REIMAGINING AFRICAN HIGHER EDUCATION FOR FINTECH INNOVATION

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Article History
Received: Nov. 2025
Review processes
Jan - Feb 2026
Received in revised form:
Feb 2026
Accepted: Mar 2026
Published online: Mar 2026

Keywords
Fintech education; digital competence; curriculum reform; African higher education; experiential learning; industry-academia partnerships; DigComp; digital equity; gender-responsive policy

Doi:
https://doi.org/10.5281/zenodo.19319940

Abstract
The rapid growth of the financial technology (fintech) sector has exposed a significant skills gap that African higher education institutions must urgently address. As financial services transition into digital models, there is increasing demand for graduates equipped with both technical expertise and entrepreneurial agility. This article introduces a pedagogical framework grounded in three pillars: integrating digital competence across all disciplines; cultivating an entrepreneurial mindset through experiential and project-based learning; and establishing sustained partnerships among academia, industry, and government. The framework is theoretically anchored in the European Digital Competence Framework (DigComp), Kolb's experiential learning cycle, and effectuation theory from entrepreneurship education. Drawing on a secondary analysis of peer-reviewed mixed-methods research, the article synthesises qualitative and quantitative evidence to assess the current positioning of African higher education institutions and propose concrete directions for repositioning. A central component of this framework is a commitment to digital equity, with particular attention to gender disparities and the structural barriers facing students from under-resourced backgrounds. The article argues that, by prioritising innovation-focused pedagogy over traditional knowledge transmission, African universities can play a pivotal role in enhancing economic resilience across the continent. Limitations of the secondary analysis approach are acknowledged, and directions for future primary research are identified.

Introduction

The intersection of technology and finance represents a critical locus of economic transformation in the twenty-first century, positioning African higher education institutions at the forefront of this disruption. While traditional curricula have left many institutions inadequately prepared, there remains significant potential for responsive reform (Woldegiorgis & Chiramba, 2025). The rapid development of financial technology—encompassing mobile banking, blockchain-based payment systems, AI-driven credit assessment, and digital insurance platforms—has fundamentally altered the competencies required of graduates in the financial sector. For the purposes of this article, the term "fintech" denotes this constellation of digital financial services, while acknowledging that the taxonomy is contested in the scholarly literature and represents an evolving and partial account of a rapidly developing sector. The traditional separation between finance education and information technology is

increasingly untenable; universities are now required to produce professionals proficient in both domains.

Addressing this challenge requires more than minor curriculum changes. African universities must fundamentally shift from knowledge transmission to fostering analytical flexibility, innovative problem-solving, and an entrepreneurial mindset suited to the fintech sector (Nyongesa & Van Der Westhuizen, 2025; Vorster & Botha, 2025). The continent's young population and widespread use of mobile technology offer a unique opportunity to bypass outdated financial infrastructure and provide a skilled workforce ready to seize the opportunities this transition presents.

This article does not advocate the uncritical adoption of Western pedagogical models. Applying imported frameworks without considering African contexts, resource constraints, and cultural realities is both limiting and ineffective (Arek-Bawa & Reddy, 2024). Balancing local relevance with global competitiveness is essential. Closing the digital skills gap also requires strong industry engagement to ensure that classroom instruction matches and anticipates employer needs (Domingo et al., 2024). Without this alignment, even well-designed curricula may produce graduates who are technically skilled but not professionally prepared.

Crucially, the gender dimension of digital skills gaps in African higher education warrants attention from the outset. The underrepresentation of women in technology-related programmes—documented across Sub-Saharan Africa (Woldegiorgis & Chiramba, 2025; Domingo et al., 2024)—means that any fintech education framework not explicitly designed with gender equity in mind risks replicating structural exclusions in digital form. Gender-responsive policies must therefore be treated as an architectural feature of reform, not an addendum.

This article is structured as follows: a literature review situates the argument within current academic debates; the methodology section clarifies the secondary analysis approach employed; findings are presented and analysed; and the article concludes with a proposed framework for institutional reform, an acknowledgement of the study's limitations, and specific directions for future research.

Literature Review

The scholarly conversation on reforming African higher education for the digital economy is rich and growing, though unevenly distributed across disciplines and geographic contexts. A notable limitation of the existing evidence base—which this article inherits—is a geographic concentration on South African institutions (Woldegiorgis & Chiramba, 2025; Arek-Bawa & Reddy, 2024; Maimela & Mbonde, 2025; Xulu, 2024). South Africa's institutional context—including its comparatively

developed higher education infrastructure, its distinct post-apartheid equity frameworks, and its regulatory environment—differs substantially from much of West, East, and Central Africa. Where South African evidence is cited in what follows, readers should exercise caution about generalising findings to the broader continental picture; the applicability of these studies to other African contexts remains an open empirical question. The review organises existing scholarship around four key themes: digital competence, experiential learning, industry-academia partnerships, and inclusive access.

Digital Competence as a Cross-Disciplinary Imperative

Scholars have increasingly argued that digital competencies should not be treated as peripheral skills confined to information technology departments, but rather embedded as core instructional outcomes across all disciplines (Arek-Bawa & Reddy, 2024; Domingo et al., 2024). This position reflects a broader recognition that the boundaries between professional domains are dissolving: an accountant who cannot interpret algorithmic credit models, or a marketing professional who lacks data analytics fluency, is increasingly at a disadvantage in contemporary labour markets. Akberdina and Vlasov (2024), in their comparative study of digital education indices across African cities, found considerable disparities in digital readiness that correlated strongly with institutional investment in technology infrastructure and faculty development—a finding with direct implications for curriculum policy. These findings resonate with the European Digital Competence Framework (DigComp), which provides a principled taxonomy of the digital competences required for full participation in digital societies and which several scholars have proposed as a contextually adaptable reference point for curriculum reform in developing-world university settings (Domingo et al., 2024).

Experiential Learning and Pedagogical Transformation

The pedagogical literature has given considerable attention to experiential learning as a mechanism for bridging the gap between theoretical knowledge and the practical demands of fintech environments. Nyongesa and Van Der Westhuizen (2025) demonstrated that digital teaching tools, when mindfully integrated into higher education curricula, lead to measurable improvements in student participation and educational outcomes. Project-based learning, collaborative digital platforms, and industry-embedded internships have been identified as distinctly effective modalities for fintech education because they replicate the iterative, team-based problem-solving that characterises actual fintech work environments (Vorster & Botha, 2025).

These findings align with Kolb's (1984) experiential learning cycle, in which learning is understood as an iterative process moving through concrete experience, reflective observation, abstract conceptualisation, and active experimentation. Fintech education, with its emphasis on live project environments and industry-embedded internships, maps closely onto the Kolbian model: students encounter real financial technology problems (concrete experience), reflect on what they observe, develop theoretical models, and test them in subsequent project cycles. Curriculum designers wishing to deploy this framework should attend not only to the provision of experiential activities but also to the reflective scaffolding—mentorship, structured debriefing, and formative assessment—that transforms experience into durable learning.

Industry-Academia Partnerships

The role of industry-academia partnerships is well-documented. Liu, Chan, and Chimhundu (2024), in a systematic mapping of fintech research across 518 articles, identified academic institutions' partnerships with fintech firms as one of the most viable avenues for ensuring that educational content remains current and employer-relevant. Croitoru et al. (2025), analysing the linkages between financial literacy and higher education through bibliometric methods, similarly found that partnerships with financial technology providers enhanced both learner participation and the functional applicability of financial learning programmes. These findings align with Xulu's (2024) argument that digitalisation in African universities cannot be achieved through institutional effort alone—it requires sustained external collaboration.

Qian, Yunus, and Rafiq (2024), in a systematic review of digital innovations in higher education, concluded that meaningful digitalisation requires not only curriculum redesign but also institutional culture change—faculty professional development, leadership commitment, and structural support for interdisciplinary collaboration. This finding aligns with Maimela and Mbonde's (2025) work on artificial intelligence in South African universities, which cautioned that technology adoption without accompanying pedagogical transformation risks becoming superficial. As Liu et al. (2024) note, fintech is not a passing trend, but a structural reorganisation of global financial services; universities that fail to prepare graduates for this reality will leave them unable to participate in the sector's most dynamic opportunities.

Inclusive Access and Digital Equity

On the question of inclusive access, the literature is both clear and urgent. Domingo et al. (2024), in a geopolitical analysis of digital skills cooperation with Africa, found that donor-driven digital skills initiatives too often bypass the most

marginalised communities, reinforcing rather than reducing prevalent inequalities. Woldegiorgis and Chiramba (2025) similarly documented how socioeconomic and communicative barriers continue to limit access to higher education for historically disadvantaged students in South Africa—a pattern broadly indicative of institutional disparities across the continent, though the specific mechanisms differ significantly between national contexts.

The gender dimension of digital exclusion is particularly pronounced. Across Sub-Saharan Africa, women are systematically underrepresented in science, technology, engineering, and mathematics (STEM) programmes and in the technology sector more broadly (Domingo et al., 2024). These structural inequalities are not self-correcting: without deliberate recruitment strategies, mentoring programmes, and financial support mechanisms targeting women, fintech education reform will disproportionately benefit those already advantaged. The implication for the framework proposed in this article is unambiguous: gender-responsive design is not optional.

Critical Assessment of the Literature

While the literature reviewed above provides substantial support for the framework developed in this article, several limitations warrant acknowledgement. First, much of the evidence on student outcomes and programme effectiveness is drawn from South African settings with specific institutional characteristics that may not obtain elsewhere on the continent. Second, the quantitative studies cited frequently report aggregate findings without disaggregating by gender, socioeconomic status, or geographic context—a methodological limitation that obscures important variation. Third, several studies rely on self-reported outcome measures (e.g., student perceptions of digital competence), which are susceptible to social desirability bias and may not accurately reflect actual capability. Future research should address these gaps through multi-country, longitudinal designs with objective outcome measures.

Methodology

This article is a secondary analysis—also termed an integrative literature review—drawing on peer-reviewed mixed-methods research reports, systematic reviews, and bibliometric analyses published in the core area of fintech education and digital curriculum reform in African higher education. This methodological approach is appropriate to the article's primary aim, which is to synthesise existing evidence in order to propose a theoretically grounded and practically oriented framework for institutional reform, rather than to generate new primary data. Secondary analysis of this kind is a well-established mode of scholarly contribution, particularly where

the aim is to develop generalisable frameworks from a body of primary studies (Pregoner, 2024; Zhang & Browne, 2026).

The principal sources informing this analysis are mixed-methods research reports that integrate qualitative and quantitative approaches to assess how African higher education institutions are currently positioned—and how they might be repositioned—to produce fintech-ready graduates (Pregoner, 2024; Zhang & Browne, 2026). The choice of mixed-methods sources is deliberate: fintech education reform involves both measurable outcomes (enrolment figures, employability rates) and interpretive dimensions (faculty perceptions of pedagogical change, students' lived experiences of digital learning). Neither quantitative nor qualitative methods alone can adequately capture this complexity (Vebrianto et al., 2020).

The qualitative data drawn upon in the reviewed studies was generated through semi-structured interviews and focus group discussions with three categories of participants: academic staff and institutional administrators responsible for curriculum design; students enrolled in business, finance, and technology-related programmes; and representatives of fintech firms and industry associations operating across West and Southern Africa. In the primary studies, these conversations were designed to surface the strengths and weaknesses of existing programmes, to understand how different stakeholders conceptualise the relationship between education and industry, and to identify the structural and cultural barriers that impede meaningful reform. Interview data were subjected to thematic analysis in accordance with established procedures for qualitative research in educational contexts.

The quantitative data drawn upon was generated through structured survey instruments administered to students across purposively selected samples of African universities with documented commitments to digital education initiatives. Surveys measured self-assessed digital competency, readiness for fintech employment, attitudes toward entrepreneurship, and perceptions of the sufficiency of current curricula. Purposive sampling in the primary studies ensured that samples represented the diversity of African higher education contexts—including institutions in Anglophone and Francophone Africa, public and private universities, and institutions with varying levels of technological infrastructure.

Documentary analysis of university curriculum frameworks, institutional strategic plans, and technology investment policies provided a third layer of evidence in the reviewed studies, enabling assessment of the extent to which institutional commitments to digital transformation were reflected in formal planning documents.

As a secondary analysis, this article is subject to certain methodological constraints that must be acknowledged. Specific quantitative claims reported in the Findings section—including the 75 percent

confidence figure and the 30 percent enrolment increase—derive from findings reported in secondary sources rather than from data collected by this author; they are cited and attributed accordingly. Readers seeking to assess the reliability of these findings are encouraged to consult the primary sources cited. This article does not claim to have conducted independent empirical research; its original contribution lies in the theoretical synthesis, the construction of the three-pillar framework, and the integration of equity and gender considerations into a coherent model for institutional reform.

Results and Findings

The findings drawn from the reviewed literature indicate substantial progress alongside persistent challenges in the reform of African higher education for fintech readiness. The evidence is organised here around three dimensions: pedagogical outcomes, institutional enrolment patterns, digital equity, and the gap between strategic commitment and implementation.

Pedagogical Outcomes

Survey data reported by Arek-Bawa and Reddy (2024), drawn from digitally transformed teacher education programmes in South Africa, indicate that over 75 percent of students enrolled in programmes that integrate theoretical instruction with practical digital applications reported increased confidence in their digital skills. While this figure is drawn from a South African teacher education context rather than from fintech programmes per se, the finding is consistent with broader evidence from project-based learning research and is cited here as indicative rather than definitive. Students who participated in project-based learning activities using fintech tools to address real-world financial problems demonstrated stronger analytical abilities and higher levels of professional self-efficacy than peers in conventionally instructed courses (Nyongesa & Van Der Westhuizen, 2025; Vorster & Botha, 2025). Faculty members engaged in structured professional development programmes also reported greater confidence in delivering digitally enriched instruction, underscoring that investment in human capital—rather than technology infrastructure alone—is the primary driver of effective change.

Enrolment Patterns

Croitoru et al. (2025), in their bibliometric study of fintech-related higher education, report evidence of a 30 percent increase in enrolment in fintech and digital financial services programmes over recent years at institutions with formal fintech partnerships. While increased enrolment does not guarantee quality outcomes, it reflects a real shift in student demand that institutions are beginning to address. The largest enrolment gains occurred at institutions with formal partnerships with fintech companies, offering students

internships, co-designed curriculum modules, and access to live project environments (Liu et al., 2024; Croitoru et al., 2025). It should be noted that these data were not disaggregated by gender or socioeconomic background in the primary sources; this represents a gap that future research should address.

Digital Equity

Findings on digital equity are concerning. Focus group data from Woldegiorgis and Chiramba (2025) and Domingo et al. (2024) reveal ongoing disparities in access to digital learning tools across geography, gender, and socioeconomic status. Students from rural or under-resourced backgrounds faced consistent challenges with internet connectivity, hardware availability, and technological familiarity. Women students reported specific barriers to participation in technology-intensive programmes, including lack of role models, hostile pedagogical environments, and financial constraints. These findings support Domingo et al.'s (2024) warning that digital skills initiatives may reinforce existing inequalities and emphasise the need to integrate equity—including gender equity—into fintech education reform from the outset rather than treating it as an afterthought.

The Strategy-Implementation Gap

Analysis of institutional strategic plans (Qian et al., 2024; Maimela & Mbonde, 2025) revealed a significant gap between stated commitments and actual implementation. Although most institutions identified digital transformation as a strategic priority, fewer than half had established dedicated funding streams for technology infrastructure, faculty development, or industry partnerships. This disconnect between commitment and resourcing constitutes a major structural barrier to sustained reform.

Discussion

The findings sustain a set of interrelated arguments about the conditions under which African higher education can successfully re-engineer itself for the fintech era. The discussion organises these arguments around three analytical themes—pedagogy and curriculum, institutional architecture, and systemic equity—before presenting the three-pillar framework that integrates them.

Pedagogy and Curriculum

The evidence is unambiguous on one point: technology adoption without pedagogical transformation is insufficient. Installing digital technologies in classrooms does not produce digitally capable graduates. What produces such graduates is a systematic reconceptualisation of how learning is organised—a move from passive reception of information toward active problem-solving, iterative design, and coordinated inquiry. This is precisely what Kolb's

(1984) experiential learning cycle prescribes, and it is what project-based learning and experiential internship programmes operationalise. These are not merely a pedagogical fashion; they are, as Nyongesa and Van Der Westhuizen (2025) demonstrate, the mechanisms through which fintech competencies are developed.

This has consequences for curriculum design that extend well beyond adding a digital skills module to existing programmes. It requires rethinking the sequencing of learning, the role of assessment, and the relationship between academic knowledge and professional practice. Digital competence must be embedded across all disciplines—not concentrated in a single department, but integrated in finance, economics, law, management, and even the arts and humanities, all of which are touched by the digital transformation of financial services. Akberdina and Vlasov (2024) found that institutions adopting this cross-disciplinary approach produced graduates who were more adaptable and more readily absorbed into fintech work environments than those from narrowly specialist programmes. The DigComp framework provides a practically useful reference for specifying what these cross-disciplinary digital competences should comprise, adapted to specific disciplinary contexts.

Institutional Architecture and Industry Partnerships

Industry-academia partnerships are not supplementary to fintech education; they are constitutive of it. Without sustained engagement with fintech firms, curriculum designers are reduced to approximating industry requirements, often with a lag of several years. With such engagement, programmes can be designed in genuine consultation with employers, updated in real time as the sector evolves, and supplemented by the live project experience that no classroom simulation can fully replicate (Liu et al., 2024).

Croitoru et al. (2025) demonstrate that the institutions producing the most fintech-ready graduates are those with formal, sustained partnership frameworks—not ad hoc relationships dependent on the enthusiasm of individual faculty members, but institutionally embedded collaborations with clear governance structures, joint objectives, and mutual accountability. Reproducing these structures across African universities will require institutional leadership, policy support, and, in many cases, regulatory reform to enable universities to enter into the contractual arrangements with industry that such partnerships demand.

Systemic Equity and Inclusive Access

A framework that produces fintech-ready graduates from well-resourced urban institutions, while leaving students in under-resourced rural universities without access to the tools or training they need, does not constitute reform—it constitutes the reproduction of privilege in digital form. Woldegiorgis and Chiramba (2025) have documented the depth of these

inequalities in the South African context, and—with due caution about direct extrapolation—the patterns they describe share structural characteristics with institutional disparities documented in West Africa (Domingo et al., 2024) and East Africa (Akberdina & Vlasov, 2024).

The gender dimension deserves particular emphasis. Women's underrepresentation in African STEM and technology fields is not incidental but reflects deeply embedded structural barriers: the absence of female role models in leadership positions, pedagogical environments that marginalise women's participation, and financial constraints that disproportionately affect women students. Addressing these barriers requires gender-responsive policies that actively recruit and support women in fintech-related programmes; targeted mentoring and networking initiatives; and financial aid mechanisms designed to reach students from low-income backgrounds. These are not exclusively educational interventions—they require policy engagement well beyond the limits of individual universities. But universities can and should advocate for such investment, recognising that their own capacity to deliver equitable fintech education depends on the broader ecosystem within which they operate.

The Three-Pillar Framework with a Digital Equity Foundation

Drawing the preceding analysis together, this article proposes a framework for fintech-oriented curriculum reform in African higher education organised around three interdependent pillars, each grounded in established educational theory, and all built upon a foundational commitment to digital equity.

The first pillar—digital competence integration—draws theoretically on the DigComp framework and holds that digital literacy must be embedded as a core instructional outcome across all disciplines, not confined to technology departments. The second pillar—entrepreneurial mindset cultivation—is anchored in Kolb's experiential learning cycle and effectuation theory (Sarasvathy, 2001), operationalised through project-based learning, hackathons, and industry-embedded internships that replicate the iterative problem-solving of fintech work environments. The third pillar—industry-academia partnership—draws on the systematic evidence of Liu et al. (2024) and Croitoru et al. (2025) and insists on formalised, institutionally embedded partnerships rather than ad hoc collaboration.

Underlying these three pillars is the fourth condition: a non-negotiable commitment to digital equity that refuses to design programmes for those already advantaged while excluding others. This condition is not a fourth pillar in the sense of an optional addition; it is the foundation upon which the entire framework rests. A framework that neglects equity will reproduce inequality at scale, regardless of how well it

performs along the other three dimensions. Gender equity, in particular, must be built into each pillar: digital competence curricula should include content on gender and technology; experiential learning programmes should include structured support for women participants; and industry-academia partnerships should set explicit targets for women's representation.

Conclusion

This article has argued that closing the skills gap between African higher education graduates and the competencies the fintech sector demands requires neither the wholesale adoption of imported models nor the piecemeal addition of digital modules to unchanged curricula. It requires a coherent, integrated framework: digital competencies embedded across all disciplines in accordance with the DigComp framework; experiential learning anchored in Kolb's cycle that connects the classroom to the workplace; and sustained industry-academia partnerships formalised at the institutional level. These three pillars, resting on a non-negotiable foundation of digital equity and explicit attention to gender, constitute the framework this article proposes.

The article's original contribution lies in the theoretical synthesis of this framework, the explicit integration of gender-responsive design as an architectural feature rather than an addendum, and the critical interrogation of the existing evidence base—including its geographic concentration on South African institutions and its reliance on self-reported outcome measures.

Several limitations of this article must be acknowledged. As a secondary analysis, it is constrained by the scope and quality of the primary studies on which it draws. The evidence base is geographically skewed toward South Africa, and the generalisability of findings to West, East, and Central African contexts remains uncertain. The specific quantitative claims reported in the findings section derive from cited primary sources and should not be read as independent empirical results. Furthermore, the framework proposed is, by design, generalisable; its adaptation to any specific institutional context will require contextual analysis that lies beyond the scope of this article.

The following directions for future research are proposed. First, multi-country, longitudinal studies using objective outcome measures (rather than self-report) are needed to assess the long-term employability and career trajectories of graduates from fintech-integrated programmes. Second, gender-disaggregated analyses of enrolment, completion, and employment outcomes are needed to understand whether equity-focused interventions are achieving their intended effects. Third, comparative studies of institutions that have successfully implemented formal industry-academia partnerships are needed to identify the governance mechanisms and policy conditions that enable such structures to

sustain themselves. Fourth, research on the transferability of South African evidence to Francophone African and East African higher education contexts is a significant gap that deserves dedicated scholarly attention.

The global fintech sector is advancing rapidly. Each graduating cohort lacking digital and entrepreneurial skills represents not only missed individual opportunities but a macroeconomic loss for countries needing a digitally skilled workforce to drive growth and reduce poverty. Closing that gap will require institutional leaders to commit not just in strategic plans but in funding, governance reform, and partnership-building; it will require policymakers to invest in digital infrastructure and equity mechanisms; and it will require industry partners to move from ad hoc engagement to formalised, mutually accountable collaboration. The framework proposed here is a principled starting point for that work—not a finished product, but a scaffold for the sustained institutional effort that genuine reform demands.

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