



## Technopreneurial Competencies and Sustainability of Small and Medium Scale Enterprises in Southeast, Nigeria

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Date of Submission: 11-02-2025

Date of Acceptance: 24-02-2025

### ABSTRACT

This study examined the effect of technopreneurial competencies on the sustainability of Small and Medium Scale Enterprises (SMEs) in South East, Nigeria. The specific objective that guided the study, to examine the effect of technical knowledge competency on productivity of selected technopreneurial firms in South East, Nigeria. The study adopted survey research design. The population of the study consisted of 632 technopreneurs drawn from 10 leading technopreneurial SMEs in the South East Nigeria. Sample size of 253 were arrived at using Godden (2004) formula primary source of data was adopted, a well-structured was used to generate data from the field. Face and content validity method was used, test-re-test reliability and Cronbach Alpha reliability technique were used to validate and test the reliability of the research instrument. Ordinary Least Square Regression analysis was used to analyzed the data. Findings revealed that; at 5% level (Sig < .05) of significance, technical knowledge competency had a positive and significant effect on the productivity of selected technopreneurial firms in South East, Nigeria. The study concluded that technopreneurial competencies positively and significantly affects the sustainability of SMEs in the South East, Nigeria. The study recommended that: technopreneurs and their teams need to continuously maintain their technical knowledge competency as it significantly affects their productivity. However, technopreneurs and their teams need to regularly upgrade their technical skills to stay competitive, by incessantly embarking on technical training, particularly in emerging technologies and industry-specific advancements, to enhance their technical knowledge base.

**Keywords:** Technopreneurial competencies, sustainability, SMEs.

### I. INTRODUCTION

The nexus between technopreneurial competencies and sustainability of Small and

Medium Scale Enterprises (SMEs) is symbiotic in nature especially in Southeast, Nigeria that are arguably the SMEs hub of West Africa. In this era of technological globalisation, technopreneurship has become prominent as it has the potential for economic growth and development. Technopreneurship has its historical roots in the convergence of technology and entrepreneurship, gaining prominence in the late 20th century. The term itself is a blend of "technology" and "entrepreneurship," reflecting the synergetic relationship between innovation and business. The early antecedents can be traced back to the emergence of Silicon Valley in the 1950s and 1960s (Machmud, Nurhayati, Aprilianti & Fathonah, 2020). The region became a hot bed for technological innovation, fostering a culture where engineers and entrepreneurs collaborated to create groundbreaking technologies.

The 1980s saw the rise of personal computing, with pioneers like Steve Jobs and Bill Gates founding Apple and Microsoft, respectively. These individuals epitomized the technopreneurial spirit by combining technical expertise with a keen sense of market opportunities. The rapid growth of the technology industry during this period laid the foundation for the modern technopreneurial landscape. The dot-com boom of the late 1990s further fueled technopreneurship, as internet-based startups emerged and attracted substantial investments. Entrepreneurs like Jeff Bezos (Amazon) and Marc Andreessen (Netscape) demonstrated the potential of leveraging on technology for initiating business models. In the 21st century, the evolution of digital technologies, such as mobile computing, cloud services, and artificial intelligence, has continued to shape the technopreneurial landscape (Machmud, *et al.* 2020).

As technological advancements continue to reshape the entrepreneurial landscape, SMEs that effectively leverage on technology are better positioned to adapt to market changes, streamline operations, and remain resilient in the face of challenges. SMEs sustainability encompasses



designing business strategies that meet the demands of firms and their stakeholders while simultaneously preserving, protecting, and improving natural and human resources for future needs (Mashenene & Kumburu, 2020). Technopreneurial innovations are linked with several benefits to SMEs; opportunities for creative development in SMEs, where the attributes of innovative ideas are critical for offering new product development (Imran, Salisu, Aslam, Iqbal & Hameed, 2019). Therefore, efforts directed towards enhancing SMEs sustainability and eventual growth through technopreneurial competencies has been of immense concern to notable stakeholders. As the business landscape undergoes dynamic transformations, understanding how technological acumen influences the longevity and resilience of enterprises becomes paramount. This study explores how technopreneurial competencies; technical knowledge, innovativeness, risk management, contribute to the long-term viability and success of ten (10) leading technopreneurial firms in South East, Nigeria.

#### A. Statement of the Problem

In today's business world, SMEs are frequently left defenseless and powerless in the face of rising economic and competitive challenges worldwide, particularly in developing countries (Ismail, 2022). As a result, 70% or more of the SMEs are unsustainable and do not often survive beyond five years (Imran *et al.*, 2019). Therefore, the transition from the maturity stage to a sustainable stage is the biggest challenge faced by SMEs in developing countries. SMEs struggle with challenges ranging from huge gaps in infrastructure, poor financial support and credit environment, high level of unskilled workforce and low investment commitment to breed business ideas into commercial scale (Financial System Strategy, 2020). Furthermore, inadequate competency from the side of the entrepreneur and bad managerial skills has been blamed as one of the major challenges impeding SMEs sustainability. Also, low ability, limited entrepreneurial aptitude, poor access to technology and low productivity (Hussain, 2015). Omar (2016) claimed that the success of any business depends on some key resources, of which technopreneurial competencies is the most critical and the most intangible.

A good number of technopreneurial firms in South East, Nigeria have suffered rapid changes in technology which poses a threat to their businesses if they fail to keep up. This leads to concerns about the obsolescence of technological

practices and the subsequent effects on their sustainability. Sustainability may be compromised by a lack of effective strategies for innovation, particularly in adopting emerging technologies to stay relevant in the market. Also, they may encounter resource constraints, both in terms of financial and human resources, impeding their capacity to invest in and deploy technopreneurial competencies. A risk-averse culture may impede their adoption of innovative technologies, limiting their ability to employ new opportunities in the dynamic business environments. These may affect their ability to leverage technopreneurial competencies; technical knowledge, innovativeness and risk management for their sustainability. However, the inability of firms to integrate and align into technological innovation and entrepreneurial skills influences their long-term viability and success in a dynamic business environment, and it is very crucial if they must remain in existence. Thus, this study empirically investigated the effect of technopreneurial competencies and sustainability of small and medium scale enterprises in Southeast, Nigeria, with reference to the selected ten (10) leading technopreneurial firms in South East, Nigeria.

#### B. Objectives of the Study

The broad objective of the study is to evaluate the effect of technopreneurial competencies on the sustainability of small and medium scale enterprises in South East, Nigeria. The specific objectives of the study are to:

- i. examine the effect of technical knowledge competency on the productivity of selected technopreneurial firms in South East, Nigeria.
- ii. ascertain the influence of innovation competency on financial stability of selected technopreneurial firms in South East, Nigeria.
- iii. evaluate the effect of risk management competency on the resource allocation of selected technopreneurial firms in South East, Nigeria.

## II. REVIEW OF RELATED LITERATURE

### A. Technopreneurship

Technopreneurship talks about the combined concepts of creativity, innovation, entrepreneurship and technology (Mintardjo, Sudiro, Noermijati & Ogi, 2021). While technopreneurs are individuals who have expertise in mastering technology so they can see business opportunities in the field of technology (Irene, 2019). A technopreneur can be defined as an entrepreneur who has hybrid competence and who uses technology to create



something new for modernization or some innovation (Talib, Sunar & Nikolic, 2018).

#### **B. Technopreneurial Competencies**

Competency is defined by behaviours that an individual exhibits as standards of concert in the organization. These behaviours can be described as modern knowledge, risk assessment, time management, and defining the circle of personal interests (Rambe, 2018). These abilities are represented in planning, problem-solving, analytical skills, and business-related skills such as orientation. They also include organizational skills, leadership skills, dispute resolution skills, creativity, and incorporating technologies (Mashavira, Chipunza & Dzansi, 2019).

#### **C. Small and Medium Scale Enterprises (SMEs)**

There is no universally accepted definition of SMEs. Even in a single country, different institutions may adopt different definitions depending on their focus. The criteria usually used in the definitions include capital investment, annual gross turnover, output and employment (Kurfi cited in Fatoki, 2018). In Nigeria, SMEs is defined as any enterprise with a maximum asset base of N50 million (excluding land and working capital) with no lower or upper limit of staff. These are business enterprises owned by an individual to create values, which include economic, social, and environmental values (Pinkovetskaia, Nikitina, & Gromova, 2018).

#### **D. Sustainability of Small and Medium Enterprises**

The phrase "sustainability," as referred to in business, means designing business strategies that meet the demands of firms and their stakeholders while simultaneously preserving, protecting, and improving natural and human resources for future needs (Ramadhan, 2019). This means it encompasses many environmental, social, and economic factors. Sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs. Sustainability must involve the company's ability to stay in business for a long time while maintaining sound financial performance and administrative systems that boost productivity and profits (Orobiaet *al.*, 2020).

#### **E. Technical Knowledge Competency**

Technical capability has been described as the firm's ability to design and develop new process, product and upgrade knowledge and skills about the physical environment in unique way and transforming the knowledge into instructions and designs for efficient creation of desired performance

(Wang *et al.*, 2006, Yakubu & Lily, 2020). Technical capability entails not only technical mastery capability, but also the capacity to expand and deploy the firm's core capabilities and effectively combine the different streams of technologies and mobilize technological resources throughout the firms (Zawislak, Alves, Tello-Gamarra, Barbieux, & Reichert, 2012).

#### **F. Organisational Productivity**

Productivity is the maximization of utilizing the resources, human force and schemes scientifically to decrease expenses and increase employees, managers and consumers' satisfaction. Productivity is calculated by comparing total amount of output to the total amount of input used to produce this output (Onuorah, 2019). Productivity is defined by Amah (2016) as "the measure of how efficiently and effectively resources (inputs) are brought together and utilized for the production of goods and services (outputs) of the quality needed by society in the long term."

#### **G. Innovation Competency**

The term "innovation" refers to a business's proclivity and willingness to adapt ideas that differ from the norm (Menguc & Auh, cited in Esra'a, Harcharanjit & Ikram, 2022). Another definition offered by Bon and Mustafa (2013) is the acceptance of novel ideas or behaviours within the framework of the organisation. Innovation is defined as 'the implementation of new ideas and introducing new solutions into practice in the environment'.

#### **H. Financial Stability**

Financial stability of a firm is associated with its ability to generate profit; increase the value of invested capital and at the same time repays its short and long-term liabilities (Myšková & Hájek, 2017). Financial stability in business terminology refers to making enough money from business operations to pay for regular business expenses and being confident that the long-term financial success of the business is secured (Myšková & Hájek, 2017).

#### **I. Risk Management Competency**

Risk is inevitable and inborn in every economic activity. According to Burt cited in Kamal (2019), risk occurs when outcome is uncertain. Risk is defined as the uncertainty associated with a future outcome or event (Banks, cited in Kamal, 2019). Williams (2017), stated that it is the process of identifying, assessing, and controlling threats to an organisation's capital and profits. These risks arise from a variety of sources, including financial uncertainty, legal obligations, technical issues, strategic management failures, accidents, and natural disasters (Kamal, 2019).



### **J. Resource Allocation**

It is an important part of strategic management to distribute business resources to the industries, strategic business units and functional departments in which they operate effectively and efficiently in line with the planned strategies in achieving business strategic goals (Osman & Süreyya, 2021). Resource allocation is making decisions about where, how, how much, how often and when to distribute the available material, physical, human, financial, organisational and technological resources in line with the activity plans and programmes (Osman & Süreyya, 2021).

### **K. Theoretical Review**

The study was anchored on Resource Based Theory. Resource Based Theory were propounded by of Penrose (1959). Resource-Based Theory espoused that sustainable business performance results from resources that are inimitable, not substitutable, tacit in nature, and synergistic (Al Ansari, 2014). It aspires to explain the internal sources of a firm's sustained competitive advantage; as such managers need to be able to identify the key resources that drive performance (Kraaijenbrink, Spender & Groen, 2010). Based on this theory the intellectual capital is a main resource to improve enterprise growth. It can be human (characteristics, knowledge, skills, and capabilities), organisational (technology, processes, patents, and networks), and social (links with customers, suppliers, and partners), all of which are important strategic resources/assets which the firm needs to propel its innovation efforts alongside increasing and sustaining competences and capabilities (Dorf & Byers, 2008).

In view of the tenets of Resource-Based Theory, the present study argued that if the selected technopreneurial firms in South East, Nigeria absolved and operationalized the tenets of Resource-Based Theory, these firms will be able to harness their technopreneurial competencies: technical knowledge competency, innovation competency and risk management competency to maintain their sustainability in the industry. Because technopreneurship and the resource-based view are interdependent as they are both concerned with how to create and capture value through resources that embody technology and scientific advances. Adopting the theory will help technopreneurs to identify and leverage distinctive resources, such as technological capabilities, patents, or specialized skills, giving their SME a competitive edge. By focusing on unique and difficult-to-replicate resources, technopreneurs can establish a sustainable competitive advantage, ensuring long-

term viability in the market. The theory encourages continuous innovation and learning. For technopreneurs, this involves investing in research and development, fostering a culture of innovation, and staying ahead in technological trends to enhance competitiveness.

### **L. Empirical Review**

#### **a. Technical Knowledge Competency and SMEs Productivity**

Nguyen, Yuosre and Nguyen (2017) research examined the impact of leaders' technical competence on employees' innovation and learning. Data were collected from 52 leaders and 127 subordinates within 68 telecommunication companies in Vietnam. The results showed that the leaders' technical competence has positive relationships with the subordinates' innovative and learning work behaviour. Moreover, learning work behaviour has a partial mediating effect on the relationship between the leaders' technical competence and the subordinates' innovative work behaviour.

Yayinci, Monika, Omark, Nurhizam and Zainudin (2020) conducted a study on the impact of technology adoption on organisation productivity. The framework has three independent variables viz. technological change, information technology (IT) infrastructure, and IT knowledge management and one dependent variable as organisational productivity. An explanatory research design with a quantitative research method was employed, and data was collected using a self-administered questionnaire using online as well as an offline survey. The sample consisted of 300 IT managers and senior-level executives (production as well as service team) in leading IT companies in Malaysia. Structural Equation Model (SEM) and path analysis was conducted using AMOS 22. The research findings demonstrated that technological change and IT infrastructure positively and significantly impact the organisation's productivity in Malaysia. The research concluded that all three factors played important role in deciding organizational productivity.

#### **b. Innovation Competency and Financial Stability**

Doğan and Doğan (2020) research investigated knowledge sharing, innovation and firm performance: Evidence from Turkey, financial studies. The aim of the study was to determine the relationship between knowledge sharing, innovation and firm performance. A survey was conducted on a total of 150 high-tech companies operating in



Istanbul, Ankara and Antalya. In the analysis results, it is seen that innovation speed and quality affect both the operational and financial performance of firms. In other words, as innovation speed and quality increase, so does the operational and financial performance of firms. Another important finding obtained in the study were that explicit knowledge sharing, and tacit knowledge sharing have a positive effect on firm performance. As a result, innovation can create a competitive advantage by creating synergy in the activities of companies and encourage creativity.

Mehdi, Elahe and Aidin (2020) research investigated the effect of innovation components on organisational performance in the Golestan Province. The study was applied research, which were descriptive correlative in terms of data collection. Thus, a 32-item structured questionnaire was adapted from the literature for hypotheses testing. The statistical population of the research consisted of the management and staff members of the Golestan provincial government. According to Cochran's formula, the research questionnaire was randomly distributed among 94 individuals in the research population. The data was then analysed with the SmartPLS 3 software using the structural equation modelling technique. Based on research findings, service innovation, administrative process innovation and technological process innovation have a significant impact on organisational performance.

### **c. Risk Management Competency and Resource Allocation**

Bojuwon, Banji, Oyewole, Oshatimi, Gbadebo, Ibrahim, Jonathan, Joseph and Babajide (2023) studied the effect of risk management practices on organisational performance and the mediating role of business model innovation in Nigeria. The study uses quantitative research methods and a sample of 83 employees, with data collected through an online questionnaire using 5-point Likert scale. The data was analyzed using partial least square structural equation modeling (PLS-SEM). The stages of data analysis begin with testing the validity and reliability of the instrument, determination and finally testing the hypotheses. The results showed that practices for risk management and financial performance had a direct and large effect on financial performance. Furthermore, risk management practices are linked to non-financial performance

Egiyi and Eze (2022) assessed the influence of risk management on organisational efficiency. An empirical review was carried out. The data was gotten from staff responses from various organisations operating in Nigeria. The study adopted the organisational culture theory, the respondents to the questionnaire were 510 people from the organisations that formed the scope of the study. SPSS 28.0 was used to perform data analysis techniques such as correlation and regression analysis on the data. Each organisation responded to questionnaires using google forms. The result of the study showed that risk analysis, evaluation of risk, the threat of risk, and monitoring and review of risk has a statistically significant positive effect on organisational efficiency at a 5% level of significance. The study asserted that banks in Nigeria should monitor their loans and advances and avoid a mismatch between their assets and liabilities.

### **III. METHODOLOGY**

The study made use of survey design. The study made use of both primary and secondary sources of data. Primary data was gathered through a well-structured questionnaire entitled "Technopreneurial Competencies and SMEs Sustainability Questionnaire." The questionnaire was structured type designed in five points Likert Scale (Strongly Agree = SA, Agreed = A, Neutral = N, Disagreed = D and Strongly Disagreed = SD). Though, the study mainly used primary source of data for the analysis. Secondary data was sourced from; textbooks, journals, newspapers, magazines and other relevant internet materials. Secondary data was mainly useful in the review of related literature and in discussing the empirical results of the study. The population of the study consisted of all the management staff and employees of the ten (10) selected leading technopreneurs SMEs within the South East region of Nigeria which was 632 staff.

Based on the population of 632 staff, a normal confidence level of 95% and error tolerance of 5% were used to deduce the actual sample size for the study. The sample size was calculated using Godden (2004) formula and was 253 respondents. To obtain the actual number of the study respondents that were sampled from each of these technopreneurship firms, Bowley's proportional allocation formula was applied. Thus, the table below shows the study population and sample size.



**Table 1, distribution of the target population and sample size drawn from the ten (10) leading technopreneurial SMEs in South East Nigeria.**

S/N	SMEs	States	Population	Sample Size
1	Abia Tech Hub	Abia	42	17
2	DeGlobal Technologies	Imo	84	34
3	Derapid Technologies and Services Limited	Ebonyi	66	26
4	Genesy Tech Hub	Enugu	79	32
5	Hydrogen Technologies Software Solution	Anambra	52	21
6	Lloydant Business Services	Enugu	68	27
7	Losintech	Ebonyi	65	26
8	Rad5 Tech Hub	Abia	34	14
9	Sidmach Technology	Abia	94	38
10	Silicon Africa Technology Ltd	Imo	48	18
<b>Total</b>			<b>632</b>	<b>253</b>

Source: Field Survey 2025.

The study combined both purposive sampling techniques and random sampling techniques. Firstly, the researcher used purposive sampling techniques to select the ten leading technopreneurship firms in South East Nigeria. Secondly, the researcher adopted purposive sampling techniques to sought for the Chief Executive Officers and management staff of these technopreneurship firms, in order to elicit firsthand information required for the study. Thirdly, the researched used random sampling techniques to sample the employees of these technopreneurship firms. The study adopted face and content validity techniques in validating the research instrument. A test-re-test method to check the reliability of the research instrument was used. The study used

Ordinary Least Square Regression analysis to analyze the study objective with the aid of Statistical Packages for Social Sciences (SPSS) version 23.

#### IV. DATA PRESENTATION AND ANALYSIS

253 questionnaire were distributed in these ten (10) leading technopreneurship firms. Totally, 235 questionnaire were returned, while 18 questionnaire was not returned. The researcher achieved 92.8% questionnaire return rate. However, out of the number of questionnaire returned, 15 questionnaire was not properly filled. Therefore, 220 valid questionnaire returned was used for the data analysis.

##### A. Effects of Technical Knowledge Competency on the Productivity of selected Technopreneurial Firms In South East, Nigeria.

Table 2, Ordinary Least Regression analysis result on the effects of technical knowledge competency on the productivity of selected technopreneurial firms in South East, Nigeria.

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.718	0.085		20.184	0.000
Technical knowledge competency	0.816	0.029	0.883	27.759	0.000
<b>R<sup>2</sup></b>			<b>0.779</b>		
<b>R<sup>2</sup></b>			<b>0.778</b>		
<b>F-Statistics</b>			<b>770.547</b>		

a. Dependent Variable: Productivity.  
 b. Predictor: Technical knowledge competency.  
 c. Source: Field Survey 2025.  
 The result in Table 2 revealed that technical knowledge competency with the regression coefficient of (0.883) is significant and positively affect the productivity of selected technopreneurial firms in South East, Nigeria at 5% level (Sig < .05) of significance. The result portrays that an increase

in technical knowledge competency will lead to a positive increase in the productivity of selected technopreneurial firms in South East, Nigeria by 0.883. Therefore, at 5% level (Sig < .05) of significance, technical knowledge competency had a positive and significant effect on the productivity of selected technopreneurial firms in South East, Nigeria.  
 The **R-square** which shows the proportion of variation in the dependent variable that can be



explained by the independent variables revealed that 77.9% of the total variation in the productivity of selected technopreneurial firms in South East, Nigeria was explained by the variation in technical knowledge competency. While the **Adjusted R** explains the effect of decrease in the degree of freedom arising from the independent variable. The **F-statistics(770.547)** is significant at 5% level,

which shows the overall significance of the entire model. Therefore, the independent variables in the model were significant in explaining the change in the dependent variable.

**B. The Influence of Innovation Competency on Financial Stability of selected Technopreneurial Firms in South East, Nigeria**

**Table 3,** Ordinary Least Regression analysis result on the influence of innovation competency on financial stability of selected technopreneurial firms in South East, Nigeria.

Variable	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	1.661	0.075		22.149	0.000
Innovation competency	0.793	0.023	0.921	34.924	0.000
<b>R<sup>2</sup></b>					<b>0.857</b>
<b>R<sup>2</sup></b>					<b>0.848</b>
<b>F-Statistics</b>					<b>1219.698</b>

- a. Dependent Variable: Financial stability.
- b. Predictor: Innovation competency.
- c. Source: Field Survey 2025.

The result in Table 3 revealed that innovative competency with the regression coefficient of (0.921) is significant and positively affect the financial stability of selected technopreneurial firms in South East, Nigeria at 5% level (Sig < .05) of significance. The result signified that an increase in innovative competency will lead to a positive increase in the financial stability of selected technopreneurial firms in South East, Nigeria by 0.921. Therefore, at 5% level (Sig < .05) of significance, innovative competency had a positive and significant effect on the financial stability of selected technopreneurial firms in South East, Nigeria.

The **R- square** which shows the proportion of variation in the dependent variable that can be explained by the independent variables revealed that 85.7% of the total variation in the financial stability of selected technopreneurial firms in South East, Nigeria was explained by the variation in innovative competency. While the **Adjusted R** explains the effect of decrease in the degree of freedom arising from the independent variable. The **F-statistics(1219.698)** is significant at 5% level, which shows the overall significance of the entire model. Therefore, the independent variables in the model were significant in explaining the change in the dependent variable.

**C. Effect of Risk Management Competency on the Resource Allocation of selected Technopreneurial Firms in South East, Nigeria**

**Table 4,** Ordinary Least Regression analysis result on the effect of risk management competency on the resource allocation of selected technopreneurial firms in South East, Nigeria.

Variable	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	2.058	0.097		21.295	0.000
Risk management competency	0.735	0.032	0.844	23.193	0.000
<b>R<sup>2</sup></b>					<b>0.712</b>
<b>R<sup>2</sup></b>					<b>0.710</b>
<b>F-Statistics</b>					<b>537.900</b>

- a. Dependent Variable: Resource allocation.
- b. Predictor: Risk management competency.
- c. Source: Field Survey 2024.

The result in Table 4 revealed that risk management competency with the regression coefficient of (0.844) is significant and positively affect the resource allocation of selected technopreneurial firms in South East, Nigeria at 5% level (Sig < .05)

of significance. The result signified that an increase in risk management competency will lead to a positive increase in the resource allocation of selected technopreneurial firms in South East, Nigeria by 0.844. Therefore, at 5% level (Sig < .05) of significance, risk management competency had a positive and significant effect on the resource



allocation of selected technopreneurial firms in South East, Nigeria.

The **R-square** which shows the proportion of variation in the dependent variable that can be explained by the independent variables revealed that 71.2% of the total variation in the resource allocation of selected technopreneurial firms in South East, Nigeria was explained by the variation in risk management competency. While the **Adjusted R** explains the effect of decrease in the degree of freedom arising from the independent variable. The **F-statistics(537.900)** is significant at 5% level, which shows the overall significance of the entire model. Therefore, the independent variables in the model were significant in explaining the change in the dependent variable.

#### D. Discussion of Findings

**The results in Table 2**, revealed that: At 5% level (Sig < .05) of significance, technical knowledge competency had a positive and significant effect on the productivity of selected technopreneurial firms in South East, Nigeria.

The result is in tandem with the findings of Yakubu and Lily (2020), Yayinci, Monika, Omkar, Nurhizam and Zainudin (2020). Yakubu and Lily (2020), evaluated the mediating role of learning capability on the relationship between technological capability, relational capability and small and medium enterprises (SMEs) performance in developing economy of Africa. The researchers revealed a positive relationship between technological capability, learning capability and SMEs performance. Yayinci, *et al.*, (2020) investigated the impact of technology adoption on organisation productivity. The researchers revealed that technological change and IT infrastructure positively and significantly impact the organisation's productivity of IT companies in Malaysia.

**The results in Table 3**, revealed that: At 5% level (Sig < .05) of significance, innovative competency had a positive and significant effect on the financial stability of selected technopreneurial firms in South East, Nigeria.

The result is in consonance with the findings of Doğan and Doğan (2020), Mehdi, Elahe and Aidin (2020). Doğan and Doğan (2020) investigated knowledge sharing, innovation and firm performance: Evidence from Turkey, financial studies. The researchers revealed that innovation speed and quality affect both the operational and financial performance of firms. In other words, as innovation speed and quality increase, so does the operational and financial performance of firms. Mehdi, *et al.*, (2020), investigated the effect of innovation components on organisational

performance in the Golestan Province. The researchers revealed that service innovation, administrative process innovation and technological process innovation had a significant impact on organisational performance.

**The results in Table 4**, revealed that: At 5% level (Sig < .05) of significance, risk management competency had a positive and significant effect on the resource allocation of selected technopreneurial firms in South East, Nigeria.

The result agrees with the findings of Sunday and Oluwaleke (2022), Bojuwon, Banji, Oyewole, Oshatimi, Gbadebo, Ibrahim, Jonathan, Joseph and Babajide (2023). Sunday and Oluwaleke (2022), evaluated the effect of risk control techniques on organisational performance of selected SMEs in Lagos State. The researchers revealed that there is a positive and significant correlation, relation and effect of physical and financial risk control on organisational performance of selected SMEs. Bojuwon, *et al.*, (2023) studied the effect of risk management practices on organisational performance and the mediating role of business model innovation in Nigeria. The researchers revealed that the practices for risk management and financial performance had a direct and large effect on financial performance.

#### V. SUMMARY OF FINDINGS

This study examined the effect of technopreneurial competencies on the sustainability of small and medium scale enterprises in South East, Nigeria. The following findings were made:

- i. At 5% level (Sig < .05) of significance, technical knowledge competency had a positive and significant effect on the productivity of selected technopreneurial firms in South East, Nigeria. The result signifies that improving technical knowledge competency will lead to increased productivity for firms in the technopreneurial sector.
- ii. At 5% level (Sig < .05) of significance, innovative competency had a positive and significant effect on the financial stability of selected technopreneurial firms in South East, Nigeria. The result implied that technopreneurial firms with higher levels of innovative competency will experience better financial stability.
- iii. At 5% level (Sig < .05) of significance, risk management competency had a positive and significant effect on the resource allocation of selected technopreneurial firms in South East, Nigeria. The result mean that technopreneurial firms with stronger risk management skills are better able to allocate their resources more effectively, and good risk management practices help improve how



resources are distributed and managed within technopreneurial firms.

## VI. CONCLUSION

This study explored the effects of technopreneurial competencies on the sustainability of Small and Medium Enterprises (SMEs) in South East Nigeria. The findings demonstrate that key technopreneurial competencies, namely technical knowledge, innovative competency and risk management competency have a significant and positive effect on the sustainability of these firms. At a 5% level of significance, each competency contributed positively to various dimensions of business performance, including productivity, financial stability and resource allocation. Based on these findings, the researcher concluded that technopreneurial competencies positively and significantly affects the sustainability of SMEs in South East, Nigeria.

## VII. RECOMMENDATIONS

The following recommendations are deemed imperative:

- i. Technopreneurs and their teams need to continuously maintain their technical knowledge competency as it positively and significantly affects their productivity. However, technopreneurs and their teams need to regularly upgrade their technical skills to stay competitive, by continuously embarking on technical training, particularly in emerging technologies and industry-specific advancements, to enhance their technical knowledge base. Since SMEs often face challenges in accessing cutting-edge technological tools and infrastructure. Policymakers and financial institutions need to help by providing affordable access to modern technologies, software, and platforms that support innovation and increase productivity.
- ii. Technopreneurs and their teams need to constantly sustain their innovative competency as it had a positive and significant effect on their financial stability. Also, technopreneurs and their teams should prioritize building a culture of innovation within their organisation. This includes encouraging employees to think creatively, experiment with new ideas, and embrace change. Patronising innovation workshops and brainstorming sessions to generate fresh ideas that will enhance business operations, products, and services. Technopreneurs need to allocate resources towards Research and Development (R&D) to improve existing offerings and explore new revenue streams. To ensure the sustainability of technopreneurs, government and business

development agencies need to offer grants, tax incentives, or subsidies to encourage R&D investments among technopreneurs.

- iii. Technopreneurs need to consistently uphold their risk management competency as it positively and significantly affects their resource allocation. Also, technopreneurs need to integrate effective risk management practices into their strategic planning processes. This they can do by identifying potential risks early and preparing mitigation strategies, making more informed decisions on resource allocation. More so, technopreneurs need undergo regular training in risk assessment, risk mitigation strategies, and crisis management. They need to undertake specialized training programmes to improve their skills in financial risk, operational risk, and market risk, which can influence how resources are allocated in the face of uncertainty. Additionally, technopreneurs need to invest in risk management software and technologies that help identify, analyse, and manage risks more effectively.

## VIII. CONTRIBUTION TO KNOWLEDGE

The following are the contributions to knowledge emanating from this study:

- i. This study provides novel framework that SME owners and business development agencies can adopt to systematically enhance technopreneurial competencies. It also provides empirical evidence on the specific effects of various technopreneurial competencies on the sustainability of SMEs in South East Nigeria. By identifying and detailing specific competencies that contribute to SME sustainability, the study offers a roadmap for fostering a sustainable, growth-oriented SME sector not only for South East Nigeria, but nationally and other developing economies.
- ii. While previous studies have explored technopreneurship broadly, this research adds to the understanding of how technopreneurial competencies directly influence key sustainability outcomes such as productivity, financial stability, resource allocation, and adaptability to market changes. The study reinforces the notion that sustainable business practices in SMEs are not solely dependent on financial management but also on the broader application of entrepreneurial and technological skills. Thus, enhanced the body of knowledge on technopreneurship, especially in the context of Nigerian SMEs, and provides actionable strategies for fostering long-term business growth and resilience.
- iii. The study sheds light on the significant effect of innovative competency on the financial



stability of SMEs, which is particularly relevant in the context of rapidly changing markets. This is an important addition to the growing body of research on innovation, demonstrating that technopreneurs who focus on continuous innovation are better positioned to navigate economic uncertainties and maintain financial resilience.

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