The Effect of Risk Mitigation Strategy on Sales Performance of Petroleum Marketing Firms in the Downstream Sector of the Petroleum Industry in Nigeria

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Abstract
The paper examined the effect risk mitigation on sales performance of petroleum marketing firms in Nigeria. The purpose of the study was to evaluate the associations between risk mitigation strategies and sales performance. The study proposed a risk mitigation model with risk mitigation as the predictor variable while sales performance as the criterion variable with profit and sales growth as measures of the criterion variable the descriptive research design was adopted for the study while, the Pearson Product Moment correlation was used to test the proposition. The study revealed risk mitigation strategy positively affect profit, while risk mitigation strategy did not have any significant effect on sales growth. The study recommends Petroleum marketing firms analyze the identified risk and ensure that they deploy a strategy that best suit the peculiar situation of risk identified.

Introduction

The petroleum industry in Nigeria is prone to uncertainty, this uncertainty and risk also affects the supply chain firms operating in the industry. Enyinda, Briggs, Obah & Obuah (2011), citing (Manzano, 2005), described "supply chain activities in the downstream sector of the petroleum industry "as those activities which takes place between the purchase of crude oil and the use of the oil products by end consumer". The implication is that it "covers transporting the crude oil, performing supply and trading activities, refining the crude oil, and distributing and marketing the refined products output". The supply chain activities in the petroleum industry is essentially a risk venture, it implies that the supply chains of firms that market these petroleum products are laden quite an enormous amount of risk. Ambituumi, Amezaga, & Emeseh (2014) noted that in Nigeria tankers are the major means of distributing, transporting of the petroleum products. It is on record that at the slightest altercation with the police or any regulatory agency the tanker drive's union have been known to call their members on a nationwide strike action. In some cases, the union has been known to call their members for strike action to protest one government policy, or to even protest the deplorable state of our roads. It is a known fact that the petroleum marketing firms in Nigeria depend on these tankers to move their product from the various tank farm to their respective filling stations. Scholars and industry practitioners are in consensus that risk mitigation is of utmost importance to the survival and success of any firm especially for firms in the downstream sector of the oil and gas industry in Nigeria. The importance of the sector for a developing country like Nigeria is seen in the adverse effect it has on the prices of goods and commodities whenever there is major disruption in the distribution of petroleum products. Experts and scholars are of the view that the pipelines have been considered to be the best and safest means of transporting petroleum product Hopkins (2012). However, the transportation of liquid petrol, kerosene and diesel are mainly done by the tankers in Nigeria. Meanwhile Kumar, et al (2014) opined that an essential component in the supply chain risk management is the strategies to be implemented to mitigate the identified risk. This study seeks to investigate the associated effect of risk mitigation strategy on the sales performance of the petroleum marketing firms in Nigeria. The rest of the study is focuses on a

review of related literature, the methodology adopted, the data presentation, discussion of results and findings

Purpose of the Study

The main purpose of this study is to evaluate the associations between risk mitigation strategy and sales performance, other sub objectives include:
- ➤ To determine the link between risk mitigation and profit
- ➤ To examine the nexus between risk mitigation and sales growth

Research Question for the Study

The following questions were raised for the study
- ➤ How does risk mitigation affects profit?
- ➤ Does risk mitigation impact sales growth?

Proposition for the Study

The following proposition were made for the study

P₁: There is no significant association between risk mitigation and profit

P₂: There is no significant association between risk mitigation and sales growth
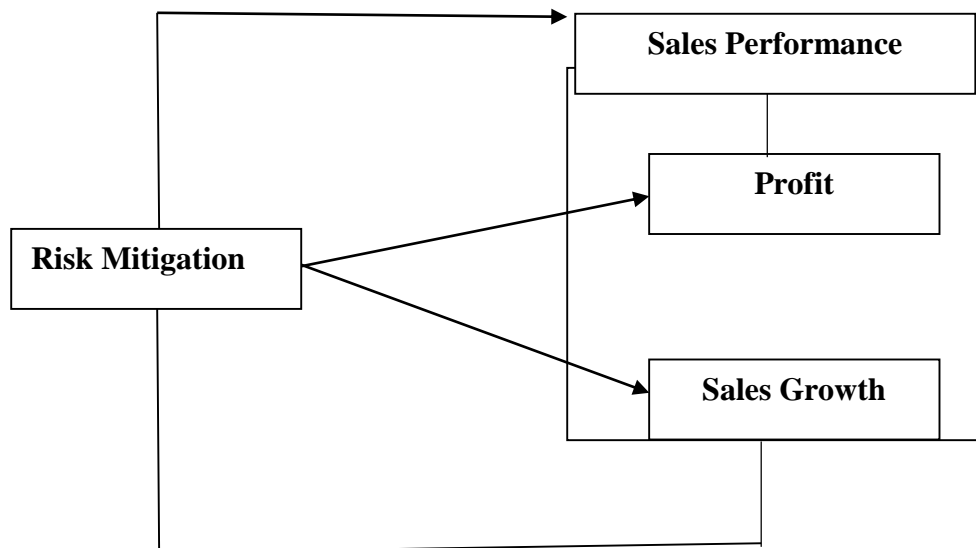

Fig 1: Conceptual Frame Work for Risk Mitigation and Sales Performance
Source: Desk research, 2019

Review of Related Literature
Theoretical Foundation
New Institutional Economics Theory

The theoretical foundation for this study is the New Institutional Economic Theory (NIET). Zsidisin et al. (2010) made use of the new institutional theory to investigate why and how organizations create a business continuity plan towards managing supply chain risks. Theories can shed significant light on supply chain risk management and help resolve ongoing debates while opening up new areas for investigation (Jian, 2010). In the view of Williamson (1998), the new institutional theory can be used to predict the risk management practices that best suit an individual organization or that is accepted as the best practice within a market or industry.

Risk Mitigation

Assuredly, scholars have described risk mitigation as any/those efforts that is designed to reduce the negative impact of an event occurring. Similarly, scholars agree that risk mitigation will reduce the probability or the effect or both on the organization, hence it become significant for managers to pick a strategy that will suit the mitigation of each risk (Liu, Li, & Wu, 2014; Sodhi, Son & Tang, 2012; Wagner and Neshat 2012). Meanwhile, wagner and vitek (2013) had argued that firms have two ways they can response to risk mitigation they can either accept the risk or reduce the risk by sharing with other firms in the supply chain. What this indicates is that some of the risk elements are beyond the control of the firms thus, collaboration becomes the preferred system to manage the risk. Kang and Kim (2012) deployed the mixed integer nonlinear programming model to investigate the impact of demand risk on the supply chain they essence of the study were centered on demand risk mitigation.

Kim (2013) on his part suggested that "risk should be shared in order to minimize loss that arises over demand uncertainties his work was based on a four-tier supply chain under dynamic market demand and suggested that bilateral contracts should be made flexible in terms of the order quantity. He argued that the fluctuations in demand can be absorbed by the contract design, which allows for a more effective inventory management and customer service". Hung (2011) and machine failures (Kenne, Dejax, & Gharbi 2012), The methodology they used include stochastic dynamic model Kenne et al (2012) Pie chart solution model Sun et al (2012) and integrated methods that combine analytic network process (ANP), fuzzy GP, five forces analysis and VaR (Hung 2011) We find some limitations with the models that these scholars used Kenne et al (2012) only considered a single type of product in their model; Sun et al (2012) on their part were only interested in a single supplier and a single retailer. However, Dowty & Wallace (2010) argue that understanding diverse organizations cultures will also aid the reduction of supply chain risk. But Nakashima & Gupta (2012) are of the view that applying a new system calls the multi kanban system for taking apart or pulling system is also an invaluable tool for reducing supply chain risk. However, there are some limitations we find in these studies Choi & Li (2011) only studied a simply supply chains with a single supplier and single retailer, while Xia, Ramachandran & Gurnani (2011) assumed that external wholesale prices. On their part Lavastre, Gunasekaran & Spalanzani (2012) used simple statistical tool and standard deviation tools and He (2013) used additive demand functions in place of multiplicative demand model this model has been faulted by which is not an appropriate tool.

Sales Performance

Experts agree that the general perception of sales performance is very essential to all organization irrespective of the industry. Also, the term has varying meaning to different organization depending on their objectives. Thus a careful analysis and assessment of the health of the firm is crucial to revealing if the objectives have been met. That is why we find several empirical studies on the subject. (Martinelli 2001) as cited by Maduenyi, Oke, Fadeyi, & Ajagbe, (2015) described "sales performance as the measure of the state of an organization, or the outcomes that results from management decision and the execution of those decisions by the employees to meet sales target". Sales performance is often described "as the quality and quantity of sales closed in a specific time period" (Salleh and Kamaruddin, 2011). Meanwhile, Greenberg (2011) posits that sales performance is a set of financial and non-financial indicators which offer information on the degree of achievement of the objectives and result desired by a firm particularly sales target. Experts have argued that sales performance could also be described as the ability to achieve organizational goals and objectives. In a study conducted by Plouffe, Sridharan, & Barclay, (2010), they have adopted two formative indicators of sales performance: one an objective measure provided by each firm's management; the other a

subjective, salesperson-reported measure However, these outcomes can be affected by several factors such as external factors government policies, trade union activities, and disruption in the supply functions or internal such as employee satisfaction, operational processes and sales person's effort. According to Hutt & Speh (2013) the term "sales refer to transaction between two parties where the buyer receives goods that could be tangible or intangible or on the other hand services and /or assets in exchange for money".

Profit

Experts are in consensus that in evaluating profit we look at the relationship between the revenues and expenses to see how well a company is performing and to forecast its future potential growth in the industry. Scholars have used: Return on Assets (ROA). To measure profit Bloom, Sadun & Van Reenen (2010), this measure they claim is able to overcome variation that is based on size in terms of total profits. Another measure used to measure profit is the earnings before interest and taxes (EBIT) divided by sales this measure scholars argue is very relevant to business mangers as it is not likely to be influenced by low asset base which is prevalent in the service sector Kiviluoto,2011; Wennberg, Hellerstedt, Wildund, & Nordqbvist 2011). Others say that profit is one of the four cardinal metrics used in the analysis of the sales performance of an organization. The other three are efficiency, solvency, and market prospects. The prospect of the company can be evaluated by investors, creditors, and managers with the use of these key components of analysis; they can determine the health of the company.

Sales Growth

Sale growth is usually a reflection of the firm's ability to sell its products and services; this expert believes is a strong indicator of its presence and activity in the market. Scholars like (Davidson, Achtenhagen, & Naldi, 2010; McKelvie & Wiklund, 2010). Argues that in spite of the vast amount of attention about firm's growth literature has shown that studies still provide a partial understanding of the construct and how and when a firms grows. While, scholars like Reichstein, Dahl, Ebersbewrg and Jensen., (2010) did argue that since the magnitude of sales and sales growth differ across industries, it is pertinent to use the relative ratio of sales growth for each firm using the difference in sales (logarithmic values) between the past and the current year when measuring for growth. Experts agree that sales growth as the most appropriate growth variable for two reasons:

First, it enables firm to investigate dynamics as function to selecting and learning mechanisms embedded in market competition (Bottazzi et al., 2010). Secondly, sales growth is one of the most commonly identified measures of growth, and experts contend that it has a great relevance in study of new organization, no matter the industry in question

Related Works on Risk Mitigation and Sales Performance

According to Ho et al (2015), significant number of studies has been paying attention to demand risk mitigation and supply chain decision-making under stochastic demand. The first group of researchers determined the optimal-order placement and replenishment plan in order to minimize the impact of demand uncertainty. Various methodologies have been developed and applied, including simulation model (Schmitt and Singh 2012), newsvendor model (Arcelus, Kumar, and Srinivasan 2012; Tang, Musa, and Li 2012), mathematical programming, and mixed integer nonlinear programming model (Kang and Kim 2012). Chen and Yano (2010) focused on two-tier supply chains, and proposed risk-sharing contracts to minimize the loss of manufacturer (e.g. overproduction) and the loss of retailers (e.g. overstocking) under demand uncertainty. However, Ho et al (2015) noted the proposed mitigation strategies were not assessed and benchmarked to see which are more effective and efficient. Ben-Tal et al. (2011)

presented a dynamic system model of manufacturing supply chains, which can proactively manage disruptive events and absorb the demand shock. It follows that a careful thought out mitigation plan to reduce the impact on demand uncertainty will aid the efficiency and effectiveness of the supply chain thereby improving the profitability of the firm.

Methodology

This study adopts the quantitative triangulation because we used both questionnaires and panel data to establish significance of risk mitigation strategy on the organizational sales performance of the quoted petroleum marketing firms in Nigeria. While, the Pearson Moment Correlation Coefficients is adopted for this study we are opting for this techniques because it will enable us to establish the trends of median relation that prevail between the contextual factor the causal and dependent variables.

Data Presentation

Table 4.1: Correlation analysis depicting the association between risk mitigation and profit

Variables 1	Statistics	Risk Mitigation	Profit
Risk mitigation	Pearson's Correlation	1.000	-638*
	Sig(2-tailed)		.000
	N	33	33
Profit	Pearson's Correlation	638*	1.000
	Sig(2-tailed)	.000	
	N	33	33

xx correlation is significant at 0.01 level (2-tailed).

$P0_1$:   There is no significant association between risk mitigation and profit

From Table 4.1 the attendant *p*-value of the association between risk mitigation (antecedent of supply chain risk management) and profit (antecedent of sales performance) is revealed to be significant (where p=0.000) which is less than the 0.05. The Pearson's r is estimated at -.638[x] thus, we therefore, reject the null hypothesis and therefore accept the alternate hypothesis indicating that risk mitigation does significantly associate with sales growth, also, we see a strong correlation but negative sign of the correlation coefficient indicating that the construct risk mitigation and sales growth are moving in opposite direction which implies that an increase in risk mitigation strategies may not necessarily be accompanied by an increase in the sales growth for the firms.

Table 4.2: Correlation analysis depicting the association between risk mitigation and Sales Growth

Variables 1	Statistics	Risk Mitigation	Sales growth
Risk mitigation	Pearson's Correlation	1.000	-398*
	Sig(2-tailed)		.022
	N	33	33
Sales growth	Pearson's Correlation	-398*	1.000
	Sig(2-tailed)	.000	
	N	33	33

ˣ **correlation is significant at 0.05 level (2-tailed).**

P0₂: There is no significant association between risk mitigation and sales growth
From Table 4.24 the attendant p-value of the association between risk mitigation (antecedent of supply chain risk management) and sales growth (antecedent of sales performance) is revealed to be insignificant (where p=0.022) which is greater than the 0.05. The results from the Pearson's correlation analysis r is estimated at -398. from this result we see that risk mitigation does not significantly associate with sales growth, the negative sign of the correlation coefficient shows that the construct risk mitigation and sales growth have an indirect/negative or inverse association indicating that an increase in risk mitigation practices does not necessarily imply an increase in sales growth for the firms. The association is an indirect one in the sense that even if the firm is able to adequately mitigate the identified risk, some risk, are beyond the scope of the firms' capacity to manage e.g. external disruption caused by natural disaster, the best the firm can do is to solve what is left after the disaster.

Result and Discussion
Risk Mitigation and Profit
The computation from table 4.1 which, was used to test the proposition 1(P0₁) we observe a substantial association between risk mitigation and profit (an element of supply chain risk management) and profit (a measure of sales performance). The Pearson's correlation was found to be significant, with an r estimate of-.638, which, implies that there is a significant and strong association between risk mitigation and profit. Thus, we can infer that there is a significant and strong risk between risk mitigation and profit.
Our proposition sought to determine the association between risk mitigation (antecedent of supply chain risk management) and profit (antecedent of sales performance) using the Pearson's product moment correlation analysis, the hypothesis was formulated in the null form from our result we find a significant and strong association between risk mitigation (antecedent of supply chain risk management) and profit, (antecedent of sales performance), thus we reject the null hypothesis and accept the alternate hypothesis indicating that risk mitigation has a significant and strong association on profit. We find support for our position from the work of various scholars such as (Hung 2011; Sun, Matsui & Yin 2012), who did considerable research on manufacturing risk mitigation such as quality risk; while, Hung, (2011) investigated capacity yield risk); and Kenne, Dejax, & Gharbi (2012) machine failures, all these studies revealed that risk mitigation has significant impact on profit of a firm.

Risk Mitigation and Sales Growth
The computation from table 4.2 which, was used to test our second proposition 2(P0₂) we observe a substantial association between risk mitigation and sales growth (a measure of sales

performance). The Pearson's correlation was found to be insignificant with a p value of (.022) which is higher than the statutory p value of (0.001) but with an r estimate of 398, which, implies that there is an insignificant association between risk mitigation and sales growth. Thus, we can infer that there is no significant link between risk mitigation and sales growth. Our second proposition sought to determine the association between risk mitigation (antecedent of supply chain risk management) and sales growth,(antecedent of sales performance) using the Pearson's product moment correlation analysis, the hypothesis was formulated in the null form The result from table 4.2 shows that the attendant *p*-value of the test consistent to risk mitigation (RMT) is 0.022 which is greater than 0.05, implying that there is no significant association between risk mitigation and sales growth from our result we find an insignificant association between risk mitigation (antecedent of supply chain risk management) and sales growth, (antecedent of sales performance), thus we do not find sufficient evidence to reject the null hypothesis indicating that risk mitigation has no significant association to sales growth, our position is contradicts the view of some experts who believe that proactive strategies have been known to lead to improvement in tracking, tracing and the selection of competent suppliers with high pedigree. While, reactive strategies refer to the process of double sourcing, various sourcing and maintaining safety stocks that ensures that the firms remain viable (Kumar Sharma & Bhat 2014; Thun et al. 2011). We argue that though it is worthy to set up strategies that would prevent risk along the supply chain these strategies do not in themselves grow sales for any organization sales growth are the function of several other factors. Even if the organization has no inherent supply chain risk to contend with there is no guarantee that they will experience sales growth

Conclusion and Recommendation

The main thrust for this study was to investigate the effect of risk mitigation on the sales performance of petroleum marketing firms in Nigeria. In order for us to achieve the objective of this study, we adopted risk mitigation as our predictor variable, while we used profit and sales growth as the measures of sales performance the criterion variable. We tested two propositions in this study, they all formulated in the null format. The following conclusion were drawn from the study, that risk mitigation (an antecedent of supply chain risk management) can positively and significantly affect profit (a measure of sales performance) of petroleum marketing firms. This implies that risk mitigation strategy adopted by some organizations has significant effect on the sales performance of the firm; mitigation strategy allows the firm to adopt a strategy that would prevent the harm from occurring; in cases where the risk is beyond the control of the firm the strategy is designed to limit the impact of the disruption which has a huge influence on loss and profit of the firm. This study provides impetus for organization to begin to ensure that adequately mitigate the impact of the associated risk along the supply chain with a view to plan the most appropriate mitigation strategy to either reduce the disruption or prevent it all together.

Recommendation

With the findings and conclusions of this study the researcher recommends that the management of these firm adopt the practices where they are able to adopt the most effective mitigation strategy to hedge the identified risk that are associated to the supply chain that affects the sales performance of the firm. Thus we recommend that:
   1. Petroleum marketing firms analyze the identified risk and ensure that they deploy a strategy that best suit the peculiar situation of risk identified.

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