The Role of Industry Collaboration in the Nexus between Managerial Skills, Networking and University Entrepreneurship Centre Performance in North Central Nigeria

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Abstract:

Rising concerns about graduate unemployment and the limited entrepreneurial outcomes of university programmes have intensified attention on the performance of University Entrepreneurship Centres (UECs), particularly in developing economies. This study examines the role of industry collaboration in the nexus between managerial skills, networking, and University Entrepreneurship Centre performance in North Central Nigeria. Drawing on the resource-based and entrepreneurial ecosystem perspectives, the study adopted a quantitative research design and utilises data collected from 281 managers, coordinators, and senior administrative staff of UECs across public and private universities. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM).The results reveal that managerial skills have a positive and significant effect on UEC performance (β = 0.253, p < 0.001), indicating that effective leadership and strategic coordination enhance centre outcomes. Networking also exerts a strong positive influence on performance (β = 0.359, p < 0.001), underscoring the importance of external linkages and stakeholder engagement. In addition, industry collaboration has a significant direct effect on UEC performance (β = 0.190, p < 0.001). More importantly, industry collaboration significantly moderates the interaction between managerial skills and performance (β = 0.259, p < 0.001), as well as between networking and performance (β = 0.134, p = 0.010), suggesting that internal capabilities translate more effectively into performance outcomes when supported by strong industry partnerships. The study concluded that UEC performance is best understood as a function of managerial competence, relational networks, and structured industry engagement. The findings offer practical insights for university administrators and policymakers seeking to strengthen entrepreneurship centres as drivers of innovation and employability in Nigeria.

Keyword: *University Entrepreneurship Centres; Managerial Skills; Networking; Industry Collaboration*

Introduction

Entrepreneurship has emerged as a central mechanism through which contemporary economies pursue innovation, employment generation, and structural transformation. In both developed and developing contexts, universities are increasingly recognised not only as sites of knowledge production but also as institutional actors capable of stimulating entrepreneurial activity and regional development (Etzkowitz et al., 2000; Guerrero & Urbano, 2019). This expanded role has given rise to the establishment of University Entrepreneurship Centres (UECs), which function as organisational platforms for entrepreneurial training, venture incubation, and industry engagement (Siegel & Wright, 2015). Through these centres, universities are expected to translate entrepreneurial education into tangible outcomes such as new venture creation, innovation outputs, and enhanced graduate employability (Kraus et al., 2023).

In Nigeria, the relevance of UECs is particularly pronounced due to persistent graduate unemployment, limited absorptive capacity of the formal labour market, and the need for innovation-driven economic diversification. In response, entrepreneurship education was institutionalised as a compulsory component of university curricula, leading to the proliferation of entrepreneurship centres across federal, state, and private universities (Aliu, 2018; Aliero, & Olarinde, 2023). These centres are mandated to provide students with entrepreneurial skills, mentorship, networking opportunities, and exposure to real-world business environments (National Universities Commission [NUC], 2022; Aliu, 2018). However, while the establishment of UECs has been widespread, questions remain regarding their actual performance and effectiveness in producing sustainable entrepreneurial outcomes (Ogbiji, 2018; Masoomi et al., 2024).

Emerging evidence (Bhushan et al., 2020; Kraus et al., 2023) suggests that the performance of entrepreneurship centres varies considerably across institutions and regions. Many centres struggle to move beyond theoretical training to sustained startup creation, innovation commercialisation, and long-term stakeholder value (Kraus et al., 2023). This performance challenge has redirected scholarly attention toward the internal capabilities of UECs, particularly the managerial skills and networking capacity of their leadership and staff. Managerial skills, including strategic planning, coordination, resource mobilisation, and operational control, are essential for translating entrepreneurial mandates into effective programmes and measurable outcomes (Ogbiji, 2018). Similarly, networking capacity enables UECs to access external

knowledge, funding opportunities, mentors, and markets that are critical for entrepreneurial success (Bhushan et al., 2020).

While these internal capabilities are widely acknowledged as important, they do not operate in isolation. University entrepreneurship centres function within broader innovation ecosystems in which industry actors play a decisive role. Industry collaboration provides practical relevance, market feedback, mentorship, and access to financial and technological resources that universities alone often lack (Aliu, 2018; Kraus et al., 2023). In entrepreneurship, collaboration with industry partners can shape programme design, strengthen incubation processes, and increase the likelihood that entrepreneurial ideas mature into viable ventures. Consequently, industry collaboration has become a central feature of contemporary models of university entrepreneurship support.

Despite this recognition, much of the existing literature treats industry collaboration as a direct antecedent of performance, rather than as a contextual condition that shapes how internal capabilities translate into outcomes. Recent studies in entrepreneurship and innovation research increasingly suggest that organisational resources yield performance benefits only when supported by favourable external linkages (Guerrero & Urbano, 2019; Theodoraki et al., 2018). From this perspective, managerial skills and networking may be necessary but insufficient conditions for high UEC performance if industry collaboration is weak, symbolic, or poorly structured. Conversely, strong industry collaboration may amplify the effectiveness of these internal capabilities by providing validation, resources, and pathways to market.

This issue is particularly salient in North Central Nigeria, where universities operate within heterogeneous socio-economic and institutional environments. Although the region hosts several public universities with established entrepreneurship centres, industry engagement remains uneven and, in many cases, superficial. Partnerships are often limited to short-term workshops or ceremonial affiliations rather than sustained collaboration involving co-creation, investment, or long-term mentorship (NUC, 2022). As a result, the extent to which managerial skills and networking contribute to entrepreneurship centre performance may depend critically on the level of industry collaboration present.It is with this background that this study examines the role of industry collaboration in the nexus between managerial skills, networking, and University Entrepreneurship Centre performance in North Central Nigeria. In doing so, it seeks to contribute empirical evidence

that can inform policy, strengthen UEC governance, and improve the effectiveness of university-led entrepreneurship development initiatives.

Statement of Problem

University Entrepreneurship Centres (UECs) were established in Nigerian universities to promote entrepreneurial mindsets, support venture creation, and strengthen the link between higher education and economic development. Despite their strategic importance, growing evidence suggests that many UECs have not achieved their expected performance outcomes, particularly in terms of sustainable start-up creation, innovation commercialisation, and meaningful engagement with industry actors (Secundo et al., 2017; Masoomi et al., 2024). This performance gap is especially evident in public universities within North Central Nigeria, where entrepreneurship centres often operate under resource constraints and weak ecosystem support.

Scholarly work increasingly points to managerial skills as a central determinant of organisational performance. In the context of university entrepreneurship centres, inadequate strategic leadership, limited coordination capacity, and weak resource mobilisation have been shown to undermine programme effectiveness and continuity (Aliero, & Olarinde, 2023). However, while managerial competence is frequently acknowledged as important, there is limited empirical evidence linking specific managerial capabilities to the performance of UECs in Nigeria.

Similarly, networking capacity is widely recognised as essential for entrepreneurship development, as it facilitates access to mentors, investors, markets, and industry knowledge. Yet, studies indicate that university-based entrepreneurship initiatives in Nigeria often exhibit weak and fragmented networks, resulting in limited exposure of student entrepreneurs to real business environments (Aliero, & Olarinde, 2023). Despite this, the combined effect of managerial skills and networking on UEC performance remains underexplored in empirical research.

More critically, existing studies on university entrepreneurship and university-industry relations tend to examine industry collaboration as a direct predictor of outcomes, rather than as a contextual condition that shapes how internal capabilities translate into performance (Song et al., 2022). This approach overlooks the possibility that managerial skills and networking may only produce meaningful performance gains when supported by strong and sustained industry collaboration. Consequently, it remains unclear whether

internal capabilities alone are sufficient to enhance UEC performance in environments where industry engagement is weak or inconsistent.

Research Questions

The aim of this study is to examine the role of industry collaboration in the relationship between managerial skills, networking, and University Entrepreneurship Centre performance in North Central Nigeria. The specific objectives of the study are to:

- Examine the effect of managerial skills on the performance of University Entrepreneurship Centres in North Central Nigeria
- Assess the effect of networking on the performance of University Entrepreneurship Centres in North Central Nigeria
- Determine the effect of industry collaboration on the performance of University Entrepreneurship Centres in North Central Nigeria
- Examine whether industry collaboration moderates the relationship between managerial skills and University Entrepreneurship Centre performance in North Central Nigeria
- Examine whether industry collaboration moderates the relationship between networking and University Entrepreneurship Centre performance in North Central Nigeria.

Literature Review

The literature on university entrepreneurship and innovation increasingly recognises universities as key actors within entrepreneurial and innovation ecosystems. University Entrepreneurship Centres (UECs) are designed to bridge the gap between academic knowledge and market application by providing structured support for entrepreneurial activity within universities (Iweh et al., 2021). Their performance is commonly assessed using indicators such as the quality of entrepreneurship programmes, number of supported start-ups, level of industry engagement, access to funding, and employability outcomes of graduates (Adeeko, 2023). Among the internal factors that determines the effectiveness of these centres is managerial skill, which has received increasing attention in entrepreneurship and higher education research. Managerial skills refer to the ability of centre leaders and administrators to plan strategically, coordinate resources, manage stakeholders, and implement programmes effectively (Guerrero & Urbano, 2019; Aliero, & Olarinde, 2023). Katz's classic framework identifies technical, human, and conceptual skills as core managerial competencies; however, recent literature (Asghar et al., 2023) places stronger emphasis on strategic

and adaptive capabilities. Ogbiji et al. (2018) defined managerial skills in educational and entrepreneurial settings as the ability to provide leadership, manage resources efficiently, coordinate stakeholders, and implement programmes effectively. Managerial skills also include opportunity recognition, decision-making under uncertainty, and the ability to align organisational objectives with external stakeholder expectations (Guerrero & Urbano, 2019). In organisational settings, strong managerial skill has been associated with improved performance, adaptability, and sustainability (Asghar et al., 2023). Adeeko (2023) further argued that effective management is essential for transforming entrepreneurial education from classroom-based instruction into practice-oriented outcomes. Within UECs, managerial skills are therefore conceptualised as the leadership and administrative capabilities that enable centre managers to design relevant programmes, mobilise resources, and sustain entrepreneurial initiatives.

Another critical internal capability is networking, which enables UECs to establish and maintain relationships with external stakeholders such as industry partners, investors, mentors, and government agencies. Aliu et al. (2018) conceptualised entrepreneurial networking as structured and informal relationships that provide access to knowledge, mentorship, funding, and markets. Networking facilitates access to information, resources, and opportunities that are essential for entrepreneurial success (Arruti & Panos-Castro, 2020). In university entrepreneurship framework, effective networking enhances programme relevance, exposes students to real business environments, strengthens pathways for venture development and extends beyond individual entrepreneurs to include institutional relationships with industry, government agencies, investors, and support organisations. Theodoraki et al. (2018) emphasised that effective networking enhances the embeddedness of entrepreneurship centres within local and regional ecosystems, thereby improving their relevance and performance. Aliero, and Olarinde (2023) noted that weak networking structures in Nigerian universities often limit students' exposure to real business environments. In this study, networking is conceptualised as the capacity of UECs to establish and utilise internal and external relationships that support entrepreneurial learning and venture development.

While managerial skills and networking are necessary internal capabilities, their influence on UEC performance may depend on the extent of industry collaboration. Industry collaboration refers to structured interactions between universities and firms involving joint activities such as mentorship, incubation support, applied research, and venture development. Prior studies highlight

that industry collaboration enhances the practical relevance and impact of university entrepreneurship initiatives (Asghar et al., 2023). However, limited attention has been given to how industry collaboration conditions the effectiveness of internal organisational capabilities.

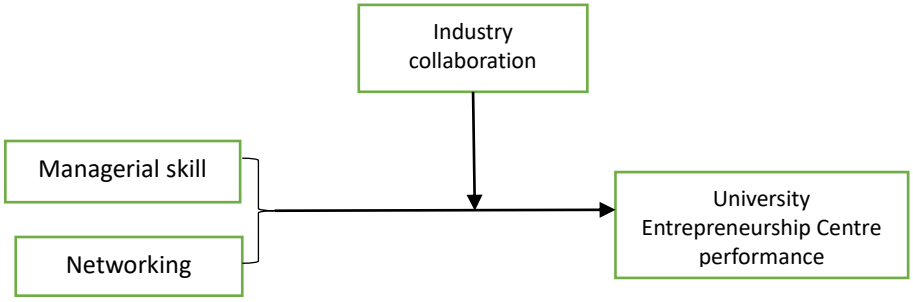

Figure 1: Conceptual Framework for the role of industry collaboration in the relationship between managerial skills, networking, and University Entrepreneurship Centre performance in North Central Nigeria

Theoretical Framework

This study is anchored on the Resource-Based View (RBV) and the Dynamic Capabilities Theory (DCT). These theories are discussed:

Resource-Based View (RBV): This theory posits that organisational performance is driven by the possession and effective utilisation of valuable, rare, inimitable, and non-substitutable resources (Baia et al., 2020; Zvarimwa & Zimuto 2022). Within this framework, managerial skills and networking are conceptualised as strategic intangible resources that enable organisations to create value and sustain performance advantages; and when applied to University Entrepreneurship Centres, RBV suggests that centres with strong managerial competencies which may be in form of strategic planning (Guerrero & Urbano, 2019), leadership, and coordination (Asghar et al., 2023), are better positioned to design effective entrepreneurship programmes and manage complex stakeholder relationships (Siegel & Wright, 2015;Adeeko, 2023). Similarly, networking capability represents a relational resource that allows centres to access external knowledge, mentorship, and funding opportunities that are not internally available (King'oo et al., 2020; Adamu et al., 2025). Prior studies have shown that universities and entrepreneurship support organisations that effectively leverage such intangible resources demonstrate superior performance outcomes (Guerrero & Urbano, 2019). However, RBV has been criticised for its limited attention to environmental dynamism, particularly

in contexts characterised by rapid change and uncertainty. This limitation is addressed by Dynamic Capabilities Theory.

Dynamic Capabilities Theory (DCT): This theory extends RBV by emphasising an organisation's ability to integrate, build, and reconfigure internal and external competencies in response to changing environments (Teece, 2018). From this perspective, managerial skills are not static resources (Asghar et al., 2023) but adaptive capabilities that enable organisations to sense opportunities, seize them, and transform operations accordingly (Teece, 2018). As viewed in this study, dynamic managerial capabilities are critical for responding to evolving entrepreneurial ecosystems, industry needs, and policy expectations. Networking further enhances these capabilities by facilitating continuous learning and adaptation through interaction with external actors (Bowser et al., 2024). DCT therefore provides a strong theoretical basis for explaining how managerial skills and networking jointly influence UEC performance. More importantly, DCT highlights that the effectiveness of internal capabilities depends on how well organisations engage with their external environment, thereby bringing industry collaboration into focus.

Methodology

This study adopts a quantitative research design and applies Partial Least Squares Structural Equation Modelling (PLS-SEM) to examine the role of industry collaboration in the relationship between managerial skills, networking, and University Entrepreneurship Centre performance in North Central Nigeria. PLS-SEM is suitable for predictive research, complex models involving moderation effects, and studies with relatively small to medium sample sizes, which are common in higher education and entrepreneurship research (Hair et al., 2014; Sarstedt et al., 2021). Data were collected through a cross-sectional survey of managers, coordinators, and senior administrative staff of University Entrepreneurship Centres in public universities within the study area. A structured questionnaire was employed, with measurement items adapted from validated scales in prior studies to ensure content validity (Adeeko, 2023). Managerial skills and networking were specified as independent variables, University Entrepreneurship Centre performance as the dependent variable, and industry collaboration as the moderating variable.Data analysis followed a two-stage PLS-SEM procedure. First, the measurement model was assessed for reliability and validity using indicator loadings, composite reliability, and average variance extracted. Second, the structural model was evaluated using path coefficients, coefficient of determination (R^2)

and predictive relevance (Q^2). The moderating effect of industry collaboration was tested using an interaction term approach, with significance assessed through bootstrapping with 5,000 resamples (Hair et al., 2014; Henseler et al., 2016).

Result and Conclusion

The data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) following a two-stage procedure involving the assessment of the measurement and structural models (Hair et al., 2014).The demographic results (Table 1) showed that out of 281 respondents, approximately 60% were male and 40% were female. Most respondents (62%) were aged between 31–40 years (38%), while approximately 30% were aged between 41 – 50, 18% we above 50 years and 13% below 30 years. Furthermore, in terms of educational qualification, 51.6% possessed a master's degree, while 33.7% held a PhD. Regarding position, 37.2% were coordinators, 36.6% were senior administrative staff, and 26.2% were centre managers or directors. A majority of respondents (43.0%) had between 5 and 10 years of work experience. Furthermore, 66.1% of respondents were from federal universities, while 23.9% were from state universities and 10% were from private university.

The remaining part of the results are presented using both the measurement and structural models to evaluate construct reliability, validity, and path relationships.

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	169	60.1
	Female	112	39.9
		281	100%
Age (Years)	Below 30	37	13.3
	31–40	107	38
	41–50	85	30.4
	Above 50	52	18.3
		281	100%
Highest Qualification	Bachelor's Degree	42	14.9
	Master's Degree	145	51.6
	PhD	94	33.5
		281	100%
Position in UEC	Centre Manager/Director	74	26.2

	Coordinator	105	37.2
	Senior Administrative Staff	102	36.6
		281	100%
Years of Experience	Below 5 years	54	19.1
	5–10 years	121	43
	11–15 years	67	23.8
	Above 15 years	39	13.9
		281	100%
University Type	Federal University	186	66.1
	State University	67	23.8
		28	10.0
		281	100%

Source: *SPSS Output*

Measurement Model

The measurement model was assessed using indicator loadings, internal consistency reliability, and convergent validity. Reliability was evaluated through Cronbach's alpha, composite reliability (rho_a and rho_c), while convergent validity was assessed using the Average Variance Extracted (AVE), in line with established PLS-SEM guidelines. The results indicated that all constructs exhibit satisfactory internal consistency reliability. Cronbach's alpha values ranged from 0.728 to 0.798, exceeding the recommended minimum threshold of 0.70. Similarly, composite reliability values for managerial skills, networking, industry collaboration, and University Entrepreneurship Centre performance were all above 0.70, confirming the reliability of the measurement scales. Regarding indicator reliability, most item loadings exceeded the recommended threshold of 0.70, indicating strong relationships between the indicators and their respective constructs. For managerial skills, item loadings ranged from 0.538 to 0.821, while networking indicators recorded loadings between 0.641 and 0.791. Industry collaboration items showed loadings ranging from 0.566 to 0.853, and University Entrepreneurship Centre performance indicators ranged from 0.721 to 0.770. Although a few indicators (MS2, NT1, and ICB1) loaded slightly below the ideal 0.70 threshold, they exceeded the minimum acceptable level of 0.50 and were therefore retained due to their theoretical relevance and contribution to content validity, consistent with recommendations by Sarstedt et al. (2021) and Afthanorhan et al. (2020). Additionally, Convergent validity was established as the AVE values for all constructs exceeded the 0.50 benchmark, with values

ranging from 0.544 to 0.564, indicating that the constructs explain more than half of the variance in their indicators.

Table 2: Measurement model

		Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Managerial skill		0.798	0.842	0.854	0.544
MS1	0.677				
MS2	0.538				
MS3	0.809				
MS4	0.802				
MS5	0.821				
Networking		0.728	0.741	0.830	0.551
NT1	0.641				
NT2	0.773				
NT3	0.791				
NT4	0.755				
Industry Collaboration		0.735	0.774	0.830	0.555
ICB 1	0.566				
ICB 2	0.765				
ICB 3	0.853				
ICB 4	0.764				
University Entrepreneurship Centre performance		0.742	0.742	0.838	0.564
UECP 1	0.754				
UECP 2	0.757				
UECP 3	0.770				
UECP 4	0.721				

SEM-PLS Output, 2025

Discriminant validity was also evaluated using the Fornell–Larcker criterion (Table 3), where the square root of AVE for each construct was greater than inter-construct correlations, confirming distinctiveness among industry collaboration, managerial skill, networking and University Entrepreneurship Centre performance (UECP). Cronbach's alpha and composite reliability values

also exceeded the 0.70 benchmark, establishing satisfactory internal consistency.

Table 3: Fornell-Larcker criterion

	Industry collaboration	Managerial skill	Networking	UECP
Industry collaboration	0.745			
Managerial skill	0.671	0.738		
Networking	0.485	0.590	0.742	
UECP	0.495	0.560	0.619	0.751

SEM-PLS Output, 2025

The collinearity statistics (Table 4) shows that all variance inflation factor (VIF) values range between 1.283 and 1.901, well below the threshold of 5 recommended by Hair et al. (2014).

Table 4: Collinearity statistics (VIF)

	VIF
ICB 1	1.303
ICB 2	1.594
ICB 3	1.767
ICB 4	1.371
MS1	1.901
MS2	1.555
MS3	1.890
MS4	1.668
MS5	1.774
NT1	1.283
NT2	1.575
NT3	1.604
NT4	1.369
UECP 1	1.420
UECP 2	1.493
UECP 3	1.558
UECP 4	1.319

SEM-PLS Output, 2025

The result in Table 4 indicated that multicollinearity is not a concern among the indicators of industry collaboration, managerial skill, networking and university Entrepreneurship Centre performance (UECP). Hence, the constructs demonstrate acceptable levels of independence, supporting the reliability of the measurement and structural models for further analysis.

Structural Model

The findings of the measurement model showed that discriminant validity, convergent validity, and construct reliability are all within acceptable threshold. Consequently, the study examined the effect of managerial skill and networking on University Entrepreneurship Centre performance. The result of the structural (inner) model is presented in Figure 1.

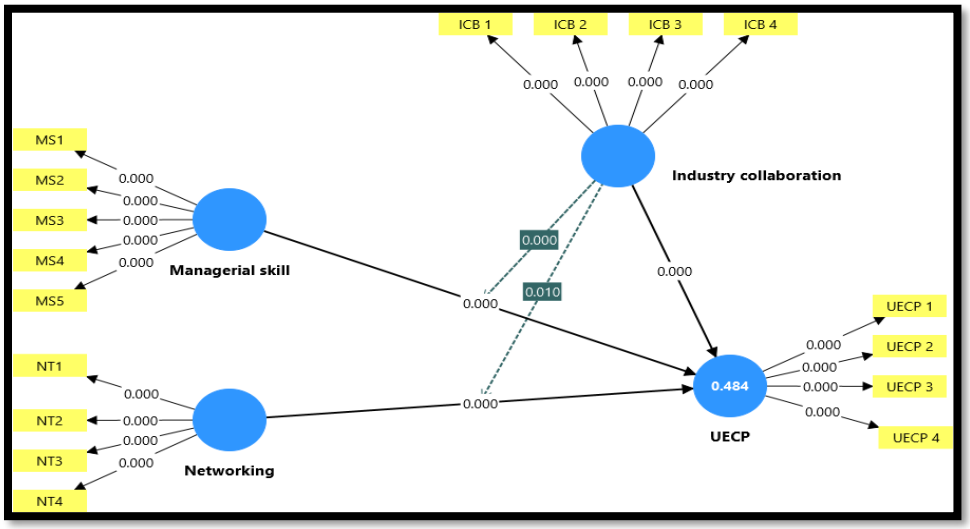

Figure 1: PLS-SEM bootstrapping model role of industry collaboration in the relationship between managerial skills, networking, and University Entrepreneurship Centre performance in North Central Nigeria

Source: *PLS-SEM Output*

The structural model results indicated that managerial skills have a positive and statistically significant effect on University Entrepreneurship Centre performance (β = 0.253, p = 0.000). This finding implies that improvements in managerial skills lead to enhanced performance of University Entrepreneurship Centres in North Central Nigeria. Specifically, a unit increase in managerial skills is associated with an approximately 25.3% improvement in centre performance, suggesting that managerial skills plays a substantial role in driving effective entrepreneurship centre outcomes. Similarly, networking

shows a strong positive and statistically significant effect on University Entrepreneurship Centre performance (β = 0.359, p = 0.000). This indicates that effective networking with external stakeholders, including industry partners, mentors, and support institutions, significantly enhances the performance of entrepreneurship centres. A unit increase in networking capability leads to about a 35.9% increase in centre performance, highlighting networking as a critical driver of entrepreneurial support effectiveness in the study area. The results further reveal that industry collaboration has a positive and significant effect on University Entrepreneurship Centre performance (β = 0.190, p = 0.000). This suggests that stronger collaboration with industry partners contributes meaningfully to improved performance outcomes, such as programme relevance, innovation support, and venture development. A unit increase in industry collaboration results in an estimated 19.0% increase in centre performance.

Table 5: Structural Path Model Result

	β	Std dev	T statistics	P values
Managerial skill -> UECP	0.253	0.057	4.415	0.000
Networking -> UECP	0.359	0.050	7.156	0.000
Industry collaboration -> UECP	0.190	0.049	3.861	0.000
Industry collaboration x Managerial skill -> UECP	0.259	0.053	4.852	0.000
Industry collaboration x Networking -> UECP	0.134	0.052	2.579	0.010

SEM-PLS Output, 2025

With respect to the moderating effects, the interaction between industry collaboration and managerial skills is positive and statistically significant (β = 0.259, p = 0.000). This indicates that industry collaboration significantly strengthens the relationship between managerial skills and University Entrepreneurship Centre performance. In other words, managerial skills are more effective in improving centre performance when supported by strong industry collaboration. Finally, the interaction effect of industry collaboration and networking on University Entrepreneurship Centre performance is also positive and statistically significant (β = 0.134, p = 0.010). This result suggests that industry collaboration enhances the positive impact of networking on centre performance indicating that collaborative industry linkages help translate networking efforts into improved performance outcomes.

Discussion

The findings of this study provide empirical support for the role of industry collaboration in the relationship between managerial skills, networking, and University Entrepreneurship Centre performance in North Central Nigeria. First, the significant positive effect of managerial skills on University Entrepreneurship Centre performance highlights the importance of leadership competence, strategic planning, and effective coordination in entrepreneurship education delivery. This result aligns with the study of Aliu (2018) and Ogbiji (2018) who stated that the effectiveness of entrepreneurship education initiatives depends heavily on how programmes are implemented and managed, rather than merely on their existence. In line with the entrepreneurial university paradigm, Etzkowitz et al. (2000) and Siegel and Wright (2015) reported that managerial capacity enables centres to move beyond symbolic compliance with policy directives toward the delivery of impactful entrepreneurial support activities. The finding also agrees with Guerrero and Urbano (2019), who argued that institutional actors require strong managerial skills to translate entrepreneurship policies into measurable innovation and venture outcomes. Additionally, the strong positive effect of networking on University Entrepreneurship Centre performance confirmed that centres embedded in wider relational networks are better positioned to achieve their objectives. This finding supports the social capital perspective, which emphasised that access to external knowledge, mentors, and resources enhances organisational performance (Theodoraki et al., 2018). This finding agrees with King'oo et al. (2020) and Bhushan et al. (2020) who reported that networking capability significantly improves institutional effectiveness by facilitating partnerships, information flow, and legitimacy. The finding also agrees with the statement by the Nigerian University Commission who asserted that within Nigerian universities, where funding and infrastructure constraints persist, networking appears to serve as a critical mechanism for overcoming internal resource limitations. Furthermore, the significant direct effect of industry collaboration on UEC performance reinforces the argument that entrepreneurship centres perform bett**e**r when they maintain active engagement with industry actors. This finding is consistent with the university–industry collaboration literature (Ankrah & Omar, 2015; Siegel & Wright, 2015), which highlights collaboration as a pathway for improving programme relevance, experiential learning, and innovation outcomes. In Nigerian, such collaboration is particularly important given policy expectations

that universities contribute to employability and enterprise development (SMEDAN, 2023; Adamu et al., 2025).

More importantly, the moderation results demonstrated that industry collaboration strengthens the interaction between managerial skills and entrepreneurship centre performance. This suggests that managerial skills yield greater performance benefits when centres operate within supportive industry-linked environments. In line with the entrepreneurial ecosystem perspective, internal capabilities are most effective when complemented by external institutional linkages (Theodoraki et al., 2018). Without industry collaboration, even well-managed centres may struggle to deliver industry-relevant entrepreneurial outcomes. Similarly, the moderating effect of industry collaboration on the networking and performance relationship indicated that networking efforts translate more effectively into performance gains when they are structured around meaningful industry partnerships. This supports the argument of Secundo et al. (2017) and Arruti and Panos-Castro (2020) who stated that not all networks are equally valuable except the ones anchored on productive university-industry interactions are more likely to enhance entrepreneurial learning and venture outcomes.

Conclusion and Recommendation

This study examined the role of industry collaboration in the relationship between managerial skills, networking, and the performance of University Entrepreneurship Centres (UECs) in North Central Nigeria. The findings demonstrated that managerial skills and networking significantly enhance UEC performance, while industry collaboration not only exerts a direct positive influence but also strengthens the effects of these internal capabilities. This study therefore confirms that entrepreneurship centre performance is shaped by and dependent on the interaction between internal managerial capacity and external institutional engagement. The study contributes to the understanding of university entrepreneurship by showing that UECs are more effective when managerial competencies such as strategic planning, leadership, and coordination are supported by strong industry partnerships. Similarly, networking efforts from these centres would yield greater performance outcomes when embedded within structured university-industry collaboration frameworks. These findings underscore the need for UECs to move beyond isolated programme delivery toward integrated models that combine capable leadership, active stakeholder engagement, and sustained industry involvement. For University Entrepreneurship Centres, the implications are significant as centres that lack industry linkages may struggle to translate

managerial expertise and networking activities into tangible entrepreneurial outcomes. Conversely, centres that actively collaborate with industry are better positioned to deliver relevant entrepreneurial training, improve graduate employability, and contribute meaningfully to regional economic development in the country. The study therefore highlights industry collaboration as a critical mechanism for enhancing the effectiveness and sustainability of university-based entrepreneurship initiatives in Nigeria.

Based on the findings, the following recommendations are proposed:

- University management and relevant regulatory bodies should prioritise continuous capacity development for UEC managers and administrators through targeted training in strategic planning, leadership, and programme coordination to enhance centre performance.
- University Entrepreneurship Centres should formalise networking mechanisms that can facilitate sustained engagement with entrepreneurs, alumni, financial institutions, and innovation support organisations to improve access to external resources and expertise.
- Universities should establish structured and long-term industry partnerships through memoranda of understanding, joint programmes, and co-designed entrepreneurship initiatives to enhance the relevance and impact of UEC activities.
- Industry actors should be actively involved in curriculum design, mentorship, internships, and venture incubation activities to ensure that entrepreneurship programmes align with market realities and skill demands.
- Regulatory agencies such as the National Universities Commission and SMEDAN should strengthen policy frameworks and monitoring mechanisms that encourage effective university-industry collaboration as a core performance criterion for UECs

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