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SUPPLIER INTEGRATION AND COMPETITIVENESS OF OIL AND GAS EXPLORATION AND PRODUCTION COMPANIES IN THE NIGER DELTA REGION OF NIGERIA

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ABSTRACT: This study investigated the relationship between Supplier Integration and Competitiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria. This study employed the survey research design, and both primary and secondary data were collection and utilized. The population of the study was forty-five (45) functional oil and gas exploration and production companies operating in the Niger Delta region as contained in the Directorate of Petroleum Resources (DPR) annual report, 2017. *Three (3) structured copies of questionnaire were randomly distributed per company to three* heads departments/managers which comprised; procurement, logistics, warehouse/store, marketing/commercial, and Production and exploration managers, out of which, a total of 112 copies of the questionnaire were retrieved and used for analysis. Thereafter, data were collated and analyzed using SPSS version 21.0 and the Spearman Rank correlation statistics was used to test the relationship between the predictor and criterion variable. The findings revealed that supplier integration has a positive and significant relationship with competitiveness in the oil and gas exploration and production companies in the Niger Delta. We therefore conclude that supplier integration affects competitiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria and the authors therefore recommended that the management of oil and gas exploration and production companies in the Niger Delta region should improve on their Supplier Integration strategies in other to continuously improve their supply chain performance, remain consistently competitive and ultimately outwit their competitors.

KEYWORDS: Supplier Integration, Competitiveness, Operational Effectiveness, Service Quality, Responsiveness.

INTRODUCTION

Supply chain Integration has emerged as a major field of interest over the years that involve the strategic alignment of functions and processes within an organization. However, there have been major debates regarding the true design of the kinds of integration that would lead to performance of supply chains. Supply chain integration (SCI) is characterized by a situation where members along the supply chain collaborate and work together for better performance and profitability while meeting the demands of the customer. Firms integrating

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their information and material flow would lead to optimal management of the supply chain (Suresh, 2009). It involves the alignment of business functions internally within a firm and with its supply chain partners so as to reduce costs, increase customer value and overall performance across the supply chain for all partners (Slack, Chambers, and Johnston, 2009). Supplier integration refers to the processes and steps involved insharing information and joint planning with key suppliers to achieve stated objectives and goals of the focal firm with benefits of cost reduction.

The world today is in the era of supply chain competition, and this has made companies not to act in isolation as an independent whole any longer, but as a supply chain with links to create desired value delivery systems that are essentially responsive to fact-altering market systems, more reliably and consistently, (Christopher, 2005; Pandey & Garg, 2009). The core capabilities of an organization lie in its aptitude to develop and sustain its supply chain in a bid to attain maximum advantage in the market that is currently faced with altering competitive forces. Suffice to say the fact that, new managerial practices and distinctive business molds evolve and diminishes immediately as managers make efforts to help their companies succeed in this less-kind, gentle and less predictable world of ours, (Fawcett, Ellram & Oglden, 2007).

Because of strongcompetition, supply chain operations now adopt globally acceptable and top-of-the range business processes. Supply chain process integration entails numerous elements. It requires sharing of information among supply chain partners, goal congruence across the supply chain, synchronization of decision making process, alignment of result and sharing of assets. Process integration is an essential factor in supply chain optimization, which is accomplished by collaboration between cross-functional teams within an organization, its customers, as well as its external suppliers (Lysons & Farrington, 2006).

Supplier integration is a practice that is seen to be common amongst companies and their suppliers that promotes the efficient transfer of knowledge and assets needed in generating shared benefits (Denese & Romano 2011,Danese 2013, Leushaer*et al.*, 2013) supplier integration entail a closer collaboration and coordination with important suppliers in bid to attain shared gains such as inventory reduction, and supplier lead- time (Thun 2010). Supplier integration involves a long- term relationship with suppliers; this allows partners develop strategies that boost the process of mutual problem identification and real-time process solutions (Flynn *et al* 2010).

Boon-itt and Wong (2011) advocates that joint collaboration in production, service development, technological transfer, shared problem solving abilities as well as designing supports are essential attributes of cooperative behaviours. Hence, it has become very imperative for focal companies in the value chain to communicate effectively with its major suppliers and consistently upgrade information gathering with the intended integration process.

Although the benefits of SCI are greatly covered in literature, the key design elements that will lead to improved performance have not been fully developed. Also there have been inconsistencies in the results as to whether integration really leads to improved supply chain performance.

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Studies have also investigated the importance of supply chain integration on performance (Droge*et al.* 2004; Frohlich and Westbrook 2001; Zailani and Rajagopal 2005). Someauthors have also questioned the validity of integration (Cousins and Menguc, 2006; Danese and Romano, 2011; Gominez*et al.*, 2012) and suggest that external supplier integration does not improve a firm's operational performance. Supply chain integration increases performance only if supply complexity is high.

Basnet (2013) posited that their study conducted in China on intensive integration was not necessarily the best solution in all cases; rather limited integration might be beneficial in some areas depending on different national and industry contexts. Donaldson (2011) analyzed the impact of customer integration on efficiency and the moderating role of supplier integration. In a survey conducted in Thailand, Wong *et al.*, (2011) argue that under environmental uncertainty the relationships between supplier/customer integration and delivery and flexibility performance and those between internal integration and product quality and production costs are high. Against this backdrop, this study is designed to empirically evaluate the relationship between Supplier Integration and Competitiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

LITERATURE REVIEW

The Nature of Supplier Integration

Supplier Integration

Supplier integration is a practice that is seen to be common amongst companies and their suppliers that promotes the efficient transfer of knowledge and assets needed in generating shared benefits (Denese& Romano 2011, Drodge, Vickery & Jacobs., 2012, Danese 2013, Leushaer *et al.*, 2013). Supplier integration entails a closer collaboration and coordination with important suppliers in a bid to attain shared gains such as inventory reduction, and supplier lead- time (Thun 2010). Supplier integration involves a long- term relationship with suppliers; this allows partners develop strategies that boost the process of mutual problem identification and real-time process solutions (Flynn *et al* 2010). Peterson, Handfield & Ragatz. (2008), contend that in the current uncertain and complex business setting that company needs greater level of accuracy on real-time information, in a bid to take advantage of supplier networks and boosts its aptitude to enhance customer satisfaction.

Notably, focal companies in the value chain are expected to communicate effectively with its major suppliers and consistently upgrade information gathering with the intended integration process. This has become very important because the focal company may more or less have outdated information that may not expose new or ongoing challenges in the real business milieu (Das, Narasimhan and Talluri.2006, Cousins and Lawson. 2009, Narasimhan, Swink, and Viswanathan. 2010). As stated previously, supplier's integration evolves through information sharing and collaborating amongst companies and their suppliers (Ragatz, Hanfield and Peterson. 2002).

The occurrence of this creates the opportunities to stimulates regular deliveries in small sizes, adopt multiple sources of supply, assess alternate supply in relation to excellent delivery instead of costs, and helps in developing long-run interaction with suppliers (Handfield*et al*

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2009). Most often, suppliers relate with the focal company as either a seller providing equipment's parts / components or as a strategic partner sharing skills and capabilities (Bernon, Bastle and Cullen., 2013).

Scholars have posited that supplier integration has the ability to develop communication benefits from suppliers' competencies and attain mutual goals. Reflection in line with this view, Droge*et al.* (2004), stated that by the adoption of critical technological capacities and competence of supplier, the focal company could eliminate any change in design, prevent delay and give itself a good opportunity to carry out parallel processing. These scholars further emphasized that qualified and competitive supplier are more useful to focal companies since they tend to have technical abilities, creative aptitude and flexible business network which they have developed through supplier enhancement program.

Understanding Competitiveness

The expression "competitiveness" has been effusively discussed in the theoretical literature by different researchers. Competitiveness is viewed as the comparative measure between organizations within the same market or its external environment that is closely linked to the availability of comparative advantage (Lewis, 2000, Depperu and Cerrato, 2003). This goes a long way in saying that competitiveness and competitive advantage are both a multidimensional concept that could be defined both at the national, industry as well as organizational level (Anca, 2012, Yercan & Isikli 2006). More so, Competitiveness entails a combination of unique assets and abilities that an organization possess that enables them to compete with rivals in the same industry successfully (O'sullivan & Abela, 2007; Akpotu, Tamunosiki-Amadi & Asiegbu 2013).

This unique resources and abilities enable an organization to sustain and enhance its position in the market. Organizational competitiveness leads to the creation of new approaches towards accomplishment of objectives through application of innovative practices. Competitiveness differentiates how companies that are focusing on broad industry segments and the one targeting on narrow segments. Porter (1995) advanced that attainment of competitiveness is the ability of a company to make alternative choice about the scope of its competitive strength within its industry. Therefore, competitiveness evolves due to the development of distinctive capabilities which enables organization to create products that are perceived by its clients in the target market to be superior to those of its close rivals.

Competitiveness has been viewed as the aptitude of an organization to become better in its operations over similar companies with regards to sales, profitability, quality and efficiency (Lall, 2001). On the other hand, De-Carohol (2003), advanced that for companies to be able to attain this height of productivity, it must accomplish a greater extent of excellence or specialization in some arrears in comparison with its close rivals. There are many measures of competitiveness including profitability, market share, and customer satisfaction, amongst others. However, the measures of competitiveness used by previous researchers (Omai, Ngugi, &Kiarie, 2018;Gefen, 2002;Abdullah and AL-Shourah 2015), were adapted and used in this study. To proxy competitiveness we used: Operational effectiveness, Service quality and Responsiveness.

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Operational Effectiveness

Operational effectiveness is the aptitude to meet up with the desired operational objectives that improves the capacity to become accustomed to pulsating business environment to promote its survival. According to Richard, Devinney, Yip and Johnson (2009), it is the mixture of organizational accomplishment and a multiplicity of core consequences that is customarily associated with extra efficient operations and other external measures that are linked to deliberations that are larger than those connected with economic assessment. Operational effectiveness is greater to the capacity to make sales or attainment of profitability; somewhat it incorporates the general effectiveness in the short-run as well as concern for the environment, corporate setting, aptitude management guidance, and novelty, stratagem, obligation and interaction. Weiss and Gershon (2002) posited that operational effectiveness involves the success of all the organizational procedures concerned with creating and delivering invaluable products or services to the right time, at the exact place and at affordable prices that assists an organization to satiate its numerous customers and gain competitive advantage. Similarly, Mihaicz (2012) views operational effectiveness, as the continuous survival, expansion and achievement of competitive enhancement by an organization. Lee and Choi (2003), suggests that it is the sensitivity of the scope to which the whole success attained in the market, gains, progression rate, and inventiveness of an organization in relationship with its major competitors.

Service Quality

Over the years, the concept of service quality has gained a lot of attention in the academic research. Providing quality service is a well-thought-out line of attack critical for organizations towards execution of set goals in today's aggressive business environment (Zeithaml, Berry and Parasuraman.,(1996). Conversely, Asubanteng, McCleary and Swan. (1996), suggests that service quality is the variance between customer's expectation for service outcome preceding to the service experience and their sensitivities of service provided to them.

Grönroos (1988), opine that service quality is generally described as an inconsistency between the service that is undertaken by the organization and the service outcomes anticipated by workforce. Theoretically, service quality is viewed as a universal conclusion or approach regarding the whole quality or sovereignty of the service. Devoid of any doubt, service quality is an essential component in any business interconnected activity, especially supply chain operations. This is likened to be so, because a client's assessment of service quality and the ensuing level of contentment are outward to touch the bottommost line procedures of business accomplishment (lacobucci Grayson and Ostrom. 1994). Customer anticipations are appreciations about a service that go through as principles against which service performance is adjudged (Zeithaml, Berry and Parasuraman., 1993). This suggests that the customer most often have it in mind that a service supplier should carry out definite clear-cut service, relatively other than what might be presented (Parasuramet al., 1988).

Alternatively, service quality can also be described as the alteration between customer's vision for the service happenstance and the reflection of the service expected. According to Gronroos (1982), apparent quality of a certain service is the outcome of an assessment process since buyers often make contrast between the services they anticipate with discernments of the services that they obtained.

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Scholars have acknowledged that SERVQUAL, is the most comprehensively engaged mechanism for measuring service quality (Parasuraman, Zeithaml and Berry., 1994; Sureshchandar, Rajendran and Kamalanabhan., 2001; Chiu, 2002). Nevertheless, its use continues to intensify in diverse service sceneries, such as marketing, banking, health, education, hospitality industry, travel and tourism sectors (Jabnoun and Al -Tamimi, 2003; SalehArasli, Ekiz and Katircioglu., 2008; Tan and Ketels, 2014)

Responsiveness

Effective and efficient marketing operation is the foundation of heterogeneity of various organizational outcomes in this highly competitive and stormy business environment. It has been extensively accepted by scholars in the marketing management literature that brand management, advertising, evolution of new strategy, efforts in the development of novel products and services as well as improved customer relationship management are some of the valuation marketing tools that effectively transforms into attainment of desired competitive advantages and enhanced marketing performance (Morgan, Vorhies, Mason., 2009; & Morgan, 2012).

Organizational responsiveness is a developing idea in supply chain management that spans throughout multiple factors included in marketing activities, therefore, in the situation of changing environment, it leads the organization to formulate and make use of business opportunities, withstand brand vitality, become accustomed and perform expeditiously in meeting with the impulsive alterations in customers' demands (Helt *et al.*, 2005).

According to Kohli *et al.* (1993), responsiveness is the actions an organization undertakes while reacting to the information gathered and shared by the organization regarding developments in its market (environment). This shows that gathering of information on the requirements of the customers, the current market outlook and the actions of rivals is what shapes an organizational prompt response to the market.

Grewal and Tnasuhaj (2009), defined responsiveness as constructed organizational flexibility that creates the dynamic capability which helps an organization to respond proactively to emerging opportunities in its market, and persistently adapt to the erratic nature of the environment. On the other hand, White *et al.* (2003), viewed responsiveness as the willingness of an organization to put into usefulness, more or less of its resources with regards to the outcome of its assessment and interpretation of the activities in the market. It would be imperative to conceptualizes corporate responsiveness as an organization's penchant to act based on market information obtained (Hult *et al.*, 2005). However, a conceptual framework of the relationship between Supplier Integration and Competitiveness is depicted in the next page in figure 1 as follows:



Conceptual Framework/Study Variables

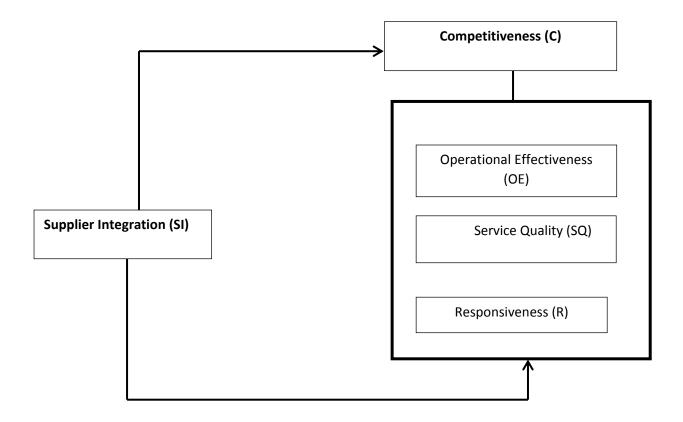


Fig.1: The conceptual framework of the relationship between Supplier Integration and Competitiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

Source: Authors' conceptualization from the review of related literature, 2020.

METHODOLOGY

The research approach adopted in this study is the non- experimental research type and it was designed based on the cross-sectional survey method which offers a wide coverage and permits generalizability of research findings. The population of this study comprises forty-five (45) oil and gas exploration and production companies operating in the Niger Delta region of Nigeria. (Directorate of Petroleum Resources (DPR) latest annual report for 2020). However, taking into cognizance that the study population was not large but rather manageable, the researchers were involved in a census study by adopting the entire forty-five (45) Oil and Gas firms operating in the Niger Delta region of Nigeria.

The validity of the scales used in this study was assessed for content, construct and face validity. The content validity was ensured based on review of similar constructs from previous studies. The questionnaire used by Tushman and Anderson (2006), Van, & McKenzie (2011) and especially Ebrahimi, (2015), concerning supply chain integration on

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organization structure and operational performance in oil and gas supply chains was adapted, modified and refined to suit our study. Similarly, the researcher used the Cronbach's Alpha analysis to ascertain the reliability and internal consistency of the measurement instrument while the Spearman Rank Correlation was used in testing the relationship between Supplier Integration and Competitiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria with the aid of the Statistical Package for Social Sciences (SPSS) version 22.0, Table 1, shows the instrument reliability rate for the constructs of the study.

Table 1. Reliability Coefficients of supplier Integration and the attributes of Competitiveness

S/No	Dimensions/Measures of the study variable	Number of items	Number of cases	Cronbach's Alpha
1	Supplier Integration	5	112	0.777
2	Operational effectiveness	5	112	0.702
3	Service Quality	5	112	0.743
4	Responsiveness	5	112	0.758

Source: SPSS output of data analysis on supplier integration and Competitiveness, 2019.

Table 1, showed different Cronbach's Alpha value for the 4 constructs of the scaled questionnaire which were all considered sufficiently adequate for the study. Over all, this indicated that there was internal consistency of the variables scaled and that variables construct exhibited strong internal reliability. Notably, the results therefore confirmed that the instrument we used for this study had satisfactory construct reliability.

Test of Hypotheses, Results and Discussions of Findings.

Univarate Data Analyses

Univarate analysis is basically the process of describing individual variables in a study. According to Sullivan (2001), univariate statistics are used to describe the distribution of a single variable through the use of simple frequency tables. According to Saunders *et al* (2003), commencing initial analysis is best done by looking at individual variables and their respective components. Earlier in this study, we clearly delineated our study variables as – supplier integration - predictor variable; and competitiveness as the criterion variable.

Table 2. Descriptive Statistics for supplier integration

					Std.
	N	Minimum	Maximum	Mean	Deviation
Supplier Integration	112	1.80	5.00	4.1000	.83223
Valid N (listwise)	112				

Source: SPSS output of data analysis on supplier integration and Competitiveness, 2019.



Table 2, above illustrates the descriptive statistics for supplier integration. The mean score of 4.1000 depicts that the variable is highly predominant and practiced in the firms that constituted the study population.

Table 3.Descriptive Statistics for the attributes of competitiveness

•	N	Minimum	Maximum	Mean	Std. Deviation
Operational	112	1.80	5.00	4.0893	.75401
Effectiveness	112	1.00	3.00	T.0073	./3+01
Service Quality	112	1.50	4.75	3.9018	.91862
Responsiveness	112	1.80	5.00	3.9446	.77586
Valid N (listwise)	112				

Source: SPSS output of data analysis on supplier integration and Competitiveness, 2019.

Table 3, above illustrates the descriptive statistics for competitiveness which are operational effectiveness, service quality and responsiveness with mean scores of 4.0893, 3.9018 and 3.9446 respectively. The high mean value suggests that the variables are predominantly practiced in the firms that constituted our study population.

Bivariate Analysis

In a bivariate analysis, two variables that are associated or correlated is been evaluated to ascertain the magnitude of relationship that exist between them. This section depicts the test of hypotheses and the Spearman Rank Order Correlation is considered appropriate and was used to test the hypothesized relationships in our study. The study hypotheses and analysis are presented as follows:

H₀₁: There is no significant relationship between supplier integration and operational effectiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

 \mathbf{H}_{02} : There is no significant relationship between supplier integration and service quality of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

 H_{03} : There is no significant relationship between supplier integration and responsiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

Table 4. Correlations for supplier integration and measures of competitiveness

			Supplier	Operational	Service	Responsive
			Integration	Effectiveness	Quality	ness
Spearman's rho	Supplier Integration	Correlation Coefficient	1.000	.880**	.680**	.803**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	112	112	112	112
	Operational Effectiveness	Correlation Coefficient	.880**	1.000	.891**	.829**
		Sig. (2-tailed)	.000		.000	.000

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-	N	112	112	112	112
Service Quality	Correlation Coefficient	.680**	.891**	1.000	.919**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	112	112	112	112
Responsiveness	Correlation Coefficient	.803**	.829**	.919**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000
	N	112	112	112	112

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

Source: SPSS output of data analysis on supplier integration and Competitiveness, 2019.

Ho₁: There is no significant relationship between supplier integration and operational effectiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

From the result as depicted in table 4, the correlation coefficient shows that there is a positive relationship between supplier integration and operational effectiveness. The correlation coefficient 0.880 confirms the magnitude and strength of this relationship and it is statistically significant at p 0.000<0.05. The correlation coefficient represents a high correlation between the variables. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate accepted. Thus, there is a significant relationship between supplier integration and operational effectiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

Ho₂: There is no significant relationship between supplier integration and service quality of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

From the result as evidenced in table 4, the correlation coefficient shows that there is a positive relationship between supplier integration and service quality. The correlation coefficient 0.680 confirms the extent and strength of this relationship and it is statistically significant at p 0.000<0.05. The correlation coefficient represents a high correlation between the variables. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate accepted. Thus, there is a significant relationship between supplier integration and service quality of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

Ho_{3:} There is no significant relationship between supplier integration and responsiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

From the result in table 4, the correlation coefficient shows that there is a positive relationship between supplier integration and responsiveness. The correlation coefficient 0.760 confirms the magnitude and strength of this relationship and it is statistically significant at p 0.000<0.05. The correlation coefficient represents a high correlation between the

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variables. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate accepted. Thus, there is a significant relationship between supplier integration and responsiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria.

DISCUSSION OF FINDINGS

Relationship Between Supplier Integration and Competitiveness

The tests of hypotheses as evidenced in Table 4, revealed that there is a significant positive relationship between supplier integration and competitiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria. This finding agrees with the assertions of Boon-itt and Wong (2011) who advocated that joint collaboration in product or service development technological transfer, shared problem solving abilities as well as designing supports are essential attributes of cooperative behaviours. Hence, it has become very imperative for focal companies in the value chain to communicate effectively with its major suppliers and consistently upgrade information gathering with the intended integration process.

Notably, Gronroos (1982), posited that the apparent quality of a certain service is the outcome of an assessment process since buyers often make contrast between the services they anticipate with discernments of the services that they obtained. He resolved that the quality of service is contingent on two variables: anticipated service and apparent service. Consumer behavioural intentions are also susceptible by the criterions of service quality (Bitner, 1990; Choi *et al.*, 2004). Service delivery suggests 'how', 'when' and 'where' the service is to be expressed to the customer (Lovelock and Wirtz, 2004). The service delivery practice can be fragmented into service happenstances that include the main part of the whole process (Danaher and Matteson, 1994).

Chowdhary and Prakash (2007), suggests that some broad view service types is conceivable for diverse services and service providers, and managers may have to contemplate this in its scheme. Therefore, the power to convey optimum service quality will get the service companies competitive advantages among others within the same sector (Turel, *et al.*, 2007). Service delivery is a constituent of business that expresses the interface between suppliers and customers where the supplier tenders a service, and it could be a knowledge or undertaking. In the banking sector different types of services are being offered. The performance of employees is important, not only in banking but other service sectors. Better performance gives satisfaction to the customers. Services are to be provided with minimum processing and waiting time, proper response, promptness and the desire to handle many customers as the demand arises.

CONCLUSION AND RECOMMENDATION

Based on the findings of this study, the authors concludes that supplier integration has positive relationship with competiveness of oil and gas exploration and production companies in the Niger Delta region of Nigeria and therefore recommends that organizations should

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maximize the gains of integration by strengthening their supplier integration activities through continuous and improved supplier relationship management (SRM) techniques and programmes that are based on more collaborative efforts and effective communication to remain strategically competitive, particularly in the area of lowering their total cost of acquisition.

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