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INFLUENCE OF SUPPLY CHAIN AGILITY ON COMPETITIVENESS OF LIQUEFIED PETROLEUM GAS FIRMS IN NAIROBI, KENYA

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Abstract: **Supply chain agility is a relatively new area in supply chain research in Kenya and it focuses on the firms' ability to absorb disruptions especially in liquefied petroleum gas industry. The ever changing nature of the global supply chain presents many challenges for effective system coordination because currently, one member in a supply chain cannot compete as independent members, but rather as a group. Therefore, the general objective of this study was determine the influence of supply chain agility on competitiveness of liquefied petroleum gas firms in Nairobi, Kenya. The specific objectives of the study was to establish the influence of alertness of supply chain on the competitiveness, to determine the influence of accessibility of information in the supply chain affect the competitiveness, to determine the influence of decisiveness of supply chain on the competitiveness and lastly to establish the influence of supply chain swift in action on the competitiveness of liquefied petroleum gas firms in Nairobi, Kenya. The study adopted a cross-sectional descriptive survey design. The target population was 8604 respondents from 20 Major petroleum and gas firms in Kenya. The sample size for the study was 375 respondents from 20 Major petroleum and gas firms in Kenya. Descriptive survey design and correlational research design was used in this study. Primary and secondary data will be used. While self-administered questionnaire and interview guide was used to collect primary data, the study reviews the previous evaluation reports to sought the secondary data on performance. The data collected was then analyzed by both descriptive and inferential statistical tools. Being that the current study was dealing with the relationship study, the study therefore used regression model as a tool of analysis and the results will be generated and presented in form of tables. The results of this study aimed to benefit policy makers, managers, administrators, entrepreneurs, researchers, consultants, scholars and trainers involved in liquefied petroleum gas firms industry. The study concluded that alertness of supply chain influence significantly and positively influenced on the on the competitiveness of liquefied petroleum gas firms in Kenya .The results suggest that the effectiveness in the alertness of supply chain led to better competitiveness of liquefied petroleum gas firms. The study also concluded that information accessibility has a significant and a positive influence on the competitiveness of liquefied petroleum gas firms in Kenya. The results suggest that effective in the information accessibility led to better competitiveness of liquefied petroleum gas firms. The study further concluded that decisiveness of supply chain had significant and a positive influence on the competitiveness of liquefied petroleum gas firms in Kenya. The results suggest that higher effectiveness in the decisiveness of supply chain led to better competitiveness of liquefied petroleum gas firms. The study finally, concluded that supply chain swift in action had significant and a positive influence on the competitiveness of liquefied petroleum gas firms. The study recommends that management of the competitiveness of liquefied petroleum gas firms must ensures that their agile supply chains is alert to changes, within the supply chain itself and within the surrounding environment which in turn will enhance their competitiveness in the context of quality products and services. The study further recommends that once a change in the market is detected through the alertness capability, liquefied petroleum gas firms must also be able to access relevant data to decide how to provide an agile response which h in turn will enhance their competitiveness. The study also recommends that firms should customize products cost efficiently while avoiding product markdowns caused by excess inventory by ensuring that they is shortened replacement times of materials and services as well as improved set-uptimes and quick adjustment of production processes.Finally,the study recommends that once a decision is made on how to respond to changes, entities must be able to quickly implement those decisions to enhance the competitiveness of liquefied petroleum gas firms.**

Keywords: **Accessibility of Information, Agility, Alertness, Competitiveness, Decisiveness and Supply Chain Agility.**

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1. INTRODUCTION

The ever changing nature of the global supply chain presents many challenges for effective system coordination because currently, one member in a supply chain cannot compete as independent members, but rather as a group. Zhao, Huo, Selen and Yeung (2014) further assert that modern changes in the world economy like globalization, outsourcing and reduction in supply base have increased the level of uncertainty, and thus risk exposure of supply chains because of the increased disruptions. Under such uncertain supply chain, Olhager and Prajogo (2012) suggest the need for a firm supply chain to be agile and adapt to the changing business conditions. All firms depend on the capabilities of their suppliers, and every firm that is not a retailer depends on the capabilities of those who provide it links to the final consumer. The need for supply chain agility is explained by the realization that some of the activities in the value stream of the product or service delivery system are often not undertaken by the organization itself, but rather sourced from external vendors whose actions will affect the performance of other supply chain partners. Consequently, Kisperska-Moron, and Haan (2015) propagates the need to manage effectively the internal and external phases of the supply chain as an integrated whole.

Statement of the Problem:

The petroleum industry in Kenya has increasingly become the key industry whose operations influence the overall economy of the country. Basically all activities in Kenya rely in one way or another on the prices of the petroleum products and considering that the prices of the oil market internationally remains unpredictable, the adaptability of the firms supply chain to the market conditions will determine the efficiency of the petroleum firms operations, and therefore the cost of its products. Further, the Energy Regulatory Commission regulates the prices of petrol, diesel and kerosene in the country and this makes price differentiation strategy to be irrelevant. Therefore, the movement to supply chain as a source of competitiveness has become an important strategy for the petroleum companies considering the fact that according to a study by the Petroleum Institute of East Africa (PIEA) (2015), close to 24% of the cost incurred on the petrol, diesel and paraffin products – that forms over 94% of the oil companies revenue, can be associated to costs that originate from the firms supply chain. Similarly, the Energy Regulatory Commission (ERC), for example, state that the pump prices of petrol, for example, is made up of close to Sh 35/- per litre due to logistics and demurrage charges a cost that is closely related to the function of the firm supply chain. In addition, the level of competition in Kenya has been increasing over the last decade. The major oil firms such as Total, OilLibya and Kenon Kobil have had their market shares shrinking over the period because of the level of competition. Kenol Kobil market share has shrunk from 18% in 2008 to than 9.9% in 2017. Similarly Total Oil Company has shed its market by 7.2% over the same period to 13.4% (PIEA, 2017). However, VIVO Energy has more than doubled its market share to 28%. The investigation of the factors that determine the competitiveness of petroleum companies in Kenya will therefore be an important exercise to be undertaken. Against this background, the research will seek to establish the influence of supply chain agility on the competitiveness of petroleum gas companies in Kenya.

Objectives:

i. To establish the influence of alertness of supply chain on the competitiveness of liquefied petroleum gas firms in Nairobi, Kenya.
ii. To determine how the accessibility of information in the supply chain influence the competitiveness of liquefied petroleum gas firms in Nairobi, Kenya.
iii. To determine the influence of decisiveness of supply chain on the competitiveness of liquefied petroleum gas firms in Nairobi, Kenya.
iv. To establish the influence of supply chain swift in action on the competitiveness of liquefied petroleum gas firms in Nairobi, Kenya.

2. THEORETICAL REVIEW

Resourced Based View Theory:

The Resource-Based View (RBV) was advanced by Barney (1991) and recognizes that the fundamental drivers to firms' superior performance are attributes to the resources and capabilities which reside in the organization and are valuable and costly-to-copy (Peteraf & Bergen, 2003). The RBV contributes to explain how firms achieve and maintain a competitive advantage by considering the firm as a bundle of resources that are unique to the firm, and which, compared with the

bundles of other firms, might translate into a competitive advantage. According to Barney (1991), for a resource residing in a firm to be a source of competitiveness, then it needs to be unique and the integration of different organization uniqueness through formation of an alliance will create much higher level of performance. The RBV argues that any firm is essentially a pool of resources and capabilities which determine the strategy and performance of the firm; implying that if all firms in the market have the same pool of resources and capabilities, they will create the same value and thus no superior performance shall be available in the industry (Wilden, 2015).

Dynamic Capability Theory:

The dynamic capability (DC) theory was advanced by Teece and Pisano (1994) and further refined by Teece, Pisano, and Shuen (1997), and Eisenhardt and Martin (2000). The theory argues that firm dynamic capabilities are resources both internal and external that enable an organization to integrate, learn and reconfigure its assets and process to achieve improved performance. Unlike the RBV which is internally focused, DCT predisposes that firm level differences in capabilities are rooted on their asset positions such that a firm's future position to change its operating condition is determined by their current stock of capabilities. In addition, firm's processes such as governance structures, resource allocation processes and managerial systems will shape the organizational agility and adoptability.

Relational View Theory:

The relational view (RV) theory was advanced by Dyer and Singh (1998) and suggests that a firm's sources that will of competitive advantage may extend beyond firm boundaries. The theory highlights that partners who are willing to make relation-specific investments and combine resources in unique ways can achieve superior levels of performance. Unique inter-firm linkages can be a source of competitive advantage over firms that are unable or unwilling to form similar linkages.

The Strategy-Structure-Performance Paradigm:

Galbraith and Nathanson (1978) advanced the strategy-structure-performance (SSP) theory. The theory argues that in order to maximize their performance, organizations should strategically approach the development of their desired level of supply chain agility. The alignment, or fit, of strategy and structure is considered a baseline requirement for organization performance and therefore, the external and internal contingency factors should be considered when developing and deploying updated strategies. Structure centres on the design of an organization through which the enterprise is administered, including the lines of authority and communication between the different administrative elements of an enterprise as well as the information and data that flow through these lines of communication and authority (Goldsby, 2006).

Conceptual Framework:

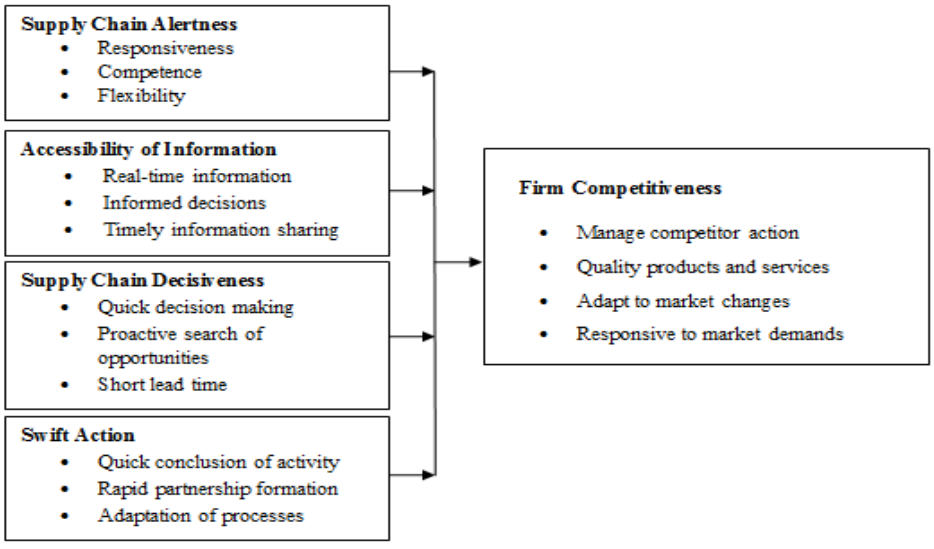

Figure 2.1: Conceptual Framework

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3. RESEARCH METHODOLOGY

This study used adopt a cross-sectional descriptive survey design to justify the relationship between the independent variables and dependent variables. Total population that will be targeted will be of 8604 respondents. The study used stratified random sampling where the subjects are selected in such a way that the existing subgroups in the population are more or less reproduced in the sample. A sample of 375 respondents was used. Open and closed-ended questionnaires was prepared and administered for the officials and members respectively. The study relied on primary data using a questionnaire, which will be administered on the drop and pick from selected respondent in Sacco members and management. In this study, the quantitative data was collected and analyzed by calculating response rate with descriptive statistics such as mean, median, standard deviation and proportions using Statistical Package for Social Sciences (SPSS) version 24 and Microsoft Excel

Model

Analysis of data used multiple regressions to test the research questions

$Y=\beta_0+\beta_{1X1}+\beta_{2X2}+\beta_{3X3}+\beta_{4X4}+\varepsilon$

Where,

Y = Competitiveness of liquefied petroleum gas firms in Nairobi

X_1 = Alertness of supply chain

X_2 = Accessibility of information

X_3= Decisiveness of supply chain

X_4= Supply chain swift in action

β0= Constant Term

4. REGRESSION RESULTS

Table 4.1: Significance of Independent Variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.892	.033		.000	.001
	Alertness of supply chain	.892	.040	.917	24.402	.002
	Information accessibility	.781	.045	.837	16.252	.002
	Decisivenes of supply chain	.737	.052	.725	11.189	.001
	Supply chain swift	.714	.055	.627	.000	.001

The results in Table 4.1 indicate that alertness of supply chain influence significantly and positively influenced on the on the competitiveness of liquefied petroleum gas firms in Kenya .The results suggest that the effectiveness in the alertness of supply chain led to better competitiveness of liquefied petroleum gas firms. The effects were significant hence lead to the conclusion that competitiveness of liquefied petroleum gas firms is influenced by alertness of supply chain. This implies that Business alertness is considered as the ability of a firm to quickly detect changes, opportunities and threats. Therefore, an agile supply chains must be alert to changes, within the supply chain itself and within the surrounding environment. This dimension of agility manifests itself through sensing emerging market trends, listening to customers, and monitoring real demand through daily point-of-sale data.

Further, information accessibility has a significant and a positive influence on the competitiveness of liquefied petroleum gas firms in Kenya. The results suggest that effective in the information accessibility led to better competitiveness of liquefied petroleum gas firms. The effects were significant hence lead to the conclusion that competitiveness of liquefied petroleum gas firms is influenced by information accessibility. This result indicates that supply chain-wide information access is recognized as a key requirement for supply chain agility. Therefore. Once a change in the market is detected through the alertness capability, firms must also be able to access relevant data to decide how to provide an agile response.

Decisiveness of supply chain had significant and a positive influence on the competitiveness of liquefied petroleum gas firms in Kenya. The results suggest that higher effectiveness in the decisiveness of supply chain led to better competitiveness of liquefied petroleum gas firms. The effects were significant hence lead to the conclusion that competitiveness of liquefied petroleum gas firms is influenced by decisiveness of supply chain. These results indicate that supply chain agility decision making decisiveness can contribute to cost performance as it enables firms to smoothly and cost-efficiently handle supply chain disruptions

Supply chain swift in action had a significant and positive influence on the on the competitiveness of liquefied petroleum gas firms in Kenya. The results suggest that higher effectiveness in the supply chain swift in action led to better competitiveness of liquefied petroleum gas firms. The effects were significant hence lead to the conclusion that competitiveness of liquefied petroleum gas firms is influenced by supply chain swift in action. This implies that swiftness enables firms to meet delivery deadlines and to ensure dependability and accuracy of a service. Swiftness of action can result in greater flexibility which can lead to enhanced delivery and service level performance.

5. CONCLUSION

The study concluded that alertness of supply chain influence significantly and positively influenced on the competitiveness of liquefied petroleum gas firms in Kenya. The study also concluded that information accessibility has a significant and a positive influence on the competitiveness of liquefied petroleum gas firms in Kenya. The study further concluded that decisiveness of supply chain had significant and a positive influence on the competitiveness of liquefied petroleum gas firms in Kenya. The study finally concluded that supply chain swift in action had significant and a positive influence on the competitiveness of liquefied petroleum gas firms in Kenya

6. RECOMMENDATIONS

The study recommends that management of the competitiveness of liquefied petroleum gas firms must ensures that their agile supply chains is alert to changes, within the supply chain itself and within the surrounding environment which in turn will enhance their competitiveness in the context of quality products and services. The study also recommends that management of the competitiveness of liquefied petroleum gas firms must ensures that their agile supply chains is alert to changes, within the supply chain itself and within the surrounding environment which in turn will enhance their competitiveness in the context of quality products and services. The study further recommends that firms should customize products cost efficiently while avoiding product markdowns caused by excess inventory by ensuring that they is shortened replacement times of materials and services as well as improved set-uptimes and quick adjustment of production processes.The study finally recommends that once a decision is made on how to respond to changes, entities must be able to quickly implement those decisions to enhance the competitiveness of liquefied petroleum gas firms

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