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ABSTRACT

This research study examined the relationship between corporate innovativeness and competitive advantage of oil and gas services companies in Bayelsa State. The study used a cross sectional research design. Primary data was collected using structured questionnaire. The population for the study was 290 top managers in oil and gas service companies operating in Brass, Bayelsa. The sample of the study was 165 obtained using Krejcie and Morgan sample size table (1970). Pearson Product Moment Correlation was used to test the hypotheses with the aid of Statistical Package for Social Sciences version 20.0. The tests were carried out at a 95% confidence interval and a 0.05 level of significance. Results showed that there was a significant relationship between process innovativeness and competitive advantage. The study thus recommends that oil and gas firms should see research and development as an essential component that can be used to overcome technological challenges, and therefore should see investment in this area as strategic input to gain competitive advantage.

Keywords: *Process Innovativeness, Competitive Advantage, Differentiation, Cost Advantage*

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INTRODUCTION

A firm is said to possess a competitive advantage if it can come up with the same benefits as rivals but at a lower cost (cost advantage), or come up with benefits that supersede those benefits of competing products (differentiation advantage). Thus, competitive advantage allows the organization to deliver superior value for its customers and superior profits for itself. Both cost and differentiation advantages are referred to as positional advantages since they tell the firm's position in the industry as a leader in either cost or differentiation (Porter, 2008). In today's competitive business environment, organizations must map out their plans on how to sustain their business performance, their competitive advantage and increase their probability. Thompson & Strickland (2007) argued that the main objective of any strategy in an organization is to improve its financial performance, strengthen its competitive position and to outdo its rivals. To obtain effective firm performance within the scope of sustainable competitive advantage, decisions on shaping firms' competitive strategies will be one of the main issues for organizations. This is because the formulation and implementation of competitive business strategies that will improve performance are one of the competent methods to achieve firm's sustainable competitive advantage, therefore the effect of competitive strategies on firm performance is a major issue to policy makers and has been playing important role to refine firm performance for a long time (Porter, 1980).

Competitive strategies are the tactics that an organization has and takes to appeal buyers, stand competitive forces and advance its market standing (Thompson & Strickland, 2010). Lester (2009) contended that competitive strategies assist an organization to describe its business at present and tomorrow, and determine the industries or marketplaces to participate in. The framework of the competitive strategies and performance of an organization can be linked to According to Johnson and Scholes (2008), central capabilities of a firm are more robust and hard to reproduce as they are related to the way linkages in the value chain of a firm are managed. Today's dynamic competitive business environment requires successful businesses to continuously re-invent in other to gain or retain superior Performance and competitive advantage (Hilman & Mohamad, 2011). One way organizations use to secure competitive advantage is via process innovation.

In today's competitive market, a company will not succeed unless they stand out in other ways than pure benefits with its products. This can be reached by in some way altering the process currently in place. One way, is by introducing process innovation. Advantages related to the adoption of process innovation has been found in literature, for example by increase competitiveness, increase productivity, and increase plant visibility. However, process innovation evokes uncertainty. The competitive market of industries in the manufacturing business today fosters product innovation; new products that makes companies successful in their market. However, after a certain period, competitors can produce similar products at the same or lower cost. This forces manufacturing companies to seek additional competitive advantages.

Furthermore, it focuses on new process technology that can provide protection from imitators (Pisano, 1997). When companies investigate options of new and unfamiliar technologies for their manufacturing processes, which will lead to a competitive advantage, accuracy when comparing these technologies becomes challenging due to limitations in their process specification (Milewski, *et al.,* 2015). In addition, the implementation of new technologies depends on the fit between the new processes and technologies and their ability to harmonise with the current capability of the system (Damanpour & Aravind, 2012). Successful implementation of new

technologies and processes, often referred to as innovations, nurtures employee knowledge necessary for manufacturing companies to retain customers.

To achieve competitiveness, process innovation is prioritised for a manufacturing plant. Process innovation has been defined as the process of going through technological and organisational change (Reichstein & Salter, 2006), and involves developing a firm's manufacturing processes (Frishammar, Lichtenthaler, & Richtnér, 2013). Process innovation requires both organisational and technological changes, and is an important source of increased productivity in a firm. This process can also support firms in gaining a competitive advantage, and facilitating the introduction of equipment, new management practices, and changes in the production process (Reichstein & Salter, 2006). The process innovation capability in a firm is understood as the ability to acquire, assimilate, transform, and exploit technically related resources, procedures, and knowledge for process innovation purposes (Frishammar, *et al.,* 2012). In spite of the benefits associated to the implementation of process innovations in a production system, research has been quick to point out the challenges associated to the presence of uncertainties that affect the characterisation of a production system and its performance (Colarelli O'Connor & Rice, 2013; Parida, et al., 2016). This study examined the relationship between process innovativeness and competitive advantage in oil and gas firms in Bayelsa State.

This study was guided by the following research questions:

- What is the relationship between process innovativeness and competitive advantage in oil and gas firms in Bayelsa State?
- What is the relationship between process innovativeness and competitive advantage in oil and gas firms in Bayelsa State?

LITERATURE REVIEW

Resource -Based View Theory

This theory tries to explain the internal sources of a firm's sustained competitive advantage (Kraaijenbrink, Spender and Groen, 2010). The resource-based strategy paradigm emphasizes distinctive, firm-specific, valuable, imperfectly inimitable and rare resources and capabilities confer competitive advantage on the firm that possesses them (Wernerfelt, 1984). Its innermost proposition is that if a firm is to attain a state of sustainable competitive advantage it must obtain and control valuable, rare, inimitable, and non-substitutable (VRIN) resource and capabilities, plus have the firms in the place that can absorb and apply them. Resources relate to a firms intangible and tangible assets whereas capabilities are the way of accomplishing firm activities, depending on the availability of resources (Wernerfelt, 1984; Barney, 1991).

Simply stated, in order to produce a competitive advantage that is sustainable, firms should base their success in their distinctive competencies which are grounded in their resources and routines. For Menguc and Auh (2006), innovativeness is a rare, valuable and hard-to-copy firm level competence. It is the key driver of innovation in a firm (Damanpour, 1991; Dobni, 2006), and represents a firm's ability to continually develop innovations (Damanpour, 1991; Dobni, 2006; Paleo and Wijnberg, 2008). Fundamentally, innovativeness increases a firm's capacity to innovate (Damanpour, 1991) by encouraging innovative behaviours through strategic practices (Siguaw, Simpson & Enz, 2006). The essence of the argument is that innovativeness is constructed by the purposeful orchestration and strategic application of practices that accumulate bundle and leverage resources (Wernerfelt, 1984; Moingeon, Ramanantsoa, Metais, 1998;). In order to create innovativeness a firm must implement strategic practices that enhance their innovativeness

competence (that is, strategic practices are the *"how to*" for creating innovativeness).

Process Innovativeness

A process innovation is the implementation of a new or significantly improved production or delivery method, including significant changes in techniques, equipment and/or software OECD (OECD, 2005). Process innovation is intended to decrease unit costs of production, to increase quality and to improve delivery of products and services (Oke, Burke & Myers, 2007). According to Hippel (2005) process innovation achieves quality function deployment and business processing reengineering. This type of innovation is sometimes considered complex and hard to comprehend but recent studies and exploration have made it easier to understand. When mastery is grown over time on productivity gains, there is a high likelihood that products can be developed that offer the same performance at a lower cost. Such reduction in cost may be passed on to the customer which eventually will increase sales volumes and influence performance positively (Sinkula & Baker, 2005). In the modern world of hyper competition, firms do not only focus on product innovation (Oke *et al.,* 2007). They also explore process innovation to integrate improvements, service delivery as well as reduce cost to consumers (Danneels, 2000).

Process innovation does not take place in a casual and offhand manner, but instead, includes the pressure of day to day business, vision creation, understanding the existing process and designing a new process. Equally, process innovation is a new approach of improving the organization's performance through incremental improvements rather than radical changes (Hippel, 2005). In most cases, the process innovation perspective embraces the top-down approach as well as the employee-based models. Top-down models have always been noted to be the mainstay of breakthrough innovation. Similarly, employee participation secures the employee commitment thereby, improving their performance (Coad & Rao, 2008). At the same time, it is strategically important to point out that process innovation is an enabler of product innovation, that is, for secondary product innovation to be achieved, process innovation plays a very important role.

Competitive Advantage

The ability or a firm to sustain profits which exceed the average for its industry is referred to as competitive advantage over its rivals. Attaining competitive advantage is indeed the primary goal of every business strategy. Porter (1998) came up with three basic types of competitive advantage: cost advantage, differentiation advantage and focus. There is cost advantage if the organization has ability to deliver equal benefits as ii vats but at a lower cost, and there is differentiation advantage if an organization delivers benefits that surpass those of competing products. The creation of superior value to customers and superior profits to the firm is made possible by competitive advantage.

Differentiation and cost advantages arc called positional since they show the firm's position in the industry as a leader in either differentiation or cost (Porter, 1998). There is also the resource-based view which stresses the firm utilizing resources and competences to bring about competitive advantage that finally brings about superior value creation. Judging from this view the company must have the resources and competences that are superior to that of its competition (Johnson, Scholes & Whittington, 2008). They are called "distinctive capabilities". The strategic capability of an organization has to do with the resources and competences required for it to survive and prosper. These capabilities usher in innovation, efficiency quality, and customer responsiveness, all of which bring about differentiation or cost advantage (Kostic, 2003).

Barney (1991) is of the view that competitive advantage created from resources that are scarce

arid valuable, is sustainable especially when such resources are hard to deliver, and difficult to duplicate or substitute. Competitive advantage occurs because of organizational acquisition or development of an attribute or combination of attributes which permits it to outperform her rivals. The attributes might be any of the following; access to natural resources, such as high grade ores or cheap power, or access to highly trained and skilled individuals (Wang, Lin & Chu, 2011). Johnson et al (2008) believe that for an organization to have capabilities for achieving and sustaining competitive advantage, the following conditions would apply: a) The value of strategic capabilities, b) rarity of strategic capabilities, c) inimitable strategic capabilities, d) non-substitutability of strategic capabilities, and e) dynamic capabilities.

Measures of Competitive Advantage

Differentiation Advantage

Differentiation strategies are marketing techniques used by a firm to establish strong identity in a specific market; also called segmentation strategy. Using this strategy, a firm will introduce different varieties of the same basic product under the same name into a particular product category and thus cover the range of products available in that category. Differentiation strategy can also be defined as positioning a brand in such a way as to differentiate it from the competition and establish an image that is unique, (Davidow &Uttal, 1989). Differentiation strategy aims to build up competitive advantage by offering unique products which are characterized by valuable features, such as quality, innovation, and customer service. Differentiation can be based on the product itself, the delivery system, and a broad range of other factors. With these differentiation features, firms provide additional values to customers which will reward them with a premium price.

Differentiation strategy is an approach under which a firm aims to develop and market unique products for different customer segments. Usually employed where a firm has clear competitive advantages, and can sustain an expensive advertising campaign. It is one of three generic marketing strategies that can be adopted by any firm. To maintain this strategy the firm should have: strong research and development skills, strong product engineering skills, strong creativity skills, good cooperation with distribution channels, strong marketing skills, and incentives based largely on subjective measures, be able to communicate the importance of the differentiating product characteristics, stress continuous improvement and innovation and attract highly skilled, creative people (Baum & Oliver, 1992).

Cost Advantage

This is Porter's generic strategies known as cost leadership (Malburg, 2000). This strategy focuses on gaining competitive advantage by having the lowest cost in the industry (Cross, 1999). In order to achieve a low-cost advantage, an organization must have a low-cost leadership strategy, low-cost manufacturing, and a workforce committed to the low-cost strategy (Malburg, 2000). The organization must be willing to discontinue any activities in which they do not have a cost advantage and should consider outsourcing activities to other organizations with a cost advantage (Malburg, 2000). For an effective cost leadership strategy, a firm must have a large market share (Hyatt, 2001). There are many areas to achieve cost leadership such as mass production, mass distribution, economies of scale, technology, product design, input cost, capacity utilization of resources, and access to raw materials (Malburg, 2000).

Lower costs and cost advantages result from process innovations, learning curve benefits, and economics of scale, product designs reducing manufacturing time and costs, and reengineering activities. A low-cost or cost leadership strategy is effectively implemented when the business designs, produces, and markets a comparable product more efficiently than its competitors. The firm may have access to raw materials or superior proprietary technology which

helps to lower costs. Cost leadership strategy seeks to achieve above-average returns over competitors through low prices by driving all components of activities towards reducing costs. To attain such a relative cost advantage, firms will put considerable effort in controlling and production costs, increasing their capacity utilization, controlling materials supply or product distribution, and minimizing other costs, including R&D and advertising.

Relationship Process Innovativeness and Competitive Advantage

Several studies discussed the relationship between process innovation and competitive advantage. Baker and Sinkula (2002); Kim and Mauborgne (2005); Oke *et al.* (2007) found a positive relationship between innovation and firm performance. Baker and Sinkula (2002) found that innovation helps companies deal with the turbulence of the external environment and is therefore one of the key drivers of long term success in business, particularly in dynamic markets. However other studies challenge this view and give conditions under which innovation is successful. According to Danneels (2000) big organizations are more likely to have experience with innovation projects leading to organizational innovation capabilities. Smaller and especially new firms often lack this organizational capability and thus run the risk of engaging in managerial undertakings without experience.

Trevor, Gerhart, and Boudreau (1997) which established that better process production of product will lead to better employee capabilities of organizations. Hytter (2007) reached the conclusion that there is correlation between organizational innovation and employee performance. From the values of the correlation above, it shows clearly how the proper process innovation which rotate around the use of new technological device, less time consuming technique in process the item from raw point to finish product lead to effectiveness and efficiency which is boost to the organizational performance.

Similarly, the present business milieu has become greatly influenced by globalization and as such is consistently breeding hyper-competition among key players in various industries both locally and internationally. These circumstances have forced organizations to adopt various strategies which they intend to use in redefining their approach towards dealing with the needs of their customers. However, organizations in their bid to respond to the challenges of environment and influence in business should focus on customer needs, wants and retention ability by being prompt in their service and product delivery.

From the foregoing point of view, we hereby hypothesized thus:

Ho_1: There is no significant relationship between process innovativeness and differentiation advantage of Oil and Gas Service Companies in Bayelsa State.

Ho_2: There is no significant relationship between process innovativeness and cost advantage of Oil and Gas Service Companies in Bayelsa State.

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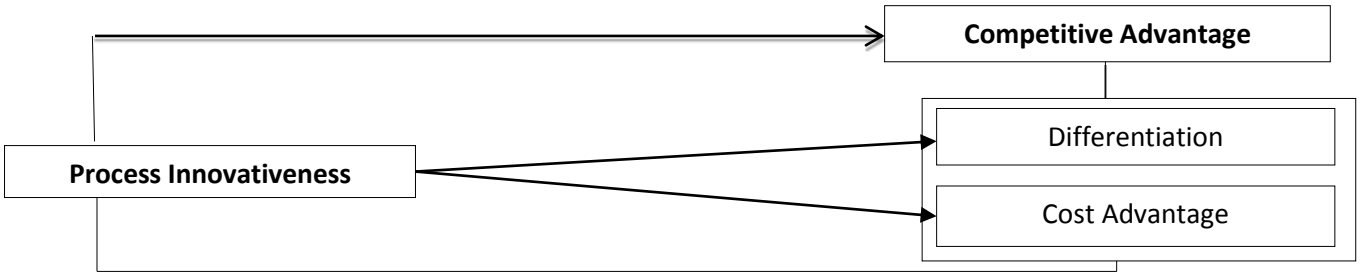

Figure 1: Operational Framework for the hypothesized relationship between process innovativeness and competitive advantage
Source: Author's Desk Research, 2019

METHODOLOGY

The study used a cross sectional research design. Primary data was collected using structured questionnaire. The population for the study was 290 top managers in oil and gas service companies operating in Brass, Bayelsa. The sample of the study was 165 obtained using Krejcie and Morgan sample size table (1970). Pearson Product Moment Correlation was used to test the hypotheses with the aid of Statistical Package for Social Sciences version 20.0. The tests were carried out at a 95% confidence interval and a 0.05 level of significance. The sample of the study was 165 obtained using Krejcie & Morgan table (1970). Pearson product moment correlation statistical tool with the aid of SPSS version 20 was used to test the hypotheses. The tests were carried out at a 95% confidence interval and a 0.05 level of significance.

DATA ANALYSIS AND RESULTS

Bivariate Analysis

Secondary data analysis was carried out using the Spearman's rank correlation at a 95% confidence interval. Specifically, the tests cover a Ho1 hypothesis that was bivariate and declared in the null form. We have based on the statistic of Spearman's rank correlation to carry out the analysis. The level of significance 0.05 is adopted as a criterion for the probability of accepting the null hypothesis in ($p > 0.05$) or rejecting the null hypothesis in ($p < 0.05$).

H_{O1}: There is no significant relationship between process innovativeness and Differentiation in oil and gas firms in Bayelsa State.

Table 1: Result of Pearson product moment correlation coefficient of Process innovativeness and differentiation advantage

		Process Innovativeness	Differentiation
Process Innovativeness	Pearson Correlation	1	.739**
	Sig. (2-tailed)		.000
	N	128	128
Differentiation	Pearson Correlation	.739**	1
	Sig. (2-tailed)	.000	
	N	164	164

**. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output

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Process innovativeness is correlated with differentiation advantage giving a positive coefficient of 0.739, and a p-value of 0.000, which shows that there is a strong positive linear relationship between the two variables. Direction is same (that is, as an increase is recorded for process innovativeness, a corresponding increase is recorded for differentiation advantage). In addition to this strong and positive relationship, since the p-value (= 0.000) is less than the level of significance, α (= 0.05), we therefore reject the null hypothesis and conclude that there is significant relationship between the two variables: process innovativeness and differentiation advantage in oil and gas firms in Bayelsa State.

H_{O2}: There is no significant relationship between process innovativeness and cost advantage in oil and gas firms in Bayelsa State.

Table 2: Result of Pearson product moment correlation coefficient of process innovativeness and cost advantage

		Process Innovativeness	Cost Advantage
Process Innovativeness	Pearson Correlation	1	.689**
	Sig. (2-tailed)		.000
	N	128	128
Cost Advantage	Pearson Correlation	.689**	1
	Sig. (2-tailed)	.000	
	N	164	164

**. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS output

Process innovativeness is correlated with cost advantage giving a positive coefficient of 0.689, and a p-value of 0.000, which shows that there is a strong positive linear relationship between the two variables. Direction is same (that is, as an increase is recorded for process innovativeness, a near corresponding increase is recorded for cost advantage also). In addition to this strong and positive relationship, since the p-value (= 0.000) is less than the level of significance, α (= 0.05), we therefore reject the null hypothesis and conclude that there is significant relationship between the two variables: process innovativeness and cost advantage in oil and gas firms in Bayelsa State.

DISCUSSION OF FINDINGS

The findings revealed that there is a significant relationship between process innovativeness and competitive advantage in oil and gas servicing companies in Bayelsa State. This finding reinforces views by Trevor, Gerhart, and Boudreau, (1997) which established that better process production of product will lead to better employee capabilities of organizations. Hytter (2007) reached the conclusion that there is correlation between organizational innovation and employee performance. From the values of the correlation above, it shows clearly how the proper process innovation which rotate around the use of new technological device, less time consuming technique in process the item from raw point to finish product lead to effectiveness and efficiency which is boost to the organizational performance.

However, conversely in their study of reward structures within the British construction industry (Drunker and White, 1996) showed that due to the project nature of that industry and the clear distinction in its work force which makes organization to push for better performance to showcase their product through a less stressful and painstaking process. Managing of the process from raw material

gathering and completion is in the hand of the Project Manager (Chartered Institute of Builder)

Similarity, the present business milieu has become greatly influenced by globalization and as such is consistently breeding hyper-competition among key players in various industries both locally and internationally. These circumstances have forced organizations to adopt various strategies which they intend to use in redefining their approach towards dealing with the needs of their customers. Most organizations today more than ever have adopted the concept of empowering their teeming customers as a panacea towards attaining desired competitive advantage (Ekis & Arasli, 2007). However, organizations in their bid to respond to the challenges of environment and influence in business should focus on customer needs, wants and retention ability by being prompt in their service and product delivery.

CONCLUSION AND RECOMMENDATION

Based on the results obtained from this study, the study thus concludes that process innovativeness significantly influences competitive advantage of oil and gas servicing companies in Bayelsa State. The study thus recommends that oil and gas firms should see research and development as an essential component that can be used to overcome technological challenges, and therefore should see investment in this area as strategic input to gain competitive advantage.

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