness is a more decisive determinant than hardware access or perceived utility alone. It entails the degree to which technology is integrated into authentic social practices. Oni et al. (2025) apply this argument to African students, revealing that cultural relevance of digital tools moderates' adoption even when technical access and skills are present. Ndibalema (2025) similarly shows, in a systematic review of digital transformation across Sub-Saharan African higher education, that stratified technology uptake persists, with infrastructural, institutional and policy factors exerting as much influence as digital literacy. The present study therefore extends TAM to incorporate cultural acceptance of indigenous languages as an independent structural predictor, testing its relative weight alongside social and organisational factors through PLS-SEM.

2.4 Social Pathways: Collaboration, Peer Interaction, and Translanguaging Uptake

The social dimensions of technology adoption in multilingual educational settings have attracted growing empirical attention. Drawing on Vygotsky's (1978) premise that higher-order cognitive processes originate in social interaction, researchers have documented how the quality of lecturer-student collaboration and peer-to-peer communication determines whether and how digital tools for translanguaging are taken up. Lave and Wenger's (1991) concept of legitimate peripheral participation extends this insight further: learners acquire both competencies and identities through progressive engagement in shared social activities. This consequently positions peer networks and collaborative learning environments as structurally significant channels for normalising or inhibiting technology adoption.

Empirical research in African educational environments back up these theoretical claims. Nordmeyer and Bettney (2022) find that collaborative digital learning environments majorly enhanced multilingual engagement among students from linguistically diverse backgrounds. It considers peer interaction as a vital mechanism for normalising language mixing in formal settings. Godwin-Jones (2018) records how language learning applications such as Duolingo and Babbel gain traction through peer recommendations and shared social use, buttressing that informal social networks are important adoption channels that institutional strategies often underutilise.

The evidence reviewed in this subsection therefore positions social interaction as a constitutive mechanism through which cultural acceptance is enacted, strengthened, and translated into sustained digital translanguaging practice. This knowledge directly motivates the inclusion of collaboration and peer-to-peer communication as key social factor variables in the present study's structural

model. It bridges the gap between individual cultural dispositions and collective digital behaviour. Therefore, the literature reviewed shows a consistent body of evidence. Cultural acceptance of indigenous languages, institutional support, and the quality of social interaction jointly determine whether technology realises its potential as a vehicle for translanguaging in African universities. However, existing literature has not examined with sufficient precision the relative structural weight of each of these factors.

Research is yet to investigate whether cultural acceptance operates independently of social dynamics or whether its influence is primarily channelled through social pathways. The present study addresses this gap directly. It employs structural equation modelling to produce path estimates that explain the independent contributions of cultural, social, organisational, and technological factors to technology adoption for translanguaging. It further traces the downstream effects of adoption on multilingual proficiency and engagement in translanguaging practices.

3. Theoretical Framework

This study utilises three interconnected theoretical frameworks which are the Translanguaging Theory, the Sociocultural Theory of Learning, and the Technology Acceptance Model. The study adopts them to explain how cultural acceptance determines technology use for translanguaging in African universities, and the social pathways through which this relationship operates.

3.1 Translanguaging Theory

Translanguaging Theory (García & Wei, 2014; Williams, 1994) provides the conceptual foundation for this study. It illuminates the reason multilingual speakers draw on their full linguistic repertoire rather than operating within the bounded constraints of a single named language. The theory serves three specific functions in this study. First, it establishes the reasons the cultural acceptance of indigenous languages is a precondition for meaningful translanguaging practice. Second, it explains why digital tools that suppress indigenous languages encounter adoption resistance regardless of their technical quality. Third, it frames the study's outcome variables including multilingual proficiency and engagement in translanguaging practices as educationally legitimate and theoretically grounded goals.

The theory, therefore, provides a normative and descriptive account of the linguistic reality that this study's technology adoption model seeks to support. Digital tools should not impose monolingual standards but should instead affirm and amplify the full multilingual repertoires that African students already possess. As Creese and Blackledge (2015) argue, translanguaging is enacted within ideological environments that either validate or suppress the linguistic identities of learners. This means that where institutions actively accept indigenous languages, translanguaging flourishes and where colonial monolingual ideologies prevail, it is inhibited regardless of the technical availability of digital tools.

3.2 Sociocultural Theory of Learning

Sociocultural Theory of Learning by Vygotsky (1978) frames this study's conceptualisation of social pathways as mechanisms for technology adoption. The theory's core claim is that higher psychological processes are first interpsychic before becoming intrapsychic. This establishes that technology adoption for translanguaging is constituted through social relationships, collaborative practices, and the communicative norms of the educational community rather than through individual attitudes alone. (Lantolf & Thorne, 2006; Randle et al., 2025). This theoretical grounding directly motivates the inclusion of lecturer-student collaboration and peer-to-peer communication as independent structural predictors in the study's model.

This theoretical position directly underpins the study's social factor variables, especially collaboration between lecturers and students and peer-to-peer communication. Furthermore, a positive attitude is an internal psychological state; cultural acceptance, by contrast, is a socially enacted orientation which is visible in institutional policies, classroom practices, and the communicative choices that educators and students make in one another's presence. Vygotsky's theory affirms that it is precisely this social enactment that constitutes the mediating condition for behavioural change, as opposed to private conviction. Communities that actively embrace indigenous languages in their shared digital and educational practices create a sociocultural environment where technology adoption for translanguaging becomes motivated and possible.

3.3 Technology Acceptance Model

Davis's (1989) Technology Acceptance Model provides the structural mechanism through which this study explains when and why digital tools are adopted for translanguaging. TAM's constructs, which includes perceived usefulness and perceived ease of use, mediate the relationship between external contextual variables and actual technology use (Venkatesh & Davis, 2000). This makes it a tractable framework for modelling the combined effects of technological, organisational, social, and cultural factors on adoption decisions in educational settings.

For this study, TAM is extended beyond its original focus on functional and ergonomic perceptions to include the cultural and social determinants of perceived usefulness in multilingual educational settings. When lecturers and students perceive that digital tools actively support the use of their indigenous languages rather than defaulting to monolingual colonial-language interfaces, the perceived usefulness of those tools for translanguaging increases substantially. On the other hand, where digital platforms are experienced as culturally alien or linguistically exclusive, adoption for translanguaging purposes remains low regardless of technical availability or ease of use. This extension of TAM is consistent with subsequent elaborations of the model by Venkatesh and Davis (2000) and Lin and Yu (2023), who showed that social influence, institutional context, and user-specific motivational factors to a large extent moderate the core TAM relationships.

3.4 Theoretical Integration and Model Rationale

The three theories are integrated in the study's structural model as complementary and not competing explanatory frameworks. Translanguaging Theory specifies what needs to be supported, which entails affirming and actively using students' full multilingual repertoires, and why cultural acceptance is non-negotiable in such support. The Sociocultural Theory of Learning explains the relational pathways through which cultural acceptance and technology adoption are realised: they emerge from collaborative, socially mediated educational practices rather than individual attitudes only. The Technology Acceptance Model provides the procedural mechanism that links these social and cultural conditions to measurable adoption behaviour, identifying perceived usefulness as the cognitive bridge between the macrosocial environment and individual technology use decisions. Therefore, the three theories generate the nine hypotheses that are tested in this study as elaborated below.

4. Research Hypotheses

This study posits nine directional hypotheses derived from its integrated theoretical framework and the four-group conceptual model. The hypotheses are organised around the structural relationships between the four categories of independent variables; technological, organisational, social, and cultural and the central mediating variable of technology adoption for translanguaging. This consequently predicts two dependent outcomes: multilingual proficiency and engagement in translanguaging practices.

4.1 Technological Factors

The first group of hypotheses addresses the technological infrastructure available to lecturers and students. Warschauer (2004) states that proper engagement with digital content requires not only the physical availability of devices and connectivity but also the availability of tools that users consider directly useful to their communicative and educational goals. In the context of translanguaging, this implies that institutions equipped with adequate multilingual digital infrastructure create stronger conditions for the adoption of translanguaging technologies than those with limited monolingual tools (Godwin-Jones, 2018).

H1: *The availability of digital tools positively influences the adoption of technology for translanguaging.*

Technical proficiency which includes lecturers' capacity to design multilingual digital learning tasks and students' ability to navigate those environments, has been consistently identified as a moderating variable in technology adoption (Venkatesh et al., 2003).

H2: *The technical skills of lecturers and students positively influence the adoption of technology for translanguaging.*

4.2 Organizational Factors

García et al. (2017) aver that institutions that explicitly incorporate translanguaging into their language-in-education policies and resource allocation decisions create enabling environments where educators and students are more

likely to invest in multilingual digital practices. Without this organisational scaffolding, individual motivation to adopt translanguaging technologies tends to dissipate against the structure of monolingual institutional norms.

H3: *Institutional support positively influences the adoption of technology for translanguaging.*

Sustained professional development and digital literacy training are the operational ways through which institutional support is translated into individual competence. Dooly, M., & O'Dowd, R. (2018) argues that training programmes specifically oriented towards multilingual digital practice instead of generic ICT skills development, are essential for equipping educators and students with the dispositions and skills needed to use technology as a translanguaging medium.

H4: *Training and development programmes positively influence the adoption of technology for translanguaging.*

4.3 Social Factors

Vygotsky's (1978) sociocultural theory establishes that technology adoption, like all forms of learning, is majorly a social achievement than an individual one. Collaborative environments where lecturers and students co-create multilingual digital content, jointly manage multilingual platforms, and share responsibility for translanguaging outcomes are more likely to sustain technology adoption over time than environments in which technology use remains the preserve of technically proficient individuals.

H5: *Collaboration between lecturers and students positively influences the adoption of technology for translanguaging.*

Peer-to-peer communication functions as a complementary social pathway through which translanguaging technology becomes normalised within student communities. Drawing on Lave and Wenger's (1991) communities of practice framework, it is posited that students who observe and participate in peer networks where multilingual digital tools are routinely used are more likely to internalise both the skills and motivational orientations that sustain translanguaging technology adoption.

H6: *Peer-to-peer communication positively influences the adoption of technology for translanguaging.*

4.4 Cultural Factors

The fourth group of hypotheses takes a look into the cultural dimensions of technology adoption, which form the primary distinguishing focus of this study. A positive attitude toward multilingual practices, which entails openness to linguistic diversity, recognition of the educational value of multiple languages, and endorsement of translanguaging as a legitimate educational mode is theoretically expected to predispose educators and students toward adopting digital tools that support multilingual engagement (Gardner, 1985). Furthermore,

Rakgogo (2024) argues that the continued dominance of colonial-era language philosophy in African higher education makes the intellectualisation of indigenous languages as legitimate academic resources a necessary precondition for technology-mediated translanguaging to take root in higher education institutions.

H7: *A positive attitude toward multilingual practices positively influences the adoption of technology for translanguaging.*

The acceptance of indigenous languages is hypothesised to exert a stronger and more direct effect on technology adoption for translanguaging than general attitudinal endorsement of multilingualism. Creese and Blackledge (2015) theoretically distinguish between tolerating language diversity and actively restructuring institutional norms to accommodate indigenous languages as legitimate academic media. The latter requires strong cultural commitment, which is visible in language policy, design of digital content, and daily communicative choices of the educational community. This goes beyond holding a positive attitude toward multilingualism on the surface.

H8: *The acceptance of indigenous languages positively influences the adoption of technology for translanguaging*

4.5 Technology Adoption and Educational Outcomes

The final hypothesis deals with the downstream educational consequences of technology adoption for translanguaging. García and Wei (2014) maintain that when multilingual students are enabled to use digital tools in ways that affirm and extend their full linguistic repertoires, the resulting educational experience produces measurable gains in multilingual proficiency. It includes the ability to operate effectively across two or more languages in academic settings as well as deeper and more sustained engagement in translanguaging practices. This final hypothesis completes the structural model, connecting the social and cultural conditions of adoption to the educational outcomes that justify translanguaging as a policy and educational priority in African higher education.

H9: *The effective adoption of technology for translanguaging positively influences multilingual proficiency and engagement in translanguaging practices.*

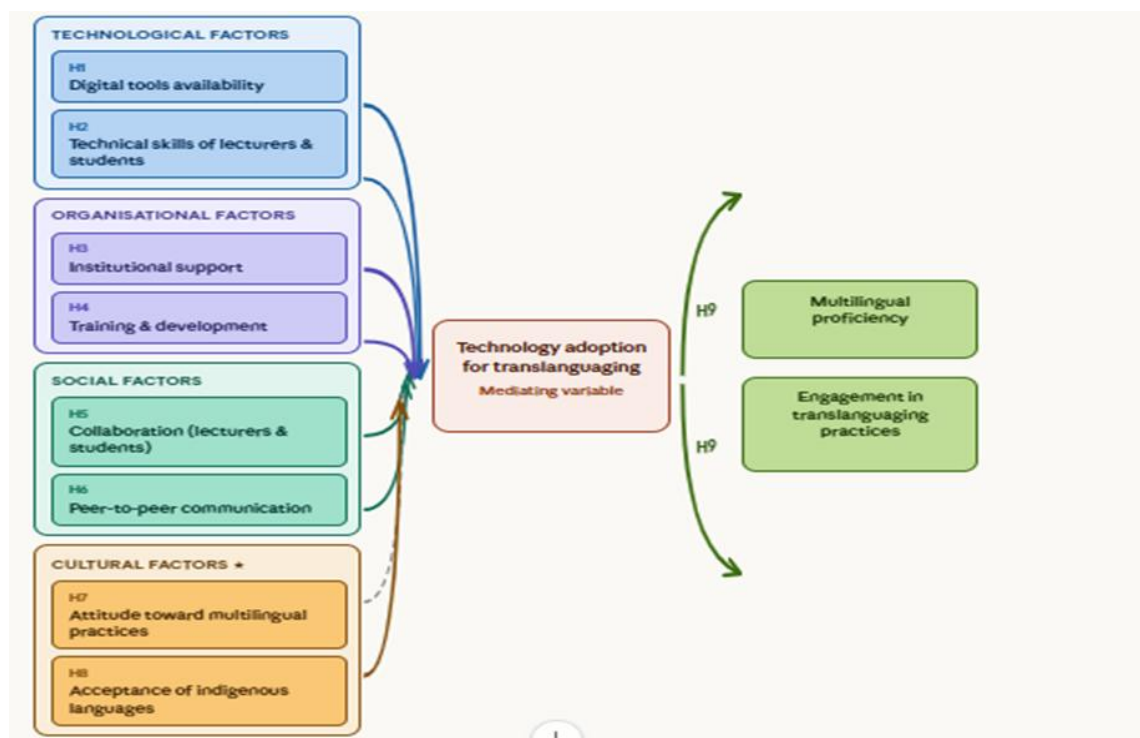


Figure 1: Conceptual Framework Diagram

5. Methodology

5.1 Research Design

This study adopted a quantitative cross-sectional survey design to examine how cultural acceptance affects technology use for translanguaging, and the social pathways through which this relationship operates in African university settings. A quantitative approach was selected because the study's objectives required the empirical testing of hypothesised structural relationships between theoretically derived constructs which demand replicable, numerically measurable data capable of supporting statistical inference (Creswell & Creswell, 2018; Randle & Ajayi, 2025).

5.2 Participants of the Study

The study was conducted in two public higher education institutions in Nigeria. These institutions were purposely selected based on their linguistic diversity, established digital infrastructure, and institutional readiness to engage in multilingual pedagogical initiatives. Nigeria was chosen as the study context because of its linguistic plurality, with an estimated 500 or more indigenous languages and its postcolonial educational system, wherein English is the dominant medium of instruction. This creates persistent tension between institutional language norms and students' everyday multilingual realities (Adegbija, 2004).

Participants were selected using purposive sampling, a non-probability technique in which individuals are selected on the basis of specific criteria aligned with the study's research objectives. The sampling criteria required that participants: (i) were actively enrolled or employed in a social science or language-related

programme; (ii) had access to digital tools in their institutional context; and (iii) were willing to engage with a gamified multilingual digital tool introduced as part of the data collection process. This approach ensured that the sample possessed the minimum conditions of digital access and linguistic diversity necessary to meaningfully respond to the study's constructs. A total of 120 questionnaires were distributed (20 lecturers and 40 students per institution). Of these, 98 were valid and retained for analysis ($N = 98$). The achieved sample comprised 40 lecturers (41%) and 58 students (59%).

5.3 Research Instrument

Data were collected using a structured, closed-ended four-point Likert scale questionnaire (1 = Strongly Disagree; 4 = Strongly Agree), designed to minimise acquiescence bias associated with the mid-point option that appears in five-point scales. The instrument comprised ten construct-specific sections, each containing six items, yielding a total of 60 items across the following constructs: digital tools availability, technical skills, institutional support, training and development, collaboration between lecturers and students, peer-to-peer communication, attitude toward multilingual practices, acceptance of indigenous languages, technology adoption for translanguaging (mediator), multilingual proficiency, and engagement in translanguaging practices (outcomes).

All items were adapted from validated scales in the extant literature. Digital tools availability items were adapted from Venkatesh et al. (2003); technical skills items from Davis (1989); institutional support and training items from Zhuang et al. (2013); social factor items from Bandura (1986) and Lave and Wenger (1991); cultural factor items from Gardner (1985) and Fishbein and Ajzen (1975); technology adoption items from Rogers (2003); and outcome items from Cummins (2000) and García and Wei (2014). The questionnaire was reviewed for content validity by two subject matter experts prior to distribution, and minor item refinements were made based on their feedback.

5.4 Data Collection

Data were collected over a defined period at each institution, with the support of departmental liaisons who facilitated access to eligible participants. Questionnaires were administered in paper format to minimise digital literacy barriers and ensure full completion.

5.5 Ethical Considerations

Participation was entirely voluntary; each respondent was informed of their right to withdraw at any stage without consequence. Institutional ethical clearance was obtained from the relevant review boards at both sites prior to data collection, and all data were stored securely and used solely for the purposes of this study. Anonymity and confidentiality were maintained throughout by assigning identification codes to all questionnaires and retaining no personal identifiable information.

5.6 Data Analysis

Data were analysed using Jamovi software (version 2.6) employing a two-stage analytical procedure consistent with the partial least squares structural equation

modelling (PLS-SEM) approach recommended by Hair et al. (2017). In the first stage, the measurement model was assessed using confirmatory factor analysis (CFA). This was to establish indicator reliability (factor loadings ≥ 0.70), internal consistency reliability (composite reliability > 0.70), convergent validity (average variance extracted > 0.50), and discriminant validity via the Fornell–Larcker criterion (Fornell & Larcker, 1981).

This criterion requires that the square root of the AVE for each construct exceeds its highest inter-construct correlation. In the second stage, the structural model was evaluated by examining R^2 values (explanatory power) and Q^2 values (predictive relevance). Path significance was assessed using 5,000 bootstrap resamples with a one-tailed test and a critical t-value of ± 1.65 . This bootstrapping procedure is consistent with the non-parametric approach recommended for PLS-SEM when distributional assumptions cannot be guaranteed (Hair et al., 2017) and is particularly well-suited to the study's modest sample size and exploratory structural modelling objectives.

The choice of PLS-SEM over covariance-based SEM was informed by the study's emphasis on predicting and explaining variance in the key endogenous constructs which is technology adoption for translanguaging, multilingual proficiency, and engagement in translanguaging practices, instead of model-fit confirmation. PLS-SEM is also well suited for models involving multiple latent constructs with reflective measurement specifications and sample sizes below 200 (Hair et al., 2017). Analyses were conducted separately for the measurement and structural models, with results reported in terms of standardised path coefficients (β), t-statistics, and corresponding significance levels.

6. Results

6.1 Demographic Profile of Respondents

Of the 120 questionnaires distributed, 98 were fully completed and valid. Table 1 summarises the demographic profile of participants.

Table 1: Demographic Distribution of Respondents (N = 98)

Variable	Category	Frequency	Percentage (%)
Age	Under 20	17	17%
	20–30 years	35	37%
	30–40 years	28	28%
	Over 40	18	18%
Gender	Male	51	52%
	Female	47	48%
Role	Lecturer	40	41%
	Student	58	59%
Qualification	Undergraduate	58	59%
	Master's degree	27	28%
	Doctoral degree	13	13%

Note: Participants selected via purposive sampling. Criteria included digital tool access, willingness to engage, and enrolment in social science or language courses

The sample was fairly balanced by gender (52% male, 48% female) and included both students (59%) and lecturers (41%). The dominant age group was 20–30 years (37%). Undergraduates made up 59% of respondents, with 28% holding master's degrees and 13% doctoral degrees.

6.2 . Measurement Model Assessment (CFA)

Confirmatory Factor Analysis (CFA) was used to evaluate the reliability and validity of all constructs prior to structural analysis. Table 2 presents the factor loadings, composite reliability (CR), average variance extracted (AVE), and square root of AVE ($\sqrt{AVE}$) for each construct.

Table 2: Factor Loadings, Composite Reliability, and Average Variance Extracted

Construct	Factor Loadings	CR	AVE	$\sqrt{AVE}$	Role
Digital tools availability	0.751–0.846	0.839	0.564	0.751	Independent
Technical skills	0.723–0.812	0.827	0.541	0.735	Independent
Institutional support	0.758–0.879	0.844	0.586	0.765	Independent
Collaboration	0.743–0.865	0.832	0.554	0.744	Independent
Peer-to-peer communication	0.731–0.827	0.821	0.532	0.730	Independent
Attitude toward multilingual practices	0.710–0.843	0.816	0.528	0.727	Cultural (key)
Acceptance of indigenous languages	0.767–0.874	0.856	0.602	0.776	Cultural (key)
Technology adoption for translanguaging	0.755–0.868	0.843	0.572	0.756	Mediator
Multilingual proficiency	0.760–0.865	0.840	0.564	0.751	Dependent
Engagement in translanguaging	0.738–0.856	0.828	0.541	0.736	Dependent

Note: CR = Composite Reliability; AVE = Average Variance Extracted; $\sqrt{AVE}$ = square root of AVE. Amber rows = cultural constructs (focus of this paper); green row = mediator. All CR > 0.70 and AVE > 0.50 confirm reliability and convergent validity

All constructs exceeded the recommended CR threshold of 0.70 and AVE threshold of 0.50 (Hair et al., 2017). The cultural construct Acceptance of Indigenous Languages yielded the highest AVE (0.602) and CR (0.856) of all constructs, showing strong measurement quality for the study's primary cultural variable. Factor loadings ranged from 0.710 to 0.879 across all constructs, all exceeding the minimum acceptable threshold of 0.70.

6.2.1 Discriminant Validity

Discriminant validity was assessed using the Fornell–Larcker criterion (Fornell & Larcker, 1981), which requires that the $\sqrt{AVE}$ for each construct exceeds its correlations with all other constructs. This condition was satisfied for all ten constructs, confirming that each construct measures a unique dimension. Notably, Acceptance of Indigenous Languages ($\sqrt{AVE} = 0.856$) and Attitude toward Multilingual Practices ($\sqrt{AVE} = 0.816$) both clearly exceeded their highest inter-construct correlations, confirming their distinctiveness as separate cultural constructs.

6.3 Structural Model Assessment

The structural model was evaluated using R^2 (explanatory power) and Q^2 (predictive relevance). Significance testing was performed via bootstrapping with 5,000 resamples and a one-tailed test at a critical t-value of ± 1.65 . Table 3 presents R^2 and Q^2 values for all endogenous constructs.

Table 3: Structural Model – R^2 and Q^2 Values

Endogenous construct	R^2	Q^2	Interpretation
Technology adoption for translanguaging	0.783	0.611	Substantial
Multilingual proficiency	0.655	0.512	Moderate-substantial
Engagement in translanguaging practices	0.634	0.497	Moderate-substantial

Note: $R^2 > 0.67$ = substantial; R^2 0.33–0.67 = moderate (Hair et al., 2017). $Q^2 > 0$ confirms predictive relevance.

The independent variables collectively explain 78.3% of the variance in technology adoption for translanguaging ($R^2 = 0.783$), indicating substantial explanatory power. Technology adoption, in turn, explains 65.5% of the variance in multilingual proficiency and 63.4% in engagement in translanguaging practices. All Q^2 values exceed zero, confirming out-of-sample predictive validity for all three endogenous constructs.

6.4 Structural Equation Model Path Diagram

Figure 1 presents the full SEM path diagram illustrating all hypothesised relationships, standardised path coefficients (β), and significance levels. Cultural and social pathways are colour-coded for visibility. The mediating role of technology adoption for translanguaging is shown at the centre of the model, connecting the four factor groups on the left to the two outcome variables on the right.

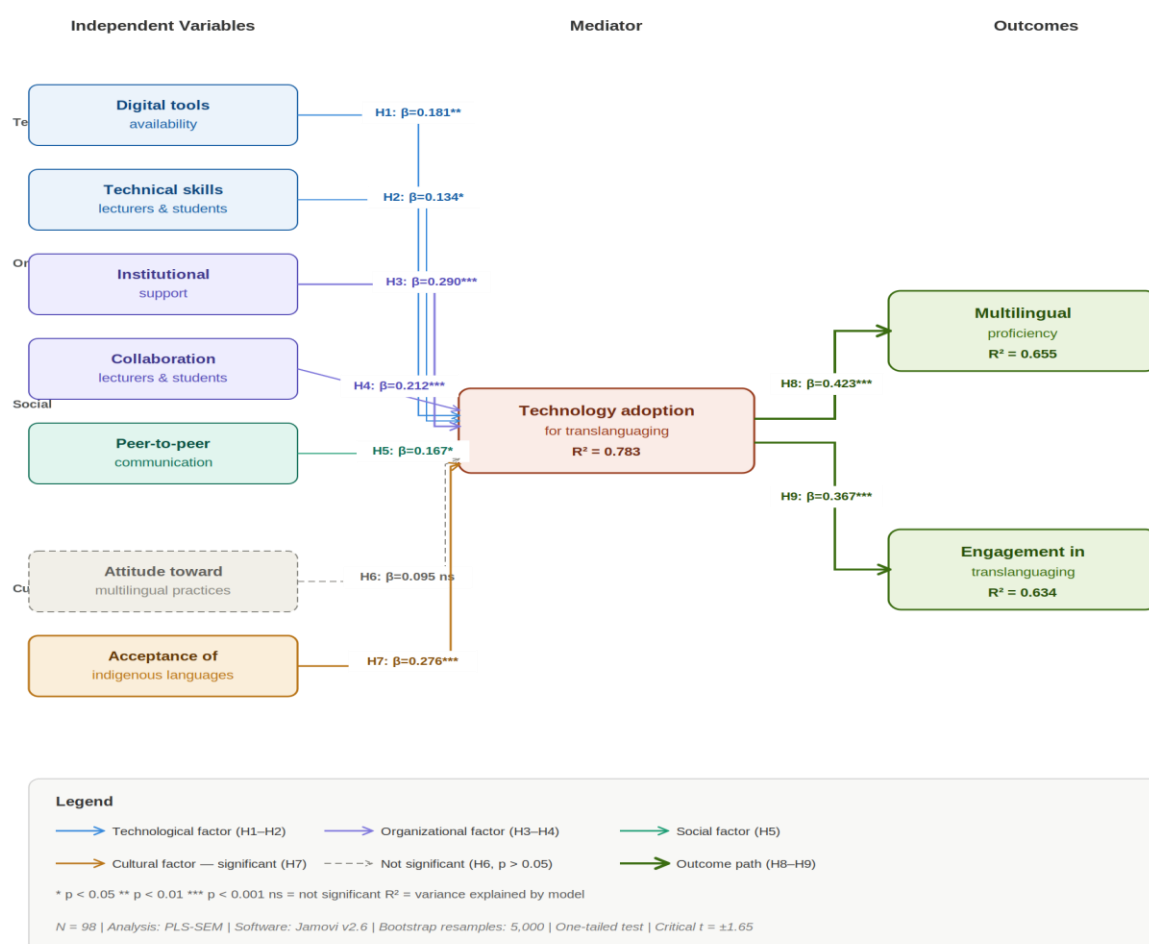


Figure 2: Structural Equation Model – Cultural Acceptance, Social Pathways, and Technology Adoption for Translanguaging

Note. Solid arrows = significant paths; dashed arrow = H6 (not significant, $p > 0.05$). Arrow weight reflects relative β coefficient strength. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; ns = not significant. R^2 values shown inside endogenous construct boxes

6.5 Path Analysis and Hypothesis Testing

Table 4 summarises all nine hypothesised path relationships with their standardised beta coefficients, t-statistics, p-values, and support status. Cultural factor rows are highlighted in amber and social factor rows in blue.

Table 4: Summary of Path Coefficients and Hypothesis Testing Results

H	Path	β	t	p-value	Result	Factor type
H1	Digital tools availability → Technology adoption	0.181	3.142	< 0.01	Supported	Technological
H2	Technical skills → Technology adoption	0.134	2.129	< 0.05	Supported	Technological
H3	Institutional support → Technology adoption	0.290	4.756	< 0.001	Supported	Organisational

H4	Collaboration → Technology adoption	0.212	3.652	< 0.001	Supported	Organisational
H5	Peer-to-peer communication → Technology adoption	0.167	2.543	< 0.05	Supported	Social
H6	Attitude toward multilingual practices → Technology adoption	0.095	1.523	> 0.05	Not supported	Cultural
H7	Acceptance of indigenous languages → Technology adoption	0.276	4.325	< 0.001	Supported	Cultural
H8	Technology adoption → Multilingual proficiency	0.423	6.871	< 0.001	Supported	Outcome
H9	Technology adoption → Engagement in translanguaging	0.367	5.643	< 0.001	Supported	Outcome

Note: β = standardised path coefficient; *t*-values based on 5,000 bootstrap resamples; one-tailed test. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Amber rows = cultural factors; H6 = not supported

Eight out of nine hypothesised paths were statistically supported. Among the cultural factors, Acceptance of Indigenous Languages (H7: $\beta = 0.276$, $t = 4.325$, $p < 0.001$) emerged as a significant and substantive predictor of technology adoption, ranking as the second most influential overall predictor after institutional support. However, Attitude toward Multilingual Practices (H6: $\beta = 0.095$, $t = 1.523$, $p > 0.05$) was not statistically significant, indicating that a general positive attitude toward multilingualism alone is insufficient to drive technology adoption.

Among the social factors, both Collaboration (H4: $\beta = 0.212$, $p < 0.001$) and Peer-to-Peer Communication (H5: $\beta = 0.167$, $p < 0.05$) significantly predicted technology adoption, confirming that cooperative and informal social interactions are meaningful pathways through which translanguaging technology is adopted and sustained in educational settings.

The two outcome paths were the strongest in the model: technology adoption significantly predicted Multilingual Proficiency (H8: $\beta = 0.423$, $p < 0.001$) and Engagement in Translanguaging Practices (H9: $\beta = 0.367$, $p < 0.001$), confirming that technology adoption serves as a robust mediator between the four factor groups and educational language outcomes.

6.6 Findings by Research Question

RQ1: Cultural acceptance of indigenous languages was a significant predictor of technology adoption for translanguaging ($\beta = 0.276$, $t = 4.325$, $p < 0.001$). It ranked as the second strongest predictor overall, behind only institutional support ($\beta = 0.290$). This finding indicates that lecturers and students who held deeper

acceptance of indigenous languages as legitimate academic and communicative resources were substantially more inclined to adopt digital tools that enabled translanguaging practice. By contrast, a general positive attitude toward multilingual practices ($\beta = 0.095$, $t = 1.523$, $p > 0.05$) did not attain statistical significance. This reveals a substantive divergence between surface-level attitudinal endorsement and the deeper cultural commitment that indigenous language acceptance represents. Together, the independent variables explained 78.3% of the variance in technology adoption for translanguaging ($R^2 = 0.783$). This lends a strong empirical support to the proposition that culturally embedded orientations toward indigenous languages decisively shape the adoption of translanguaging technologies in postcolonial Nigerian university settings.

RQ2: Two social pathways through which cultural dispositions translate into digital translanguaging practice were identified. Collaboration between lecturers and students emerged as the stronger pathway ($\beta = 0.212$, $t = 3.652$, $p < 0.001$), followed by peer-to-peer communication ($\beta = 0.167$, $t = 2.543$, $p < 0.05$). Both pathways functioned as independent structural mechanisms within the model, not merely as reflections of underlying cultural values. Collaborative digital environments, wherein lecturers and students jointly negotiated multilingual content and shared responsibility for translanguaging outcomes, were more strongly associated with technology adoption than peer interaction alone. Nevertheless, peer-to-peer communication served as a complementary channel through which the use of indigenous languages in digital academic spaces was gradually normalised and rendered socially legitimate within student communities.

RQ3: Technology adoption for translanguaging demonstrated robust predictive effects on both outcome variables. It explained 65.5% of the variance in multilingual proficiency ($\beta = 0.423$, $t = 6.871$, $p < 0.001$) and 63.4% of the variance in engagement in translanguaging practices ($\beta = 0.367$, $t = 5.643$, $p < 0.001$). Cultural acceptance of indigenous languages and the social factors of collaboration and peer-to-peer communication sustained these educational outcomes indirectly. This is possible by shaping the quality and extent of technology adoption, which in turn enabled learners to develop multilingual proficiency and engage more fully in translanguaging practices. These results affirm that the educational benefits of translanguaging are not automatic consequences of technological availability but are contingent on prior alignment of cultural acceptance, structured social interaction, and institutional support. All of these work in concert to make technology adoption purposeful and durable.

7. Discussion of Findings

7.1 Cultural Acceptance as a Driver of Technology Adoption

The most theoretically significant finding of this study is the divergence in predictive power between the two cultural constructs. Acceptance of indigenous languages emerged as a notable predictor of technology adoption for translanguaging, whereas attitudes toward multilingual practices were not statistically significant. The difference has great importance for both theory and practice. This pattern cannot be dismissed as a measurement issue. Instead, it

points to a meaningful difference between private attitudinal orientation and publicly enacted cultural commitment. The present data confirms the logic of Gardner (1985) who argues that attitudes are necessary but rarely sufficient conditions for language behaviour change: what motivates actual practice is whether the cultural environment provides concrete, visible affirmation of the languages in question. In a digital educational context, institutions that seeks to promote technology adoption for translanguaging must do more than cultivating positive attitudes toward linguistic diversity. They must actively embed indigenous languages in curricula, platforms, and everyday educational communication.

This finding extends Makalela's (2021) concept of ubuntu digital translanguaging, which calls for technology environments that reflect African multilingual realities instead of just accommodating them. Where Makalela's argument was largely theoretical and focused on informal digital spaces, the present study provides quantitative structural evidence that the same principle applies in formal higher education. At the same time, the finding also challenges Lockett and Hurst-Harosh (2021), whose pessimism about digital transformation in South African universities was grounded partly in the assumption that attitudinal resistance is the primary barrier. The present evidence suggests the relationship is more balanced. It is not negative attitudes that really constrain adoption. However, the absence of structured cultural practices makes the use of indigenous language feel academically legitimate and digitally normal.

7.2 Institutional Support and the Organizational Ecology of Adoption

Institutional support emerged as the single strongest predictor of technology adoption in the structural model which aligns with well-established findings in the technology acceptance literature.

Venkatesh and Davis (2000) identified facilitating conditions as a moderator of perceived usefulness, and recent work by Lin and Yu (2023) confirmed that institutional backing significantly shapes individual adoption decisions in higher education contexts. What distinguishes the present study is the specific multilingual dimension of institutional support: in environments where administrative policy, resource allocation, and training infrastructures are tilted toward monolingual colonial-language norms, even technologically proficient users are unlikely to adopt digital tools for translanguaging because doing so falls outside institutionally sanctioned practice.

The finding implies that cultural change and organisational change are not sequential but co-dependent and neither alone is sufficient to shift adoption behaviour. This co-dependence aligns with and extends the findings of Ndibalema (2025) and Venkatesh and Davis (2000). Ndibalema (2025) corroborates that institutional transformation in Sub-Saharan African universities remains incomplete when policy and infrastructural readiness are not simultaneously addressed alongside individual digital literacy. Venkatesh and Davis (2000) facilitating conditions construct pointed in the same direction but fall

short in theorising the cultural dimension that is now evidenced in the present data.

7.3 Social Pathways: Collaboration and Peer Communication

The importance of collaboration and peer-to-peer communication as significant social pathways to technology adoption aligns with Vygotsky's (1978) foundational claim that higher cognitive and behavioural practices are first enacted socially before being internalised individually. As regards translanguaging, this means that digital multilingual practice is not adopted simply because it is available or useful. It is adopted because learners observe trusted peers using it, receive encouragement, and see it included in collaborative educational relationships. Niyibizi et al. (2021) observe analogous peer-driven dynamics in Rwandan social media, where multilingual digital practices spread horizontally through community networks instead of institutional authority. This study extends that insight into structured formal learning environments, suggesting that how technology is used socially is a decisive factor in whether translanguaging adoption is sustained.

Comparable findings by Waluyo and Rouaghe (2025) further support this conclusion. Their study in an EFL context in Thailand documents strong positive relationships between student-initiated AI tool use and peer learning. It also gives cross-national support to this conclusion, even though their setting differs from the Nigerian higher education context. Despite contextual differences, their findings and those of the present study converge on the same point: peer social dynamics are not peripheral to technology adoption for translanguaging but constitutive of it. This has direct implications for instructional design, specifically creating collaborative digital tasks that require multilingual interaction is likely to be more effective than individual technology provision alone.

7.4 The Attitude–Behavior Gap and its Implications

The non-significant path from attitude toward multilingual practices to technology adoption is perhaps the study's most practically instructive finding. It is worth dwelling on precisely because it runs counter to the intuitive assumption that positive attitudes toward multilingualism will translate into multilingual digital behaviour. Creese and Blackledge (2015) give a clear theoretical difference between tolerating linguistic diversity and actively restructuring educational norms around it, and the present structural model appears to exactly operationalise this distinction.

Lecturers and students in Nigerian higher education may sincerely endorse multilingualism as an educational value while simultaneously reproducing monolingual digital practices because the institutional and cultural scaffolding required to make translanguaging academically legitimate in digital spaces is absent. This attitude–behaviour gap is not unique to the present context. Qureshi et al. (2023) record a comparable discrepancy between Saudi university where teachers supported translanguaging in theory but maintained monolingual classroom practices. They attributed this to a lack of systemic policy support.

7.5 Technology Adoption, Multilingual Proficiency, and Engagement

The strong predictive relationships between technology adoption and both multilingual proficiency and engagement in translanguaging practices confirm that technology functions not merely as a conduit for language learning but as an active medium through which multilingual competence is developed and exercised. This finding is generally consistent with García and Wei's (2014) argument that translanguaging is not an educational technique that is applied to language but a dynamic mode of meaning-making that digital environments can either facilitate or suppress.

When adoption occurs, that is, when cultural, institutional, and social conditions align sufficiently, the translanguaging that digital tools enable are advantageous in both linguistic competence and learner engagement. This gives empirical substance to what Makalela (2021) describes as the transformative potential of ubuntu digital translanguaging: technology, when embedded in enabling cultural conditions, does not simply preserve indigenous languages outside academic practice but integrate them into the intellectual work of higher education.

8. Limitations and Directions for Future Research

Although this study's findings are significant, we must acknowledge that there are some limitations. First, the reliance on self-reported data introduces the risk of social desirability bias, especially on items concerning cultural attitudes and technology use. Some respondents may have answered in ways they perceived as academically or institutionally expected rather than accurate reflections of their actual practice. Future work would benefit from triangulating survey responses with behavioural data such as platform usage logs or observed classroom recordings. Second, while it is analytically productive for the study's aims, the use of purposive sampling from two institutions in one country limits the generalisability of the structural model to other national or regional settings in Africa. Language policy histories, digital infrastructure conditions, and institutional cultures vary widely from the Nigerian setting examined here.

Third, the cross-sectional design provides a snapshot of attitudes and adoption at a single point in time, making it impossible to determine whether cultural acceptance of indigenous languages causally precedes changes in technology adoption behaviour or whether repeated positive experiences with multilingual digital tools gradually redefine cultural orientations which is a directionality question that only longitudinal data can resolve. Fourth, the study examined general technology adoption without distinguishing between different categories of digital tools which may carry quite different cultural valences and elicit different adoption patterns. Finally, the study did not account for socioeconomic and generational variation within the sample, factors which prior research suggests significantly mediate both digital access and cultural attitudes toward indigenous language use in academic settings (Warschauer, 2004).

The limitations identified above open several productive directions for subsequent inquiry. The most pressing is a longitudinal replication of the structural model in multiple African institutions and national settings to test

whether the relationship between cultural acceptance and technology adoption holds across linguistically and institutionally diverse settings or is conditioned by Nigeria-specific postcolonial dynamics. A related priority is the development of mixed methods designs. One that pairs the quantitative structural model with an in-depth qualitative investigation. Such investigation can show how cultural acceptance is enacted in practice by examining the specific educational decisions, informal peer exchanges, and institutional signals that communicate the legitimacy of indigenous languages in digital spaces.

The present survey instrument could only capture these dynamics at an aggregate level. There is also a compelling need for future research to examine the role of emerging technologies, especially artificial intelligence translation and generative language tools, as potential accelerators of translanguaging adoption. Although Waluyo and Rouaghe (2025) have begun to document student-initiated AI-assisted translanguaging, but the conditions under which AI tools either strengthen or undermine indigenous language acceptance in African academic settings remain almost entirely uncharted. Finally, future studies should investigate community-based digital content creation. When students and educators co-produce multilingual materials, this may both reflect and reinforce cultural acceptance. Such work could test whether the relationship between culture and adoption is reciprocal rather than one-directional.

9. Conclusion

This study set out to examine how cultural acceptance influences the use of technology for translanguaging in African universities and the social pathways that mediate this relationship. The evidence reveals that the adoption of digital tools for multilingual educational practice is not basically a technological problem, but a cultural and social one. Where institutions actively accept and integrate indigenous languages into their digital and educational systems, and where collaborative peer relationships normalise multilingual digital engagement, the conditions for translanguaging technology adoption and their downstream educational benefits are well established. The notable finding is that the acceptance of indigenous languages is a stronger predictor than general positive attitudes toward multilingualism. Approaches to awareness campaigns that do not address the cultural and institutional norms from which actual behaviour flows are insufficient.

With 78.3% of the variance in technology adoption explained, and significant downstream effects on both multilingual proficiency and translanguaging engagement, the structural evidence is clear. It foregrounds that cultural acceptance of indigenous languages is not an optional enhancement to digital educational strategy but a necessary precondition for it. In postcolonial African universities, advancing linguistic justice requires placing cultural and social conditions at the centre of technology adoption policy. The findings reported here are provided not as a definitive account but as an empirically grounded provocation to researchers, administrators, and educators to take the cultural dimensions of digital education as seriously as its infrastructural ones.

Acknowledgements

The authors wish to acknowledge that there was no use of any AI tool. The paper remains an accurate representation of the authors' work and intellectual contributions.

Disclosure Statement

The authors did not report any potential conflicts of interest.

10. References

- Adegbija, E. (2004). Multilingualism: A Nigerian case study. Africa World Press.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice-Hall.
- Canagarajah, S. (2011). Codemeshing in academic writing: Identifying teachable strategies of translanguaging. *The Modern Language Journal*, 95(3), 401–417. <https://doi.org/10.1111/j.1540-4781.2011.01207.x>
- Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE.
- Charamba, E. (2023). Translanguaging as bona fide practice in a multilingual South African science classroom. *International Review of Education*, 69(2), 329–349. <https://doi.org/10.1007/s11159-023-09990-0>
- Creese, A., & Blackledge, A. (2015). Translanguaging and identity in educational settings. *Annual Review of Applied Linguistics*, 35, 20–35. <https://doi.org/10.1017/S0267190514000233>
- Cummins, J. (2000). Language, power and pedagogy: Bilingual children in the crossfire. *Multilingual Matters*. <https://doi.org/10.21832/9781853596773>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Dooly, M., & O'Dowd, R. (2018). Telecollaboration in the foreign language classroom: A review of its origins and its application to language teaching practice. In M. Dooly & R. O'Dowd (Eds.), *In this together: Teachers' experiences with transnational, telecollaborative language learning projects* (pp. 11–34). Peter Lang. https://ddd.uab.cat/pub/caplli/2018/266845/inthistgether_a2018p11.pdf
- Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Addison-Wesley.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- García, O., & Wei, L. (2014). Translanguaging: Language, bilingualism and education. Palgrave Macmillan. <https://doi.org/10.1057/9781137385765>
- Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitude and motivation*. Edward Arnold.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.). SAGE.
- Godwin-Jones, R. (2018). Second language writing online: An update. *Language Learning & Technology*, 22(1), 1–15. <https://doi.org/10.64152/10125/44574>
- Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge University Press. <https://doi.org/10.1017/CBO9780511815355>
- Lantolf, J. P., & Thorne, S. L. (2006). *Sociocultural theory and the genesis of second language development*. Oxford University Press.

- Lin, Y., & Yu, Z. (2023). Extending technology acceptance model to higher-education students' use of digital academic reading tools on computers. *International Journal of Educational Technology in Higher Education*, 20, Article 32. <https://doi.org/10.1186/s41239-023-00403-8>
- Lewis, G., Jones, B., & Baker, C. (2012). Translanguaging: Origins and development from school to street and beyond. *Educational Research and Evaluation*, 18(7), 641–654. <https://doi.org/10.1080/13803611.2012.718488>
- Luckett, K., & Hurst-Harosh, E. (2021). Translanguaging pedagogies in the humanities and social sciences in South Africa. In B. Paulsrud, Z. Tian, & J. Toth (Eds.), *English-medium instruction and translanguaging* (pp. 43–61). *Multilingual Matters*. <https://doi.org/10.21832/9781788927338-008>
- Makalela, L. (2015). Moving out of linguistic boxes: The effects of translanguaging strategies for multilingual classrooms. *Language and Education*, 29(3), 200–217. <https://doi.org/10.1080/09500782.2014.994524>
- Mlambo, R., & Matfunjwa, M. (2024). *The use of technology to preserve indigenous languages of South Africa*. *Literator*, 45(1), Article 2007. <https://doi.org/10.4102/lit.v45i1.2007>
- Ndibalema, P. (2025). Digital literacy gaps in promoting 21st century skills among students in higher education institutions in Sub-Saharan Africa: A systematic review. *Cogent Education*, 12(1), 2452085. <https://doi.org/10.1080/2331186X.2025.2452085>
- Nordmeyer, J., & Bettney, E. (2022). Equity for multilingual learners: A global network response to the pandemic. *Current Issues in Comparative Education*, 24(2), 99–107. <https://doi.org/10.52214/cice.v24i2.9414>
- Omidire, M., & Ayob, S. (2022). The utilisation of translanguaging for learning and teaching in multilingual primary classrooms. *Multilingua*, 41(1), 105–129. <https://doi.org/10.1515/multi-2020-0072>
- Oni, A. A., Ajayi, D., & Randle, O. A. (2025). Critical Factors Influencing the Adoption of Mobile Games in African Students: Case of an Extended Technology Acceptance Model. *Educational Process: International Journal*, 19, e2025546. <https://doi.org/10.22521/edupij.2025.19.546>
- Randle, O., Ajayi, D., & Kaka, F. (2025). Adoption of Technology in the Promotion of Translanguaging in African Higher Education. *International Journal of Learning, Teaching and Educational Research*, 24(12), 776–808. <https://doi.org/10.26803/ijlter.24.12.33>
- Randle, O. & Ajayi, D. (2025). Influence of Computer Self-Efficacy, Socio-Economic Status, and Facilitating Conditions on the Learning Abilities of Digital Arts Students. *International Journal of Learning, Teaching and Educational Research*, 24, (7), 465–485. <https://doi.org/10.26803/ijlter.24.7.23>
- Rakgogo, T. J. (2024). A linguistic evaluation of the South African higher education sector: A reflection on 30 years of democracy (1994–2024). *Transformation in Higher Education*, 9, a342. <https://doi.org/10.4102/the.v9i0.342>
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Skutnabb-Kangas, T. (2017). Linguistic genocide in education, or worldwide diversity and human rights? *Routledge*. <https://doi.org/10.4324/9781410605191>
- United Nations Department of Economic and Social Affairs. (2023). *Why indigenous languages matter: The International Decade on Indigenous Languages 2022–2032* (Policy Brief No. 151). <https://www.un.org/development/desa/dpad/publication/un-des-a-policy-brief-no-151-why-indigenous-languages-matter-the-international-decade-on-indigenous-languages-2022-2032/>
- Van Pinxteren, B. (2022). Language of instruction in education in Africa: How new questions help generate new answers. *International Journal of Educational Development*, 88, Article 102524. <https://doi.org/10.1016/j.ijedudev.2021.102524>

- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press. <https://doi.org/10.2307/j.ctvjf9vz4>
- Waluyo, B., & Rouaghe, F. (2025). Beyond teacher-led approaches: Student-initiated translanguaging with artificial intelligence tools in foreign language acquisition. *SAGE Open*, 15(3). <https://doi.org/10.1177/21582440251362998>
- Zhuang, Y., Chen, X., & Wang, Y. (2013). Factors affecting instructor adoption of mobile learning in higher education. *International Journal of Mobile Learning and Organisation*, 7(3–4), 291–307. <https://doi.org/10.1504/IJMLLO.2013.057489>
- Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. MIT Press. <https://doi.org/10.7551/mitpress/6699.001.0001>
- Williams, C. (1994). *Arfarniad o ddulliau dysgu ac addysgu yng nghyd-destun addysg uwchradd ddwyieithog* [An evaluation of teaching and learning methods in the context of bilingual secondary education] (Doctoral thesis, Bangor University). Bangor University Research Portal