

Innovation capabilities and Organizational Productivity of oil and gas companies in South-South, Nigeria

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Abstract: *This study investigated the relationship between Innovation capabilities and Organizational Productivity of oil and gas companies in South-South, Nigeria. The study examined the dimensions of innovation capabilities as product innovation capability and organizational innovation capability. Organizational Productivity was measured in terms of Output quality and Output Quantity. The study adopted the cross-sectional research survey design. Primary data was generated through structured questionnaire. The population of this study was thirty-three registered and functional oil and gas companies in South-South, Nigeria. Five employees were selected from each of the thirty-three registered and functional oil and gas companies in South-South, Nigeria giving a total of One Hundred and sixty five employees. This study the researcher adopted a census sampling technique to study all the thirty-three indigenous oil and gas companies in Rivers State because the population was small. The research instrument was validated by supervisors' vetting and approval while 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. Findings revealed that there is a significant relationship between innovation capabilities and Organizational Productivity of oil and gas companies in South-South, Nigeria. Specifically, all the dimensions of innovation capabilities and all the measures of Organizational Productivity of oil and gas companies in South-South, Nigeria all revealed statistically significant correlation. Therefore, this study concludes that enhancing the innovation capabilities of oil and gas companies in the South-South, Nigeria is essential to improving their Organizational Productivity. Hence the study recommends that the management of oil and gas companies should expand integration of new technologies in product development and offering. This will enhance customer satisfaction and retention levels within the oil and gas industry.*

Key word: *Innovation capabilities and Organizational Productivity, product innovation capability and organizational innovation capability*

INTRODUCTION

Oil and Gas Industry is facing huge price changes in the global market due to a decrease in demand. Due to these price fluctuations, Oil and Gas Industry companies are in a critical stage to reform their financial position and status. They are struggling hard to strengthen their performance appraisal. Without proper utilization of finance, any business cannot survive for long in the market. Oil companies have been working from time to time to ensure they contribute to sustaining the growth of their contributions to the

economy. Innovation capabilities are crucial for enhancing organizational productivity, especially in the highly competitive and dynamic oil and gas sector. In Nigeria, this industry faces unique challenges and opportunities that drive the need for continuous innovation. Innovation capabilities in Nigeria's oil and gas sector play a crucial role in enhancing organizational productivity

Innovation capabilities in Nigeria's oil and gas sector are pivotal for maintaining competitiveness and achieving sustainable growth. The adoption of advanced technologies such as the Internet of Things (IoT), artificial intelligence (AI), and big data analytics has transformed traditional exploration, drilling, and production processes, significantly enhancing operational efficiency and decision-making. Companies like the Nigerian National Petroleum Corporation (NNPC) have made substantial investments in research and development (R&D), partnering with international entities to foster the development of new technologies and improve existing methodologies (Adeleye, 2023; Eze, 2023). These technological advancements have enabled the industry to better navigate the complex challenges of the global energy market.

Innovation is essential for achieving a competitive advantage in start-ups and established companies (Lichtenthaler, 2020). This is because innovation is considered a key driver for the long-term success of firms in today's competitive markets (Darroch & McNaughton, 2022). As a result, businesses with the capacity to innovate can respond to market challenges faster and better than non-innovative companies (Calvo-Porrá, Medín, & Losada-Lopez, 2017). Innovation capabilities refer to an organization's ability to develop new products, services, or processes and implement them effectively to gain a competitive advantage. This concept encompasses various dimensions, including the ability to generate new ideas, leverage technology, manage resources, and adapt to changing market conditions. According to Teece (2018), innovation capabilities are crucial for firms to sustain growth and competitiveness in dynamic environments. These capabilities allow companies to not only respond to market demands but also anticipate future trends and needs, ensuring long-term success.

The development of innovation capabilities involves fostering a culture that encourages creativity and experimentation. Organizations must invest in research and development (R&D), provide continuous learning opportunities, and encourage cross-functional collaboration. As highlighted by Damanpour and Aravind (2019), successful innovation requires a strategic alignment between an organization's goals and its innovation efforts. Companies that excel in innovation typically have robust systems for idea management, strong leadership support, and a commitment to innovation as a core value. These elements contribute to building an environment where innovation can thrive.

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.

Organizational productivity is one of the most studied terms in management sciences. Pitcher Partners Growth (2016) opined that organizational productivity relates to how successful an organized group of people with a particular purpose perform a function. It comprises the actual output or results of an organization as measured against its intended outputs, objectives, or goals. However, high organizational productivity exists when all the parts of an organization work together to achieve great results. Eyenubo (2013) claimed that productivity is the success of meeting predefined objectives, targets, and goals within a specified time target. Organizational productivity refers to the efficiency and effectiveness with which an organization utilizes its resources to achieve its goals and produce desired outcomes. It encompasses various dimensions such as labor productivity, capital productivity, and total factor productivity, reflecting the organization's ability to convert inputs into outputs. According to Hitt, Carnes, and Xu (2016), high organizational productivity is critical for maintaining competitive advantage and achieving long-term success. This concept is particularly important in today's rapidly changing business environment, where organizations must continually improve their operations to stay ahead of the competition.

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. 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. Therefore, this study by as its point of departure from previous studies sought to fill these observed research gaps examining the relationship between Innovation capabilities and Organizational Productivity of oil and gas companies in South-South, Nigeria.

Product innovation

Product innovation involves the development and introduction of new or significantly improved products that offer enhanced value or functionality to consumers. It is a key driver of competitive advantage and growth for organizations, enabling them to meet

evolving market demands and differentiate themselves from competitors. According to Garcia and Calantone (2002), product innovation encompasses not only the creation of entirely new products but also substantial improvements to existing ones, including advancements in technology, design, and usability. Effective product innovation helps organizations stay relevant in rapidly changing markets and respond to shifting consumer preferences. The process of product innovation typically involves several stages, including idea generation, concept development, prototype testing, and market introduction. Each stage requires a combination of creativity, technical expertise, and market insight. As highlighted by O'Connor and DeMartino (2006), successful product innovation often depends on the organization's ability to integrate cross-functional teams, manage resources efficiently, and align innovation efforts with strategic objectives. Collaboration between departments such as R&D, marketing, and manufacturing is crucial to ensuring that the innovative products meet customer needs and are feasible to produce.

Organizational innovation capability

Organizational innovation capability refers to an organization's ability to continuously develop and implement new ideas, products, or processes that enhance its competitive position and operational effectiveness. This capability is crucial for sustaining long-term success in a dynamic business environment, where rapid changes in technology and market demands necessitate constant innovation. According to Teece (2018), organizational innovation capability encompasses various elements, including the ability to generate new ideas, assimilate external knowledge, and apply these insights effectively. Organizational innovation capability involves fostering a culture that encourages experimentation and supports risk-taking. Organizations need to establish systems and processes that facilitate the generation, evaluation, and implementation of innovative ideas. As highlighted by Wang and Ahmed (2004), this includes investing in research and development, creating cross-functional teams, and providing employees with opportunities for continuous learning and development. Leadership plays a critical role in cultivating an environment where innovation can thrive by championing innovation initiatives and aligning them with the organization's strategic objectives.

Statement of the Problem

Oil and gas companies often face significant challenges in harnessing innovation capabilities to enhance organizational productivity. One major problem is the inherent complexity and risk associated with developing and implementing new technologies in this sector. Innovations in areas such as exploration, drilling, and production require substantial investment and rigorous testing due to the high stakes involved in ensuring safety and operational efficiency. Davis and Kauffman (2021), the high costs and extended timelines for developing new technologies can hinder the ability of oil and gas companies to rapidly adopt and integrate innovations. Additionally, the industry's reliance on legacy systems and infrastructure can create barriers to adopting more modern, efficient technologies.

Another challenge is the organizational resistance to change, which can impede the effective implementation of innovative practices. Oil and gas companies often have established processes and cultures that are resistant to alteration, making it difficult to introduce new methods or technologies. This resistance can stem from concerns about disrupting current operations or fear of potential failures. According to Martin and Roberts (2022), overcoming this resistance requires strong leadership and a clear strategic vision that aligns innovation efforts with the company's overall goals. Additionally, fostering a culture that embraces change and encourages experimentation is crucial for improving organizational productivity through innovation.

Conceptual Framework

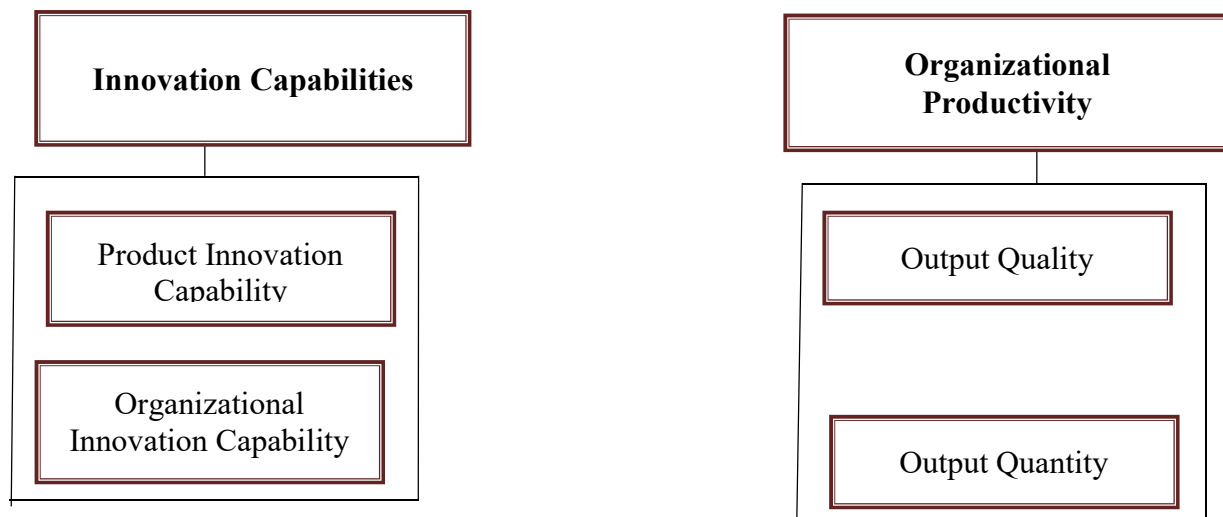


Figure1.1: Conceptual framework for innovation capabilities and organizational productivity

Purpose of the Study

The purpose of the study was to examine the relationship between Innovation capabilities and Organizational Productivity of oil and gas companies in South-South, Nigeria. Basically, the specific objectives of the study were to:

- i. Examine the relationship between product innovation capability and Organizational Productivity of oil and gas companies in South-South, Nigeria.
- ii. Examine the relationship between organizational innovation capability and Organizational Productivity of oil and gas companies in South-South, Nigeria

Research Questions

In order to guide the researcher within the context of this study, the following research questions were posed for answers.

- i. What is the relationship between product innovation capability and Organizational Productivity of oil and gas companies in South-South, Nigeria?

- ii. What is the relationship between organizational innovation capability and Organizational Productivity of oil and gas companies in South-South, Nigeria

Research Hypotheses

Base on above research questions the following null hypotheses were tested for validation or refutation.

Ho₂: There is no significant relationship between product innovation capability and Output Quantity of Oil and Gas companies in south-south, Nigeria

Ho₃: There is no significant relationship between product innovation capability and Output quality of Oil and Gas companies in south-south, Nigeria

Ho₁₀: There is no significant relationship between organizational innovation capability and Quality service delivery of Oil and Gas companies in south-south, Nigeria

Ho₁₁: There is no significant relationship between organizational innovation capability and Output Quantity of Oil and Gas companies in south-south, Nigeria

Concept of Innovation Capabilities

Innovation can be seen as an effective means of enhancing organizational performance (Rajapathirana & Hui, 2017). Innovation is positively related to the company's performance (Calantone et al., 2002). In the relationship between innovation and organizational performance, Simpson et al. (2006) point out that innovation can be an expensive and risky activity, which can have positive results in solid performance, but also negative results, such as increased exposure to market risk, increased costs and employee dissatisfaction with unexpected consequences in the organization.

The understanding of innovation is related to the generation of ideas, which need to be unprecedented so that they are considered evolutionary and in turn generate processes or products improved for the people through the organizations. It can also generate goods or services that, over time, will revert to results for the organization, making it more competitive (Schumpeter, 1964). According to Chen et al. (2004), "innovation refers to the introduction of a new combination of the essential factors of production into the production system. Innovation capital is the competence of organizing and implementing research and development, bringing forth the new technology and the new product to meet the demands of customers.

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.

Organizational Innovation

Organizational innovation is the firm's ability to use its unique organizational structure, designs, and methods in carrying out its daily business routines or operations and building external relationships. Organizational innovation relates to all efforts exerted towards modifying the traditional operation, procedures and techniques of working in order to bring changes in collaboration, information sharing and coordination. It is a means of achieving competitive advantage (Mol & Birkinshaw, 2019). Organizational innovation includes ideas of work design, training and development of employee and shared objectives (Nwankpa, 2017). Gunday and Dutton (2021) are of the view that organizational innovation is strongly related to efforts made by the paperwork department to make new organization's daily operations, procedures and methods so as to spur the spirit of teamwork, innovation, learning, collaboration and information sharing. Organizational innovation may generate different types and degrees of innovation (Vicente et al., 2015). The types of innovation can be categorized as technological (in products or processes) and non-technological (in marketing or managerial). The degree of innovation can be classified between incremental (implying the development of simple improvements in existing products) and radical innovations (involving significant changes in the technology of existing products).

Organizational Productivity

Productivity is about the effective and efficient use of all resources. Resources include time, people, knowledge, information, finance, equipment space, energy, materials. Productivity is the ratio of output to input. It is a measure of how efficiently and effectively a business or an economy uses inputs such as labor and capital to produce outputs such as goods and services. An increase in productivity means that more goods and services are produced with the same amount of labor and capital. It is not about cutting costs but "doing things right" and "doing the right things" to achieve maximum efficiency and value. Productivity is the ratio of what is produced to what is required to produce it. It measures the relationship between output and inputs. Productivity is commonly defined as a ratio between the output volume and the volume inputs. In other words, it measures how efficiently production inputs, such as labor and capital, are being used in an economy to produce a given level of output. Productivity is considered a key source of economic growth and competitiveness and, as such, is basic statistical information for many international comparisons and country performance assessments.

Productivity is at the highest level of performance with the least expenditure or resources. It is often seen as the relationship between total output/total input. The effectiveness of the use of the factors of production to produce goods, and services is commonly referred to as productivity. According to Allen and Helms (2006), productivity is characterized as the rate at which an employer, organization, or country produces items and the amount produced corresponding to the amount of time, effort, and money required to generate them. The ability of humans to join assets like unrefined components, work, abilities, capital, hardware, land, protected innovation, administrative capacity, and monetary funding to create labour and products is known as productivity. A company's prospective success is determined by its organizational productivity, or its capacity to effectively

implement methods to meet institutional goals (Randeree and Al Youha, 2019). The capacity of an organization's executives to implement initiatives has a significant sway on the organization's productivity.

Output Quantity

Chernis and Kane (2004) describe employee output quantity as referring to the total number or aggregate of jobs or activities quantified in a manner that allows one assess the extent of contributions or effort made towards the overall performance of the organization. It is an integral aspect of productivity and emphasizes on the amount or totality of effort involved in the job. Armstrong (2005) opines that employee output quantity enables the organizations identify areas and elements that are making the actual contributions and the units or elements that are lagging behind (Yesufu, 2000; Akinyele, 2007). As a measure of productivity, it presents the organization with tangibility in terms of results and enables the management the process of locating loopholes and dysfunctional factors (Armstrong, 2005; Christesen, 2002; Yesufu, 2000; Akinyele, 2007).

Output Quality

According to Umeh and Usman. (2000), employee output quality can be defined as an overall judgment similar to attitude towards the service and generally accepted as an antecedent of overall customer satisfaction (Armstrong, 2005; Christesen, 2002). Akinyele, (2007) have defined output quality as the ability of the organization to meet or exceed customer expectations. It is the difference between customer expectations of service and perceived service (Armstrong, 2005). Employee output quality results from comparisons by customers of expectations with their perceptions of service delivered by the employees of the organization (Armstrong, 2005).

Innovation Capabilities and Organizational Productivity

Innovation capability has been defined as “the ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders” with this higher order capability enabling the moulding and management of multiple capabilities to successfully stimulate innovation (Lawson & Samson 2001). In highly competitive and high-velocity markets, dynamic capabilities take on a different character being simple (not complicated), experiential (not analytic), and iterative (not linear) processes with situation-specific knowledge created and applied in the context of simple boundary and priority-setting rules (Eisenhardt 2000).

Innovation capability is used to describe the ability to create and commercialize something new. It also describes new drives towards execution of new ideas. It could be new processes or introduction of a new product. Innovation capability demonstrates the relationship between creativity and implementation in Baer (2012). Innovation capability within an organisation represents how the people in the organisation think and act (Dobni, 2008). The role of individuals in supporting innovation capability is critical to innovation success. Srivastava and Sushil (2014) and Baer (2012) opine that that individual motivation plays an important role in enhancing innovation capability. The drive to innovation can be intrinsic (self-drive) or extrinsic (pegged on external factors). Innovation

capability plays a pivotal role in business success by being a platform and vehicle for change and idea generation that can enable businesses to propel to greater heights. These innovative ideas can leverage businesses giving them competitive advantage over others, considered as critical to business sustainability and success. Innovation is therefore imperative for every industry (Thompson et al., 2016).

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" (Lerro, Linzalone & Schiuma, 2009). It has been suggested that innovation capabilities are so-called higher-order capabilities or "the ability to mould and manage multiple capabilities" (Lawson & Samson, 2001, p. 380). Firms that possess these capabilities have "the ability to integrate key capabilities and resources of their firm to successfully stimulate innovation" (Lawson & Samson, 2001, p. 380). Accordingly, attempts to define innovation capability have overlapped with the theory of dynamic capabilities. In addition, within the conceptualization of innovation capability is the idea that capability is linked to renewal and performance of a firm over time, especially with changing markets and the idea that it is necessary for a firm to be flexible and adapt services and products offered. Moreover, innovation capability includes a combination and orchestration of resources to maintain fitness along with external changes. Again, the above definition appears to overlap with dynamic innovations; however, innovation capability focuses more directly on the firm's ability to change its offerings, while dynamic capability emphasizes environmental fitness as an indication of performance (Helfat, et al., 2007)

Empirical Review

Wachira (2013) looked at the impact technological innovation capability had on Kenyan banks financial performance. The census study used a descriptive cross-sectional design and the target population was all the commercial banks in the country. The results indicated that the customer care staffs in these financial organizations were open to technological innovations. The outcome also showed a favorable and significant association between the bank's profitability performance and the use of different technological innovations such as customer transparent technologies, customer assisted technologies and customer independent technologies. The effect of these variables (customer independent technology, customer assisted technology and customer transparent technology) had a positive relationship with profitability ($r=0.7$) with 50.8% of the variations in profitability of banks in Kenya being explained by the model. The research emphasized that commercial banks need to invest in technological innovations if they want to be relevant and competitive in the industry.

Njagi (2016) studied the effect of product innovation capability on the profitability of private manufacturing firms in Nairobi County. Descriptive research design was used and primary data was collected using questionnaire. The study found a positive and significant correlation between product innovation and ROA. The findings also revealed that the correlation between inflation rate and ROA is negative and significant. Cost of production

was also found to be negatively and significantly associated with ROA. The study concluded that product innovation has positive effects on profitability. Hence, recommended that manufacturing companies should invest more on product innovation practices as it improves financial performance and also improve their competitive advantage. The study suggest that further study should be done considering all counties since this study only focused on companies in Nairobi Country hence further study on effects of product innovation on Profitability need to be done in the Country.

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Pradhan and Kumari (2017) did a critical review on how human resource flexibility relates with firms' effectiveness in manufacturing firms in India. This work employed cross sectional survey. Questionnaire was utilized in data collection from respondents. The work employed a random sampling method, 500 respondents which comprise of employees in upper echelon. Questionnaire was distributed personally and through mails. However, 350 questionnaires which represent 70% of total response rates were correctly filled and valid for the study. The linear structural equation modeling was used for data analysis. The result of the analysis revealed that skill flexibility and behaviour flexibility have a noteworthy positive relationship with organizational effectiveness in terms of operational performance and employee performance. They concluded that human resource flexibility system of an organization enables the firm to take instantaneous actions and to successfully satisfy new or urgent demand in the market.

METHODOLOGY

This study employs the cross-sectional survey method. A cross-sectional survey method was very suitable for this study because it provide a more insightful move towards comparison, considering that the research focus on more than one company. The population of this study consisted of the thirty-three (33) registered and functional oil and gas companies in South-South, Nigeria. These companies were registered with the Department of Petroleum Resources. The sample consist of 165 respondents. The researcher adopts both primary and secondary data sources to collect requisite data from the respondents. The validity of a research instrument is the degree to which a measuring instrument measures what it is designed to measure according to (Baridam, 2001). the

researcher use Cronbach alpha co-efficient method in measuring the reliability of the research instrument for the study which is a principal technique of testing reliability, especially among social science researchers (Hair *et' al*, 2010). This study adopts a descriptive and inferential statistics for data analysis. Mean scores was used to measure central tendencies and standard deviation for dispersion, as well as representations in bar and pie charts. The secondary data was analyzed utilizing the Spearman's Rank Order Correlation Coefficients (SROCC) to test the earlier stated hypothetical statements.

DATA ANALYSIS AND RESULTS

Test of Hypotheses

Table 1 Correlations for Product Innovation Capability and Organizational Productivity

			Product Innovation Capability	Output Quality	Output Quantity
Spearman's rho	Product Innovation Capability	Correlation Coefficient	1.000	.734**	.568**
		Sig. (2-tailed)	.	.000	.000
		N	148	148	148
	Output Quality	Correlation Coefficient	.734**	1.000	.922**
		Sig. (2-tailed)	.000	.	.000
		N	148	148	148
	Output Quantity	Correlation Coefficient	.568**	.922**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	148	148	148

Source: SPSS Version 23.0 Output

H₀₁: There is no significant relationship between Product Innovation Capability and Output Quantity of oil and gas companies in South-South, Nigeria.

Table 4.17 shows the result of correlation matrix obtained for between Product Innovation Capability and Output Quantity. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. From the result obtained in table 4.17 above, the correlation coefficient (rho) showed that there is a significant relationship between Product Innovation Capability and Output Quantity. The correlation coefficient of 0.734 confirms the extent and strong correlation between the variables. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between Product Innovation Capability and Output Quantity of oil and gas companies in South-South, Nigeria.

H₀₂: There is no significant relationship between Product Innovation Capability and Output Quality of oil and gas companies in South-South, Nigeria.

Table 4.17 shows the result of correlation matrix obtained for between Product Innovation Capability and Output Quality. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. From the result obtained in table 4.17 above, the correlation coefficient (rho) showed that there is a significant relationship between Product Innovation Capability and Output Quality. The correlation coefficient of 0.568 confirms the extent and strong correlation between the variables. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between Product Innovation Capability and Output Quality of oil and gas companies in South-South, Nigeria.

Table 2: Correlation for Organizational Innovation Capability and Organizational Productivity

			Market Innovation Capability	Output Quality	Output Quantity
Spearman's rho	Market Innovation Capability	Correlation Coefficient	1.000	.670**	.722**
		Sig. (2-tailed)	.	.	.000
		N	148	148	148
	Output Quality	Correlation Coefficient	.670**	1.000	.622**
		Sig. (2-tailed)	.	.	.000
		N	148	148	148
	Output Quantity	Correlation Coefficient	.722**	.922**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	148	148	148

Source: SPSS Version 23.0 Output

H₀₃: There is no significant relationship between Organizational Innovation Capability and Output Quantity of oil and gas companies in South-South, Nigeria.

Table 2 shows the result of correlation matrix obtained for between Organizational Innovation Capability and Output Quantity. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. From the result obtained in table 4.20 above, the correlation coefficient (rho) showed that there is a significant relationship between Organizational Innovation Capability and Output Quantity. The correlation coefficient of 0.670 confirms the extent and strong correlation between the variables. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld.

Thus, there is a significant relationship between Organizational Innovation Capability and Output Quantity of oil and gas companies in South-South, Nigeria.

Ho4: There is no significant relationship between Organizational Innovation Capability and Output Quality of oil and gas companies in South-South, Nigeria.

Table 4.20 shows the result of correlation matrix obtained for between Organizational Innovation Capability and Output Quality. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. From the result obtained in table 4.20 above, the correlation coefficient (rho) showed that there is a significant relationship between Market Innovation Capability and Output Quality. The correlation coefficient of 0.722 confirms the extent and strong correlation between the variables. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between Organizational Innovation Capability and Output Quality of oil and gas companies in South-South, Nigeria.

Discussion of the Findings

This study using descriptive and inferential statistical methods investigated the relationship between Innovation Capabilities and Organizational Productivity of oil and gas companies in South-South, Nigeria. The findings revealed a significant relationship between Innovation Capabilities and Organizational Productivity of oil and gas companies in South-South, Nigeria using the Spearman Rank Order Correlation tool and at a 95% confidence interval.

Product Innovation Capability and Organizational Productivity

The results from the analysis reveal that significant relationship between Product Innovation Capability influences Organizational Productivity of oil and gas companies in South-South, Nigeria. Culture is critical to business success, according to the results of the 2013 Culture and Change Management Survey. When more than 2,200 global businesspeople were surveyed to get their take on culture's role in business, it was observed that culture is widely seen as more important than companies' strategies or operating models. This view of culture's importance holds true around the world (Cox, 1991; Cox, 1994; Gilbert & Ivancevich, 2000).

Significant Relationship Organizational Innovation Capability and Organizational Productivity

The results from the analysis reveal significant relationship between Organizational Innovation Capability and Organizational Productivity of oil and gas companies in South-South, Nigeria. This finding confirms the views of Darwin (2014) that Organizational Innovation Capability has been found to be a vital and strategic capability that adds (if not creates) value to the firm especially in the face of competition. One way in which Organizational Innovation Capability, brings value to the firm and increases a firm's

overall performance is by facilitating creativity and innovativeness. Creativity refers to the generation of novel ideas which are both useful and appropriate while innovation is the intentional introduction within a work team of novel ideas, procedures and processes that are new (Rietzchel & Zacher, 2015).

Conclusion

The research in general concludes that enhancing the innovation capabilities of indigenous oil and gas companies in the South-South, Nigeria is essential to improving their performance. The study concludes that market innovation enhances the ventures into new markets and support better market shares.

Recommendations

- i. The management of indigenous oil and gas companies should expand integration of new technologies in product development and offering. This will enhance customer satisfaction and retention levels within the oil and gas industry.
- ii. The management of indigenous oil and gas companies should stipulate policies that provide and enhance platforms for process innovation so as to their improve performance. There is need also to invest in process innovation strategies that would optimize the HR practices around innovation, resource mobilization, revenue allocation and monitoring and evaluation to ensure efficiency in the innovation practices.

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