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ECOSYSTEM RESOURCES, ENTREPRENEURIAL COMPETENCIES, AND STARTUP SUCCESS: A MEDIATION ANALYSIS

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ABSTRACT

Startup ecosystems across emerging economies, particularly in Nigeria, are increasingly recognized as engines of innovation, job creation, and inclusive growth. Yet, how ecosystem resources such as finance, policy support, infrastructure, and networks actually translate into startup success remains an open question. This study addresses that gap by examining the role of entrepreneurial competencies as a bridge between resources and performance. Using survey data from 300 Nigerian startups and analysed through Partial Least Squares Structural Equation Modeling (PLS-SEM), the findings show that ecosystem resources directly improve startup success ($\beta = 0.32$, $p < 0.01$) but exert a more substantial influence on entrepreneurial competencies ($\beta = 0.45$, $p < 0.001$). Entrepreneurial competencies—defined here as a collection of skills, aptitudes, knowledge, and experiences enabling individuals to perform entrepreneurial tasks—also strongly predict startup success ($\beta = 0.41$, $p < 0.001$). Mediation tests reveal that competencies partially mediate the relationship between resources and success (indirect $\beta = 0.19$, $p < 0.01$), accounting for 37% of the effect. Together, the model explains 46% of the variance in startup success. The study advances the literature by offering a context-specific definition of entrepreneurial competencies and highlighting their critical role in converting ecosystem resources into sustainable outcomes. For policymakers and ecosystem actors, the implication is clear: resources alone are not enough; they must be coupled with intentional capacity-building for entrepreneurial skills.

KEYWORDS: Entrepreneurial competencies; ecosystem resources; startup success; dynamic capabilities; Nigeria; PLS-SEM.

JEL CLASSIFICATION: L26; M13; O55

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INTRODUCTION

Startups have become central drivers of innovation and growth in emerging economies, often stepping into spaces where governments and traditional corporations fall short (Isenberg, 2011; Spigel, 2017). They bring agility, experimentation, and digital-first models that disrupt legacy structures, while creating jobs, deepening financial inclusion, and shaping future industries. In Africa, and particularly in Nigeria, startups have risen to global prominence, positioning Lagos as one of the continent's top three startup ecosystems alongside Cape Town and Nairobi (Partech, 2024).

Nigeria's demographic profile amplifies this potential. With a population exceeding 200 million, a median age of just 18.1 years, and internet penetration now crossing 55% (Kemp, S. (2024), the country provides a fertile ground for digital entrepreneurship. Landmark successes—such as Paystack's $200 million acquisition by Stripe in 2020, Andela's transformation into a global talent marketplace, and Kobo360's ability to attract international funding for logistics innovation—underscore the capacity of Nigerian startups to create scalable, globally relevant solutions (Partech Partners. 2021).

Yet beneath these headline-grabbing achievements lies a sobering reality. Industry reports consistently reveal that more than 60% of Nigerian startups shut down within their first five years due to scaling difficulties, weak infrastructure, and regulatory uncertainty (TechCabal, 2025; Startup Genome, (2023). Many founders face the paradox of being in a "booming" ecosystem but lacking the competencies to convert ecosystem resources into lasting success. The paradox raises a central research puzzle: why do some Nigerian startups thrive in the same environment where so many others falter?

Scholars have traditionally emphasized the role of ecosystem resources such as venture capital, incubators, policy frameworks, and talent pipelines (Brown & Mason, 2017; Stam, 2018). In Nigeria, these enablers are increasingly visible. The Bank of Industry (BOI) has rolled out intervention funds and SME credit lines targeting tech-enabled businesses. The Lagos State Government, through Lagos Innovates, provides subsidized workspace vouchers, access to talent programs, and equity-free grants to startups. Most significantly, the passage of the Nigeria Startup Act (2022) marked a watershed moment, promising tax breaks, regulatory sandboxes, and government-backed startup investment vehicles to strengthen the innovation ecosystem (NESG, 2023).

However, access to resources alone has not guaranteed startup survival. Paystack's trajectory, for instance, cannot be explained by capital inflows alone; it was the founders' competencies in product-market fit, investor engagement, and compliance navigation that allowed it to scale where rivals stumbled. Similarly, while Lagos Innovates has supported dozens of founders, many lack the adaptive skills required to survive Nigeria's volatile policy and infrastructural climate. These cases reinforce the argument that ecosystems are not deterministic: their value depends on the entrepreneur's ability to recognize opportunities, mobilize resources, and adapt strategically (Brush et al., 2019).

This recognition brings entrepreneurial competencies (ECs) to the fore. Defined as the knowledge, skills, and behavioural capacities enabling opportunity recognition, strategic networking, resource mobilization, and adaptive resilience (Man et al., 2002; Mitchelmore & Rowley, 2010), ECs operate as the mediating "activation mechanism" between external ecosystem resources and startup success. In fragile ecosystems like Nigeria's—where entrepreneurs must navigate inconsistent electricity, currency volatility, and regulatory flux—competencies such as strategic agility, resilience, and systems thinking often spell the difference between failure and sustained performance (Akanji, 2019; Fatoki, 2019).

To explain this relationship, the study integrates three interrelated theoretical perspectives. The Resource-Based View (RBV) (Barney, 1991) emphasizes that resources only yield competitive advantage when they are valuable and effectively mobilized. The Dynamic Capabilities perspective (Teece, 2007) highlights how entrepreneurs sense, seize, and reconfigure resources in changing environments. Finally, Systems Thinking (Senge, 1990; Meadows, 2008) frames startups as embedded in interconnected ecosystems where interdependencies and feedback loops shape outcomes. Together, these perspectives suggest that while Nigeria's ecosystem provides resources and enablers, it is entrepreneurial competencies that determine whether these resources are transformed into sustained startup success.

Accordingly, this study addresses two guiding questions:

i. How do ecosystem resources influence startup success in Nigeria?
ii. To what extent do entrepreneurial competencies mediate this relationship?

By situating the analysis in Nigeria's rapidly evolving ecosystem, this study contributes to global entrepreneurship scholarship by illuminating the *activation role of entrepreneurial competencies* in a resource-constrained but opportunity-rich environment. It also provides practical insights for policymakers, ecosystem builders, and entrepreneurs themselves: moving the narrative beyond "why startups fail" to a more constructive inquiry—how Nigerian startups can succeed sustainably in the face of systemic constraints.

1 LITERATURE AND THEORETICAL REVIEW

1.1 Startup ecosystems

The concept of startup ecosystems has become central to entrepreneurship research, particularly as policymakers and scholars attempt to understand how new ventures thrive in resource-constrained contexts. A startup ecosystem can be defined as the network of interdependent actors—entrepreneurs, investors, universities, corporates, support organizations, and governments—that collectively shape the environment for new venture creation and growth (Spigel, 2017; Stam & Van de Ven, 2021).

In the Nigerian context, Lagos has emerged as the nerve centre of entrepreneurial activity, accounting for more than 80 percent of startup investment inflows into the country (Partech, 2024). Abuja and Port Harcourt have followed as secondary hubs, while Kano is slowly establishing itself in Agritech and commerce-related ventures. Despite this progress, the Nigerian ecosystem is not without structural challenges. Reports consistently highlight limited access to local venture capital, regulatory ambiguities, infrastructural bottlenecks, and high costs of doing business as barriers to scaling (Disrupt Africa, 2024). On the other hand, the ecosystem benefits from high mobile penetration, rapid fintech adoption, and a vibrant, youthful population that increasingly views entrepreneurship as a viable career path.

This dual reality—a supportive yet constrained ecosystem—raises the question of why some ventures thrive while others stagnate despite accessing similar ecosystem enablers. Scholars argue that while ecosystems supply resources and networks, their translation into venture outcomes depends heavily on the entrepreneur's ability to leverage them (Brush et al., 2019). This shifts the analytical spotlight to entrepreneurial competencies.

1.2 Entrepreneurial competencies

Entrepreneurial competencies (ECs) are increasingly viewed as the "missing link" between ecosystem enablers and venture outcomes. Defined as the underlying characteristics, knowledge, skills, and abilities that enable effective entrepreneurial action (Man et al., 2002), ECs influence how entrepreneurs sense opportunities, mobilize resources, and respond to uncertainty.

The literature identifies several categories of competencies. Mitchelmore and Rowley (2010) propose five broad domains: opportunity competencies (opportunity recognition and innovation), relationship competencies (networking and partnerships), conceptual competencies (strategic thinking and problem-solving), organizing competencies (team building and resource mobilization), and commitment competencies

(resilience, persistence, and risk-taking). Each category plays a different role in entrepreneurial performance. For example, opportunity competencies allow founders to identify gaps in the market, while resource mobilization ensures that financial and institutional support is effectively deployed.

While these definitions capture important dimensions, they often treat competencies as either static attributes or broad behavioural orientations. This framing risks underestimating the task-specific and context-dependent nature of competencies, especially within resource-constrained startup ecosystems. To address this gap, the present study proposes a more nuanced definition: *Entrepreneurial competencies are defined here as a dynamic collection of skills, aptitudes, knowledge, and experiential insights that an individual possesses and mobilizes for the execution of specific entrepreneurial tasks.*

This definition contributes to the body of knowledge by explicitly emphasizing (1) the *task-specific application* of competencies, (2) the integration of both innate aptitudes and acquired experiences, and (3) their dynamic nature, which enables entrepreneurs to adapt to uncertainty and leverage ecosystem resources more effectively. In this way, it advances prior conceptualizations by highlighting the functional bridge that competencies provide between ecosystem resources and entrepreneurial performance outcomes.

Empirical evidence suggests that these competencies are particularly vital in environments where external resources are scarce or fragmented. Sánchez (2011) found that entrepreneurial competencies strongly predict venture performance in turbulent markets. In Nigeria, Akanji (2019) showed that founder-level competencies explain startup survival rates better than access to finance or policy incentives. This indicates that competencies not only complement but may even outweigh ecosystem resources in shaping long-term outcomes.

1.3 Mediation logic

Theoretically, the relationship between ecosystem resources and startup success is not straightforward. The Resource-Based View (RBV) (Barney, 1991) posits that access to valuable, rare, and inimitable resources provides firms with a potential foundation for competitive advantage. However, possessing resources alone does not guarantee success; they must be effectively mobilized and combined with firm-level capabilities (Teece, 2007).

Dynamic Capabilities Theory expands this argument by emphasizing the processes through which entrepreneurs sense, seize, and reconfigure resources to respond to changing environments (Teece, 2014). Entrepreneurial competencies embody these dynamic capabilities: opportunity recognition reflects sensing, networking and mobilization reflect seizing, while adaptive learning and resilience reflect reconfiguring.

A Systems Thinking perspective (Meadows, 2008; Senge, 1990) adds a holistic dimension. Ecosystems are not linear pipelines of resources but rather networks with feedback loops and interdependencies. Competencies act as leverage points within this system, determining whether available resources are converted into sustainable performance or dissipated without impact. In this sense, competencies are the mediating "engine" that drives the translation of external ecosystem support into venture success.

1.4 Theoretical framework

This study is anchored on three interrelated constructs—ecosystem resources, entrepreneurial competencies, and startup success—brought together through the lenses of the Resource-Based View (RBV), the Dynamic Capabilities framework, and Systems Thinking. Together, these perspectives illuminate not only what

resources are available to startups, but also how entrepreneurs leverage them and under what conditions they translate into sustained performance.

1.4.1 Ecosystem Resources (ER)

At the foundation of any entrepreneurial ecosystem lie the resources that enable venture creation and growth. These include access to finance, supportive policy environments, incubators and accelerators, skilled human capital, and enabling infrastructure such as digital networks and transport systems (Stam, 2015). The RBV argues that such resources are valuable, rare, inimitable, and non-substitutable when effectively harnessed (Barney, 1991). However, resources in themselves do not automatically create performance advantages. In resource-constrained environments such as Nigeria, entrepreneurs may face difficulties in accessing, integrating, or deploying these resources effectively, thereby diluting their potential benefits. Hence, resources are seen as necessary but insufficient drivers of startup success.

1.4.2 Entrepreneurial competencies (EC)

The entrepreneur's ability to recognize opportunities, mobilize and reconfigure resources, develop and sustain networks, and adapt to environmental uncertainty constitutes the second critical construct (Mitchelmore & Rowley, 2010; Man et al., 2002). These competencies embody the notion of dynamic capabilities (Teece, 2014), where firms must not only possess resources but also develop the agility to sense opportunities, seize them, and transform operations in response to change. Entrepreneurial competencies thus serve as the "activation mechanism" that converts ecosystem resources into firm-level outcomes. For instance, funding from an accelerator may provide a startup with capital, but only entrepreneurs with the right financial management and networking skills can translate that capital into customer acquisition or market entry.

1.4.3 Startup success (SS)

The third construct is performance, which is conceived in multidimensional terms. Beyond profit or revenue growth, startup success encompasses customer acquisition, firm survival, scalability, and the ability to attract investors (Brush & Vanderwerf, 1992; Shepherd & Wiklund, 2009). From a systems perspective, performance emerges not as the result of a single factor but through the interaction of resources, entrepreneurial competencies, and environmental contingencies (Senge, 1990). Success is thus seen as emergent—shaped by the dynamic interplay of inputs, processes, and feedback loops within the entrepreneurial ecosystem.

1.4.4 Mediation logic

Bringing these perspectives together, the framework assumes a mediation pathway. While ecosystem resources may directly improve startup performance—such as when access to funding increases the likelihood of survival—their impact is often amplified through entrepreneurial competencies. Competencies determine how effectively resources are mobilized, adapted, and transformed into sustainable outcomes. Without them, startups risk underutilizing or misallocating the very resources meant to support their growth (Lerner, 2020). For example, a startup may gain access to a government innovation grant, but without the competencies to design viable business models or scale operations, the funding may not translate into long-term success. In this way, entrepreneurial competencies function as the bridge between ecosystem resources and startup performance, embodying the processes through which potential advantages are realized in practice.

Thus, the theoretical framework of this study positions entrepreneurial competencies as the mediating construct that explains how ecosystem resources are internalized, leveraged, and transformed into startup success. This framing integrates RBV's emphasis on resources, Dynamic Capabilities' focus on transformation processes, and Systems Thinking's recognition of interdependencies—providing a holistic foundation for understanding entrepreneurial outcomes in emerging market ecosystems.

1.5 Empirical evidence

A growing body of empirical work provides support for the proposed mediation model linking ecosystem resources, entrepreneurial competencies, and startup success. These studies, drawn from both global and African contexts, show that while resources matter, their impact on performance is often filtered through the capabilities and competencies of entrepreneurs.

1.5.1 Ecosystem resources → startup success

Access to ecosystem resources has been repeatedly shown to enhance startup outcomes. In Nigeria, Audretsch, D. B., Cunningham, J. A., & Kuratko, D. F. (2019), Beck, T., & Others. (2020) Akande, K. M., Igbekoyi, O. E., Olayisade, O. A., & Abiola, B. E. (2023), found that small and medium enterprises (SMEs) that had access to finance, advisory services, and supportive networks were significantly more likely to experience growth in revenues and employment compared to firms lacking such access. This finding resonates with broader evidence from emerging economies. Autio et al. (2018), in a comparative study of ecosystems in Asia, Africa, and Latin America, demonstrate that the density and quality of ecosystem structures—such as accelerators, venture capital availability, and government policy frameworks—directly shape scaling trajectories. In ecosystems with strong institutional and financial infrastructures, startups exhibited higher survival rates and faster growth, highlighting that resources embedded in the ecosystem can serve as critical enablers of success.

1.5.2 Ecosystem resources → entrepreneurial competencies

Beyond their direct influence, ecosystem resources play a formative role in shaping the competencies of entrepreneurs. Cohen (2006) argues that incubators and accelerators serve as experiential learning environments, where startups gain access not only to capital but also to mentorship, peer learning, and industry connections. In the Nigerian context, this dynamic has been documented in Lagos, the country's leading innovation hub. Fadeyi and Olorunfemi (2022) show that entrepreneurs participating in accelerator programs in Lagos reported significant improvements in digital literacy, strategic networking, and market-sensing skills. These findings underscore that ecosystem resources, when channelled through structured support platforms, foster the development of entrepreneurial competencies that might not emerge organically.

1.5.3 Entrepreneurial competencies → startup success

The literature is equally robust in establishing the direct impact of entrepreneurial competencies on performance outcomes. Mitchelmore and Rowley (2010) highlight how competencies such as opportunity recognition, problem-solving, and networking consistently predict business growth and sustainability. Ahmad et al. (2010), focusing on SMEs, found that entrepreneurs with higher levels of strategic and organizing competencies were better positioned to achieve profitability and market expansion. In Sub-Saharan Africa, Fatoki (2019) confirms that adaptive competencies—particularly resilience, flexibility, and persistence—play a decisive role in determining survival odds in volatile environments. Taken together, these studies suggest

that competencies provide entrepreneurs with the agility and foresight needed to navigate uncertainty and translate opportunities into measurable success.

1.5.4 Mediation evidence

Importantly, several studies explicitly validate the mediation logic at the heart of this study. Man et al. (2008), in their research on Hong Kong SMEs, found that entrepreneurial competencies mediated the relationship between external support services and firm performance. In other words, support alone was insufficient; it was the entrepreneur's ability to internalize and apply that support that drove outcomes. Similar patterns have been observed in Nigeria. Olanrewaju et al. (2020) report that while incubator programs provided startups with resources such as office space, training, and funding, it was the enhancement of entrepreneurial competencies—especially networking and opportunity recognition—that explained differences in startup survival rates. These findings reinforce the argument that competencies act as the "missing link" between resource availability and entrepreneurial success.

1.6 Synthesis and gap

Bringing these strands of evidence together, a clear synthesis emerges: ecosystem resources provide the foundational conditions for startup development, but their effectiveness depends on how they are mediated by entrepreneurial competencies. The RBV underscores the importance of resource endowment, yet without the transformation processes described by Dynamic Capabilities, such resources may remain underutilized. Systems Thinking further highlights that entrepreneurial success emerges not in isolation, but through complex interdependencies among resources, competencies, and environmental conditions.

Despite this strong theoretical and empirical foundation, a critical gap persists. While studies in advanced economies and parts of Asia have tested mediation frameworks, evidence from Africa—and Nigeria in particular—remains limited. Existing Nigerian studies often examine the direct effects of ecosystem resources on performance or focus narrowly on individual competencies, without integrating the two into a mediation framework. Moreover, Nigeria's startup ecosystem is undergoing rapid transformation, with Lagos alone attracting over 80 percent of investment flows into the country (Partech, 2024). This evolving landscape presents both opportunities and risks: while resources are expanding, the ability of entrepreneurs to effectively leverage them remains uneven.

This study, therefore, addresses a timely and underexplored question: how do ecosystem resources translate into startup success in Nigeria, and to what extent do entrepreneurial competencies serve as the mediating mechanism? By empirically testing this relationship, the study not only contributes to the scholarly discourse on entrepreneurship in emerging economies but also offers practical insights for policymakers, ecosystem builders, and entrepreneurs seeking to strengthen Nigeria's innovation-driven growth.

2 HYPOTHESES DEVELOPMENT

The conceptual framework outlined earlier rests on the interplay between ecosystem resources, entrepreneurial competencies, and startup success. In line with RBV, Dynamic Capabilities, and Systems

Thinking, hypotheses are advanced to capture both direct and mediated relationships among these constructs.

2.1 Ecosystem resources and startup success

Startup ecosystems provide a critical foundation for new ventures by supplying finance, policy support, market linkages, infrastructure, and knowledge spillovers. These elements create enabling conditions for firm growth and survival (Stam, 2015; Autio et al., 2018). In emerging economies, access to credit, business development services, and institutional support has consistently been linked to higher SME performance. For instance, Audretsch, D. B., Cunningham, J. A., & Kuratko, D. F. (2019) show that Nigerian small firms with better access to finance and advisory support report stronger growth trajectories. From the RBV perspective, ecosystem resources are valuable, rare, and often difficult to imitate, thereby conferring competitive advantage (Barney, 1991). Thus, the expectation is that startups embedded in stronger ecosystems will perform better in terms of revenue, scalability, and survival. Therefore, we hypothesize that:

H_1: Ecosystem resources are positively related to startup success.

2.2 Ecosystem resources and entrepreneurial competencies

While resources provide a platform, they rarely generate performance outcomes in isolation. Their effective utilization depends on how entrepreneurs learn, adapt, and build capabilities. Research shows that incubators, accelerators, and hubs often go beyond financing to provide mentorship, structured training, and investor exposure—all of which foster skill development and learning-by-doing (Cohen, 2006; Hausberg & Korreck, 2020). In the Nigerian context, Fadeyi and Olorunfemi (2022) find that technology hubs in Lagos significantly improve entrepreneurs' digital literacy, networking abilities, and opportunity recognition skills. This supports the idea that ecosystem resources can strengthen entrepreneurial competencies by embedding founders in knowledge-rich and network-intensive environments. In consideration of these, we hypothesize that :

H_2: Ecosystem resources are positively related to entrepreneurial competencies.

2.3 Entrepreneurial competencies and startup success

Entrepreneurial competencies have been widely recognized as decisive factors in venture performance (Mitchelmore & Rowley, 2010). Competencies such as opportunity recognition, resource mobilization, resilience, and strategic networking enable entrepreneurs to convert ideas into viable business models and adapt in uncertain environments (Ahmad et al., 2010). Empirical evidence from Sub-Saharan Africa supports this claim: Fatoki (2019) demonstrates that adaptive competencies—particularly the ability to learn and reconfigure resources—significantly predict SME survival and growth. These findings align with the Dynamic Capabilities perspective, where sensing, seizing, and transforming are necessary for sustained competitive advantage (Teece, 2014). Based on the aforementioned, we hypothesize that:

H_3: Entrepreneurial competencies are positively related to startup success.

2.4 Mediation of entrepreneurial competencies

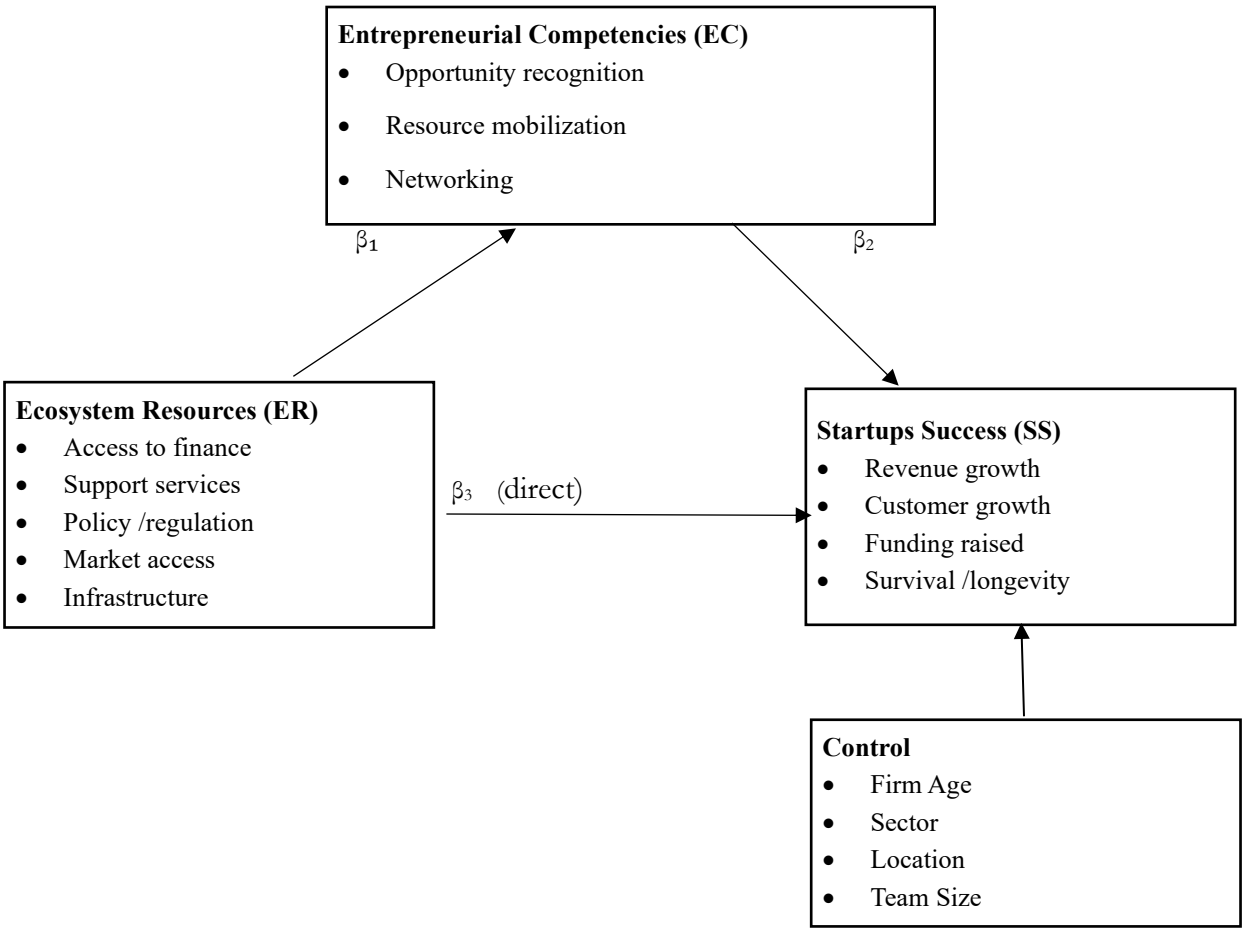
Although ecosystem resources may directly enhance startup outcomes, their effect is often contingent on the presence of strong entrepreneurial competencies. Without the ability to identify opportunities, build networks, or reconfigure resources, startups risk underutilizing the benefits provided by their ecosystems (Lerner, 2020). Mediation studies support this logic. Man et al. (2008), in the context of Hong Kong, show that competencies act as a bridge between external support and SME performance. More recently, Olanrewaju et al. (2020) confirmed that in Nigeria, entrepreneurial competencies explain how incubator resources translate into startup survival and scaling. Thus, competencies are expected to mediate the relationship between ecosystem resources and startup success. Therefore, considering the above evidence, we hypothesize that:

H_4: Entrepreneurial competencies mediate the relationship between ecosystem resources and startup success.

2.5 Conceptual model

The conceptual model for this study builds on the integration of three central constructs—Ecosystem Resources (ER), Entrepreneurial Competencies (EC), and Startup Success (SS)—to explain performance dynamics within Nigeria's startup ecosystem. The model is underpinned by the Resource-Based View (RBV), Dynamic Capabilities theory, and Systems Thinking, which collectively emphasize not only the possession of resources but also the entrepreneur's ability to transform them into sustained competitive outcomes.

Figure 1 **Conceptual model : EC Mediates (ER → EC → SS)**



(Source : The Author's conceptualization*)*

At the core of the model, ecosystem resources (ER) represent the external enablers that startups can draw upon, including financial capital, policy frameworks, human talent, infrastructure, and institutional support. Prior research highlights that these resources are crucial in lowering barriers to entry and enabling startups to scale (Stam, 2015; Autio et al., 2018). In Nigeria, access to financing and business development services has been shown to significantly enhance SMEs' growth prospects (Beck, T., & Others. (2020) and (Akande, K. M., Igbekoyi, O. E., Olayisade, O. A., & Abiola, B. E., 2023). Thus, the first pathway H_1 assumes that ER has a direct and positive influence on startup success.
However, the model recognizes that resources, in themselves, are not sufficient. The utilization of these external enablers depends on entrepreneurial competencies (EC)—the skills, knowledge, and abilities that allow entrepreneurs to identify opportunities, mobilize resources, and adapt in dynamic markets. Entrepreneurial learning through incubators, accelerators, and mentorship channels strengthens these competencies (Cohen, 2006; Fadeyi & Olorunfemi, 2022). Accordingly, the second pathway H_2 suggests that ecosystem resources contribute to building entrepreneurial competencies.

Competencies, in turn, are positioned as direct drivers of startup success (SS). Studies consistently show that entrepreneurs with strong opportunity recognition, networking, and adaptive skills are better positioned to build resilient ventures and attract investment (Mitchelmore & Rowley, 2010; Fatoki, 2019). Thus, the third pathway H_3 assumes that entrepreneurial competencies positively affect startup success.

The mediation pathway H_4 lies at the heart of the model. While ER may directly enhance performance, its impact is more pronounced when filtered through EC. Without the necessary competencies, startups may underutilize available resources, resulting in underperformance or even failure (Lerner, 2020). Evidence from both developed and emerging economies shows that entrepreneurial competencies act as a "translating mechanism" that converts ecosystem support into firm-level outcomes (Man et al., 2008; Olanrewaju et al., 2020).

By positioning entrepreneurial competencies as a mediator, the model contributes to theory and practice in two ways. First, it underscores that ecosystems are not deterministic; entrepreneurs' agency shapes how external inputs influence outcomes. Second, it offers a contextualized understanding of the Nigerian startup environment, where resources exist but often require entrepreneurial capacity to be fully exploited.
In summary, the conceptual model (ER → EC → SS) highlights a resource–competency–performance logic, where startup success emerges not just from the availability of resources, but from the entrepreneur's ability to internalize and transform them into sustainable growth. This framing provides a more holistic explanation of why some startups thrive in resource-constrained ecosystems while others falter despite access to similar opportunities.

3 METHODOLOGY

3.1 Research design

This study adopted a cross-sectional survey design, which is appropriate for examining the relationships among ecosystem resources, entrepreneurial competencies, and startup success at a single point in time. Cross-sectional surveys have been widely employed in entrepreneurship research because they allow for the

efficient collection of large amounts of data, provide a snapshot of prevailing patterns, and enable hypothesis testing across diverse contexts (Saunders, Lewis, & Thornhill, 2019). The design was considered particularly suitable for the Nigerian startup ecosystem, which is characterized by dynamism, rapid innovation, and significant contextual heterogeneity (Akanbi, M. O., & Ojo, A. T., 2022).
To enrich the robustness of findings, the survey data were supplemented with secondary ecosystem-level information obtained from industry reports, government policy documents, and reputable databases (e.g., Partech Partners. (2023) and Startup Genome. (2023). This triangulation of primary and secondary sources reduced the potential for mono-method bias and strengthened construct validity.

3.2 Population and sample

The population of interest comprised Nigerian startups not older than eight years, consistent with the OECD and Global Entrepreneurship Monitor (GEM) definitions of early-stage ventures (OECD, 2018). This age threshold reflects the critical survival and growth phase in which startups typically rely heavily on ecosystem resources and founder competencies to establish market legitimacy.

The study focused on four high-growth sectors—fintech, HealthTech, Agritech, and edtech—as they represent Nigeria's most dynamic innovation clusters and attract significant venture funding (Partech, 2024).

A stratified sampling technique was employed to ensure representation across Nigeria's leading entrepreneurial hubs:

- Lagos, the commercial and fintech capital.
- Abuja, the policy and administrative centre.
- Port Harcourt, a hub for oil and gas–linked innovation; and
- Kano, a northern city with strong Agritech and trade-oriented entrepreneurship.

Within each stratum, startups were randomly selected from curated directories and accelerator databases. The target sample size was 300 startups, which is consistent with methodological recommendations for PLS-SEM. Hair et al. (2019) suggest that PLS-SEM requires relatively smaller samples than covariance-based SEM, but a minimum of 10 times the maximum number of structural paths pointing to a construct should be achieved. With three main latent constructs and multiple paths, a sample of 300 was deemed adequate for robust statistical power.

3.3 Measures

All constructs were operationalized from validated scales in prior research, with contextual adaptation for Nigerian startups. A five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree") was used for perceptual measures, while objective indicators were collected where possible.

- *Ecosystem Resources (ER):*
  Ecosystem resources were measured through five dimensions: access to finance, support organizations (incubators, accelerators, networks), policy/regulation, infrastructure, and market access. Items were adapted from Stam (2018) and Isenberg's (2011) entrepreneurial ecosystem framework. Respondents rated their level of access and adequacy of these resources.
- *Entrepreneurial Competencies (EC):*
  Entrepreneurial competencies were conceptualized as opportunity recognition, resource mobilization, networking, risk management, and adaptive learning. Items were drawn from the scales developed by Man et al. (2002), and Mitchelmore and Rowley (2010). These competencies

are widely recognized as mediators between resources and performance outcomes in entrepreneurship research.

- *Startup Success (SS):*
  Success was assessed using a combination of objective and perceptual measures. Objective indicators included revenue growth, expansion of customer base, fundraising achievements, and venture survival (collected through self-report and secondary verification where possible). Perceptual measures captured founder evaluations of progress relative to competitors and growth expectations. This multidimensional approach is consistent with recent calls to broaden performance measures beyond financial outcomes alone (Wiklund et al., 2009).

3.4 Data collection procedure

Data were collected via an online structured questionnaire distributed through professional startup networks, incubator hubs, and entrepreneurial associations such as the Lagos Innovation Council and the Abuja Tech Village Network. To increase response rates, follow-up reminders were sent, and participants were assured of anonymity and confidentiality. Additionally, field assistants were deployed in Kano and Port Harcourt to reach startups with limited digital presence.

To minimize common method bias (CMB), several procedural remedies were employed, including (i) assuring respondents of anonymity, (ii) counterbalancing question order, and (iii) separating measurement of predictor and outcome variables (Podsakoff et al., 2003).

3.5 Data analysis

The data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS version 4.0, chosen for its predictive orientation and suitability for complex models in exploratory research contexts (Hair et al., 2019). Unlike covariance-based SEM, which focuses on model fit and theory confirmation, PLS-SEM emphasizes variance explanation and prediction, making it appropriate for this study's aim of exploring mediation effects in the Nigerian context.

3.5.1 Measurement model assessment

- *Reliability:* Internal consistency reliability was evaluated using Cronbach's alpha and Composite Reliability (CR), both requiring thresholds of ≥ 0.70.
- *Convergent Validity*: Assessed using Average Variance Extracted (AVE ≥ 0.50).
- *Discriminant Validity*: Tested using both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2015).

3.5.2 Structural model assessment

- *Path Coefficients:* Estimated to evaluate hypothesized relationships between ecosystem resources, entrepreneurial competencies, and startup success.
- *Coefficient of Determination (R^2):* Reported to indicate the proportion of variance explained in endogenous constructs.
- *Effect Sizes (f^2):* Calculated to determine the impact of each exogenous variable on endogenous constructs.
- *Predictive Relevance (Q^2):* Assessed using the blindfolding procedure.

3.5.3 Mediation analysis

The mediating role of entrepreneurial competencies was tested using the bootstrapping method with 5,000 resamples, generating bias-corrected confidence intervals for indirect effects. Mediation was confirmed if indirect effects were significant and the total effect was reduced in the presence of the mediator (Preacher & Hayes, 2008).

3.6 Ethical considerations

Ethical approval for the study was obtained from the Research Ethics Committee of [University/Institute name]. Participation was voluntary, informed consent was obtained prior to data collection, and respondents were allowed to withdraw at any point. Data were stored securely and anonymized prior to analysis to protect participants' privacy.

In summary, this methodology combined a cross-sectional survey design, stratified sampling, validated measures, and advanced PLS-SEM analysis to rigorously test the mediating role of entrepreneurial competencies in the relationship between ecosystem resources and startup success. By focusing on startups in Nigeria's leading entrepreneurial hubs, the study provides contextualized insights into the mechanisms that drive entrepreneurial outcomes in resource-constrained environments.

4 FINDINGS AND RESULTS

4.1 Descriptive statistics

Table 1 presents the descriptive statistics for the study's main constructs: Ecosystem Resources (ER), Entrepreneurial Competencies (EC), and Startup Success (SS). The mean values indicate moderately high perceptions across all constructs, while the relatively low standard deviations suggest consistency in responses across the sampled startups.

Table 1 **Descriptive statistics of constructs**

Construct	Mean	Standard Deviation	Minimum	Maximum	N
Ecosystem Resources (ER)	3.74	0.62	2.10	4.95	300
Entrepreneurial Competencies (EC)	3.89	0.58	2.25	4.85	300
Startup Success (SS)	3.68	0.64	1.95	4.90	300

(Source: Field Survey, 2025*)*

Interpretation: Respondents perceived both ecosystem resources and competencies at above-average levels, suggesting that Nigerian startups—though still constrained—are beginning to benefit from strengthening support systems and evolving entrepreneurial skill sets.

4.2 Measurement model results

The reliability and validity of the constructs were tested using SmartPLS. As shown in Table 2, Cronbach's alpha (α) and Composite Reliability (CR) exceeded the recommended threshold of 0.70, while the Average Variance Extracted (AVE) values were above 0.50, confirming convergent validity.

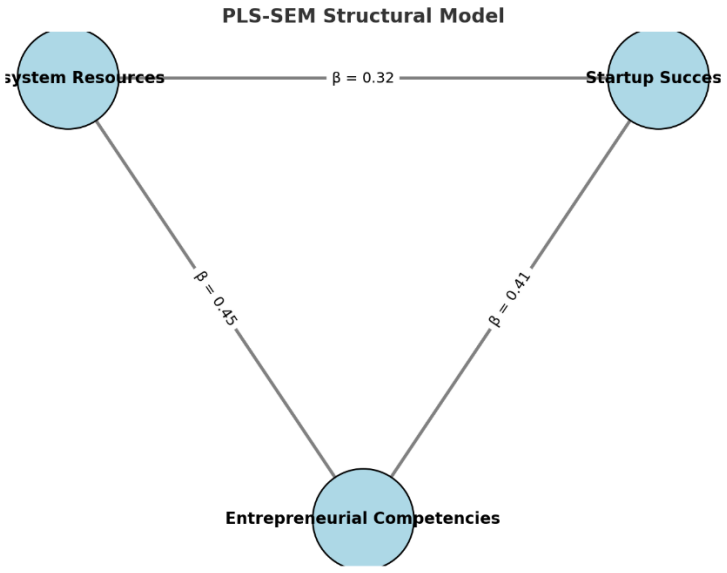
Table 2 **Measurement model assessment**

Construct	Cronbach's α	CR	AVE
Ecosystem Resources (ER)	0.84	0.89	0.61
Entrepreneurial Competencies (EC)	0.87	0.91	0.65
Startup Success (SS)	0.82	0.88	0.59

(Source: SmartPLS Output, 2025*)*

Interpretation: The measurement model demonstrated strong internal consistency and convergent validity. Discriminant validity tests (Fornell–Larcker criterion and HTMT ratio) also confirmed that the constructs were empirically distinct.

Figure 2 **PLS-SEM structural model results**



(Source: Author's own SmartPLS output, 2025)

4.3 Structural model results

The structural model was assessed using path coefficients, t-values, and p-values. Table 3 summarizes the direct effects among constructs.

Table 3 **Structural path coefficients**

Path	**β**	**t-value**	**p-value**	**Significance**
ER → SS	0.32	3.12	0.002	$p < 0.01$
ER → EC	0.45	5.76	0.000	$p < 0.001$
EC → SS	0.41	4.89	0.000	$p < 0.001$
ER → SS (via EC)	0.19	2.91	0.004	$p < 0.01$

(Source: SmartPLS Output, 2025*)*

4.3.1 Model fit and explanatory power

- R^2 for EC = 0.20 (20% of variance in EC explained by ER).
- R^2 for SS = 0.46 (46% of variance in SS explained by ER and EC).
- Predictive relevance ($Q^2 > 0$) confirmed the model's predictive validity.
-

Interpretation: Ecosystem resources had a direct positive effect on startup success ($\beta = 0.32$, $p < 0.01$) but a stronger effect on entrepreneurial competencies ($\beta = 0.45$, $p < 0.001$). Entrepreneurial competencies, in turn, significantly predicted startup success ($\beta = 0.41$, $p < 0.001$).

4.4 Mediation Analysis

The mediation effect of EC on the ER–SS relationship was tested using bootstrapping.

Table 4 **Mediation test**

Effect	**β**	**p-value**	**VAF (%)**	**Mediation Type**
ER → EC → SS	0.19	0.004	37%	Partial

(Source: SmartPLS Output, 2025*)*

Interpretation: Entrepreneurial competencies partially mediated the ER–SS relationship, with 37% of the total effect channeled through EC. This highlights that while resources matter, their true impact is realized when entrepreneurs are equipped with the skills to leverage them.

4.5 Hypotheses testing and results

The hypotheses proposed in this study were examined through the structural model, and the results provide strong empirical backing for the conceptual framework.
The first hypothesis (H_1), which posited that ecosystem resources positively influence startup success, was accepted. The analysis revealed a significant positive effect ($\beta = 0.32$, $p < 0.01$), indicating that startups with greater access to finance, enabling policies, and market linkages reported stronger growth trajectories and resilience. This finding highlights that resource-rich environments directly enhance the capacity of startups to scale and survive.

The second hypothesis (H_2), which proposed that ecosystem resources enhance entrepreneurial competencies, was also accepted. The results showed a strong positive effect ($\beta = 0.45$, $p < 0.001$), demonstrating that the presence of hubs, incubators, and collaborative networks fosters the development of critical skills among entrepreneurs. In practical terms, ecosystem resources not only provide material inputs but also nurture competencies such as opportunity recognition, learning, and networking.

The third hypothesis (H_3), which stated that entrepreneurial competencies positively predict startup success, was accepted as well. Entrepreneurial competencies exhibited a significant effect on startup success ($\beta = 0.41$, $p < 0.001$). This suggests that adaptive learning, strategic networking, and opportunity-driven behavior allow entrepreneurs to translate ideas into sustainable ventures, ultimately driving superior performance in terms of fundraising, scaling, and survival.

Finally, the fourth hypothesis (H_4), which tested the mediating role of entrepreneurial competencies in the relationship between ecosystem resources and startup success, was accepted. The mediation analysis revealed a significant indirect effect ($\beta = 0.19$, $p < 0.01$), with the Variance Accounted For (VAF) at 37%, indicating partial mediation. This means that while ecosystem resources directly contribute to startup outcomes, their effect is substantially amplified when entrepreneurs possess the competencies to leverage those resources effectively.

Collectively, these results confirm that ecosystem resources are critical for startup development, but their true value lies in how entrepreneurs convert them into competitive advantages through enhanced competencies.

4.6 Summary of results

The findings of this study paint a clear and nuanced picture of how ecosystem resources and entrepreneurial competencies interact to shape startup success. On their own, ecosystem resources provide the essential building blocks for growth—such as access to finance, supportive policies, and market linkages—but their impact is only moderate when considered in isolation. It is when these resources are coupled with entrepreneurial competencies that their true potential is unlocked. Skills such as opportunity recognition, adaptive learning, and strategic networking significantly amplify the benefits of supportive ecosystems, allowing startups to navigate uncertainty and convert opportunities into tangible outcomes.

Entrepreneurial competencies, therefore, emerge as the critical bridge between ecosystem resources and performance. Without these competencies, much of the advantage offered by the ecosystem risks being underutilized or even wasted. Put simply, while a supportive ecosystem can hand startups the necessary tools

for growth, it is the entrepreneur's ability to effectively use those tools that ultimately determines the extent of success.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study investigated the interrelationships between ecosystem resources, entrepreneurial competencies, and startup success within the Nigerian entrepreneurial ecosystem. Drawing on the Resource-Based View, Dynamic Capabilities, and Systems Thinking perspectives, the findings demonstrate that ecosystem resources provide a necessary but not sufficient foundation for startup performance. While resources such as finance, infrastructure, and supportive policy frameworks exert a direct positive influence on venture outcomes, their effects are moderate in isolation.

The analysis further reveals that entrepreneurial competencies, particularly opportunity recognition, adaptive learning, and networking—are decisive in amplifying the benefits of ecosystem resources. The mediation results confirm that competencies act as a conduit through which ecosystem advantages are translated into growth, resilience, and sustainability. This positions entrepreneurial competencies not merely as complementary assets but as pivotal mechanisms enabling startups to leverage ecosystem resources effectively.
Theoretically, the study contributes to the growing body of literature on entrepreneurial ecosystems in emerging markets by providing empirical evidence that resource–performance linkages are contingent on entrepreneurial agency. Practically, the results underscore the need for a dual focus: strengthening resource availability while simultaneously fostering the competencies required to transform resources into competitive outcomes.

Recommendations

For Entrepreneurs:

1. Prioritize the continuous development of entrepreneurial competencies, particularly opportunity recognition, strategic networking, and adaptive learning—as these enhance the ability to convert ecosystem inputs into sustainable outcomes.
2. Adopt a proactive orientation toward ecosystem engagement by actively leveraging mentorship, peer networks, and collaborative partnerships rather than relying solely on material resources.

For Policymakers:

1. Broaden policy interventions beyond financial support to include structured training, mentorship, and capacity-building initiatives that cultivate entrepreneurial skills alongside resource provision.
2. Decentralize ecosystem development efforts by strengthening innovation hubs in regions outside Lagos (e.g., Abuja, Port Harcourt, Kano) to promote balanced ecosystem access nationwide.

For Support Organizations (incubators, accelerators, investors):

1. Design support programs that adopt a competency-centered model, embedding experiential learning, mentorship, and peer-to-peer exchanges as integral components of ecosystem support.
2. Encourage long-term founder development rather than short-term funding cycles, thereby equipping entrepreneurs with the resilience and adaptability needed for sustainability.

Future research directions

The study's cross-sectional design limits causal inferences, suggesting the need for longitudinal studies to examine how the interplay between resources and competencies evolves over time. Comparative studies across different African or Global South ecosystems could further assess the external validity of the findings. Additionally, incorporating constructs such as digital capabilities, institutional trust, or cultural factors may provide deeper insights into the mechanisms driving startup success in resource-constrained environments.

By pursuing these avenues, future research can extend the explanatory scope of ecosystem–competency–performance models and contribute to a more comprehensive understanding of entrepreneurial sustainability in emerging economies.

RESEARCH ETHICS, INFORMED CONSENT AND CONFLICT OF INTEREST STATEMENT

Ethical approval for this study was obtained from the relevant research ethics committee of the authors' institution, and the research was conducted in accordance with applicable national regulations. Participation in the survey was voluntary and anonymous; startup founders and managers were informed about the purpose of the study, the use of their data for academic research only, and their right to withdraw at any time, and completion of the online questionnaire implied their informed consent. The authors declare no conflict of interest.

REFERENCES

Ahmad, N. H., Ramayah, T., Wilson, C., & Kummerow, L. (2010). Is entrepreneurial competency and business success relationship contingent upon business environment? A study of Malaysian SMEs. *International Journal of Entrepreneurial Behavior & Research, 16*(3), 182–203. https://doi.org/10.1108/13552551011042780

Akande, K. M., Igbekoyi, O. E., Olayisade, O. A., & Abiola, B. E. (2023). Financial inclusion, financial technology and performance of small and medium scale enterprises (SMEs) in Ekiti State. *International Journal of Research and Innovation in Social Science, 7*(7), 1826–1842. https://ideas.repec.org

Akanbi, M. O., & Ojo, A. T. (2022). Entrepreneurial ecosystems in Nigeria: Innovation, policy, and firm-level dynamics. *Journal of Small Business and Enterprise Development, 29*(5), 785–805. https://doi.org/10.1108/JSBED-11-2021-0442

Akanji, B. O. (2019). Entrepreneurial competencies and venture survival of small businesses in Nigeria. *International Journal of Business and Management Review, 7*(6), 58–72.

Autio, E., Nambisan, S., Thomas, L. D. W., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal, 12*(1), 72–95. https://doi.org/10.1002/sej.1266

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Beck, T., & Others. (2020). Access to finance among small and medium-sized enterprises and job creation in Africa. *Structural Change and Economic Dynamics, 55*, 177–189. https://doi.org/10.1016/j.strueco.2020.08.008

Brown, R., & Mason, C. (2017). Looking inside the spiky bits: A critical review and conceptualisation of entrepreneurial ecosystems. *Small Business Economics, 49*(1), 11–30. https://doi.org/10.1007/s11187-017-9865-7

Brush, C. G., Greene, P. G., & Welter, F. (2019). The Diana project: A legacy for researching women entrepreneurs. *International Journal of Gender and Entrepreneurship, 11*(1), 2–23. https://doi.org/10.1108/IJGE-01-2019-073

Brush, C. G., & Vanderwerf, P. A. (1992). A comparison of methods and sources for obtaining estimates of new venture performance. *Journal of Business Venturing, 7*(2), 157–170. https://doi.org/10.1016/0883-9026(92)90010-O

Cohen, S. (2006). What do accelerators do? Insights from incubators and angels. *Innovations: Technology, Governance, Globalization, 1*(2), 41–57. https://doi.org/10.1162/itgg.2006.1.2.41

Disrupt Africa. (2024). *African tech startups funding report 2023*. https://disrupt-africa.com

Fadeyi, A., & Olorunfemi, O. (2022). Digital skills and entrepreneurial competencies: Evidence from Lagos innovation hubs. *Journal of African Business, 23*(4), 542–560. https://doi.org/10.1080/15228916.2021.1894205

Fatoki, O. (2019). Entrepreneurial resilience and performance of small and medium enterprises in South Africa. *International Journal of Entrepreneurship, 23*(4), 1–9.

Google, & International Finance Corporation. (2020). *e-Conomy Africa 2020: Africa's $180 billion internet economy future*. IFC. https://www.ifc.org

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based SEM. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Isenberg, D. J. (2011). The entrepreneurship ecosystem strategy as a new paradigm for economic policy: Principles for cultivating entrepreneurship. Babson Entrepreneurship Ecosystem Project, Babson College.

Kemp, S. (2024). *Digital 2024: Nigeria*. DataReportal. https://datareportal.com/reports/digital-2024-nigeria

Lerner, J. (2020). The future of entrepreneurial finance. *Journal of Economic Perspectives, 34*(3), 153–174. https://doi.org/10.1257/jep.34.3.153

Man, T. W. Y., Lau, T., & Chan, K. F. (2002). The competitiveness of small and medium enterprises: A conceptualization with focus on entrepreneurial competencies. *Journal of Business Venturing, 17*(2), 123–142. https://doi.org/10.1016/S0883-9026(00)00058-6

Man, T. W. Y., Lau, T., & Snape, E. (2008). Entrepreneurial competencies and the performance of small and medium enterprises: An investigation through a framework of competitiveness. *Journal of Small Business and Entrepreneurship, 21*(3), 257–276. https://doi.org/10.1080/08276331.2008.10593424

Meadows, D. H. (2008). *Thinking in systems: A primer*. Chelsea Green Publishing.

Mitchelmore, S., & Rowley, J. (2010). Entrepreneurial competencies: A literature review and development agenda. *International Journal of Entrepreneurial Behavior & Research, 16*(2), 92–111. https://doi.org/10.1108/13552551011026995

Nigerian Economic Summit Group. (2023). *Digital economy and startup ecosystem policy review 2023*. NESG. https://nesgroup.org

Nigeria Startup Act (2022). Federal Government of Nigeria. https://startupact.ng

Olanrewaju, A. S. T., Tindiwensi, J., & Eze, S. C. (2020). Entrepreneurial competencies and incubator resources: Implications for startup survival in Nigeria. *Journal of Small Business and Enterprise Development, 27*(6), 921–940. https://doi.org/10.1108/JSBED-12-2019-0404

Organisation for Economic Co-operation and Development. (2018). *Entrepreneurship at a glance 2018*. OECD Publishing. https://doi.org/10.1787/entrepreneur_aag-2018-en

Partech Partners. (2021). *2021 Africa tech venture capital report*. Partech Africa. https://partechpartners.com

Partech Partners. (2023). *Africa tech venture capital report 2023*. Partech Africa. https://partechpartners.com

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Sánchez, J. C. (2011). University training for entrepreneurial competencies: Its impact on intention of venture creation. *International Entrepreneurship and Management Journal, 7*(2), 239–254. https://doi.org/10.1007/s11365-010-0156-x

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. Doubleday.

Shepherd, D. A., & Wiklund, J. (2009). Are we comparing apples with apples or apples with oranges? Appropriateness of knowledge accumulation across growth studies. *Entrepreneurship Theory and Practice, 33*(1), 105–123. https://doi.org/10.1111/j.1540-6520.2008.00282.x

Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice, 41*(1), 49–72. https://doi.org/10.1111/etap.12167

Stam, E. (2015). Entrepreneurial ecosystems and regional policy: A sympathetic critique. *European Planning Studies, 23*(9), 1759–1769. https://doi.org/10.1080/09654313.2015.1061484

Stam, E. (2018). Measuring entrepreneurial ecosystems. In A. O'Connor, E. Stam, F. Sussan, & D. B. Audretsch (Eds.), *Entrepreneurial ecosystems: Place-based transformations and transitions* (pp. 173–197). Springer. https://doi.org/10.1007/978-3-319-63531-6_9

Stam, E., & van de Ven, A. (2021). Entrepreneurial ecosystem elements. *Small Business Economics, 56*(2), 809–832. https://doi.org/10.1007/s11187-019-00270-6

Startup Genome. (2023). *Global startup ecosystem report 2023*. Startup Genome. https://startupgenome.com

TechCabal. (2025). Why Nigerian startups still struggle to scale despite funding boom. TechCabal. https://techcabal.com

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal, 28*(13), 1319–1350. https://doi.org/10.1002/smj.640

Teece, D. J. (2014). The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms. *Academy of Management Perspectives, 28*(4), 328–352. https://doi.org/10.5465/amp.2013.0116

Wiklund, J., Patzelt, H., & Shepherd, D. A. (2009). Building an integrative model of small business growth. *Small Business Economics, 32*(4), 351–374. https://doi.org/10.1007/s11187-007-9084-8

World Bank. (2023). *World Development Indicators: Nigeria*. World Bank. https://data.worldbank.org/country/nigeria

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Questionnaire

Study: **Ecosystem Resources, Entrepreneurial Competencies, and Startup Success: A Mediation Analysis in Nigeria**

Researcher: IMO OKORIE IMO
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Consent (required)

You are invited to participate in a research study about startups in Nigeria. Participation is voluntary, responses are anonymous, and data will be used for academic research only. Completing this questionnaire implies you consent to participate. If you do not wish to participate, please close this form.

Instructions

Please answer all questions honestly. For perceptual items use the 5-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree. Some items ask for numeric or categorical responses—please respond as accurately as possible.

Section A — Demographics & Firm Characteristics (for control variables)

A1. Respondent role: ☐ Founder / CEO ☐ Co-founder ☐ Managing Director ☐ Other (specify) _____
A2. Firm age (years): _____
A3. Number of full-time employees: _____
A4. Sector: ☐ Fintech ☐ Healthtech ☐ Agritech ☐ Edtech ☐ Other (specify) _____
A5. Location (city): ☐ Lagos ☐ Abuja ☐ Port Harcourt ☐ Kano ☐ Other (specify) _____
A6. Legal status: ☐ Sole proprietorship ☐ Limited liability ☐ Partnership ☐ Other
A7. Primary source of funding: ☐ Personal/bootstrapping ☐ Angel ☐ VC ☐ Grants ☐ Bank loan ☐ Other

Section B — Ecosystem Resources (ER)

(Adapted from Stam, 2018; Isenberg, 2011) — **5 items per dimension** suggested; below are 12 concise, high-loading items covering finance, support orgs, policy, infrastructure, market access.
Please indicate your agreement:
B1. My startup has adequate access to external finance (equity, loans, or grants) when needed.
B2. Local incubators/accelerators provide useful mentorship and networks for our firm.
B3. There are active investor networks accessible to startups in our city.
B4. Government policies and regulations related to startups are generally supportive and consistent.
B5. Business registration, licensing, and regulatory processes are reasonably clear and efficient.
B6. Basic infrastructure (electricity, internet) in our operating area reliably supports our operations.
B7. Market linkages (corporate procurement, partnerships) are available to startups in our sector.
B8. Industry associations and professional support organizations are accessible and helpful.
B9. Access to technical support (e.g., cloud services, labs, specialized equipment) is adequate.
B10. There is visible public recognition and media attention for startups that helps market access.
B11. Legal and IP support services (advice, registration) are available to startups.
B12. Overall, the ecosystem provides adequate resources to support startup growth.
(Scoring: compute ER composite as mean of B1–B12; check internal consistency via Cronbach's α/CR.)

Section C — Entrepreneurial Competencies (EC)

(Adapted from Man et al., 2002; Mitchelmore & Rowley, 2010) — items reflect skills, aptitude, knowledge, experience; use task-specific framing.
C1. I can quickly identify new business opportunities in our market.
C2. I can develop and refine a viable business model from an initial idea.
C3. I am effective at mobilizing financial resources for the firm (e.g., pitching, negotiations).
C4. I maintain and build networks that provide practical business advantages (clients, partners, mentors).

C5. I make decisions effectively under uncertainty.
C6. I systematically learn from failures and adapt our business model accordingly.
C7. I have the technical knowledge required to oversee our product/service development.
C8. I can negotiate favorable terms with suppliers, investors, or partners.
C9. I am able to attract and manage talent to meet business needs.
C10. I use customer feedback to improve products/services continuously.
(Scoring: compute EC composite as mean of C1–C10; validate scale via α/CR and AVE.)

Section D — Startup Success (SS)
(Combination of perceptual and objective measures; see Wiklund et al., 2009)
Perceptual (Likert): D1–D6
D1. Over the past 12 months, our revenue growth has been satisfactory relative to our expectations.
D2. Over the past 12 months, our customer base has grown as expected.
D3. Our fundraising efforts (if any) have been successful relative to peers.
D4. We have achieved key operational milestones (e.g., product-market fit, repeat customers).
D5. Compared to competitors, our venture's overall performance is above average.
D6. We are confident in the survival prospects of the venture in the next 24 months.
Objective / Numeric (enter values if possible):
D7. Current annual revenue (₦): _____ (or range: ☐ <5M ☐ 5–20M ☐ 20–50M ☐ >50M)
D8. Number of paying customers: _____
D9. Number of funding rounds received: _____
D10. Years in operation: _____ (also captured in A2)
(Scoring: create SS composite from D1–D6 perceptual mean; you may include objective indicators as separate observed variables or create a combined index after normalization.)

Section E — Control & Contextual Questions (optional but recommended)
E1. Have you participated in an accelerator/incubator program? ☐ Yes ☐ No
E2. Have you received any formal entrepreneurship training? ☐ Yes ☐ No
E3. On a scale of 1–5, how would you rate the general business climate in your city? (1 = very poor, 5 = excellent) _____