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INNOVATION AND ORGANIZATIONAL RESILIENCE OF OIL SERVICING FIRMS IN PORT HARCOURT

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ABSTRACT

The study investigated the relationship between innovation and organizational resilience. The study had as its dimensions the independent variable (innovation) process innovation while the dependent variable (organizational resilience) was measured using adaptive capacity, robustness, and agility. The study adopted the cross-sectional survey method, a form of the quasi-experimental research design. A target population of 523 Was drawn from the HR department of the 12 selected oil servicing companies studied, the number of oil servicing companies in Port Harcourt (45) was obtained from the DPR office in Port Harcourt. Primary data was gathered for this work, the questionnaire was the main instrument for the collection of primary data. The instrument was subjected to content and convergent validity, and a pilot study was also carried out on it using 20 staff of the sample population. The reliability was tested using the Cronbach alpha test of the SPSS. The hypotheses were tested using the Spearman rank correlation coefficient, and the moderating effect of technology was checked using the Partial Correlation. The results revealed a significant and positive relationship between the dimensions of innovation and the measures of resilience. The study concluded that innovation significantly affected resilience as innovative organizations showed more signs of resilience than less innovative organizations. It was recommended that Organizations should create an enabling environment that encourages employee creativity and innovative capacities

1. INTRODUCTION

In modern times where uncertainty is the order of the day, there are issues confronting society and businesses existing in the society, and organizations that are proactive and innovative and take the right decision could be the organization that survives in this dynamic and ever-changing business environment. Resilience is now a much-needed element in the repertoire of any business about changing environmental factors. In the past two decades, the attention of business managers and scholars has continued to shift towards the importance of innovation in building organizational resilience. Innovation is one of the instruments that leverage a firm upon entering a new and existing market and provide the company with a competitive edge. Innovation opens new ground and opportunities in both local and international markets by offering new products and ideas to both local and foreign markets. As businesses operate over some time, it faces different kinds of challenges in the environment; some of these challenges if an organization is not resilient could bring about the end of these organizations.

According to the British Standard, (2014), organizational resilience is defined as the organizational ability to anticipate, prepare and respond as well as adjust for ever-increasing changes due to sudden disturbances to survive and be good or prosperous. Others see organizational resilience as an ability to rebound from unexpected, stressful, and adverse situations (Balu, 2001; Gittel et al., 2006). Researchers defined organizational resilience as the capability of the organization to deal with change and continue to develop such as fostering learning and adaptation. Folke et al., (2010). Organizational resilience has two perspectives, such as operational resilience and strategic resilience (Lengnick-Hall et al., 2010; Valikangas & Romme, 2012). Operational resilience focuses on overcoming the crisis and bouncing back to a former condition, often associated with the ability of adaptive interpretation and action, also called passive resilience (Pasteur, 2011; Somers, 2009). Conversely, active resilience or strategic resilience is defined as a capability to convert threats quickly into opportunities then identify a unique opportunity and act effectively as they compete Valikangas & Romme, (2012). The act of organizations represents the type of organizational resilience, whether operational resilience (passive/reactive) or strategic resilience (active/proactive) (Vogus & Sutcliffe, 2008; Valikangas & Romme, 2012). The relationships between organizational resilience and inventory management have been proven by Mitroff (2005) to be a sustained target movement that requires high adaptability and reliability. (Durodie, 2003) and the ability to manage disruptive challenges (Weick et al., 2005) that contribute to organizational performance.

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Plessis, (2007) delineated innovation as a formation of new knowledge that helps the new business returns, which has the purpose to make the organization's internal business process and structure more sophisticated and produce market-acceptable products and services. Innovation creates value for businesses Akram et al, (2011) considering the degree of change in customer tastes and desires, and the degree of dynamism in the business environment. The survival of an organization is great to deal associated with how resilient an organization can be to withstand these various challenges. In some cases, people inter use innovation and creativity without knowing the big difference between the two, innovation, however, involves creativity Amabile et al (1996) but at the same time, it takes a lot more than creativity to bring about organizational innovation. Scholars In every field of study today such as (Plessis, 2007; Nielson 2006; Allen, 1977, Bressman & Dirkinshaw, 1999; Awa & Kalu, 2012; Eze et al, 2013) approach innovation differently. Innovation is viewed by some professions as the introduction of a new good, to others, it is the introduction of a new method of production while some consider it as the creation or opening of new markets.

In today's highly competitive and sensitive business environment, with the consistent and persistent change in customer taste and desires, and with firms struggling to remain in relevant positions in the industry, ideas are no longer centered on cost reduction and mass production with companies paying more attention to customer needs. Innovation has become a vital instrument for top firms to build a competitive advantage above those that are less innovative. Current research has shown that companies that are usually market leaders are companies who have innovative competencies and uses such competencies to satisfy a variety of customer with different needs, thereby eliminating the chance of customers switching brands while attracting competitors' brands. Companies cannot survive through cost reduction and reengineering alone… innovation is the key element in organizational resilience and for increasing bottom-line results Davila et al (2006). Organizations have identified the numerous advantages presented by innovation and have sought to explore it in every possible way, either to improve quality or create a new market or sometimes in an attempt to reduce labor costs.

The term innovation may refer to both radical and incremental changes in thinking, things, processes, or services Mckeown (2008). Radical innovation- a radical innovation is a product, service, and process with entirely new and unique improvement in existing features which in turn improves the value and cost of performance (Leifer et al, 2007; Akram et al, 2011). Radical innovation presents greater risks to firms who go into them as it is associated with lots of uncertainty, and radically innovated products are more difficult to commercialize (Akram et al, 2011). Radical innovation involves a complete system overhaul, plants and machinery used in previous business may be less relevant to current business. Incremental innovation – incremental innovation refers to a modification of existing products or services usually to attract a slightly different target market in the industry (Akar, 2001; Akar & Keller, 1990). Incremental innovation most times is referred to as line extension; it does not need to significantly diversify from current business Akram et al (2011). This type of innovation enhances the skills and competencies of the employees in an organization and helps the organization increase its market share and remain relevant in the industry Banbury & Mitchell, (1995).

Statement of the Problem

Resilience is a crucial characteristic in this unpredictable business environment. Trees can only survive storms if they can bend in the winding Feather (2011). The natural world's proclivity towards flexibility is also rewarded in humans, as resilient individuals can achieve a greater level of success, in some cases after hundreds of attempts. At its core, resilience is the spark of determination that empowers us to get up and try again, no matter the circumstances. We have seen time and again that the most successful businesses are resilient enough to bounce back from any crisis. Many organizations have failed to recognize the importance of building and putting in place resilient plans and machinery that will help companies and organizations recover from unforeseen changes.

Businesses have caved to economic and natural problems caused by unsettled issues in the macro environment, the current global pandemic would challenge many businesses and only the resilient ones would bounce back, the aviation industry has been hit and many may not bounce back, the oil sector is also badly affected by the pandemic. Innovation would prove very important for organizations that are going to bounce back to business and profitability. In this light, this study seeks to explore the relationship between innovation and organizational resilience within the Nigerian work environment with a study of the upstream sector of the oil and gas industry in the Port Harcourt metropolis of Rivers of Nigeria. This is necessary given the need for building resilience in Nigerian organizations in the face of the numerous threats to their survival.

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Aim/Objectives of the Study

This study aims to investigate the relationship between innovation and organizational resilience. The study however has some specific objectives:

i. Ascertain the relationship between process innovation and adaptive capacity.
ii. Ascertain the relationship between process innovation and agility.
iii. Establish the relationship between process innovation and robustness.

Research Questions

The following research questions were asked in line with the above research objectives.

i. How does process innovation relate to adaptive capacity?
ii. Does process innovation influence agility?
iii. What is the relationship between process innovation and robustness?

Research Hypotheses

The following null hypotheses were formulated for this study.

Ho_1. There is no significant relationship between process innovation and adaptive capacity.
Ho_2. There is no significant relationship between process innovation and agility.
Ho_3. There is no significant relationship between process innovation and robustness.

2. LITERATURE REVIEW

2.1 Theoretical Framework

Several theories explain mentoring in the workplace. However, this study considers several theories that are appropriate to be utilized as the basic theoretical framework

Resource Dependency Theory

Contingency Theory

Contingency theory details the study of organizational behavior in which reasons are given as to how contingent factors such as technology, culture, and the external environment influence the design and function of organizations. The assumption underlying contingency theory is that no single type of organizational structure is equally applicable to all organizations. Rather, organizational effectiveness is dependent on a fit or match between the type of technology, environmental volatility, the size of the organization, and the strategy in place, the features of the organizational structure and its information system. Contingency theories were developed from the sociological functionalist theories of organizational structure such as the structural approaches to organizational studies by Reid and Smith (2000), Chenhall, (2003), and Woods (2009).

The concept of fit has been defined by Van de Ven and Drazin (1985) in three approaches -selection, interaction, and systems approach. First, in the selection approach, the interpretation of fit was that, if an organization wants to survive or be effective, it must adapt to the characterizations of its organizational context. Most of the early contingency research studies adopted this approach to examine links between inventory management practice and organizational resilience. Second, the fit is interpreted as an interaction effect of organizational structure and context on performance (Khandwalla, 1977; Van de Ven & Ferry, 1980). However, in these studies, the differences in the correlation between context and design in the high and low-performing organizations were not significant. Furthermore, these studies did not show if the interactions between context and design were effective.

Third, another approach in the contingency theory literature about fit is the systems approach. According to the systems approach, one can understand organizational design only by simultaneously investigating the contingencies, structural alternatives, and performance criteria existing in an organization. Multiple and equally effective alternatives may exist. Van de Ven and Drazin (1985) suggested that contingency studies should be designed. Hence, the comparative evaluation of various forms of fit is possible and the design of organizational sub-divisions should be taken into consideration.

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2.2 Conceptual Review

Innovation

Process Innovation

The process of innovation is defined to encompass multiple decisions and activities around multiple patterns, sub-process, and phases (Tornatzky & Fleischer, 1990). As an analogy with the life cycle of products, the authors propose a life cycle of innovation that has been divided into two main sub-processes: the prenatally one (or generation- or sourced-based process) and the postnatal one (or adoption- or user-based process). Each one is a set of specific activities and involves different actors. The two are intertwined. The former results in innovation as an outcome which may be a product, service, or process. The latter delineates how the adopting organizations assimilate these outcomes.

The management of innovation is located in a highly complex and dynamic environment. There exists interaction inside the organization and interaction between the organization and its environment. The underlying interdependencies are numerous and not always transparent. Due to the complexity and the dynamic behavior of the system under investigation, there is a time gap between an action/decision and the evidence of its consequences which makes the decision process even more difficult. Very often product innovations that are crucial for an organization´s survival have to be generated under lack of time. Due to this fact, decision-making in innovation management is a very difficult and risky task. Any approach providing support and leading to more rational decision-making is welcome.

By identifying, and then separating, process and product innovations the industrial innovation pattern could be related to three different stages of the innovation process: the uncoordinated, the segmental, and the systemic. Utterback and Abernathy notice that the rate of product or process innovation depends on the present stage of the product´s life cycle. It has to be mentioned that this concept can refer to the life cycle of a single product line and its manufacturing process as well as to a specific product generation and the growth of a whole industrial branch related to this generation of products. The process of substitution for a completely different, sophisticated kind of product is not the focus of the investigation.

Organizational Resilience

Resilience is the organizational capability to anticipate key events from emerging trends, constantly adapt to change, and rapidly bounce back from disaster. The business environment is fast becoming more interconnected, unpredictable, and volatile and the consequences of external events more substantial. If you respond too late or inappropriately, you risk getting left behind. The concept of resilience has gained considerable attention in the last three decades as organizations strive to face constant changes in the environment, where the focus was on the ability of systems to cope with changes in the environment and persist (Petak, 2002).

Walker et al., (2004) define resilience as the capacity of a system to absorb disturbance and reorganize while changing to still retain the same function, structure, identity, and feedback. There is a distinct difference between the materials science equilibrium view of resilience and the ecologist's view of renewal and reorganization. More in line with renewal, a developmental psychology perspective is useful for understanding the development of resilience in organizations. From this perspective, resilience develops over time from continually handling risks, stresses, and strains, where an entity not only survives and thrives by positively adjusting to current adversity, but also, in the process of responding, strengthens its capability to make future adjustments (Sutcliffe & Vogus, 2003).

Both of these events were managed in a way that not only dealt effectively with a tragic situation but also enhanced organizational core capabilities enabling them to thrive (Lengnick-Hall & Beck 2003). One challenge is to understand why and how some organizations manage to thrive and enhance core capabilities when faced with a crisis while others fail, or at a best return to equilibrium. Resilience begins with enterprise leadership setting the priorities, allocating the resources, and making the commitments to establish organizational resilience throughout the enterprise. Bell, (2002) also argues that a component of organizational resilience is enterprise culture.

Adaptive Capacity

To develop 'bounce-back', managers and executives should enhance the organization's absorptive capacity, facilitating the scanning of the environment in search of valuable external information, assimilating it, and exploiting it in a socio-ecological context, Walker et al., (2002) define adaptive capacity as an aspect of resilience that reflects learning, flexibility to experiment and adopt novel solutions, and the development of generalized responses to broad classes of challenges. Armitage (2005) adapts Folke's (2003) four dimensions for socio-institutions. In a socio-institution context, adaptive capacity depends on the attributes of individuals, organizations,

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and institutions that might foster learning when faced with change and uncertainty, such as willingness to learn from mistakes, engage in collaborative decision-making arrangements, and encourage institutional diversity.

Adaptive capacity may be defined as the ability or inclination of an individual or group to maintain an experimental attitude towards new situations as they occur and to act in terms of changing circumstances. Adaptive capacity is addressed in this context through two approaches; socio-environmental, and organizational (McManus, 2007). An organization's ability to adapt is at the heart of its ability to display resilient characteristics. Amah and Baridam (2012) discuss the importance of adaptation and note that the aim is to create advantages over less adaptive competitors. This suggests that adaptive capacity is also linked to competitiveness.

Dalziell and McManus (2004) define adaptive capacity as, the engagement and involvement of organizational staff so that they are responsible, accountable, and occupied with developing the organization's resilience through their work because they understand the links between the organization's resilience and its long-term success. Adaptive capacity then is the envelope or space in which the organization's performance or management of the disaster fluctuates until it reaches an equilibrium.

Agility

The concept of Agility needs to be well grounded in management theory (Yusuf et al., 1999). Early in the 1990s, a new solution for managing a dynamic and changing environment emerged. Agility is the ability to survive and prosper in a competitive environment of continuous and unpredictable change by reacting quickly and effectively to changing markets, driven by customer-defined products and services (Yusuf, et al, 1999). The creators of the "agility" concept at the Iacocca Institute, of Lehigh University (USA), defined it as a manufacturing system with capabilities (hard and soft technologies, human resources, educated management, information) to meet the rapidly changing needs of the marketplace (speed, flexibility, customers, competitors, suppliers, infrastructure, responsiveness). Agility is the successful application of competitive bases such as speed, flexibility, innovation, and quality by the means of the integration of reconfigurable resources and best practices of a knowledge-rich environment to provide customer-driven products and services in a fast-changing environment (Yusuf et al., 1999). Agility emphasizes speed and flexibility as the primary attributes of an agile organization (Gunasekaran, 1999). An equally important attribute of agility is the effective response to change and uncertainty (Goldman et al., 1995).

Agility refers to the proactive responses to changes (Bessant et al., 2001). Agility refers to the use of changes as inherent opportunities in a turbulent environment (Sharifi & Zhang, 2001). Agility refers to the ability to survive and progress in a variable and unpredictable environment (Dove, 2001). Organizational flexibility represents an organization's capacity to adjust its internal structures and processes in a predetermined response to changes in the environment. Adaptability underlies the fit of organizational operations to their environment while flexibility emphasizes the readiness of organizational resources and the ease of resource mobilization. The "agility" concept encompasses both flexibility and adaptability. Agility was coined in a manufacturing context-particularly about flexible manufacturing systems (Christopher & Towill, 2001).

Agility is a new concept in contemporary administrative thought. One writer has defined the process of agility in terms of the capabilities necessary to achieve light movement in the organization (Sherehiy, 2008). Agility is the ability to respond to unpredictable changes with quick response and profitability (Erande & Verma, 2008). It is an organizational ability to react quickly and effectively to an environment that can change radically (Janssen, 2010). Agility also refers to the ability to rapid and easy movement and rapid thinking with a thoughtful method. The root or origin of agility is derived from agile production and this is a concept that has been presented in later years. Agile production has been accepted as a successful strategy by producers that prepare them for considerable performance (Mehrabi, 2013).

Robustness

Broadly understood, robustness refers to the 'ability to withstand or survive external shocks, to be stable despite uncertainty' (Bankes 2010). More specifically, robustness has been described as the 'ability of a system to withstand perturbations in structure without change in function' (Jen 2003). In all instances, robustness is associated with a complex system's ability to remain functional in the face of shocks or disturbances (Mens et al. 2011). This focus on withstanding shocks and systemic functioning is prevalent in most applications of robustness across the various disciplines. In engineering, the robustness of systems refers to functional reliability in the presence of eventual failure; in biology, robustness is the ability of developmental processes to remain on course, notwithstanding the impact of environmental perturbations; in ecosystems, robustness is defined in terms of ecological resilience, which is the ability to maintain functions and control in the presence of external disturbance

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(Jen 2003) and 'the maintenance of some desired system characteristics despite fluctuations in the behavior of its parts or its environment' Carlson and Doyle (2002).

Robustness has thus emerged as a characteristic that can ensure effectiveness over time in a specific system, institutional arrangement, or policy field. Due to such characterizations, robustness can be understood as synonymous with stability or even an echo of the effect of the process of institutionalization, through which policies and institutions persist over time thanks to institutional or organizational adaptation and evolution (Smit & Wandel 2006), with strong connotations of adaptive efficiency (Bednar 2016). Robustness is the capacity to maintain the functions of a system (policy, political system, organization, or institution), while stability refers to a system's ability to maintain its actual state.

A robust system is therefore not necessarily a static system, although a system could be kept stable thanks to the robustness of its functions. Put in other words, a 'system is robust as long as it maintains functionality, even if it transits through a new steady state or if instability helps the system to cope with perturbations' Kitano (2007). Then, 'robustness is a measure of feature persistence in systems where the perturbations to be considered are not fluctuations in external inputs or internal system parameters, but instead represent changes in system composition, system topology, or in the fundamental assumptions regarding the environment in which the system operates' Jen (2003).

2.3 Empirical Review

Bon and Mustafa, (2014) investigated the impact of customer focus on process innovation and administrative innovation in service organizations. The data were collected from service organizations in Malaysia. The organizations are from different service subsectors and different sizes. Confirmatory Factors Analysis (CFA) was used to confirm and validate the constructs included in the proposed theoretical model. Structural Equation Modeling (SEM) was used to test the hypotheses. Results of hypothesis testing revealed that customer focus has a positive impact on both processes and administrative innovations in the surveyed organizations. This study added the perspective of service organizations to the debate about the relationship between customer focus and innovation. The findings of this study will help managers to positively link customer focus practices with the process and administrative innovation.

Emmanuel and Onuoha, (2019) investigated the relationship between strategic agility and organizational resilience of food and beverages firms in Rivers State, Nigeria. The cross-sectional survey which is a type of quasi-experimental design was used in this study because the variables were not under the control of the researcher. A total population of 95 managerial employees of the 15 registered food and beverage firms was covered in this work. Data was collected using a questionnaire and the data was analyzed using the Pearson Product Moment Correlation statistical analysis. A total of 81 questionnaires represented 85% of the questionnaire distributed successfully retrieved and used for the study. Thus, the findings revealed a noteworthy relationship between the dimensions of strategic agility (flexibility and accessibility) with the measures of organizational resilience (adaptability and robustness). It was thus concluded that when an organization's strategic agility increases, the firm's resilience also increases as a result of their linear relationship. The study among others recommended that the management of the food and beverage firms should develop agile strategies that will enable the organizations to withstand turbulent moments and thus enhance the firms' resilience

Williams, Best, and Anyanwu, (2017) investigated the influence of Innovation on organizational resilience in the food and beverage industry. The cross-sectional survey design was adopted. Data were obtained from 108 managers from a population of 385 management staff of the 7 selected beverage firms in Port Harcourt. The instrument adopted for data collection was the questionnaire. A total of 78 questionnaires were retrieved and also analyzed. The Spearman's Rank correlation coefficient tool was used to test the hypotheses. Findings revealed that product innovation is significantly related to adaptability and vulnerability. Based on these findings we concluded that organizational innovation has a significant influence on resilience. Product innovation promotes adaptability and makes an organization less vulnerable. We, therefore, recommend that organizations should create an enabling environment that encourages employee creativity and innovative capacities which will play a key role in building organizational resilience. Organizations should implement policies and processes which would allow for informed changes to the structure, work processes, and operations which in turn would be beneficial to the organization.

Ikiriko, Jaja, and Eketu, (2017) studied the relationship between performance management and organizational resilience in selected commercial banks in Port Harcourt. The study adopted a cross-sectional research survey. The target population comprised selected commercial banks in Port Harcourt. The accessible population for this study was 10 selected commercial banks. 424 workers were surveyed from the 10 selected commercial banks. A simple random sampling technique was adopted. The sample size for the study was 206 using the Taro Yamane formula. A

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total number of 132 copies of the questionnaire were found useful for data analysis. Spearman Rank Order Correlation Coefficient was used as a statistical tool to test the hypotheses with the aid of SPSS 20.0. The study found that performance management enhances organizational resilience. The study concluded that effective performance management can enhance the organizational resilience of commercial banks in Port Harcourt. The study recommended that bank managers should ensure that performance planning is in place to enable the organization to prepare for unforeseen circumstances.

3. METHODOLOGY

The cross-sectional survey method, a form of quasi-experimental design, is considered most appropriate for this study. This study was aimed at empirically evaluating the impact of innovation on organizational resilience in the Nigerian oil servicing industry in Port Harcourt, Rivers state of Nigeria, using questionnaires as a measuring instrument. The moderating effects of technology in an organization were evaluated. The sample consists of the top cadre of employees in the oil servicing industry (managers and heads of departments), who are capable of providing responses at the organizational level particularly as they concern with the innovation of their respective organizations. The questionnaires were personally administered. Information from the Department of Petroleum Resources DPR revealed a total of 45 oil servicing companies operating in Port Harcourt, 12 of them were selected as the target population for this study. The 12 firms were selected based on their ability to carry out onshore and offshore oil servicing operations Preliminary investigation shows that a total of 523 five hundred and twenty-three management staff are in the twelve (12) selected oil servicing firms, this information was obtained from the various Human Resource management units of the firms.

The determination of the sample size was done using the Krejcie and Morgan (1970) table and the result of 217 (two hundred and seventeen) was obtained. The purposive sampling technique was adopted largely because of the nature and characteristics of the respondents. Taking into account the different sizes of the firms, we used Bowley's formula to proportionately allocate the 217 (two hundred and seventeen) instruments to the 12 (twelve) firms. This describes the statistical tools utilized in the analysis and interpretation of the questionnaire as regards the hypotheses. Multiple regression was used to analyze the data obtained from the questionnaire. This choice is premised on the transformation of scales from ordinal (manifest properties) to interval (latent constructs) thus enabling the researcher to examine the relationship between the dimensions of innovation (product innovation and process innovation) and organizational resilience (adaptive capacity, agility, and robustness). The hypotheses were tested using simple linear regression. Partial Correlation would be used to check the effect of the moderating variable All Statistical analysis will be carried out using the Statistical Package for Social Sciences (SPSS) version 26.

4. DATA ANALYSES AND PRESENTATION

Ho_1. There is no significant relationship between process innovation and adaptive capacity.

Table 4.1: Correlation between Process Innovation and Adaptive Capacity

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.750[a]	.563	.560	.88613

a. Predictors: (Constant), Process Innovation

SPSS output, Version 26

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	163.933	1	163.933	208.771	.000[b]
	Residual	127.207	162	.785		
	Total	291.140	163			

a. Dependent Variable: Adaptive Capacity

b. Predictors: (Constant), Process Innovation

SPSS output, Version 26

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Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound
1 (Constant)	.216	.217		.993	.322	-.213	.644
Process Innovation	.793	.055	.750	14.449	.000	.685	.901

a. Dependent Variable: Adaptive Capacity
SPSS output, Version 26

The results show the relationship between process innovation and adaptive capacity. The simple correlation reveals that there is a strong significant relationship between process innovation and adaptive capacity (0.750). The indicates that 56% variation in adaptive capacity of oil servicing firms can be attributed to process innovation. The results reveal that the regression model statistically and significantly predicts the outcome of the variables where P = 0.000 which is less than 0.5. The Coefficient table shows a positive relationship between process innovation and adaptive capacity. Thus, the alternate hypothesis states that, there is a significant relationship between process innovation and adaptive capacity.

Ho_2. There is no significant relationship between process innovation and agility.

Table 4.2: Correlation between Process Innovation and Agility

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.629[a]	.396	.392	.98179

a. Predictors: (Constant), Process Innovation
SPSS output, Version 26

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	102.207	1	102.207	106.035	.000[b]
	Residual	156.152	162	.964		
	Total	258.360	163			

a. Dependent Variable: Agility
b. Predictors: (Constant), Process Innovation
SPSS output, Version 26

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound
1 (Constant)	.951	.241		3.953	.000	.476	1.426
Process Innovation	.626	.061	.629	10.297	.000	.506	.746

a. Dependent Variable: Agility
SPSS output, Version 26

The results show the relationship between process innovation and agility. The simple correlation reveals that there is a moderate significant relationship between process innovation and agility (0.629). The indicates that 40% variation in agility can be explained by the organizations process innovation. The results reveal that the regression model statistically and significantly predicts the outcome of the variables where P = 0.000 which is less than 0.5. The Coefficient table shows a positive relationship between process innovation and agility. Thus, the alternate hypothesis states that, there is a significant relationship between process innovation and agility.

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Ho_3. There is no significant relationship between process innovation and robustness.

Table 4.3: Correlation between Process Innovation and Robustness

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.726[a]	.528	.525	.88017

a. Predictors: (Constant), Process Innovation

SPSS output, Version 26

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	140.274	1	140.274	181.071	.000[b]
	Residual	125.500	162	.775		
	Total	265.774	163			

a. Dependent Variable: Robustness

b. Predictors: (Constant), Process Innovation

SPSS output, Version 26

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1 (Constant)	.890	.216		4.126	.000	.464	1.316
Process Innovation	.733	.055	.726	13.456	.000	.626	.841

a. Dependent Variable: Robustness

SPSS output, Version 26

The results show the relationship between process innovation and robustness. The simple correlation reveals that there is a strong significant relationship between process innovation and robustness (0.726). The indicates that 53% variation in organizational robustness can be explained by the level of process innovation. The results reveal that the regression model statistically and significantly predicts the outcome of the variables where P = 0.000 which is less than 0.5. The Coefficient table shows a positive relationship between process innovation and robustness. Thus, the alternate hypothesis states that, there is a significant relationship between process innovation and robustness.

5. DISCUSSION AND CONCLUSION

The study examined the relationship between innovation and organizational resilience of oil servicing firms; a study of twelve (12) oil servicing firms and seven (7) hypotheses were formulated as tentative answers to research questions raised and were tested to find support for the propositions, thus: The result also reveals that process innovation is associated largely with organizational resilience. The high extent of existence of process innovation in the management of organizational resilience end to agrees with the study of Philips (2011) who contend that process innovation allows the organizations to define upstream and downstream activities to direct and simplify workflow, assign tasks and responsibilities to people who have been trained in their roles. And also, a process ensures that work is done the same way without reason. In line with this Becker, (2003) argues that the process structure complexity in organizations is characterized by the level of mechanization, systematization, and interconnection of the production process, which includes the stages where a series of actions or tasks are performed in the organization.

As revealed by the findings of the study, effective innovative activities within the organization are closely associated with adaptive capacity, agility, and robustness of the organization, thereby enhancing learning, competitiveness, and market share. We are, therefore, inclined to argue that corporate innovative activities, when effectively managed, gear the organization towards efficient, optimal, and more effective work processes which in turn serves as an edge in the business industry or environment. The empirical endeavor intended to investigate the relationship between innovation and organizational resilience. the study findings from our analysis support a correlation between both variables as all two dimensions of innovation (process innovation and product innovation) all strongly and significantly associate with organizational resilience, and based on these findings we, therefore,

conclude that innovative activities should be encouraged to enhance the resilient stance and capacities of the organization.

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