

Strengthening Higher Education Institution–Industry Synergies For Advancing Financial Innovation And Technology-Enabled Entrepreneurship In Nigeria

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Abstract

Nigeria's entrepreneurship landscape has been reshaped over the past decade by the rapid expansion of financial technology (fintech), yet the higher education sector that should be supplying its talent pipeline, applied research, and incubation infrastructure remains loosely connected to the fintech and broader financial-services industry. This paper examines the state of higher education institutions (HEI)–industry synergy in Nigeria and its implications for financial innovation and technology-enabled entrepreneurship. Adopting a conceptual, desk-review methodology grounded in the Triple Helix model of university–industry–government relations, the paper synthesises recent empirical and policy literature (2022–2026) on university–industry linkages, fintech education, and entrepreneurial ecosystems in Nigeria and comparable African contexts. The review shows that although instruments such as the Nigeria Startup Act (2022), the Tertiary Education Trust Fund (TETFund) innovation-hub programme, and university-based entrepreneurship centres have created a policy scaffold, synergy remains constrained by curriculum rigidity, weak technology-transfer infrastructure, fragmented funding, low industry participation in curriculum design, and limited fintech literacy among staff and students. The paper proposes a five-pillar framework, curriculum co-design, joint innovation and incubation infrastructure, structured internship and mentorship pipelines, collaborative research and regulatory-sandbox partnerships, and institutionalised funding and reward structures for strengthening HEI–industry synergy. It concludes that deliberate, government-supported institutional collaboration, rather than isolated pilot initiatives, is required to convert Nigeria's youthful, digitally engaged graduate population into a sustained source of fintech-enabled entrepreneurial value.

Keywords: Higher Education–Industry Synergy, Financial Innovation, Financial Technology (Fintech), Technology-Enabled Entrepreneurship, Triple Helix Model, Nigeria

1.0 INTRODUCTION

Financial technology has become one of the most visible expressions of innovation-driven entrepreneurship in Nigeria. Mobile money, digital lending, agency banking, and blockchain-based payment platforms have transformed how millions of previously unbanked Nigerians save, borrow, and transact, and fintech ventures such as Moniepoint, Flutterwave, and Moove have attracted some of the largest single rounds of venture funding on the African continent (Innovation Village, 2026; TechNext24, 2025). This growth has occurred against a backdrop of active policy support: the Nigeria Startup Act of 2022 created a legal and institutional framework for startup labelling, tax and fiscal incentives, regulatory support, and the establishment of the National Council for Digital Innovation and Entrepreneurship, while the National Information Technology Development Agency (NITDA) reports that more than 12,900 startups had registered on the Startup Support and Engagement Portal by 2024, alongside hundreds of accelerators, incubators, and investor networks (TechNext24, 2025; Startup Nigeria, n.d.).

Higher education institutions (HEIs) sit at the centre of this ecosystem in principle, as the primary source of the technically skilled, digitally literate graduates that fintech ventures and financial institutions require, and as sites of research capable of generating investable innovations. In practice, however, the relationship between Nigerian HEIs and the financial-services and technology industries remains under-developed. The Tertiary Education Trust Fund (TETFund) has announced plans for 48 innovation centres nationwide, with only a fraction operational as at 2024–2025 (TechNext24, 2025), and recent scholarship continues to document weak, ad hoc collaboration between universities and industry across Sub-Saharan Africa, in contrast to the more institutionalised triple helix arrangements found in advanced innovation economies (Hailu, 2024; Bawa et al., 2026).

This disconnect matters because entrepreneurship, and fintech entrepreneurship in particular, is knowledge- and skills-intensive. Evidence from Nigerian polytechnic and university students shows that fintech knowledge and a positive attitude toward fintech tools are significant predictors of entrepreneurial intention (Ezenwafor et al., 2022), yet entrepreneurship curricula across much of Africa have been slow to formally incorporate fintech content beyond a superficial awareness of funding platforms (Stouraitis & Tsanis, 2025). At the same time, graduate employability research in Nigeria continues to link weak industrial–institutional collaboration to poor labour-market outcomes for graduates (Iwara, 2025).

Against this background, this paper asks two related questions: first, what is the current state of HEI–industry synergy in Nigeria as it relates to financial innovation and technology-enabled entrepreneurship; and second, what framework of institutional strategies could strengthen that synergy. The paper proceeds as follows. Section 2 reviews conceptual and empirical literature on HEI–industry linkages, fintech, and technology-enabled entrepreneurship. Section 3 outlines the theoretical framework. Section 4 discusses Nigeria's policy and ecosystem context. Section 5 identifies barriers to effective synergy. Section 6 proposes a strengthening framework, and Section 7 concludes with recommendations.

2.0 LITERATURE REVIEW

2.1 Conceptual Clarification

2.1.1 Higher Education Institution–Industry Synergy

HEI–industry synergy refers to the range of formal and informal mechanisms through which universities and polytechnics exchange knowledge, skills, resources, and capabilities with firms, including joint research, technology-transfer offices, collaborative curriculum design, internships, incubation and acceleration programmes, and staff or student mobility between academia and industry (Hailu, 2024). Recent Sub-Saharan African scholarship frames such synergy as a

precondition, rather than a by-product, of entrepreneurial-university development: universities that combine teaching and research with active commercialisation and industry engagement are more likely to produce graduates and spin-off ventures capable of sustaining local economic development (Iwara, 2025; Addy, Adabor & Badu, 2025).

2.1.2 Financial Innovation and Financial Technology (Fintech)

Financial innovation denotes the creation and diffusion of new financial products, services, business models, or delivery channels, while fintech specifically refers to the application of digital technology, mobile platforms, application programming interfaces, blockchain, and data analytics to deliver those innovations. Nigeria's fintech sector expanded considerably through 2024 and into 2025, driven by the coordinated efforts of the Central Bank of Nigeria, the Securities and Exchange Commission, the Federal Ministry of Communications, Innovation and Digital Economy, and the Nigeria Data Protection Commission, alongside a National Artificial Intelligence Strategy aimed at building AI infrastructure and governance capacity (Mondaq, 2025). Lagos in particular has become one of Africa's most prolific hubs for fintech unicorns, with early-stage investment activity in 2025 further reinforced by state-level reforms such as Lagos's Innovation Bill and the creation of the Lagos State Science, Research and Innovation Council in January 2026 (Startup Genome, 2026).

2.1.3 Technology-Enabled Entrepreneurship

Technology-enabled entrepreneurship refers to the identification and exploitation of opportunities through the application of digital technologies, encompassing not only stand-alone technology start-ups but also the technology-mediated delivery of financial products, services, or business processes by micro, small, and medium enterprises. It is distinguished from generic entrepreneurship by its dependence on both technical competence (coding, data analysis, platform design) and domain knowledge of the sector in which the technology is applied, in this case, financial services (Stouraitis & Tsanis, 2025).

2.2 Empirical Review

A growing body of Nigerian and comparable African studies bears on the relationship between higher education, fintech, and entrepreneurship. Ezenwafor, Adebayo and Okafor (2022) examined the predictors of fintech adoption among digitally active Nigerian consumers of online savings and investment platforms, finding that perceived usefulness and ease of use strongly shaped adoption intention, a finding with direct implications for how fintech products aimed at student and graduate entrepreneurs should be designed. Ilevbare, Ilevbare, Adelowo and Oshorenua (2022), studying undergraduates at a Nigerian university, found that social support and risk-taking propensity were significant predictors of entrepreneurial intention, underscoring the importance of mentorship structures that HEI–industry partnerships can supply. Adeoye and Olubiyi (2024), surveying final-year students across eleven private universities in South-West Nigeria, similarly identified personal, familial, and technical factors as determinants of entrepreneurial intention, reinforcing the case for embedding technical and industry-linked content into entrepreneurship curricula.

Directly on the fintech-education nexus, Stouraitis and Tsanis (2025) surveyed entrepreneurship students in Nigeria and Mauritius and found that fintech was still treated largely as a peripheral funding-awareness topic rather than a structured component of entrepreneurship curricula, and they called for updated fintech education plans spanning undergraduate and postgraduate programmes. This is consistent with findings that entrepreneurial ecosystems differ markedly between Nigerian polytechnics and universities in the

extent to which fintech knowledge is integrated into curricula, with consequences for students' entrepreneurial attitudes and intentions (Stouraitis & Tsanis, 2025).

On the institutional-collaboration side, Hailu (2024) proposed, in the Ethiopian context, the establishment of dedicated Higher Education Institution–Industry Resource Integration Centres to operationalise the triple helix model, arguing that intermediary organisations such as technology-transfer offices, collaborative research centres, incubators, and science parks are essential where informal linkages have failed to produce sustained collaboration. Addy, Adabor and Badu (2025), examining technical universities, identified leadership commitment, funding availability, and clearly defined roles among university, industry, and government actors as the critical success factors for triple helix collaboration to translate into sustainable innovation outcomes. Anifowose, Ngah and Odugbesan (2026), in a structural model of Nigerian universities, found that student–staff partnership mediates the relationship between internally generated revenue, financial inclusion, and university-based entrepreneurial ventures, and that government funding significantly moderates this relationship evidence that institutional collaboration mechanisms, not funding alone, determine whether university entrepreneurial activity translates into venture creation.

At the continental level, Afolabi and Adeyinka (2024) argued that triple helix arrangements must be adapted to leverage "endogenous" innovation systems in Africa rather than transplanting models designed for advanced economies, while Bawa and colleagues (2026) proposed extending the triple helix with digital-twin methods to address the resource constraints that typically weaken university–industry–government collaboration in African contexts. Taken together, this literature converges on three points relevant to Nigeria: fintech content remains under-integrated into entrepreneurship curricula; institutional intermediaries (technology-transfer offices, innovation centres, structured partnerships) are necessary rather than optional for translating policy intent into venture outcomes; and funding, governance clarity, and leadership commitment jointly determine whether HEI–industry synergy succeeds.

3.0 THEORETICAL FRAMEWORK

This paper adopts the Triple Helix model of university–industry–government relations (Etzkowitz & Leydesdorff, 2000) as its primary theoretical lens. The model holds that innovation in a knowledge-based economy arises from the overlapping, rather than strictly separate, roles of three institutional spheres: the university as a source of new knowledge and human capital, industry as the locus of production and commercialisation, and government as regulator and funder. Applied to Nigeria's fintech-entrepreneurship context, the model suggests that sustained innovation requires universities to move beyond a purely teaching-and-research role to actively co-produce curricula, research, and ventures with financial-services firms, while government through instruments such as the Nigeria Startup Act, TETFund, NITDA, and the Central Bank of Nigeria's regulatory sandbox provides the enabling legal, fiscal, and regulatory infrastructure (Mondaq, 2025; TechNext24, 2025).

Recent applications of the model to African contexts caution against a mechanical transfer of the triple helix framework, noting that African university–industry relationships often develop within more informal, resource-constrained, and government-dependent institutional environments than those of the OECD economies in which the model was first developed (Afolabi & Adeyinka, 2024; Bawa et al., 2026). This paper therefore treats the triple helix as a heuristic for identifying where synergy is weakest most notably in the university–industry linkage itself rather than as a prescriptive blueprint, and it supplements the model with insights from the technology acceptance and entrepreneurial-intention literatures to explain how curriculum and institutional design shape individual-level entrepreneurial outcomes (Ezenwafor et al.,

2022; Ilevbare et al., 2022).

4.0 NIGERIA'S POLICY AND ECOSYSTEM CONTEXT

Nigeria's fintech and entrepreneurship policy environment has developed rapidly since 2022. The Nigeria Startup Act established a Startup Label conferring tax and fiscal incentives, regulatory support, and access to a Startup Investment Seed Fund, and created the National Council for Digital Innovation and Entrepreneurship to coordinate policy across agencies (Startup Nigeria, n.d.; TechNext24, 2025). By 2024, NITDA reported that Nigerian startups had attracted approximately \$410 million in funding, with fintech ventures such as Moniepoint and Moove each securing \$110 million in single rounds (TechNext24, 2025). On the regulatory side, the Central Bank of Nigeria, the Securities and Exchange Commission, and the Nigeria Data Protection Commission have continued to refine the rules governing digital financial services, including guidance issued under the Nigeria Data Protection Act 2023, while a National Artificial Intelligence Strategy adopted in 2024 seeks to build AI infrastructure, talent, and risk-governance capacity relevant to next-generation fintech products (Mondaq, 2025).

Within this environment, higher education's institutional footprint remains comparatively modest. TETFund's innovation-hub programme envisaged 48 centres nationwide, of which only 12 were operational and a further 18 in procurement as at the most recent reporting period (TechNext24, 2025), while state-level initiatives such as Lagos's iHatch programme and the newly created Lagos State Science, Research and Innovation Council illustrate the kind of sub-national institutional infrastructure that could be extended to universities and polytechnics across the federation (Startup Genome, 2026). Independent commentary on the Startup Act's implementation cautions that registration on the Startup Portal has outpaced the actual disbursement of the 31 incentives the Act promises, and that inter-agency coordination precisely the kind of coordination a functioning triple helix requires remains the binding constraint on the ecosystem's development (Innovation Village, 2026; Consumer Experience, 2026).

5.0 BARRIERS TO EFFECTIVE HEI-INDUSTRY SYNERGY IN NIGERIA

Five recurring barriers emerge from the reviewed literature and policy record.

Curriculum rigidity and slow fintech integration. Entrepreneurship and business curricula in many Nigerian HEIs continue to treat fintech as a peripheral topic rather than a core competency, despite evidence that fintech knowledge and positive attitudes toward fintech tools are strong predictors of entrepreneurial intention among Nigerian students (Ezenwafor et al., 2022; Stouraitis & Tsanis, 2025).

Weak technology-transfer and incubation infrastructure. The gap between TETFund's planned and operational innovation centres illustrates a broader shortfall in the intermediary institutions technology-transfer offices, incubators, science parks that the triple helix literature identifies as necessary for converting research and student projects into ventures (Hailu, 2024; TechNext24, 2025).

Fragmented and short-term funding. University-based entrepreneurial ventures depend on the interaction between internally generated revenue, government funding, and structured institutional partnerships; where any one of these is weak or inconsistent, ventures struggle to move from ideation to sustainability (Anifowose et al., 2026).

Limited industry participation in academic governance. Financial-services firms and fintech companies are rarely represented on curriculum-review boards, advisory committees, or research-supervision panels, limiting the extent to which academic programmes track fast-moving industry practice (Addy et al., 2025).

Regulatory and coordination gaps. Even where national policy the Startup Act, the National AI Strategy, TETFund's innovation-hub programme creates an enabling framework, weak inter-agency coordination and slow disbursement of promised incentives blunt the practical benefit to universities and student entrepreneurs (Mondaq, 2025; Innovation Village, 2026).

6.0 A FRAMEWORK FOR STRENGTHENING HEI-INDUSTRY SYNERGY

Building on the reviewed literature, this paper proposes a five-pillar framework through which Nigerian HEIs, industry actors, and government agencies can strengthen synergy for fintech-enabled entrepreneurship.

Pillar 1

Curriculum co-design. Fintech and digital-finance modules should be co-developed and periodically reviewed with financial-services and fintech firms, moving beyond a "light-touch" awareness of funding platforms toward structured coverage of digital payments, mobile money, blockchain applications, regulatory technology, and data-driven credit assessment, delivered through experiential formats such as fintech simulation labs, hackathons, and platform-specific projects (Stouraitis & Tsanis, 2025).

Pillar 2

Joint innovation and incubation infrastructure. Universities should prioritise completing and operationalising TETFund-funded innovation hubs, co-located or co-managed with industry partners, functioning as the kind of Higher Education Institution-Industry Resource Integration Centre proposed by Hailu (2024) to house technology-transfer, incubation, and applied-research functions under one governance structure.

Pillar 3

Structured internship, mentorship, and student-staff partnership pipelines. Formal internship and mentorship pipelines with fintech and financial-services firms address the social-support and risk-mitigation factors shown to drive entrepreneurial intention (Ilevbare et al., 2022), while structured student-staff partnership models have been shown to mediate the translation of institutional resources into viable university-based ventures (Anifowose et al., 2026).

Pillar 4

Collaborative research and regulatory-sandbox partnerships. Universities should position themselves as research partners within the Central Bank of Nigeria's and NITDA's regulatory sandbox initiatives, allowing faculty- and student-led fintech innovations to be tested under supervised conditions before market launch, in line with the national push toward a more coordinated regulatory-innovation interface (Mondaq, 2025).

Pillar 5

Institutionalised funding and reward structures. Government funding, internally generated revenue, and industry co-investment should be channelled through transparent, jointly governed funding instruments rather than one-off grants with academic promotion and reward criteria adjusted to recognise industry collaboration, patenting, and venture creation as legitimate scholarly output, consistent with evidence that governance clarity and leadership commitment are critical success factors for triple helix collaboration (Addy et al., 2025).

7.0 CONCLUSION AND RECOMMENDATIONS

Nigeria possesses most of the raw ingredients for a thriving fintech-enabled entrepreneurial economy: a young, digitally engaged population, one of Africa's most active startup funding environments, and a legal and regulatory framework anchored by the Nigeria Startup Act — that explicitly targets innovation and entrepreneurship. What remains underdeveloped is the institutional bridge between higher education and the financial-services and technology industries that should be supplying skilled talent, applied research, and incubation support to that ecosystem. The literature reviewed in this paper indicates that such bridges have been deliberately built through curriculum co-design, joint innovation infrastructure, structured mentorship, collaborative research, and institutionalised funding university-based entrepreneurial activity and fintech engagement improve measurably.

The paper recommends, first, that the National Universities Commission and the National Board for Technical Education mandate periodic, industry-involved review of entrepreneurship and finance curricula to ensure fintech content keeps pace with market practice. Second, TETFund and state governments accelerate the completion and joint governance of planned innovation hubs, prioritising co-management with financial-services and fintech firms rather than purely academic administration. Third, that the Central Bank of Nigeria and NITDA formally extend regulatory-sandbox access to university-affiliated ventures and research teams. Fourth, that universities adjust academic promotion criteria to reward industry collaboration and venture creation alongside conventional research output. Finally, given the resource constraints that distinguish the Nigerian context from the advanced economies in which the triple helix model originated, future empirical research should test the proposed five-pillar framework against institution-level data to establish which pillars yield the greatest returns under Nigeria's specific funding and regulatory conditions.

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