



# Moderating Effect of Organisational Structure on the Relationship between Innovation Capabilities and Performance of Indigenous Oil and Gas Companies in South-South, Nigeria

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**Abstract:** *This study examined the moderating effect of organisational structure on the relationship between innovation capabilities and performance of indigenous oil and gas companies in South-South, Nigeria. The study adopted the cross-sectional research survey design. Primary data was generated through structured questionnaire. The population of the study was the five (5) multinational oil and gas companies registered with the Department of Petroleum Resources. Since the population of five (5) multinational oil and gas producing companies in Nigeria was relatively small, the entire population was studied as a census and in line with the unit of analysis which was at the macro level, the questionnaire was distributed to ten (10) managers of the five (5) multinational oil and gas producing companies in Nigeria, bringing the total number to fifty (50) respondents. The category of managers included in the study were; Directors, General Managers, Deputy General Managers, Divisional Managers and Deputy Divisional Managers. The reliability of the instrument was achieved by the use of the Cronbach Alpha Coefficient with all the items scoring above 0.70. Findings revealed that organisational structure significantly moderate the relationship between innovation capabilities and performance of indigenous oil and gas companies in South-South, Nigeria. Therefore, the study recommends that to boost indigenous oil and gas companies' innovation capability formalization and centralization/decentralization should be preferably considered. Thus, managers should spend time creating an organizational structure hinged on creativity and innovation.*

**Keywords:** *Organisational Structure, Innovation Capabilities, Performance.*

## INTRODUCTION

The discourse on organizational performance has received attention from policy makers, researchers and managers in the past years. Different views exist however of what constitutes organizational performance in the 21st century. Several concepts constitute organizational performance, such as business model effectiveness, efficiency, and outcomes (Almatrooshi, Singh, & Farouk, 2016; Boyatzis & Ratti, 2009). Kipleting (2017) reports that performance is seen as an umbrella term for all concepts that consider the success of a firm and its activities. Performance thus can refer to actual results or outputs of certain activities, how an activity is carried out, or an ability to achieve results eventually.

Organizations around the globe are in a continuous dilemma of maintaining business performance. Most business organization managers around the world find it difficult to constantly achieve targeted business performance due to the dynamic nature, open market competition and

globalization characterized with the 21st-century industry. Firms in different industries around the world have experienced unstable performance, seemingly uncertain on strategies to employ in reacting to flexible policies and unstable performance arising from challenges in the local and international business context (Arokodare & Asikhia, 2020).

The decline in performance of firms, according to Zafari (2017) cuts across developed, emerging and developing countries due to poor innovation capabilities and response to microeconomic and macroeconomic factor challenges like performance industry environmental factors, task environment, natural and technological environments, social environments, economic and cultural environments, and political, law and security environments coupled with the management of marketing content and product marketing. In developing countries especially African countries, harsh economic and external conditions have placed pressure on organizational performance (Bredenhann, 2019). The challenges facing firms operating in Africa are diverse and numerous such as political interference, lack of transparency, regulatory uncertainty, policy instability, ongoing infrastructure deficit, uncertainty, delays in passing laws, energy policies and regulations into law are stifling growth, development and investment (Pricewaters Coopers, 2018).

Over the years, performance of a firm is where the focus of management and shareholders are more often than not placed upon. Essentially, the investors are fundamentally looking forward to returns on their investments. The management of the firm is at the same time striving to deliver returns to shareholders. In striving to achieve better organizational performance, certain activities and efforts are put in place for success to be attained in product quality and operational efficiency. The performance of a firm is what every stakeholder of the firm would always look forward to. Organizational performance is usually the topmost priority of the managers of organizations because they have to stand up to the confidence the owners have reposed in them.

According to Mahapatro (2013), organizational performance is the capability of a firm to accomplish its objectives and goals with the help of good governance and talented administration. Organizational performance is a sign which deals with how well a firm accomplish its goals. In an attempt to measure firm's performance, several scholars have proffered different measures such as customer satisfaction, product quality, employee satisfaction, organizational reputation, customer loyalty, competitive advantage, perceived image, capacity utilization, employee morale, operational efficiency, product innovations, inventory turnover and timeliness (Richard, Devinney, & Yip, 2009).

According to Daft (2010) the performance of an organization can be referred to as its capacity to meet its objectives using the resources available to it. These resources must be used both efficiently and effectively while at the same time being managed well. The firm should also keep

on successfully adapting to the changes in its external environment while successfully fulfilling its goals and objectives (Hult, Hurley & Knight, 2014). Performance measures are largely described as two dimensional. One dimension involves the meeting of the performance objectives which are often depicted in market and financial measures such as market share, profitability and capacity building. The second measure is the judgmental or the subjective measure which is depicted in form of employees and customer measures such as customer satisfaction, quality of service and employee satisfaction (Agarwal, Erramilli & Dev, 2013).

The capability to innovate is one of the top priorities of an enterprise' management in enhancing sustainability and promoting superior performance (Jonash & Sommerlatte, 2009). The innovation capabilities of a given company acquired over a given period influences significantly its performance. Majority of the organization measures their performance in terms of financial and non-financial indicators (Tangen, 2015). According to Essmann and du Preez (2009) an organization develops innovation capabilities in organizational support, knowledge and competence, and innovation process respectively. This implies that innovation capability maturity in any given organization is a process commencing with management's support in creating a conducive environment for innovative activities, then recruitment of the right people with the required knowledge and competence to finally carry out the innovation process (Jonash & Sommerlatte, 2009).

Innovation is said to be the use of internally or externally developed programs, systems, services, devices, policies, processes or products that are newly introduced to the firm (Damanpour & Gopalakrishnan, 2011). The concept of innovation involves the use of a new idea to enhance the performance of a firm. At its core, the term innovation captures the newness of an idea that attempts to enhance the productivity of the firm (Schroeder, 2013). Thus, this is a concept that allows organizations to grow by increasing their market share, entering new markets and by providing the firm with a sustainable competitive advantage. Therefore, innovativeness provides the firm with an indispensable strategy that can be used to increase the productivity of the firm, increase the levels of customer satisfaction, gain increased market share in the industry and in the end have a sustainable competitive advantage that is hard to replicate (Kogut & Zander, 2012).

Innovation refers to the ability of a firm to change the knowledge available to it to new products, ideas, systems, processes for the benefit of the organization and those involved (Lawson & Samson, 2001). Therefore, they are unique integrated tangible and intangible resources that a firm develops to improve its performance. Ettlie and Reza (2012) that highlights a firm's capability in the process of innovation; information along with competence; and also, organizational support. The capability in the innovation process is a complete innovation lifestyle which includes the practices, actions, as well as activities which take either ideas or opportunities through to concepts, growth, and execution and ultimately to a point of commercialization and action. Hence, it includes constant improvement and optimization (Essmann & du Preez, 2009). The process is composed of elements such as exploration capability; portfolio management; exploitation capability; and, risk management (Essmann & du Preez, 2009).

Previous studies have attempted to solve the problem of organizational performance using different variables. Ouma & Kombo (2016) examined the influence of organizational learning on organizational performance of food manufacturing firms in Nairobi County, Kenya and found that the joint effect of organizational learning components on organizational performance was significant. Also, Eletu, Ukoha & Nwuche (2017) examined human capital development and corporate performance of food and beverages firms in Port Harcourt and concluded that there were strong correlation between the dimensions of human capital development and the measures of corporate performance. Furthermore, Tamunomiebi, Adim and Adubasim (2018) carried out a study on telecommuting and organizational performance of mobile (GSM) telecommunication companies in Port Harcourt, Nigeria, and found that there is a positive and significant relationship between telecommuting and organizational performance of Mobile (GSM) telecommunication companies in Port Harcourt. Similarly, Uchendu, Anijaobi-Idem and Odigwe (2013) examined the relationship that exists between principals' conflict management and organizational performance in Cross River State, Nigeria. Likewise, Olowookere (2021) examined workforce diversity and organizational performance: a case study of university of Ilorin teaching hospital and concluded that workforce diversity has a significant effect on organizational performance. In another study, Anyakoha (2019) examined job analysis as a tool for improved organizational performance of SMEs in Lagos, Nigeria and concluded that proper job analysis improves productivity at work, efficiency and organizational profitability.

Similarly, Bello and Adeoye (2018) undertook a study that examined organizational learning, organizational innovation and organizational performance: Empirical evidence among selected manufacturing companies in Lagos metropolis, Nigeria. The study confirmed that organizational learning had a positive correlation with organizational innovation; organization innovation in turn had positive correlation with organizational performance and organizational learning also had positive correlation with organizational performances. Chigozie, Aga and Onyia (2018) examine the effect of human capital development in organizational performance in manufacturing industries in South-East Nigeria and concluded that any organization that does not learn continuously and is not able to continuously list, develop, share, distribute, mobilize, cultivate, put to practice review and spread knowledge will not be able to compete effectively in the global market.

However, despite these studies and many other studies that have considered the antecedents of organizational performance there still exists some research gaps that need to be filled. In the first instance, most of these studies used different predictor variables which differ quite from the current study hence, a conceptual gap exists. Secondly, a variety of these studies were domiciled in different geographical areas and across different industries which is different from the present focus of this study and thus showed a contextual gap. Therefore, this study by as its point of departure from previous studies sought to fill these observed research gaps examining the relationship between innovative capabilities and performance of indigenous companies in South-South, Nigeria.

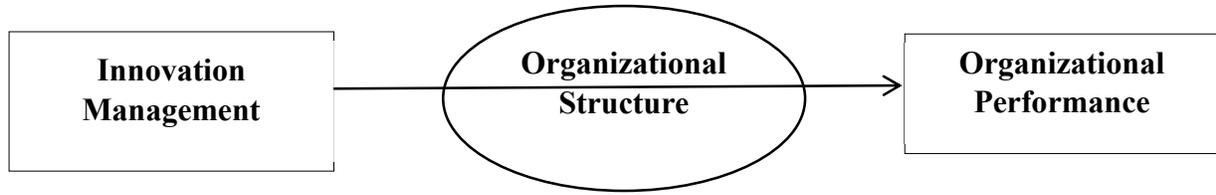


Fig.1 Conceptual model for the moderating role of organization structure on the relationship between innovation management and organizational performance

**Source:** Desk Research (2023)

## **LITERATURE REVIEW**

### **Theoretical Foundation**

#### **Diffusion of Innovation Theory**

The innovation diffusion theory was developed by Rodgers (2003) and seeks to examine how technology adoption influences consumer preferences and productivity within a firm. The theory holds that innovation is considered a new practice by a firm whereas the diffusion aspect relates to the process through which the innovation is communicated across a business unit. The theory proposes that there are four distinct elements that guide the diffusion process. These include time, innovation, social systems and communication nodes that affect adoption of the innovation within a firm.

Rodgers (2003) points out that innovation process within a firm is limited by a myriad of factors that are both internal and external to the environment of the firm. These can be considered as the relative advantage, complexities and compatibility issues that may affect innovation. The theory further points out that inherent challenges to the innovation process may render the innovation counter-productive to a firm's goals; hence the proponent posits that a firm should conduct a comprehensive analysis before adopting a specific strategy.

The theory was imperative in the current study in assisting in examination of how insurance firms develop, integrate and execute innovation capabilities across the firm and its implication on competitiveness of the institutions.

#### **Concept of Innovation Capabilities**

Innovation is the mechanism through which valuable new products, processes, and organizational knowledge are developed, being the foundation of intellectual capital is considered central to the organizational capabilities to perform optimally. Ramadani and Gerguri (2011) defined innovation as a process of transforming new ideas and new knowledge into new products and services. Wang (2011) on the other hand see innovation in the developing country context as the process by which firms master and implement the design and production of goods and services that are new to them irrespective of whether they are new to their competitors, their customers or the world. Kusiak (2007) posited that the way organizations develop value through new products, processes,

and organizational systems needed to respond to changing markets, technologies and modes of competition as an innovation device. Through value creation it enhances the organization's success, maintains its sustainable competitive advantages, and is critical in determining the long-term survival of organizations (Abereijo, Ilori, Taiwo & Adegbite, 2007; Baark, Antonio, Lo & Sharif, 2011).

Innovation capability is an essential prerequisite for efficient ideas management and innovation management, as well as, for the implementation of disruptive innovation. Innovation capability is defined as a firm's ability to identify new ideas and transform them into new/improved products, services, or processes that benefit the firm. Teece, Pisano, and Shuen (1997) defined innovation capabilities as the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. A firm's 'innovation capability can be understood as the potential to innovate (Saunila & Ukko, 2012), or more specifically, the "ability to continuously transform knowledge and ideas into new products, processes, and systems for the benefit of the firm and its stakeholders.

According to Lawson and Samson (2001), innovation capability connotes the ability to mould and manage several capabilities. Arguably, firms with innovation capability can integrate important capabilities and resources to successfully foster innovation. Indeed, a firm's reconfiguration capability promotes continuous transformation and enables them to obtain new resources and capture innovation benefits. Other scholars have conceptualised innovation capabilities as consisting of marketing innovation, product innovation and process innovation capabilities (e.g., Camison & VillarLopez, 2014; Nwachukwu, Chladkova, & Olatunji, 2018). Product innovation capability allows firms to effectively change their resources into innovative offerings that are unique and are better in terms of quality to exceed customers' expectations (Camison & Villar-Lopez, 2014). Process innovation capabilities are linked to a firm's ability to improve its internal processes (Damanpour, Walker, & Avellaneda, 2009) and reduce the cost of production (Damanpour, 2010) which foster superior performance.

Innovation capability is the firm potential in generating new and unique values by converting new idea procured (Bullinger, Bannert & Brunswicker, 2007; TERziovski, 2007). Sáenz *et al.* (2009) consider innovation as a dynamic capability, capability that allows the organization to integrate, build, and reconfigure internal and external competences in order to address rapidly changing environments. Kusiak, (2009), defined Innovation as a process with the aims of creating new products, knowledge, processes or services by the use of new or even existing knowledge. Therefore, innovation can be viewed as an organizational capability since it is the act of deploying resources with a new ability to create value (Yang, Rui, & Wang, 2006). It is to be noted that innovative capabilities empower employees to be creative and more outspoken within a company (Adim, Adubasim & Lebura, 2018).

## **Performance**

Organizational performance can be simply defined as a company's results and achievements compared to goals and objectives (Richard, Devinney, Yip & Johnson, 2009). Cho and Dansereau (2010) define organizational performance about the organization's goals and objectives. Tomal and Jones (2015) refer to organizational performance as the actual results or outputs of an organization as measured against that organization's intended outputs. Organizational performance reflects the way an organization takes advantage of tangible and intangible resources to achieve its goals (Hunger & Wheelen, 2012) and the culmination of an organization's working process and activities. Nnabuiife (2009) defines organizational performance as setting up a structure or mending an already existing one to suit the organizational environment and the demands of technology. Moullin (2007) identified organizational performance as, a measure which is used by organizations so that they can manage their efficiency well, and deliver their worth to shareholders and clients. Since organizational performance is a multidimensional concept, it seeks to measure companies' achievement of the objectives proposed for different stakeholders in a given period (Richard *et al.*, 2009). Performance is the end result of activities (Bayo & Hamilton, 2022). It includes the actual outcome of the strategic management process. The practice of strategic management is justified in term of its ability to improve an organization performance measured in terms of profit and return on investment. For evaluation and control to be effective, managers must obtain clear prompt and unbiased information from the people below them in the organization hierarchy.

Firm performance is one of the most relevant constructs in the field of strategic management; a construct commonly used as the final dependent variable in various fields (Cho & Pucik, 2005; Richard, Derinney, Yip, & Johnson 2009). It is believed that the essence of performance is the creation of value, therefore, value creation, as defined by the resource provider, is the essential overall performance criteria for any organization (Monday, *et al.*, 2015). Continuous performance is the focus of any organization because only through performance are organizations able to grow and survive (Gavrea, *et al.*, 2011). A business organization could measure its performance using the financial and non-financial measures.

## **Empirical Review**

Iranmanesh, Kumar, Foroughi, Mavi and Min (2021) examined the impacts of organizational structure on operational performance through innovation capability: innovative culture as moderator. Data were collected through a survey completed by 212 medium and large manufacturers in Malaysia and analysed using the partial least squares technique. Results show that specialization, formalization, informal social relations and link mechanisms have positive significant effects on innovation capability. Furthermore, the relationship between innovation capability and operational performance is supported. Innovation capability also positively moderates the impacts of informal social relations and link mechanisms on firms' innovation capability. Findings of this study help managers of manufacturing firms to enhance their firms' innovation capability and operational performance.

Also, Karemu, Nyakora, Thoronjo and Mandere (2021) carried out a study on the influence of organizational structure on performance of Mobile Telephone Network Operators in Kenya. Mixed methodology was used in collecting and interpreting data. Primary data was gathered using self-guided semi-structured questionnaires and secondary data was obtained from published profit margins and percentages of market share obtained from the companies' reports. Study population was 6,167 which included all the employees in the Mobile Telephone Network Operators in Kenya and a total sample size of 361 employees was obtained but 258 questionnaires were filled and returned. Data analysis was done using descriptive statistics and inferential statistics. The study hypothesis was tested at 95% confidence interval and 0.05  $\alpha$  level of significance. Goodness of fit model demonstrated that organizational structure had a positive influence on organizations' performance of MTNOs accounting for 16.4% of the performance (R squared = 0.164). The study concluded that there was a statistically significant influence of organizational structure on organization's performance therefore rejecting the null hypothesis  $H_0$  at  $\beta = 0.405$  and  $P=0.000$ . Ejo-Orusa and Adim (2018) examined strategic innovation management and organizational survival of hotels in Port Harcourt, Nigeria: The moderating role of organizational structure. The study used a correlational cross sectional design involving managers, supervisors and unit heads. Primary data was obtained using self-administered, structured questionnaire. The population of the study was 350 from 20 purposively selected hotels in Port Harcourt. A sample size of 186 was adopted using the Krejcie and Morgan table and the simple random technique was used. Spearman's rank correlation was used for hypothesis testing while the zero-order partial correlation was used to test the moderating role of organizational structure. The study findings revealed that there is a positive and significant relationship between strategic innovation management and organizational survival. Furthermore, organizational structure significantly moderated the relationship between strategic innovation management and organizational survival.

Teixeira, Koufteros, Peng and Schroeder (2008) in their study examined the relationship between organizational structures and integration argued that the level of flatness in an organization's structure directly influences its performance outcomes. In flat organizational structures, fewer levels of management create more flexibility in the decision-making process. Since employees at all levels can make business process decisions quickly since they are not restricted with the need to wait all the time for managers' decisions before they can act.

Yamini and Gupta (2008) explored the relationship between organization structure and perceived innovation in the manufacturing industry sector in India. Data collected from 250 employees of four firms brought out a significant relationship between the variable of organization structure considered in their study and perceived innovation. Khandawala in 1985 and in 1995, shed light on the organizational design needed for innovativeness. Khandawalla's (1985) study of policy frameworks used by a sample of 75 companies yielded one that he labeled as „pioneering

innovative". This consisted of a group of policies that favored pioneering of novel, technologically sophisticated, high-quality products in Indian market, emphasis of innovation as experimentation in all operations of the organization, entrepreneurial risk taking, operating flexibility and hiring of creative youngsters with considerable operating responsibility and autonomy.

Nina Jacob (1998) studied four pairs of Indian organizations and showed that organization design for innovativeness was a strategic choice of management. This was a comparative study of three creative organizations (those whose outputs are both novel and useful) and three organizations of the same type that were much less creative. Taking a leaf from Peter Drucker's study in 1985 on innovation and entrepreneurship, Manimala's study (1999) of 167 entrepreneurial case studies showed sharp differences between what he called "PI" or pioneering- innovative entrepreneurs and ordinary entrepreneurs. Comparable findings were found from a study of Indian impact making entrepreneurs (Jain and Ansari, 1988). Service and Boockholdt (1998) surveyed the literature on organization innovations and identified structure of the organization and the control system as one of the eight broad factors that affect innovativeness.

Based on the foregoing, the following hypotheses were derived:

**Ho<sub>10</sub>:** Formalization does not significantly moderate the relationship between innovation capabilities and performance of indigenous oil and gas companies in South-South, Nigeria.

**Ho<sub>11</sub>:** Centralization does not significantly moderate the relationship between innovation capabilities and performance of indigenous oil and gas companies in South-South, Nigeria.

## **METHODOLOGY**

The study adopted the cross-sectional research survey design. Primary data was generated through structured questionnaire. The population of this study was thirty-three (33) registered and functional indigenous oil and gas companies in South-South, Nigeria. In this study the researcher adopted a census sampling technique to study all the 33 indigenous oil and gas companies in Rivers State because the population was small. However, preliminary field survey revealed that there are at least five (5) employees in each of the indigenous oil and gas companies in Rivers State. The reliability of the instrument was achieved by the use of the Cronbach Alpha coefficient with all the items scoring above 0.70. The hypotheses were tested using the Spearman's Rank Order Correlation Statistics while the partial correlation was used to test the moderating effect of organisational structure. The tests were carried out at a 0.05 significance level.

## **DATA ANALYSIS AND RESULTS**

This section was therefore used to present the answers to our research questions and test the earlier postulated hypotheses. However, we commenced by first presenting a proof of existing relationships using a scatter graph.

Generally, the decision rule for the acceptance or rejection of hypothetical statements is premised on the adoption of a 0.05 significance threshold due to its 95% test on all hypotheses.

#### 4.5.1 Scatter Plot of the Relationship between Study Variables

A scatter plot was fitted to describe the relationship between the independent variable – innovation capability and performance. The results of the scatter plot in the Figure 4.7 indicate that there is a positive linear relationship between the independent variable and the dependent variable, which implies that innovation capability positively contributes to performance in the indigenous oil and gas companies in South-South, Nigeria.

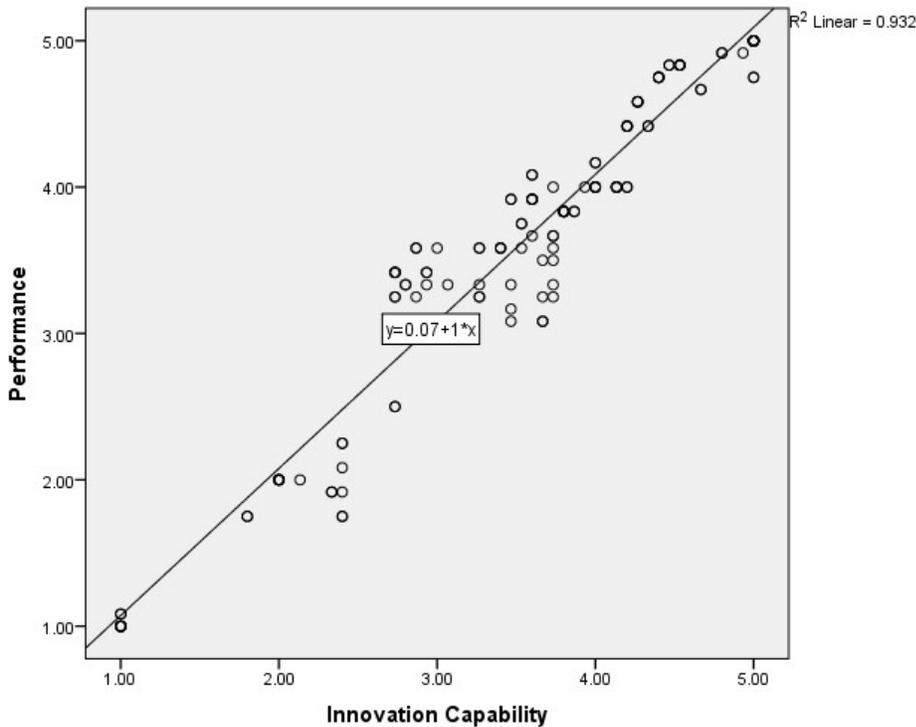


Fig 1 Scatter graph for the relationship between innovation capability and performance

Figure 1 shows a very strong relationship between innovation capability (independent variable) and performance (dependent variable). The scatter plot graph shows that it is linear value of (0.980) depicting a very strong and positive relationship between the two constructs. The implication is that an increase in innovation capability simultaneously brings about an increase in the level of performance.

The scatter diagram has provided vivid evaluation of the closeness of the relationship among the pairs of variable through the nature of their concentration. The positive relationship is evidenced by the pattern of the points moving upwards from left to right. This positive relationship indicates that a higher value of the dependent variable is associated with higher values of the independent variables. The steepness of the regression line roughly indicates the strength of the relationship between the dependent and independent variables. As shown in Figure 4.6 the scatter plots show

a positive gradient which means that innovation capability has a positive relationship with performance of indigenous oil and gas companies in South-South, Nigeria.

**Hypotheses Testing**

The multivariate analysis in this section examines the assumed role of organizational structure (formalization and centralization) as a moderator in the relationship between innovation capability and performance of indigenous oil and gas companies in South-South, Nigeria. The Decision rule is that if the difference between the zero-order correlation and the controlled correlation < 0.01, then there is no significant difference, and the null hypothesis is accepted.

**Table 1: Partial Correlations for the Effect of Formalization on the Study Variables**

Control Variables			Innovation Capability	Performance	Formalization
-none <sup>a</sup>	Innovation Capability	Correlation	1.000	.966	.860
		Significance (2-tailed)	.	.000	.000
		Df	0	143	143
	Performance	Correlation	.966	1.000	.732
		Significance (2-tailed)	.000	.	.000
		Df	143	0	143
	Formalization	Correlation	.860	.732	1.000
		Significance (2-tailed)	.000	.000	.
		Df	143	143	0
Formalization	Innovation Capability	Correlation	1.000	.967	
		Significance (2-tailed)	.	.000	
		Df	0	142	
	Performance	Correlation	.967	1.000	
		Significance (2-tailed)	.000	.	
		Df	142	0	

a. Cells contain zero-order (Pearson) correlations.

**Source:** SPSS Output version 23.0

**Ho<sub>1</sub>:** Formalization does not significantly moderate the relationship between innovation capabilities and performance of indigenous oil and gas companies in South-South, Nigeria.

Table 1 depicts the zero-order correlation between innovation capabilities and performance and shows the correlation coefficient when formalization is not moderating the variables; and this is positive and very strong at 0.966. The partial correlation controlling for organizational structure,

however, is also strong with rho value of 0.967. The observed positive "relationship" between innovation capability and performance is due to the underlying relationships between each of those variables and formalization. Therefore, formalization has a positive and strong effect on the relationship between innovation capability and performance of Indigenous Oil and Gas companies in South-South, Nigeria. From a critical look at the zero partial correlation, we found that the relationship both between innovation capability and performance are positively correlated with formalization, as the control variable. Removing the effect of this control variable reduced the correlation between the other two variables to be 0.967 and significant at  $\alpha = 0.05$ . Since the difference between the zero-order correlation and the controlled correlation ( $0.966 - 0.967$ ) =  $-0.001 < 0.01$ ; hence from the decision rule, there is no significant difference and thus the null hypothesis is accepted and upheld. Therefore, it is concluded that formalization has no significant moderating effect on the relationship between innovation capability and performance of indigenous oil and gas companies in South-South, Nigeria.

**Table 2 Partial Correlation Matrix of the Effect of Centralization on the Study Variables**

Control Variables			Innovation Capability	Performance	Centralization
-none <sup>a</sup>	Innovation Capability	Correlation	1.000	.966	.882
		Significance (2-tailed)	.	.000	.000
		Df	0	143	143
	Performance	Correlation	.966	1.000	.932
		Significance (2-tailed)	.000	.	.000
		Df	143	0	143
	Centralization	Correlation	.882	.932	1.000
		Significance (2-tailed)	.000	.000	.
		Df	143	143	0
Centralization	Innovation Capability	Correlation	1.000	.841	
		Significance (2-tailed)	.	.000	
		Df	0	142	
	Performance	Correlation	.841	1.000	
		Significance (2-tailed)	.000	.	
		Df	142	0	

a. Cells contain zero-order (Pearson) correlations.

**Source:** SPSS Output version 23.0

**Ho<sub>2</sub>:** Centralization does not significantly moderate the relationship between innovation capabilities and performance of indigenous oil and gas companies in South-South, Nigeria.

With respect to research, Table 1 depicts the zero-order correlation between innovation capability and performance shows the correlation coefficient when centralization is not moderating the variables; and this is positive and very strong at 0.966. The partial correlation controlling for centralization, however, is also strong with rho value of 0.841. The observed positive "relationship" between innovation capability and performance is due to the underlying relationships between each of those variables and centralization. Therefore, centralization has a positive and strong effect on the relationship between innovation capability and performance of Indigenous Oil and Gas companies in South-South, Nigeria.

After a critical look at the zero partial correlation, we found that the relationship both between innovation capabilities and performance are positively correlated with centralization, the control variable. Removing the effect of this control variable reduced the correlation between the other two variables to be 0.841 and significant at  $\alpha = 0.05$ . Since the difference between the zero -order correlation and the controlled correlation  $(0.966 - 0.841) = 0.125 > 0.01$ ; hence from the decision rule, there is a significant difference and thus, the null hypothesis is rejected. Therefore, it is concluded that centralization has a significant moderating effect on the relationship between innovation capability and performance of indigenous oil and gas companies in South-South, Nigeria.

## **DISCUSSION OF FINDINGS**

The findings revealed that organizational structure significantly moderates the relationship between innovation capability and performance of indigenous oil and gas companies in South-South, Nigeria. This finding agrees with Iranmanesh, Kumar, Foroughi, Mavi and Min (2021) who examined the impacts of organizational structure on operational performance through innovation capability: innovative culture as moderator and found that specialization, formalization, informal social relations and link mechanisms have positive significant effects on innovation capability. Furthermore, the relationship between innovation capability and operational performance is supported. Innovation capability also positively moderates the impacts of informal social relations and link mechanisms on firms' innovation capability.

Also, the current finding agrees with Karemu, Nyakora, Thoronjo and Mandere (2021) who carried out a study on the influence of organizational structure on performance of Mobile Telephone network operators in Kenya and found that organizational structure had a positive influence on organizations' performance of MTNOs accounting for 16.4% of the performance (R squared = 0.164).

Also, the earlier finding by Ejo-Orusa and Adim (2018) confirmed the current finding of this study. Their finding revealed that organizational structure significantly moderated the relationship between strategic innovation management and organizational survival. Similarly, the finding confirms the earlier finding by Teixeira, Koufteros, Peng and Schroeder (2008) whose study on organizational structures and integration argued that the level of flatness in an organization's structure directly influences its performance outcomes. In flat organizational structures, fewer

levels of management create more flexibility in the decision-making process. Since employees at all levels can make business process decisions quickly since they are not restricted with the need to wait all the time for managers' decisions before they can act.

Furthermore, Yamini and Gupta (2008) who explored the relationship between organization structure and perceived innovation in the manufacturing industry sector in India and found that there is a significant relationship between the variable of organization structure considered in their study and perceived innovation. Nina Jacob (1998) also studied four pairs of Indian organizations and showed that organization design for innovativeness was a strategic choice of management. This was a comparative study of three creative organizations (those whose outputs are both novel and useful) and three organizations of the same type that were much less creative. Taking a leaf from Peter Drucker's study in 1985 on innovation and entrepreneurship, Manimala's study (1999) of 167 entrepreneurial case studies showed sharp differences between what he called "PI" or pioneering- innovative entrepreneurs and ordinary entrepreneurs. Comparable findings were found from a study of Indian impact making entrepreneurs (Jain and Ansari, 1988). Service and Boockholdt (1998) surveyed the literature on organization innovations and identified structure of the organization and the control system as one of the eight broad factors that affect innovativeness.

Additionally, the current finding is consistent with the findings of Damanpour (1991) but inconsistent with the findings of Daugherty *et al.* (2011), who investigated the relationship between organizational structure and logistics service innovation and found that specialization does not affect the logistics service innovation capability. However, in this study, the impact of formalization on innovation capability—which comprised product innovation, process innovation, marketing innovation and organization—was tested. As each type of innovation requires different types of knowledge, skills, and experiences, specialization was found to play an important role in creating the capability to be innovative in different areas, including product, process, marketing, and organizational changes. Therefore, since the innovation capability was measured by considering four main areas of innovation, it can be the potential reason for the inconsistency between the results of this study and that of Daugherty *et al.* (2011). As such, manufacturers should limit the number of tasks that each staff member performs to enhance the firm's innovation capability in all four main areas of innovation.

Formalization can be beneficial in promoting innovation capability for two main reasons. First, it can signal a firm's commitment to certain activities and convey the importance and value of these activities (Daugherty *et al.* 2011). Second, formalization can direct the behaviour of staff towards specific activities (Moreno-Luzón and Valls-Pasola 2011). As such, instead of inhibiting the generation of new ideas, formalization of required activities or procedures promotes the innovation capability of the manufacturing firms. Thus, manufacturing firms should have written rules, procedures, and instructions for any situation to guide employees towards the main aims of the company and consequently to enhance its innovative capability.

The results showed that decentralization has a significant effect on the innovation capability of indigenous oil and gas companies in South-South, Nigeria. We conclude that centralization nor its reverse, —increasing decentralization—will enhance the innovative capability of indigenous oil and gas companies in South-South, Nigeria. The potential reason for this is that the positive and negative aspects of decentralization neutralize each other's effects on the innovation capability. On one hand, decentralization may lead to fewer layers of information transfer, less information filtering, wider communication, and more inter-departmental communication (Cardinal 2001; Jansen *et al.* 2006). Centralization prevents the generation of information sources and blocks the free flow of information from the bottom towards upper management, hence decreases the quality and quantity of new thoughts and skills for initiatives and problem-solving activities (Jansen *et al.* 2006). Any restriction in the way of generating new thoughts and knowledge will reduce the capability of innovation (Pierce and Delbecq 1977). However, on the other hand, in a centralized organization, the upper-level managers have greater power and freedom in decision-making, which enables them to coordinate and integrate departments more efficiently (Sheremata 2000; Cardinal 2001). In addition, centralization has the potential to eliminate information redundancy and promotes managers' capacity to concentrate on the goal-relevant information and disregard the goal-irrelevant information (Bunderson and Boumgarden 2010; Bunderson & Reagans 2011). In a centralized organization, upper-level managers are able to effectively coordinate and integrate disparate resources and required knowledge among functional units to improve core competency, cut down on coordination and communication expenses in transferring internal information, and gain greater innovation capability (Argyres & Silverman 2004). As such, decentralization has both positive and negative effects on the innovation capability and consequently, its impact on the innovation capability of the firm may be dependent on other factors, including the type of organizational chart, the company's communication technology, top-level managers' skills and their relationships with other staff.

## **CONCLUSION AND RECOMMENDATION**

Therefore, study concludes that organizational structure (formalization and centralization) is a significant variable in moderating the relationship between innovation capability and performance of indigenous oil and gas companies in the South-South, Nigeria.

Therefore, the study recommends that to boost indigenous oil and gas companies' innovation capability formalization and centralization/decentralization should be preferably considered. Thus, managers should spend time creating an organizational structure hinged on creativity and innovation.

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