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ROLE OF FLEET MANAGEMENT OPTIMIZATION ON SUPPLY CHAIN PERFORMANCE IN OIL INDUSTRY IN KENYA: A CASE OF HASS PETROLEUM (K) LIMITED.

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ABSTRACT

Supply chain is critical to overall business strategy and can influence a significant percentage of operating results. Fleet management optimization can help define, recommend, and set flexible supply chain strategies based on your organization's operations, resources, and other capabilities. The general objective of this study was to examine the Role of Fleet management optimization on supply chain performance in oil sector in Kenya: A case of the Hass petroleum Kenya Limited. The specific objective of this study will be: to examine the effect of cost reduction on supply chain performance in oil sector in Kenya, to establish whether ICT integration affect on supply chain performance in oil sector in Kenya, to investigate the effect of top management support on supply chain performance in oil sector in Kenya and to establish the effect of lead time on supply chain performance in oil sector in Kenya. The study adopted a descriptive survey design. The sample of 50 respondents was used. The researcher used questionnaire as the research instrument. The questionnaires were self-administered and distributed to the respondents and reasonable time given before they can be collected. Data entry was done in a designed SPSS template through variable definition files generated from the questionnaires. The study found out that; cost reduction, ICT integration, Top management support and lead time affected fleet management optimization to a great extent. The study recommends that the organisation should have sufficient special techno-economic knowledge and openness to new, effective methods when assessing tenders for fleet management optimization.

Keywords: *Fleet management optimization, supply chain performance, oil sector and Supply chain*

INTRODUCTION

It has been proved by (Davenport and Beers, 1995) that supply chain management has immense implication on the company's bottom line and a lot of researchers examined ways to optimize its and consequently company's performance. A great deal of attention is paid to the issue of fleet management optimization. The benefits one company could gain if it is properly employed could range from cost reductions and operational efficiencies to increased market share and increased revenues (Frohlich & Westbrook, 2002; Sanders, 2007). The task of realizing supply fleet management optimization has been substantially alleviated with the advent of the internet (Coase, 2011). It has outperformed the older generation of management platforms by lowering cost of implementation and coordination functionalities and flexible configuration.

Since an organization cannot be efficient and competitive in every area, fleet management optimization presents the best strategy to get rid of the non-value added activities and relevant savings can therefore be achieved. When the non-core activities can be committed to suppliers or service providers, the core competencies giving competitive advantage must be owned Nakhla (2006). Then following the evolution of competition and new technologies, new activities become the core and others can be shifted to other partners. Consequently new organisations have been set up in order to manage in the most optimal way all the supply chain, including the main company, its suppliers and service providers, in an interorganizational manner. It aims at eliminating the redundancies created by barriers between stages by integrating operations to make the system as a whole more responsive to customers and to reduce the cost of product flow as far as possible Pimor, (2004),.

Global Perspective of Fleet Management Optimization

Even though fleet management optimization has been researched in the last 10 years, still there hasn't been proposed a universal definition for it. One part of the scientists conceptualizes supply chain performance in terms of buyer-supplier relationships, that is, supply chain relationship performance. If we drill down in the literature, we can find out that the theoretical foundation of supply chain performance lies in Porter's Value Chain Model (Porter, 1985), where he explored the notion of linkages. These linkages span from inter to intra firm environment.

In a world where global products are produced in a global production system and are sold in the global market place, the supply chain becomes major contributor to the corporate success Persson (2003),. Indeed the global competition is not based anymore on a challenge between oil companies but mainly on a challenge between oil companies supply chain, which consists in focusing on rapid response to customers' needs at low costs. Therefore in order to stay competitive in reaching the wide spread customers in an effective and cost efficient way, more importance has been given to the area of logistics. Managing the supply chain aims at challenging constantly the corporate strategy by setting a new environment where cost savings must be done whenever an opportunity appears. Jacobsen (2000). Consequently costs which do

not add any value to the final product have to be chased and reduced: outsourcing has become a widely accepted practice as companies concentrate on their core activity, savings in inventory holding costs are performed through smaller stock levels, deliveries from the supplier to the point of use must be optimized, etc. This is the time of continuous improvement and "lean" thinking!

Kenya perspective on fleet management optimization

According to (Oke *et al*, 2006) fleet management optimization in Kenya is at the early adoption stage. Very few companies have the pre-requisite ICT infrastructure that is necessary for the implementation of fleet management optimization. This has been attributed to the astronomical costs that are involved in the setting up of the infrastructure as well the skill gap that exists in the labor market. The government of Kenya considers ICT as a key pillar in the success of vision 2030 which aims at transforming the country into an industrialized nation by the year 2030. To this end, a fully-fledged ICT board has been set up by the government to spearhead the ICT revolution in the country which is a positive signal for fleet management optimization (Oke *et al*, 2006). By April 2008, there were 73 registered ISPs, 16 of which were active approximately 1,500,000 internet users and over 1000 cyber cafes.

Previous studies by Kalathur, (2002) on business value and technology adopted exploratory approach as their underlying methodology. Studies suggest that organizations are being strategic in their fleet management optimization implementation. However, such studies are fragmented across both developed and developing countries. The benefits achievable from fleet management optimization render it an important consideration for any business and in addition a wide range of challenges continue to deter fleet management optimization. The depth of the research prevents the validation of these points, in the context of Kenyan private firms in.

Fleet Management Optimization

According to Flynn, Huo and Zhao (2010) fleet management optimization is defined as "the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra- and inter-organizational processes in order to achieve effective and efficient flows of product and services, information, money and decisions to provide maximum value to the customer". Similar definition was suggested by Vijayasarathy (2010) – "adoption and use of collaborative and coordinating structures processes technologies and practices among supply chain partners for building and maintaining a seamless conduit for the precise and timely flow of information materials and finished goods". Following these definitions, it becomes clear that supply chain performance entails collaboration and coordination either in the company between different departments or functions or with supply chain partners. The former type of collaboration and coordination draws the concept of internal performance, which will be out of the scope of this paper, while the latter delineates external performance. As the abovementioned definitions clearly emphasize on how important is the

management of inter-company relations to achieve performance, they fail to determine the depth of these relations. The term depth in this case is an indicator, demonstrating how strong the inter-dependencies between two parties are. A good example for different kind of relationships could be given from the procurement literature, where the relationships with suppliers that provide non-crucial goods, which can be readily found in the market from another supplier, are not as deep and important as with a supplier, who provides a strategic good to the company. In that vein, Hansen et al. (2009) argues that inter-organizational relationships range from short-term, contract-driven obligations to long-term, trust-based partnerships. Lambert, Emmelheinz and Gardner (1996) present a continuum for supply chain partnership, where the weakest form of relationship is arm's length and the strongest is joint venture. This notion of the depth of supply chain performance will be used later for the one of the two dimensions of the theoretical construct, based on which the literature is reviewed. The rationale behind it is that in the majority of the research papers supply chain performance is examined in a narrow scope, including only its cooperative aspects. In my work I will try to analyze it in a broader perspective, by adding one more aspect of it, namely the short-term, arm's length relationships. Moreover I believe that the advent of internet technologies present a great deal of opportunities to manage and optimize such kind of relationships, resulting in substantial cost and time savings.

Another part of the supply chain scholars adhere to the conceptualization of supply chain performance in terms of processes, namely supply chain process performance. A business process can be defined as structured and measured set of activities with specified business outcomes for customers (Davenport and Beers, 1995). Building on the process concept we can understand the connection between supply chain management and supply chain performance.

History Hass Petroleum Kenya Limited

Hass Petroleum is a renowned regional oil marketing company, incorporated in 1997, with a significant presence in East Africa and the Great Lakes region. Hass is a renowned oil marketer with fully fledged operations in Kenya, Tanzania, Uganda, South Sudan, Rwanda, Burundi and the Democratic Republic of Congo. With the aid of cutting-edge technologies and modern infrastructure, the firm is consolidating its position as the market leader in the regional oil industry. It has invested heavily in storage facilities as well as retail station networks and supply chain infrastructures to establish a solid and reputable partnership both on the supply and demand side.

Given its logistical capability, the firm has been able to provide optimal product flow to our business units in the landlocked countries in the region thereby providing operational flexibility to service the market demand for the region.

To address business growth, it has continued to invest in human capital; building a strong, youthful, motivated and highly qualified team to take us to the next level. The staff number over the recent years has pinnacled to over 600, spread out across the region. The Vision of Hass is to fulfill customers petroleum needs in the most credible, efficient and profitable manner while the Mission is To be the region's premier provider of high quality petroleum products through innovation, integrity, and reliable service delivery.

Statement of the Problem

Effective supply chain performance through the use of fleet management optimization can lead to a reduction in cost, resulting in a significant saving. A potential 6% saving on total cost through effective fleet management optimization is achievable (Bell &Sturkhart, 2007).

Today, it is commonly accepted that the cost of holding stock to a business is between 4% and 10% on top of the stock's value (PPOA, 2005). Oil firms in Kenya are characterized by elongated or overextended chains retailers (buyers/agents) which, in turn, mean long chains of transactions between chain members and consumers (Amoro, 2014). (World Firm, 2007) showed that leading firms in Kenya are faced with problems of wrong forecasting due to an unavailability of enough fleet management optimization. In 2014 Hass petroleum was affected by poor fleet management optimization related cases leading to low performance (ERC, 2014). This caused erratic deliveries, late deliveries and inflexibility hence affecting customer satisfaction with in their downstream chain (Kim, 2014). Customers are concerned with the availability of the product and the ability of the firms to meet their needs timely (Aghazadesh, 2013). Among all the opportunities of savings, the Supply Chain & Logistics area is covering a wide range of possibilities since the supply chain accounts for 80% of the product costs Clive (2014).

Unavailability of integrated fleet management optimization systems has affected performance at Hass petroleum hence reduced profits in the downstream chain hence leading to loss of chain profits (Otieno, 2014). There are few local studies done on establishing the role of effective inventory management in enhancing performance of commercial firms in Kenya by using fleet management optimization. There are studies done on the adoption of fleet management optimization by the public sector in the developed world. Thus the need to validate these in the context of the developing countries and in specific the oil sector in the developing countries since the implementation of fleet management optimization will adversely affect positively performance in terms of increasing the effective and efficiency in the oil sector.

Oil companies attain significant savings from effective fleet management optimization, which amounts between 40%-45% of total costs (Songet al.,2008). Effective fleet management optimization can lead to a reduction in cost, resulting in a significant saving. A potential 7% saving on total cost through effective inventory management is achievable (Bell &Sturkhart,

2007). Indeed, for many oil firms inventory costs account for over 50 % of total production costs (Chen, 2014).

Today, it is commonly accepted that the cost of fleet management to a business is between 4% and 15% on top of the stock's value (PPOA, 2005). Oil firms in Kenya are characterized by elongated or overextended chains retailers (buyers/agents) which, in turn, mean long chains of transactions between chain members and consumers (Amoro, 2011). (World Firm, 2007) showed that leading oil firms in Kenya are faced with problems of wrong forecasting due to an unavailability of enough fleet management optimization data. In 2012 Hass petroleum was affected by poor fleet management optimization related cases leading to low performance (ERC, 2014). This caused erratic deliveries in these firms, late deliveries and inflexibility hence affecting customer satisfaction with in their downstream chain (Kim, 2013). Customers are concerned with the availability of the product and the ability of the firms to meet their needs timely (Aghazadesh, 2003).

Thus the study focuses on Role of fleet management optimization on supply chain performance in oil sector in Kenya with reference to Hass petroleum.

1.3 Objectives of the Study

LITERATURE REVIEW

Supply Chain Performance

For decades supply chain performance has been attracting great attention from practitioners due to poor performance resulting from non-adherence to power processes and procedures. The procurement function has not been given the recognition it deserves in developing countries, in most public entities, regardless of the effort by the partners like the World Bank, the international. This could be deliberate or sheer ignorance on the value the supply chain function could contribute to any organization (Zhu, 2002). While functions like Human Resource (HR) and Finance can have their performance measured, this is not the case with the procurement function. The failure to establish performance of the supply chain function has led to irregular and biased decisions that have costly consequences to every entity (Subramaniam & Shaw, 2002).

(Kamanda, 2001), suggested that supply chain performance starts from purchasing effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity. According to (Venkatesh *et al*, 2003) purchasing performance is considered to be the result of two elements; purchasing effectiveness and purchasing efficienc.y. For an organization to change its focus and become more competitive performance is a key driver to improving quality services while its absence or use of in

appropriate means can acts as a barrier to change and may lead to deterioration of the purchasing function (Ajzen, 2007).

Empirical Literature

It is readily apparent that most of the scholars are concentrated on exploring the relationship between fleet management optimization and performance (Frohlich & Westbrook, 2002; Sanders, 2007). Yet another group of scientist look into issues related with the implementation and achieving interoperability between fleet management optimization systems among business partners to promote supply chain performance (Power & Singh, 2007; Lancioni et al. 2003). It is necessary more attention to be paid to the different tools that technologies offer in support of supply chain performance. One of the few scholars that investigate e-business tools is Sulo (2007). He proposes a set of tools that can be harnessed for redesign of business relationships. Unlike this study however, his paper is empirical, restricting the scope of his analysis only to the steel industry. Moreover the author sets the point of focus on sequential adoption of the proposed tools for the redesign of relationships and emphasizes only on the information management application of e-business tools. S. Garcia-Dastugue and D. Lambert made a classification of different e-business mechanisms building on literature from marketing, logistics, SCM and management information systems. They proposed 6 market mechanisms that promote matchmaking, market liquidity and short-term transaction between participants and one mechanism used in more stable and close relationships – namely coordination flows. Even though this paper can be determined as remarkable, it is notable that too much attention is paid to the market mechanisms. Moreover the authors suggest that coordination is attained by means of public and private information hubs. The advent of technology, though, has given practitioners more tools to cope with it. Therefore I have good reasons to believe that more effort should be made in drilling down the issue of coordination and collaboration in supply chain integration.

Wang and N. Archer (2007), carrying out a web survey, embark on exploring and categorizing different collaborative functionalities that are offered by electronic marketplaces. They put forward, as a result, five types of horizontal and four types of vertical collaborative mechanisms to enhance supply chain integration. Although their research is quite comprehensive and exploratory, they define collaboration in very broad terms- "…in its broadest sense, joining an electronic market place is called collaborative commerce, regardless of whether business participants trade through arms-length market relationships or through long-term relationships" (S. Wang, N. Archer, 2007). Additionally, their research encompasses only electronic marketplaces. As I mentioned above, there exist more variable tools for accomplishing supply chain integration

The use of internet in business has become ubiquitous and the arsenal of internet-related tools to plan, organize and execute has substantially expanded. Lancioni et al. (2003) conducted two

consecutive studies on the adoption of e-business technologies in supply chain management – one in 1999 and the next in 2001. They found out that the difference of adopting such practices was abruptly grown only for two years. Given the fact that this research was carried out 10 years ago, I dare say that e-business technologies now play a crucial role in managing business relations. As there exist a host of tools to facilitate supply chain integration, there is a need to ascertain in which integration contexts, they perform best. Such an investigation would have an important managerial implication. Despite that, it seems that this area is still under-researched.

RESEARCH METHODOLOGY

The study adopted a descriptive survey design. The target population was 500 staffs within fleet management at Hass Petroleum. The sample of 50 respondents was used from the target population of 500. The researcher used questionnaire as the research instrument.

DATA ANALYSIS AND INTERPRETATION

Reliability Test

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda & Mugenda, 2003). During the pilot study, two repeat mailings of the instrument were carried out to improve the overall response rate before sending the actual instrument to allow for pre-testing of the research instrument.

Cronbanch's alpha for each value was established by the SPSS application and gauged against each other at a cut off value of 0.7 which is acceptable according to Cooper and Schindler (2008). According to table 4.1 all the values were above 0.7 which concludes that the data collection instrument was reliable.

Table **4. 1**: Reliability test

Variable	Cronbach's Alpha	No of Items
Costs Reduction	.7045	2
ICT Integration	.7168	3
Top management support	.7263	4
Lead time	.7177	2

Findings from Study Variables

Costs Reduction

The study found out that majority (83%) of the respondents agreed that Costs Reduction contribute to fleet management optimization in the firm through the advertisements and meetings of the stake holders while 17% of the respondents were not for the opinion that Costs Reduction contribute to fleet management optimization in the firm. The found out the Costs Reduction contributed to fleet management optimization practices in the firm.

ICT Integration

The study found out that ICT Integration contributed to fleet management optimization in your organization. According to the findings, 80% of the respondents indicated that ICT Integration contribute to fleet management optimization in your organization while 20% of them indicated that ICT Integration does not contribute to fleet management optimization in the organization. According to the findings, 40% of the respondents indicated that ICT Integration contribute to fleet management optimization in the organization, 28% of the respondents indicated that ICT Integration contribute to fleet management optimization in your organization, 21% of the respondents indicated that ICT Integration contribute to fleet management optimization in the organization to a moderate extent, 4% of the respondents indicated that ICT Integration contribute to fleet management optimization in the organization to a great extent while only 2% of the respondents indicated that ICT Integration contribute to fleet management optimization in your organization at a great extent.

Top management support

The study found out that Sixty four percent (64%) of the respondents felt that Top management support contribute to fleet management optimization practices in the organization while 36% of them were of the opinion that Top management support does not affect contribute to fleet management optimization practices in the organization. The study also found out that Top management support contributes to fleet management optimization practices in the organization, 36% of the respondents indicated that Top management support contributes to fleet management optimization practices in the organization to a great extent, 27% to a very great extent, 24% to a moderate extent, 7% that it did not at all affect fleet management optimization practices, while only 6% indicated that Top management support contributes to fleet management optimization practices in the organization to a little extent.

The study found out that 35% of the respondents argued that Top management support factors influence fleet management optimization practices in the organization, 30% of the respondents indicated that Top management support factors influence fleet management optimization practices in the organization, 14% of the respondents indicated that Top management support factors influence fleet management optimization practices in the organization, 11% of the respondents indicated that Top management support factors influence fleet management

optimization practices in the organization, while only 9% of the respondents indicated that Top management support factors influence fleet management optimization practices in the organization.

Lead time

The study found out that organizational Lead time contributed to fleet management optimization in your organization, 67% of the respondents indicated that the organizational Lead time contributed to fleet management optimization in the organization while only 33% of the respondents indicated that the organizational Lead time do not contribute to fleet management optimization in your organization. From the study findings, 31% of the respondents indicated that Lead time contribute to fleet management optimization in the organization to a very great extent, 29% of the respondents indicated Lead time contribute to fleet management optimization in the organization to a great extent, 26% of the respondents indicated that Lead time contribute to fleet management optimization in the organization to a moderate extent, 12% of the respondents indicated that Lead time contribute to fleet management optimization in the organization to a little extent while only 4% of the respondents indicated that Lead time did not contribute to fleet management optimization in the organization at all.

Conclusions

The study concludes that majority of the respondents agreed that Costs Reduction contribute to fleet management optimization in the firm through the quality products and meeting of the recommended standards while some of the respondents were for the opinion that Costs Reduction doesn't contribute to fleet management optimization in the firm.

The study concludes that the firm ICT Integration contributed greatly to fleet management optimization in the organization. According to the findings, majority respondents indicated that ICT Integration contributes to fleet management optimization in the organization at a great extent.

The study concludes that majority of the respondents felt that Top management support contribute to fleet management optimization practices in the organization. The study also concludes that Top management support contributes to fleet management optimization practices in the organization, since majority of the respondents indicated that Top management support contributes to fleet management optimization practices in the organization to a great extent. The study also concludes that majority of the respondents argued that Top management support factors influence fleet management optimization practices in the organization.

Finally the study concludes that organizational Lead time contributed to fleet management optimization in your organization, majority of the respondents indicated that the organizational Lead time contributed to fleet management optimization in the organization. From the study findings, majority of the respondents indicated that Lead time contribute to fleet management

optimization in the organization to a very great extent and only a few respondents thought Lead time did not contribute to fleet management optimization in the organization at all.

5.4 Recommendations for policy and practice

Policy and practice for fleet management optimization should be carefully evaluated and the results of that evaluation fed back into improved approaches. It is important that the evaluation considers the full range of costs and benefits. The organisation should have sufficient special techno-economic knowledge and openness to new, effective methods when assessing tenders for fleet management optimization. Staffs should be equipped with the specific skills and competencies needed to design and manage contracts (including the associated training, after-sales service and Employ human resources with specific training and equipment for performing functional and environmental tests in order to be able to accept the end product and verify performance.

Fleet management optimization initiatives appear to be instrumental for improving supply chain performance, by harmonizing operations, launching co-ordination initiatives, setting standards and building skills. As such, the management of the Hass petroleum should adopt fleet management optimization initiatives. However, the main focus of fleet management optimization is to produce cost savings.

The firm should create supporting structures of expertise with the help of public authorities that have R&D-review as core business and Introduce clear incentives to private authorities by stating that 80% percent of the total volume of business realignments should be implemented. In this manner, fleet management optimization can become a strategic issue for the Hass petroleum ltd.

On financing investment, the Hass petroleum should adopt new financing methods to save costs, to improve customer relationships, business processes and performance, and to open new business opportunities. It might also help the organisation to respond better to existing challenges and improve the anticipation of future developments in business realignments.

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