



Evaluation of Logistics Outsourcing Strategies in the Oil and Gas Companies in Niger Delta Region.

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ABSTRACT

The study aimed at evaluating the Logistics Outsourcing Strategies of the Oil and Gas companies in the Niger Delta. The study adopted a cross sectional research design; the population of interest for this study was drawn from oil and gas companies operating in Niger Delta; a total of fifty one (51) oil and gas companies were identified. The data collected for this study was analyzed using descriptive statistics and SPSS analysis tools. The study revealed that, the challenges exist between major oil and gas companies and logistics service providers in the Niger Delta; the challenges identified were lack of appropriate technology, lack of appropriate business process, the quality of service by logistics service provider not matched to the firm's standards, increase in the level of risk associated with logistics outsourcing between oil and gas companies and service providers, delays in service provision by logistics service provider, lack of appropriate business process and there is lack of tools to optimize the use of logistics service provider. The study concluded that strategies employed by oil and gas companies in the Niger Delta in logistics outsourcing with logistics service providers were key in influencing their operation positively and in view of sustainable oil and gas companies, more improve mechanism or strategies must be in practice. The recommendations are made base on the study findings; the study suggest that outsourcing strategies should be improve and existing ones modified to accommodate current environmental externalities. Such as full or complete outsourcing to service providers, complete risk should be shouldered by service providers, and service providers (LSP) should present a strong capital base and that just-in-time concept or approach, payment duration, welfare approach and sustainable communication channels should be included in the measurement of oil and gas companies in logistics outsourcing process.

Keywords: Outsourcing, Strategies, Cost, Oil and Gas, Companies, Logistics service Providers, Just-in-time.

1.1 Introduction

Outsourcing of logistics services is one of the strategies which are becoming very common with many organizations today. Outsourcing is a widely adopted business strategy where companies delegate certain internal activities and decision-making responsibilities to external providers, thereby improving overall productivity in operations and service delivery (Chase, 2004). Logistics outsourcing encompasses various practices such as information management, transportation management, warehouse management, material handling management, and inventory management (Forslund, 2012). As highlighted by Sink and Langley (1997), outsourcing serves as a business strategy in which a company entrusts its non-core internal activities to external service providers, allowing the company to maintain control over resources and share risks. Additionally, Mohiuddin and Su (2013b) define the term outsourcing as acquiring of components or services from outside sources rather than producing in-house. The principal company only focuses on core matters necessary for survival and growth. This strategy encompasses outsourcing and relocating to low-cost suppliers from advanced firms to lower entire costs of production by realizing benefits from competitive factors of production and gain more profits. Numerous companies have adopted logistics outsourcing as a strategic business approach to reorganize their distribution networks and achieve a competitive edge.

According to Shepherd (2017) and Freytag, Clarke and Evald (2016), the decision made by oil and gas companies on whether to outsource logistics activities or not, depend on cost, risks, and capacity decisions. Similarly, literature shows that Logistics Service Providers (LSPs) outsourcing is extensively popular in Europe (Mckinnon, 1999; Chima, 2007), North America (Cooper & Kaplan, 1991) and Asia Pacific region (Zhao & Tang, 2009). On the other hand, there is less information available on Logistics Service Providers (LSPs) outsourcing especially in developing regions including Africa. The convergence of globalization pressures and ongoing institutional and structural reforms in Africa signals a rapid advancement in economic growth and opportunities across the continent.

The Oil and Gas industry grapples with challenges in establishing effective in-house logistics solutions, including adverse local conditions for International Oil Companies (IOCs), limited in-house capacity for specialized logistics, and inefficiencies resulting from using in-house resources that

could be more effectively utilized for the industry's core activities. Given that logistics is not considered a core function within Oil and Gas, as it doesn't align with exploration, production, and refining operations that focus on mechanical matrices, the industry necessitates an external entity to contribute the human element crucial for logistics service delivery. This entails outsourcing logistics responsibilities to unburden Oil and Gas routines, capitalize on assets for economies of scale and scope, and enlist professional logistics services tailored to the specific needs of the oil and gas sector. In this context, Zhu, Ng, Wang and Zhao (2017) acknowledge that logistics outsourcing is being increasingly adopted by firms to "reduce costs and increase flexibility".

This study will cover a wide range of industries including general manufacturing, mineral exploration, consumer goods, traditional retail, and online (e-commerce) retail outsourcing to compare various outsourcing strategies in relation to performance in the oil and gas industry.

However, there are many literatures written on oil and gas companies but only few or no literature is available on logistics outsourcing as a strategy of oil and gas industry in Nigeria. Therefore, this research will focus on the gap of knowledge on the evaluation of Logistics outsourcing strategies of the oil and gas companies in Niger Delta Region.

The issues contributing to these outcomes include service performance issues, disruptions to inbound flows, insufficient provider expertise, subpar employee quality, prolonged time and effort dedicated to logistics, absence of customer feedback, and the Logistics Service providers' inability to handle special product requirements and emergency situations. Additionally, these patterns appear to align with observations made in the context of outsourcing in general. When it comes to the reasons for the problems, terminations, and back-sourcing, the most obvious factor seems to be those expectations concerning financial benefits have not been met. Given that cost reductions consistently rank as a primary expectation in outsourcing benefits, these circumstances pose significant drawbacks. This scenario aligns with general findings on outsourcing and the reasons behind unmet expectations regarding cost reductions. Usually, these situations are attributed to the realization that the low unit price achievable through outsourcing "is only one part of a very complex equation and must be considered against the direct, indirect, and hidden costs" associated with such changes in the division of labor. Summarily, what has been observed by scholars and the researcher about outsourcing as a strategy is that, cost savings and other benefits tend to be taken for granted, as such service performance, disruption to inbound flows, inadequate provider expertise, inadequate employee quality, sustained time and effort spent on logistics, loss of customer feedback and inability of Logistics Service providers to deal with special product needs and emergency circumstances seems to correspond to what has been observed for outsourcing in general. The aim of the study is to evaluate the logistics outsourcing strategies in the oil and gas companies in the Niger Delta Region. The postulated hypotheses was tested at 0.05 alpha level which state that there is no statistically significant difference in the outsourcing strategies of oil and gas companies.

Outsourcing has in recent decades been processed and implemented strategy to oil and gas companies. It is very interesting and highly significant to the industry to learn and gain experiences from different outsourcing processes. Experiences that provide information of successful outsourcing and potentially failed outsourcing attempts are of high interest for the oil companies, logistics service providers and for the society.

This work was mainly focus on the experiences concerning outsourcing in the oil & gas industry. To prepare a solid research and analysis of this, theory of the concept of outsourcing in general basis was presented. The study also explored some history about the oil & gas industry's development to gain an insight into the interaction between Oil, Gas, and Service companies. To answer this issue at some extent, this study involve both theory and data collection.

The study was limited to a cross sectional research design to examine the large oil and gas companies in Niger Delta Region especially the International Oil and Gas Companies (IOCs). Cross sectional is type of observational study that analyses data from a population, or a representative subset, at a specific point in time, that is a cross sectional data. A descriptive approach was adopted to achieve the aim of this study. The scope is limited to eleven (11) out of the forty-five multinational and indigenous of the oil and gas companies in the Niger Delta region in Nigeria where logistics outsourcing operations are high in the selected oil and gas companies.

2.1 Literature Review

2.1.1 Resource Based View (RBV) Theory

The resource-based view (RBV) is a managerial framework employed to identify the strategic resources that a company can leverage to attain a sustainable competitive advantage. Barney's 1991 study "Firm Resources and Sustained Competitive Advantage" is widely cited as a pivotal work in the emergence of the resource-based view. Nonetheless, certain scholars contend that there existed indications of a rudimentary resource-based theory dating back to the 1930s. The RBV posits that firms exhibit heterogeneity due to possessing diverse resources, implying that different resource compositions enable firms to adopt distinct strategies.

The Resource-Based View (RBV) theory conceptualizes the firm as a collection of resources (Penrose, 1959). In accordance with its tenets, an organization must acquire an effective combination and steady influx of the appropriate resources from its environment to endure and enhance its operational performance. Both the outsourcing user and outsourcing provider must guard against wandering from their core competencies in directions that detract from their ability to create value (Prahalad and Hamel 1990). This theory rests on two key points. Primarily, it asserts that firm performance is contingent on resources. Secondly, it emphasizes that for a competitive advantage to emerge, resources must be scarce, valuable, challenging to replicate, and not easily substitutable by other scarce resources. (Priem and Butler, 2001). Accordingly, RBV is particularly appropriate for examining logistics outsourcing because organizations essentially use outsourcing as a strategy for gaining access to other organizations' valuable resources.

Several criticisms of RBV have been widely cited, and are as follows: The RBV is [tautological](#), different resource configurations can generate the same value for firms and thus would not be competitive advantage, the role of product markets is under developed in the argument and the theory has limited prescriptive implications.

Other criticisms include: The failure to consider factors surrounding resources; that is, an assumption that they simply exist, rather than a critical investigation of how key capabilities are acquired or developed. Locating a resource that fulfills all of Barney's VRIN criteria may be challenging, if not impossible. An assumption that a firm can be profitable in a highly competitive market if it can exploit advantageous resources does not always hold true. It ignores external factors concerning the industry as a whole; [Porter's Industry Structure Analysis](#) ought also to be considered.

This theory is related to the research because it talks about resources and capabilities of the third-party logistics service provide which is part of the researcher's objectives.

2.1.2 Transaction Cost Theory

Coase tries to explain why firms emerge in the economy and study the determinants of the size of the firm in his famous article "The Nature of the Firm" in 1937. It is the first time term "transaction cost theory" has been used to explain the generation of the firm. He mentions that "there is a cost associated with using the price mechanism." He encapsulates this by stating that transaction costs are expenses incurred in the decision-making process of an economic exchange. He further breaks down the concept of "transaction cost" into two components: the cost of discovering the relevant price and the cost of acquiring accurate market information. "The cost of negotiating and concluding a separate contract for each exchange transaction" (Coase, 1937) which I conclude them to the bargaining cost. Thus a firm emerges in order to substitute the price mechanism and reduce the transaction cost.

Then Williamson develops transaction cost analysis from several aspects: Based on Simon's definition of "bounded rationality" which refers to human behaviour that is "intended rational, but only limitedly so" (Simon, 1961, p. xxiv), He extends the conventional assumption about economic agents and explains that they are not only guided by consideration of self-interest but opportunism, which includes "strategic manipulation of information or misrepresentation of intentions"(Williamson, 1975) He claims that "opportunism requires economic activity to be organized so that parties who voluntarily carry out the terms of an agreement (contract) will not be injured by parties who fail to adhere to the contract" and emphasize the emergence of opportunism increases the transaction cost. In 1981, Williamson distilled transaction costs into three dimensions. He characterizes transactions based on (1) the impact of information, (2) the frequency of the exchange, and (3) the extent to which durable, transaction-specific investments are necessary to achieve the least-cost supply. Williamson states that assets specificity is one of the most important dimensions influencing the transactions.

If an organization opts to outsource, it will increase its transaction costs and most likely lose its economies of scale (Grover, 1996) because the increased size of the firm will require increased internal co-ordination. It would however take advantage of the economies of scale and scope of the vendor while at the same time reducing internal coordination costs. By outsourcing the firm will increase its external co-ordination costs of which will depend on the level of asset specificity. High asset specificity arises where the firm's products and services are customized and not easily transferable to alternative vendors (Williamson, 1985). In criticism of the transaction cost theory, standardized products and services could reflect lower external co-ordination costs and the vendor may achieve economies of scale and would be a more viable option for outsourcing.

This theory is of relevance to the topic because it pointed out on cost which is the main reason why oil and gas companies outsourced their non-core activities to third party logistics.

2.3 Review on Logistics Outsourcing Strategies

Macharia et al. (2017) examine the relationship between logistics outsourcing and oil and gas project performance in Kenya. The review of literature focused on examining the connection between the variables, encompassing both theoretical and empirical literature. The unit of analysis comprised all managing directors of the 71 registered oil and gas players who provided information on Oil and Gas Project performance and logistics outsourcing. Data was collected through questionnaires distributed to the oil and gas players concerning the variables. Responses were statistically analyzed using descriptive statistics, product moment correlation and regression analysis. Data was presented using charts, tables and figures. The research uncovered a weak positive correlation between Oil and Gas projects and Inventory Management Outsourcing. As noted by Macharia et al. (2017), various studies indicate numerous benefits arising from the adoption of logistics outsourcing strategies in the oil and gas industry. However, both oil and gas companies and logistics service providers encounter challenges in executing business contracts. A prominent advantage is that companies engage in logistics outsourcing to revamp their distribution networks and gain a competitive edge. Efforts are made to establish a conducive environment for mutual cooperation between the oil and gas industry and third-party logistics service providers, emphasizing the significance of outsourcing either full or partial logistics activities to attain a competitive advantage. The logistics outsourcing strategy plays a pivotal role in business, particularly in reducing operating costs and sharing risks in business contracts.

Nawfal, Wissal and Imane (2015) on a study on "Outsourcing of Logistics Functions: A Case Study of A Moroccan Retailer" says that, for large retailers and manufacturers, the issue of outsourcing logistics activities to specialized service providers arises for thirty years. It resulted in the creation of powerful companies like Kuehne, Nagel, Norbert Dentress angle whose job is to offer their clients a personalized logistics services, including a multitude of components (e.g., transport, order picking, inventory management, creation of promotional items, etc.). Therefore, the aim of the paper was to provide theoretical insights into the logistics outsourcing phenomenon and to trace the evolution of the job and offer of logistics service provider (LSP). The researchers also were interested in the characteristics of shipper-LSP relationship. A qualitative inquiry was undertaken involving a prominent participant

in the Moroccan mass retail sector, which had outsourced certain logistics activities to a globally recognized Logistics Service Provider (LSP) a few years ago. While the outsourced components are pertinent to the study, the employed methodology is not conducive to this investigation, prompting the need for a more quantitative approach.

In another study by Izuakulom (2022), effective supply chain management through inventory control management in Nigeria's downstream petroleum sector is discussed. The theoretical framework is based on the Resource-Based View Theory (RBV). The research design is descriptive and narrative, utilizing quantitative and qualitative secondary data. Among other findings, the study reveals that the most fundamental role inventory plays in the supply chain is facilitating and balancing demand and supply. The finding of the paper showed that environmental uncertainty, information technology, supply chain relationships, and supply chain management performance are the broad challenges facing Nigeria's downstream petroleum sector in its supply chain management over the years. The central argument of this study is that the downstream operations cannot be effective and sustained in the petroleum industry without a well-coordinated and viable downstream operations and more importantly, without robust and vigorous supply chain master plan and industry good practices. As suggested by the study, oil and gas product marketing firms should enhance their inventory management systems to ensure effective supply chain management. This can be achieved through regular training and retraining of staff, staying abreast of technological advancements in inventory management and supply chain practices, thereby ensuring the efficient and timely delivery of petroleum products to the public.

3.1 Methodology

The study employed a cross-sectional research design to investigate major oil and gas companies in the Niger Delta Region, with a particular focus on International Oil and Gas Companies (IOCs). Cross-sectional research involves analyzing data from a population or a representative subset at a specific point in time. A descriptive approach was chosen to fulfill the study's objectives. Emory (1995) suggests that surveys are feasible when the population is small and variable, allowing researchers to cover all elements of the population, making the survey more efficient and economical.

The study's population comprised fifty-one (51) oil and gas companies operating in the Niger Delta region, covering states such as Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers (Reconnaissance Survey, 2020). The sample size was determined using the Taro Yamane (1967) formula applied to the total population of 1,343. The sample strata demonstrated homogeneous characteristics, and simple random sampling was employed to select the study population. The inclusion and exclusion criteria of the sampling method were used to choose eleven (11) oil and gas companies based on the population's characteristics of interest and the study's objectives. Thus, Taro Yamane formula is:

$$n = \frac{N}{1 + N(e)^2}$$

Where n – Sample Size

N – Population Size (Total)

1 – constant

E – Margin of error (0.05 based on research condition)

$$n = 1343 / 1 + 1343 (0.05)^2 = 1343 / 4.3575 = 308.20$$

n = **308**, which is the sample size for this study

To obtain a proportional allocation of the questionnaire, which is the sampling instrument, to the sample strata, this method is being used for application of questionnaires on the staff of the selected companies. Table 3.1 below shows a proportional allocation method of the study instrument to each population strata:

$$= \frac{N_p \times n}{N}$$

N_p – Population of each strata of oil and gas companies

n – Study sample size

N – Total population of the study

The data collections for this study were analysed using descriptive statistics such as percentage and frequency distribution and tables to explain and analyse the research questions.

Each of the hypotheses was tested with various SPSS analysis tools to get more and accurate results.

Hypothesis (H_0): There is no statistically significant difference in the outsourcing strategies of oil and gas companies was tested using the Chi-square statistics. Chi-square statistics was used to examine association between categorical variables.

Chi-Square Statistical tool Model specification

$$X^2 = \sum_{i=1}^n \sum_{j=1}^n \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

Where X^2 = chi-square

O = observed frequency

E = expected frequency

In substituting hypothesis one with the variables;

Observed frequency = outsourcing strategies

Expected frequency = oil and gas companies

Table 3.1: Determination of Sample Size

S/N	International Oil and Gas Companies	Year of Establishment	Location	Numbers of Staff in Procurement Unit	Numbers of Staff in Logistics Unit	Numbers of Staff in Operations Unit	Numbers of Staff in Human Resource Unit	Total Sampled Size	Proportional Allocation method $\frac{Np \times n}{N}$
1	EXXON MOBIL	1999	Eket, Qua Iboe	34	32	40	23	129	30
2	CHEVRON	1991	Brass/Ogidigbe	27	28	45	27	127	29
3	SEPLAT PETROLEUM COMPANY	2009	Sapele	18	24	26	15	83	19
4	SHELL	1937	Rumumasi	34	37	49	37	157	36
5	AGIP OIL	1962	Brass/Obio Akpo	31	35	40	32	138	32
6	PETROBRAS	2005	Bayelsa/Port Harcourt	25	23	30	20	98	22
7	TOTAL	1956	Onne/Port Harcourt	35	32	50	37	154	35
8	NESTOIL	1991	Aboloma	16	23	29	15	83	19
9	HALLIBURTON ENERGY	1959	Trans-Amadi/Port Harcourt	12	15	30	18	75	17
10	SCHLUMBERGER NIG LTD	1970	Old Aba Road, Port Harcourt	37	35	46	28	146	34
11	NLNG	1989	Bonny	30	34	54	35	153	35
	TOTAL			299	318	439	287	1343	308

Source: Reconnaissance survey, 2020.

4.1 Discuss and Analysis

Test of Hypotheses

Hypothesis one (H_0)

H_0 : There is no statistically significant difference in the outsourcing strategies of oil and gas companies.

H_1 : There is a statistically significant difference in the outsourcing strategies of oil and gas companies.

Conclusion; table 4.1 below revealed that, Chi-square statistics was used to examine association between categorical variables. There is a significant relationship at 0.5% significant level between oil and gas companies and the outsourcing strategies ($X^2 = 1478.761$, $df = 198$, $P = .000$). Decision, we therefore reject the null hypothesis of no difference and uphold the alternate hypothesis which state that there is a statistically significant difference in the outsourcing strategies of oil and gas companies.

Table 4.1 Chi-Square output for hypothesis one

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1478.761 ^a	198	.000
Likelihood Ratio	984.915	198	.000
Linear-by-Linear Association	230.603	1	.000
N of Valid Cases	290		

a. 217 cells (94.3%) have expected count less than 5. The minimum expected count is .06.

The overall mean derived from the analyzed data indicates that oil and gas companies in the Niger Delta have implemented positive strategies in conducting business with third-party logistics operators. The statistical analysis conducted to examine the variance in outsourcing strategies among oil and gas companies in the Niger Delta utilized the Chi-square statistical tool. The results demonstrate a statistically significant difference in the outsourcing strategies employed by these companies.

These findings align with the research of Pellegrini, Lazzarotti, and Pizzurno (2012), who contend that the involvement of logistics service providers (LSPs) has shielded oil and gas companies from certain external weaknesses or challenges. Pellegrini et al. (2012) assert that outsourcing in the activities of oil and gas companies has led to technological innovation among logistics service providers, making them increasingly dominant in exploration and production activities. While achieving cost reduction goals pursued by major oil and gas players in the region, they have concurrently relinquished a significant degree of control over technology.

In contrast, Emah et al. (2017) suggest that some organizations need to enhance their current capabilities to effectively integrate logistics outsourcing, especially when they currently implement these processes in fragmented ways. Therefore, there is a need for synergies between oil and gas firms and their local vendors (service providers). The findings of Adams and Youdal (2007), Flatworld Solutions (2015), and Hoff (2009) corroborate the results of this study, affirming that one of the logistics outsourcing strategies employed by firms is directed towards cost savings, as identified in this study. It is evident that continuous outsourcing processes are likely to impact the competency level of major companies over the long run, as argued by Kotabe et al. (2008).

5.1 Conclusions

The study concludes that the strategies implemented by oil and gas companies in the Niger Delta for logistics outsourcing with logistics service providers played a pivotal role in positively influencing the performance of their operations. To ensure the sustainable performance of oil and gas companies, there is a need for ongoing improvement mechanisms or strategies in practice.

5.2 Recommendations

The following recommendations are made base on the study findings'

- i. The study recommends to the management of oil and gas companies that outsourcing strategies should be enhanced and existing ones modified to adapt to current environmental externalities. This includes considering full or complete outsourcing to service providers, where the entire risk is borne by the service providers, and ensuring that service providers (LSP) maintain a robust capital base.
- ii. The study suggests that incorporating the just-in-time concept or approach, payment duration, welfare approach, and sustainable communication channels is advisable when evaluating the performance of oil and gas companies in the logistics outsourcing process.

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