



## Effects of Innovation and Opportunity Recognition on Performance of University Entrepreneurship Centers in North Central, Nigeria

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### Abstract

Despite the establishment of University Entrepreneurship Centres (UECs) in Nigerian universities to promote innovation and entrepreneurial opportunity development, many centres continue to experience weak innovation outcomes, poor commercialization of ideas, and limited entrepreneurial performance. This study examined the effect of innovation and opportunity recognition on the performance of UECs in North Central Nigeria. A quantitative, cross-sectional survey design was adopted, and data were collected from 281 Centre Managers/Directors, Coordinators, and Senior Administrative Staff across Federal and State Universities. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model demonstrated satisfactory reliability and validity, with Cronbach's alpha values ranging from 0.728 to 0.798, composite reliability values between 0.829 and 0.853, and Average Variance Extracted (AVE) values from 0.532 to 0.550. Structural model results revealed that innovation has a positive and significant effect on UEC performance ( $\beta = 0.307$ ,  $p < 0.001$ ), while opportunity recognition exerts a stronger positive and significant effect ( $\beta = 0.451$ ,  $p < 0.001$ ). The study concludes that both innovation and opportunity recognition are critical drivers of UEC performance, with opportunity recognition playing a more dominant role. The findings provide empirical evidence to guide UEC management and university administrators and ensure they prioritize the development of structured innovation frameworks within entrepreneurship centres.

**Keywords:** Innovation, Opportunity Recognition, University Entrepreneurship Centres, Organisational Performance.

### 1.0 Introduction

The performance of university entrepreneurship centers has become a global concern as higher education institutions increasingly serve as engines of economic growth, innovation, and venture creation in knowledge-based economies (Audretsch *et al.*, 2019; Guerrero and Urbano 2019). Globally, universities are expected to enhance start-up creation, technology commercialization, and graduate employability, yet many entrepreneurship centers struggle to translate policy expectations into measurable outcomes such as sustainable ventures, industry linkages, and innovation outputs (Secundo *et al.*, 2019). Recent studies emphasize that the effectiveness of university-based entrepreneurship support structures varies significantly across regions due to differences in institutional capacity, ecosystem maturity, and strategic orientation (Cunningham *et al.*, 2019).

In developing economies, the performance challenge is more pronounced because entrepreneurship centers often operate within weak innovation systems and limited funding environments (Bruton *et al.*, 2017; Urbano *et al.*, 2019). In Nigeria, universities were mandated to strengthen entrepreneurship education and establish centers to address unemployment and

stimulate venture creation among graduates (Acs et al., 2018). However, empirical evidence suggests that many Nigerian university entrepreneurship centers experience low venture survival rates, weak industry collaboration, and inadequate commercialization outcomes (Ogunyomi and Bruning, 2019; Eze et al., 2020). These performance gaps are further compounded by infrastructural deficits, limited managerial expertise, and inconsistent policy implementation within the Nigerian higher education system (Adeleke et al., 2021; Yusuf and Dansu, 2020).

In North Central Nigeria specifically, where universities are strategically positioned to support regional economic development, entrepreneurship centers face contextual constraints such as limited innovation ecosystems, funding instability, and weak university–industry linkages. Despite policy emphasis on entrepreneurship as a solution to youth unemployment and poverty reduction in the region, measurable performance indicators—such as number of scalable start-ups, patent outputs, and sustained business incubation—remain relatively modest (Danladi and Akomolafe, 2022). This situation suggests that structural existence alone does not guarantee effective performance of university entrepreneurship centers.

Innovation has been widely identified as a critical driver of organizational performance, particularly in knowledge-intensive institutions such as universities (Distanont, 2020; Ferreira et al., 2019). Innovation within entrepreneurship centers through new program designs, incubation models, digital platforms, and collaborative networks can enhance value creation and venture outcomes (Ratten, 2020; Secundo et al., 2019). Similarly, opportunity recognition is central to entrepreneurial success, as the ability to identify and evaluate viable business opportunities influences venture creation and sustainability (George et al., 2018; Shepherd and Patzelt, 2018). Studies indicate that institutional support structures that strengthen opportunity recognition competencies tend to produce higher-performing entrepreneurial ecosystems (Santos et al., 2019).

Although innovation and opportunity recognition have individually been linked to entrepreneurial performance in various contexts, limited empirical research has examined their combined effect on the performance of university entrepreneurship centers within the specific socio-economic environment of North Central Nigeria (Urbano et al., 2019; Ratten, 2020). This gap underscores the need to investigate how innovation practices and opportunity recognition capabilities interact to influence the performance outcomes of university entrepreneurship centers in North Central Nigeria.

## **1.2 Statement of the Research Problem**

The performance of university entrepreneurship centers remains a growing concern globally as many institutions struggle to convert entrepreneurship policies into measurable outcomes such as sustainable start-ups, innovation outputs, and effective industry collaboration (Secundo et al., 2019; Cunningham et al., 2019). Despite the strategic role of universities in driving entrepreneurial ecosystems, evidence indicates persistent gaps between expected and actual performance in venture creation and commercialization activities (Audretsch et al., 2019; Guerrero and Urbano, 2019). In developing economies, including Nigeria, these performance deficiencies are more pronounced due to weak innovation systems, limited funding, and inadequate institutional capacity (Bruton et al., 2017; Urbano et al., 2019).

In Nigeria, university entrepreneurship centers were established to address graduate unemployment and stimulate economic development, yet many centers record low venture

survival rates, minimal patent generation, and weak university–industry linkages (Ogunyomi and Bruning, 2019; Eze et al., 2020). The situation in North Central Nigeria reflects similar challenges, where entrepreneurship centers exist structurally but struggle to achieve sustainable and scalable performance outcomes (Danladi and Akomolafe, 2022). Although innovation and opportunity recognition are widely acknowledged as critical drivers of entrepreneurial success and organizational performance (Distanont, 2020; George et al., 2018), there is limited empirical evidence examining how these factors jointly influence the performance of university entrepreneurship centers in North Central Nigeria (Ratten, 2020; Urbano et al., 2019). This unresolved gap creates the need for a focused investigation into the effect of innovation and opportunity recognition on the performance of university entrepreneurship centers in North Central Nigeria.

The main objective of this study is to examine the effects of innovation and opportunity recognition on performance of university entrepreneurship centres in North central, Nigeria. The specific objectives are to:

- iv. To examine the effect of innovating on the performance of university entrepreneurship centres in North central, Nigeria.
- v. To evaluate how opportunity recognition affects the performance of university entrepreneurship centres in North central, Nigeria.

In line with this, the following hypotheses were tested:

HO<sub>1</sub>: Innovation has no significant effect on the performance of university entrepreneurship centres in North central, Nigeria.

HO<sub>2</sub>: Opportunity recognition has no significant effect on the performance of university entrepreneurship centres in North central, Nigeria.

This study focuses on examining the effect of innovation and opportunity recognition on the performance of university entrepreneurship centers in North Central Nigeria. Specifically, it assesses how innovation practices such as program development, incubation models, partnerships, and technology-driven initiatives and opportunity recognition capabilities influence key performance indicators including venture creation, sustainability, graduate employability, industry collaboration, and commercialization outcomes. The study targets selected university entrepreneurship centers within North Central Nigeria, evaluating their operational strategies and entrepreneurial support mechanisms. A quantitative research approach will be adopted to analyze the relationships among the variables. The study will also consider contextual factors such as institutional support, funding availability, and ecosystem development in shaping performance outcomes.

## **2.0 Literature Review**

### **2.1 Conceptual Review**

#### **Performance of University Entrepreneurship Centres**

Performance refers to the extent to which an organization achieves its stated objectives through efficient and effective utilization of resources (Santos and Brito, 2019). In the context of university entrepreneurship centers, performance encompasses measurable outcomes such as venture creation rates, business survival, innovation outputs, commercialization activities, graduate employability, and strength of university–industry collaboration (Guerrero and

Urbano, 2019; Secundo et al., 201). Organizational performance in higher education institutions is often assessed using multidimensional indicators that combine financial and non-financial measures, including innovation capacity, stakeholder satisfaction, and societal impact (Cunningham et al., 2019; Audretsch et al., 2019). Recent literature emphasizes that performance within entrepreneurial ecosystems is shaped by institutional support structures and strategic orientation toward innovation and opportunity exploitation (Urbano et al., 2019; Ratten, 2020). Therefore, the performance of university entrepreneurship centers reflects their effectiveness in fostering entrepreneurial competencies, facilitating opportunity commercialization, and contributing to regional economic development. In this study, the performance of University Entrepreneurship Centres (UECs), which served as the dependent variable in this study, was measured using a key proxy: startup success which is assessed through indicators such as the number of student or graduate ventures successfully incubated, venture survival and growth, business sustainability, and the ability of startups to attract market acceptance and operational continuity.

### **Innovation**

Innovation refers to the development and implementation of new ideas, processes, products, services, or organizational practices that create value and enhance competitiveness (Distanont, 2020; Ferreira et al., 2019). It involves both technological and non-technological changes that improve organizational effectiveness and adaptability in dynamic environments (OECD, 2018; Ratten, 2020). Within university entrepreneurship centers, innovation may manifest in new incubation models, digital entrepreneurial platforms, collaborative partnerships, and novel training programs designed to stimulate venture creation (Secundo et al., 2019; Guerrero and Urbano, 2019). Empirical studies suggest that innovation capability is positively associated with organizational performance because it enhances problem-solving capacity, responsiveness to market needs, and value creation processes (Cunningham et al., 2019; Urbano et al., 2019). In entrepreneurial ecosystems, innovation acts as a strategic resource that strengthens competitiveness and sustainability, thereby improving institutional and venture-level outcomes. Thus, innovation is conceptualized in this study as the ability of university entrepreneurship centers to introduce and implement creative and value-adding initiatives that enhance performance.

### **Opportunity Recognition**

Opportunity recognition is defined as the cognitive and behavioral process through which individuals or organizations identify and evaluate potential business ideas capable of generating value (George et al., 2018; Shepherd and Patzelt, 2018). It involves scanning the environment, interpreting market signals, and linking resources to unmet needs or emerging trends (Santos et al., 2019). In entrepreneurship literature, opportunity recognition is considered a foundational capability that precedes venture creation and significantly influences entrepreneurial performance outcomes (Urbano et al., 2019; Ratten, 2020). Within university entrepreneurship centers, opportunity recognition may include mentoring programs, market research support, idea validation mechanisms, and entrepreneurial training that enhance students' and start-ups' ability to identify viable business prospects (Secundo et al., 2019; Guerrero and Urbano, 2019). Studies indicate that stronger opportunity recognition capabilities improve venture sustainability, innovation output, and ecosystem performance (George et al., 2018; Santos et al., 2019). Therefore, opportunity recognition in this study represents the institutional capacity to facilitate the identification and exploitation of entrepreneurial opportunities that drive performance outcomes.

## 2.2 Conceptual Framework

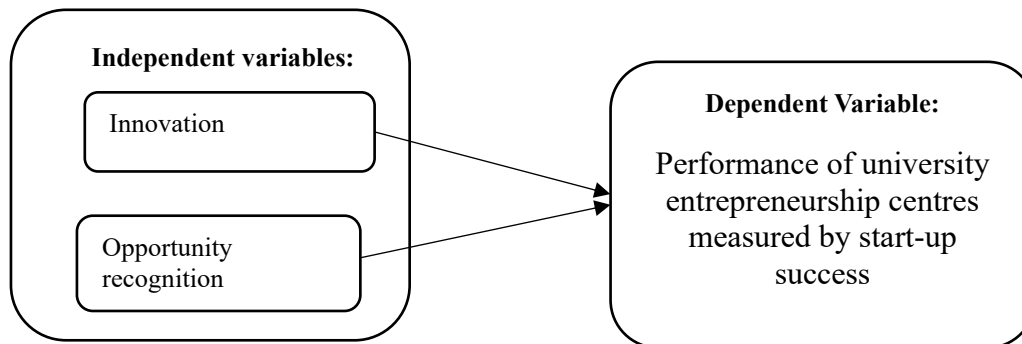


Figure 1: Conceptual framework (Author's compilation, 2026)

## 2.3 Theoretical Framework

The study was underpinned and supported by the two theories; Schumpeter's Innovation Theory and Kirzner's Opportunity Recognition Theory because it explains that innovation is a major driver of organizational growth, entrepreneurial success, and performance through the creation of new products, processes, services, and methods

### Schumpeter's Innovation Theory

Schumpeter's Innovation Theory posits that economic development and organizational performance are driven by innovation through new combinations of resources, processes, products, and markets (Schumpeter, 1934). Contemporary scholarship affirms that innovation capability remains central to entrepreneurial success and institutional competitiveness in dynamic environments (Distanont, 2020; Audretsch et al., 2019). Within university entrepreneurship centers, innovation manifests in novel incubation models, technology transfer mechanisms, and entrepreneurial training systems that enhance venture creation and commercialization outcomes (Guerrero and Urbano, 2019). The theory suggests that institutions that continuously introduce and implement innovative practices are more likely to achieve superior performance outcomes. Thus, Schumpeter's perspective provides a strong theoretical foundation for examining how innovation influences the performance of university entrepreneurship centers in North Central Nigeria.

### Kirzner's Opportunity Recognition Theory

Kirzner's Opportunity Recognition Theory emphasizes entrepreneurial alertness as the ability to identify previously unnoticed market opportunities and exploit them for value creation (Kirzner, 1973). Recent research highlights opportunity recognition as a cognitive and behavioral process that significantly predicts entrepreneurial outcomes and organizational performance (George et al., 2018; Shepherd and Patzelt, 2018). In the context of university entrepreneurship centers, opportunity recognition involves equipping students and start-ups with skills to scan environments, evaluate ideas, and transform them into viable ventures (Urbano et al., 2019). The theory argues that performance improves when institutions strengthen mechanisms that enhance opportunity identification and exploitation. Therefore, Kirzner's framework underpins the examination of how opportunity recognition capabilities influence the performance of university entrepreneurship centers in North Central Nigeria.

## 2.4 Empirical Review

Secundo *et al.* (2019) examined the impact of innovation practices on the performance of European university entrepreneurship centers, finding that adoption of innovative programs, incubation models, and collaborative initiatives significantly improved venture creation and commercialization outcomes. While the study underscores the critical role of innovation in enhancing performance, it is contextually limited to developed economies with strong funding, advanced technology, and mature ecosystems. The findings may not fully translate to North Central Nigeria, where entrepreneurship centers often face infrastructural deficits and low resource availability. Additionally, the study did not consider the interaction between innovation and opportunity recognition, leaving a gap in understanding how these two independent variables jointly influence the overall performance of university entrepreneurship centers in developing regions.

George *et al.* (2018) investigated opportunity recognition as a driver of entrepreneurial success, showing that entrepreneurial alertness and the ability to identify viable business opportunities strongly predicted venture outcomes. Although this highlights the importance of opportunity recognition, the study primarily focused on individual entrepreneurs rather than institutional structures, such as university entrepreneurship centers. Consequently, it provides limited insight into how institutional mechanisms can enhance opportunity recognition to improve performance metrics like start-up creation, sustainability, and commercialization. Furthermore, the research did not integrate innovation as a complementary factor, failing to examine the combined effect of innovation and opportunity recognition on the performance of university entrepreneurship centers, particularly in emerging economies such as North Central Nigeria.

Ogunyomi and Bruning (2019) explored the performance of Nigerian university entrepreneurship centers and identified weak institutional strategies, limited funding, and inadequate human resource management as key barriers to effective performance. While the study acknowledges low levels of venture creation and commercialization, it lacks a focused analysis on how innovation initiatives and opportunity recognition capabilities specifically influence performance outcomes. The descriptive approach provides limited empirical evidence linking the independent variables to measurable results such as graduate employability, industry collaboration, and innovation output.

## 3.0 Methodology

This study adopted a quantitative research design using a cross-sectional survey approach to examine the effects of innovation and opportunity recognition on the performance of University Entrepreneurship Centres (UECs) in North Central Nigeria. The target population comprised Centre Managers/Directors, Coordinators, and Senior Administrative Staff of UECs across Federal and State Universities in the region. Census sampling technique was used considering the small population ( $N = 377$ ) involved and a structured questionnaire was used for data collection, with measurement items adapted from validated scales in existing entrepreneurship and innovation literature. A total of 281 usable responses were obtained and analyzed. Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model was assessed for reliability and validity using Cronbach's alpha, composite reliability, average variance extracted (AVE), and indicator loadings. The structural model was evaluated using path coefficients ( $\beta$ ),  $t$ -statistics, and  $p$ -values obtained through bootstrapping procedures. This approach ensured robust examination of the hypothesized relationships between innovation, opportunity recognition, and UEC performance.

#### 4.0 Results and Discussion

The demographic profile of respondents indicated that out of 281 participants (accounting for 74.5% of the population), 60.1% were male while 39.9% were female, suggesting moderate gender representation in University Entrepreneurship Centres (UECs). The majority of respondents were between 31–40 years (38%), followed by 41–50 years (30.4%), indicating that most participants are in their active professional years. In terms of educational attainment, more than 50% possessed a Master’s degree while 33.5% held PhDs, reflecting a highly educated workforce suitable for driving innovation and opportunity recognition within UECs. Regarding position, Coordinators constituted the largest group (37.2%), followed closely by Senior Administrative Staff (36.6%) and Centre Managers/Directors (26.2%), ensuring representation across management levels. Experience distribution shows that 43% had 5–10 years of experience, suggesting substantial institutional knowledge. Finally, 66.1% of respondents were from Federal Universities and 23.8% from State Universities, indicating stronger participation from federally funded institutions in North Central Nigeria.

**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*

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

#### 4.1 Measurement Model

The measurement model was evaluated using indicator loadings, internal consistency reliability, and convergent validity. As presented in Table 2, all constructs demonstrated satisfactory reliability. Cronbach's alpha values ranged from 0.728 to 0.798, exceeding the recommended threshold of 0.70 (Sarstedt et al. 2021), thereby confirming acceptable internal consistency. Similarly, composite reliability values (rho\_c) ranged from 0.829 to 0.853, further supporting the reliability of the constructs: Innovation, Opportunity Recognition, and Performance of University Entrepreneurship Centres. With respect to indicator reliability, most item loadings surpassed the 0.70 benchmark (Afthanorhan et al. 2020), indicating strong interaction between indicators and their respective constructs. Innovation item loadings ranged from 0.534 to 0.826, Opportunity Recognition from 0.636 to 0.798, and Performance from 0.713 to 0.743. Although INN2 (0.534) loaded slightly below 0.70, it exceeded the minimum acceptable threshold of 0.50 and was retained based on theoretical justification. Furthermore, convergent validity was established as the Average Variance Extracted (AVE) values ranged from 0.532 to 0.550, exceeding the 0.50 criterion, indicating adequate construct validity.

**Table 2: Measurement model**

	Factor loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
<b>Innovation</b>		0.798	0.844	0.853	0.543
INN1	0.674				
INN2	0.534				
INN3	0.809				
INN4	0.801				
INN5	0.826				
<b>Opportunity Recognition</b>		0.728	0.743	0.829	0.550
OR1	0.636				
OR2	0.772				
OR3	0.798				
OR4	0.752				
<b>Performance of University Entrepreneurship Centre</b>		0.780	0.781	0.850	0.532
PUEC 1	0.737				
PUEC 2	0.713				
PUEC 3	0.743				

PUEC 4	0.722
PUEC 5	0.733

*SEM-PLS Output, 2026*

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 innovation, opportunity recognition and performance of University Entrepreneurship Centre (PUEC). Cronbach’s alpha and composite reliability values also exceeded the 0.70 benchmark, establishing satisfactory internal consistency.

**Table 3: Fornell-Larcker criterion**

	Innovation	Opportunity Recognition	Performance of University Entrepreneurship Centre
Innovation	0.737		
Opportunity Recognition	0.591	0.742	
Performance of University Entrepreneurship Centre	0.574	0.633	0.729

*SEM-PLS Output, 2026*

#### 4.2 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 effects of innovation and opportunity recognition on the performance of University Entrepreneurship Centre.

#### 4.3 Model-Fit

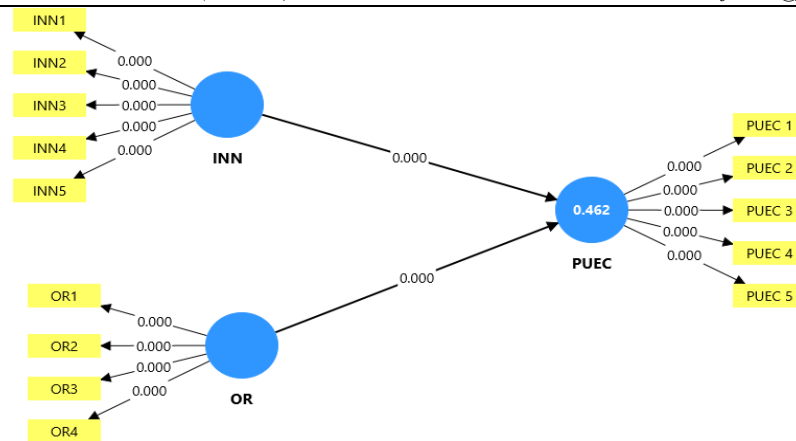
In this section, the Structural Equation Modeling (SEM) model fit indices are presented based on the analysis of the research data.

**Table 4: Model Fit Indices for the Study**

Model Fit Index	Value for current study	Estimated valued for fit
ChiSqr/df	4.422	< 5
RMSEA	0.075	< 0.80
GFI	0.838	> 0.80
AGFI	0.894	> 0.80
NFI	0.829	> 0.80
TLI	0.849	> 0.80
CFI	0.862	> 0.70

*SEM-PLS Output, 2026*

From Table 4, the model fit indices indicated that the structural model achieved an acceptable level of fit. The Chi-square/df, RMSEA, GFI, AGFI, NFI, TLI, and CFI values satisfied the recommended thresholds, suggesting that the model demonstrates adequate structural validity, acceptable explanatory power, and sufficient goodness-of-fit for testing the hypothesized relationships in the study. The result of the structural (inner) model is presented in Figure 2.



**Figure 2: Structural Equation Model for the Study**

Source: PLS-SEM Output

The structural model results in Table 4 indicated that innovation demonstrates a positive effect on PUEC ( $\beta = 0.307$ ,  $t = 6.964$ ,  $p < 0.001$ ). The t-statistic exceeds the critical value of 1.96, and the p-value is below the 0.05 significance threshold, therefore, the null hypothesis was rejected confirming that Innovation significantly enhances the performance of University Entrepreneurship Centres. This implies that a unit increase in innovative practices will lead approximately 31% in performance of entrepreneurship centres. Similarly, opportunity recognition shows a stronger positive effect on PUEC ( $\beta = 0.451$ ,  $t = 10.373$ ,  $p < 0.001$ ). The high t-statistic and statistically significant p-value indicate robust empirical support for this relationship. The beta coefficient suggests that opportunity recognition exerts a greater influence on performance compared to Innovation, that is a unit increase in opportunity recognition results in an estimated 45.0% increase in centre performance.

**Table 5: Structural Path Model Result**

Paths	Hypotheses	$\beta$	Std dev	T statistics	P values	Decision
INN -> PUEC	HO <sub>1</sub>	0.307	0.044	6.964	0.000	Reject
OR -> PUEC	HO <sub>2</sub>	0.451	0.044	10.373	0.000	Reject

SEM-PLS Output, 2026

#### 4.4 Discussion of Findings

The findings revealed that innovation had a significant effect on the performance of University Entrepreneurship Centres (UECs). This implies that innovative capabilities improve startup development, entrepreneurial activities, and overall performance outcomes of UECs. The finding supports Schumpeter's Innovation Theory, which emphasizes innovation as a driver of entrepreneurial and organizational performance. The result aligns with Huang et al. (2022) and Tariq and Zehir (2023), who found that innovation competencies significantly enhance organizational and entrepreneurial performance outcomes. Similarly, opportunity recognition significantly influenced UEC performance ( $p < 0.05$ ); thus, the null hypothesis was rejected. This suggests that the ability to identify and exploit entrepreneurial opportunities enhances the effectiveness and performance of UECs. The finding supports Kirzner's Opportunity Recognition Theory and agrees with George et al. (2018) and Shepherd and Patzelt (2018),

who emphasized that opportunity recognition significantly contributes to entrepreneurial success and performance outcomes.

## 5.0 Conclusion and Recommendations

This study examined the effects of innovation and opportunity recognition on the performance of University Entrepreneurship Centres (UECs) in North Central Nigeria. The findings revealed that both innovation and opportunity recognition significantly and positively influence UEC performance. Innovation was found to enhance the centres' ability to introduce new programmes, improve service delivery, and strengthen stakeholder engagement, thereby contributing to better overall performance of the centres. More importantly, opportunity recognition demonstrated a stronger predictive effect on performance, indicating that the ability of UECs to identify, evaluate, and exploit emerging entrepreneurial opportunities plays a critical role in achieving sustainable success.

### Recommendations

Based on the findings, it is recommended that:

1. UEC management and university administrators should prioritize the development of structured innovation frameworks within entrepreneurship centres. This can be achieved through capacity-building programmes, innovation labs, and strategic industry partnerships.
2. UECs should institutionalize opportunity recognition training, including market intelligence systems, business incubation support, and mentorship initiatives to enhance opportunity identification and exploitation capabilities.

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