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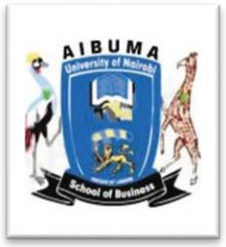

SUPPLY CHAIN RISK ASSESSMENT STRATEGIES AND PERFORMANCE OF BEVERAGES DISTRIBUTION CHANNELS IN KAJIADO COUNTY

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Abstract

The objective of this study was to evaluate the extent to which Supply Chain Risk Assessment Strategies (SCRAS) are being adopted by beverage distribution channels in Kajiado County and to establish the relationship between SCRAS and performance of beverage distribution channels in Kajiado County. The population comprised all channels that distribute beer, sodas, and juice in Kajiado County, which were 1,200 and a sample size was 92 channels was selected. The data was collected by use of a questionnaire and univariate data was summarized by use of mean scores, standard deviation and percentages to present the results. The findings indicated that the channels carry out routine audit of outlets to check for product expiry. The findings revealed that beverage distribution channels in Kajiado County adopted several SCRAS, and also revealed that when well implemented, the strategies lead to better performance of the distribution channels. The study concludes that lack of top management support affect performance, uncertainty of future events and in demand planning is another challenge, lack of proper strategies to deal with challenges is another shortcoming. The study recommend that the government should formulate proper policies to support the growth of firms. The firm should also improve the technological level for efficient work delivery.

Key words: *Supply chain risk, performance, distribution channels*

Introduction

In today's business environment firms compete to satisfy customer demands, comply with government regulations, engage in market source development and supply chain capacities, meeting internal shareholder pressure for performance, and employee motivation issues. Variations in market demand leave several firms unable to satisfy the consumer demands; the stock-out dilemma threatens pushing consumers away to taste competitor products. Changes in government regulations at times affects the product selling chains, working hours, skills required to produce and sell the products. When these elements are not well taken care of, they bring about risks that can affect the company revenues and profits; thus, directly affecting the firms' sustainability (Blackman &Baumol, 2008).

In the context of supply chain risk management, it is prudent to identify all potential risks that face organizations in order that the management can carry out an assessment of the impact on the company operations, then develop mitigation and control mechanisms. On product delivery for instance, a driver delivering products to customers may be working alone in a truck and get fatigued due to frequency of loading and offloading. The management had to assess the probability of the driver getting involved in an accident, and the implication of the accident so as to analyze the cost of business interruption (Coyle, Novack, Gibson & Bardi, 2011). Product loss, product damage, product contamination or delivery delays are likely to arise in the course of transportation operations.

Volatility in inventory optimal forecasting part of it caused by demand-pull, transport breakdowns, abrupt changes in channels network redesigns pose direct and indirect risks to a business (Harrison, Van Hoek, Skipworth, 2014), Farrington and Lyson (2012), positing stockpiling, insurance premiums and supplier selection and development as remedies. Outsourcing of non-core functions of an organization is a trending issue because this transfers risks to the outsourced partner (Christopher, 2016). Organizations are likely to reduce risks and succeed if they focus on their core strengths, and they have differential advantage over their competitors.

It is a global practice that organizations find it necessary to identify, assess, control and mitigate risks due to the design of supply chains that has potential to present uncertainties, dynamic procedures of managing evolving risks because of environmental changes, and the need to be agile in responding to customer needs and product innovation. Severity of risks is growing by the day, and research shows that some of these risks have led to closure of organizations (Hunt, 2001). Accounting irregularities, accidents, supplier delays, sudden change in consumer preferences, regulations changes, and technological advancement may pose great risks to organizational survival. McKinsey's (2010), found out that supply chain risk management requires strategies and is a major concern to organizations, but only a few of them took steps to assess and control it.

Use of information to carry out environmental scanning looks at both internal and external forces in order to assess risks

that can hinder competitiveness (Ogden, 2014). Motorola, according to Ogden (2014), as one of the early strategic scanners managed to develop a methodology to collect information, and utilize it to remain on the cutting edge and competitiveness. For organizations that deal in global sourcing and partnerships, use of global databases helps them consolidate volumes and also sourcing strategies. Technology tools leads to efficiency and effectiveness along the supply chain, therefore, decision makers must put more emphasis on assessing applications of information technology with view of improving the organizations profitability (Leenders, Johnson, Flynn, & Fearon, 2010). For planning and control of business activities, reports and information derived from information technology tools is very crucial. Electronic procurement has become a modern method presenting risk assessment due to its audit trails in the procurement systems.

The list provided by Kenya Revenue Authority in 2018 has 57 such local manufactures with about 1,200 distribution channels in Kajiado County ranging from small, medium and large size outlets. Of interest such as beverages depots, there were several players in the county; such as depots distributing soda, beer, juices for companies such as Coca-Cola, Pepsi, East African Breweries, Keroche Breweries Limited, Del Monte, Kevian Kenya Limited, all which have a national distribution outlook.

Problem Statement

Studies have revealed that risks can extend to danger, loss or injury which may cause operational, financial, and integrity risks; all these with the potential of causing a negative business impact (Stemmler, 2006; Merna & Al-Thani, 2005). However, according to Waters (2011), risk identification, assessment, control and mitigation procedures make a supply chain more resilient and thus lead to organizational performance. Successful implementation of the system reduces traditional operations by more than 70 percent; thus reducing costs for the organization (Burt, Dobler & Starling, 2013); with accuracy of forecasting reducing the risk of excess inventory because lead times, re-order levels and points are well accommodated thus, information flow is passed from one level to the other with certainty for storage and production planning (Heizer & Render, 2014).

Supply chain risks have different outcomes and Krajewski, Malhotra and Ritzman (2016), posit that SCRA in organizations try to analyze potential effect to facilities, operations or the integrity of the business and its stakeholders with the view to ascertaining impact to the business. However, Simchi-Levi, Kaminsky and Simchi-Levi (2008) suggested cost reduction as a benefit realized from risk assessment in the sourcing of raw materials, labour dynamics and outsourcing, which then leads to increased revenue and profits. Pollution assessment as affect firms' risk assessment in the supply chain, provides a methodology of understanding of the firms' control systems (Sarhaye & Marendi, 2017). A study is necessary on risk assessment strategies such as risk audit, demand and supply forecasting, channels network designs, implementation of use of techniques and information technology can improve on

accurate demand forecasting benefiting the organization on lean thinking.

According to Kendrick (2009), the internet provides information necessary for assessing technical risks and, at the strategic level of management, assisting in better selection of vendors and supply partners. Talent management was a crucial component in enhancing performance of human resources and this would be critical in risk management in juice management at Del Monte Kenya in the beverage industry (Mutinda, 2017). However, a study is necessary to assess the whole beverage industry including beer, juice, and soda. This study aims at evaluating the extent to which SCRAS were being adopted by beverage distribution channels in Kajiado County.

Objective

The objective of the study was to identify the factors that affect adoption of SCRAS and determine the businesses' management contribution to the impact and performance of beverage distribution channels in Kajiado County.

Literature Review

This section lays focus on review of theoretical, conceptual and empirical literature along the study's conceptualization. The section presents literature on theoretical underpinnings of the study followed by conceptual and empirical literature on SCRAS, information technology and organizational performance of the distribution channels in Kajiado County.

Prediction of what will happen in the future is the most difficult portion of management in any organization. The burden, however, rests with managers and expectations are high to ensure solutions in mitigating risks are found and implemented. Managers in small, medium and large organizations usually find themselves having to deal with constructing long-term relationships with suppliers, risk management, and profit maximization (Bruel, 2017).

When managing risks, the agency theory has shown to influence the managers' attitudes and also motivation to manage and hedge against risks in the organization (Smith & Stulz, 1985). The theory explains the possible mismatch between the managers and the organization's shareholders, which has the potential of creating risks because their interests are different and at times competing. Investors in the supply chain have conflicting interest that may pose risks especially when capital asset financing is priced inappropriately and may affect product pricing, shifting consumer demand. When the output in terms of finished product is uncompetitive in the market place, then the pressure turns from the principal to the agent, demanding for results in sales revenues from the outputs. Harris and Raviv (1979) describe the issue of principal-agent theory as the trade-off between measuring the behavior and then the cost of measuring the outcomes with the aim of transferring the risks that emanate from the relationship and interests. When the principal and the agent engage in a long term relationship, according to Lambert (1983), the principal will be able learn the behavior of agent and assess that behavior more readily in order to avert any risks.

The relational theory of risk is an interpretive theory that seeks to answer the question on how and why something may be considered a

risk and how in the cognitive capabilities of organizations, risk can be assessed on its societal implications (Bohom, 2009). The analytical notion of the risk object in this theory helps managerial decisions in identifying the causes of the risk, assessing the implications of the risk in order to find mitigating strategies for organizational survival. The relationship between facilities service providers and their customers has been distributive to some extent (Atkin& Brooks, 2000). Services have been purchased for each site separately and price becomes the only determining factor in the selection and award of service providers. The risk assessment for outsourcing of non-critical functions and the reduction of supplier bases is forcing organizations to seek for collaborative approaches to relationships (Loosemore & Hsin, 2001). Both agency and relational risk theories are considered to be directly related to risk assessment and management, which is an interpretive theory that seeks to answer the question on how and why something may be considered a risk.

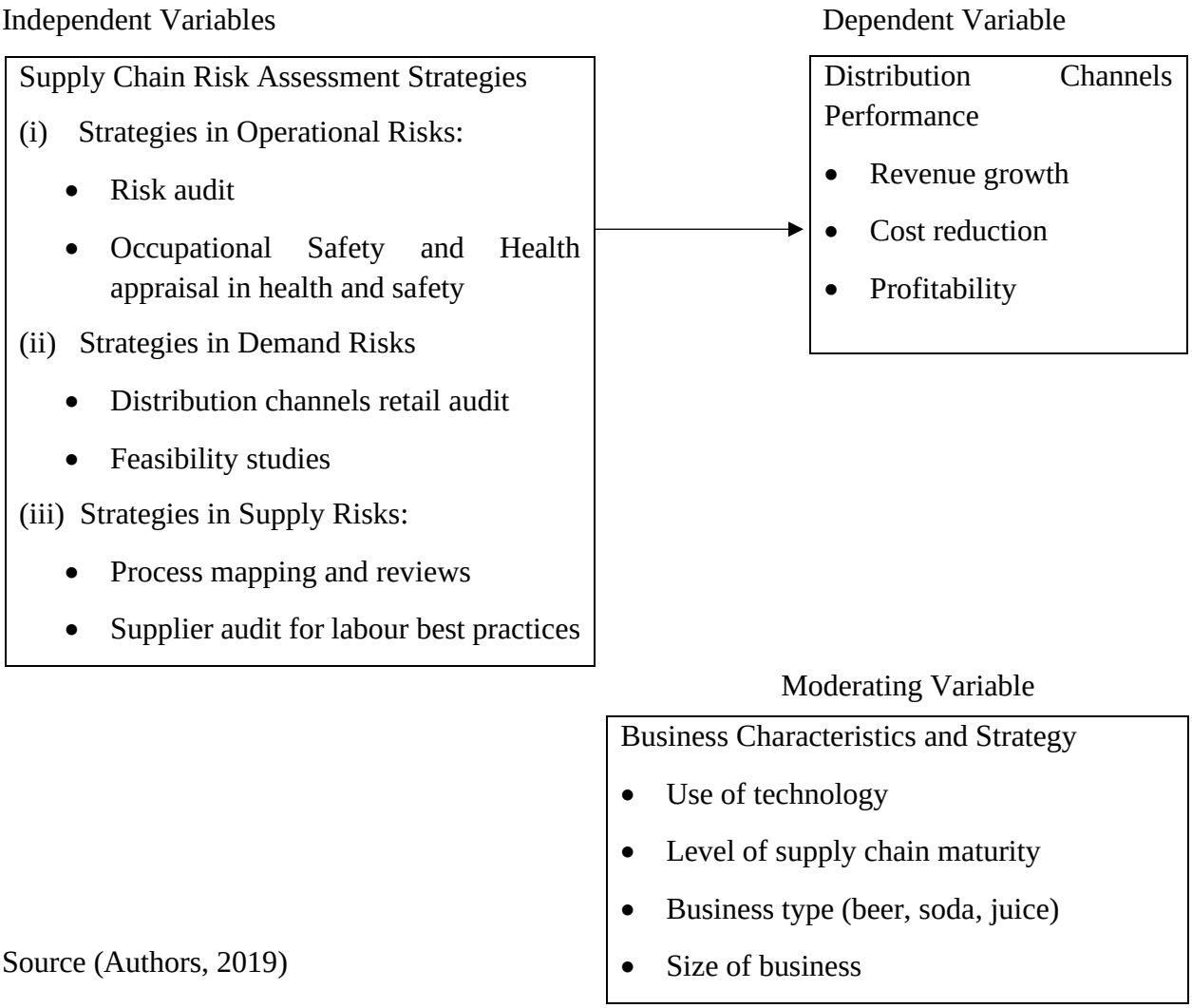
At mature levels of the business cycle, risk assessment is carried out to describe the competitive rivalry of the business in order to adopt the right competing strategies. Hillson (2016), posit that goods, services and technology are interdependent in the supply chain resilience and exposes the managers (Waters & Rinsler, 2017), to the analysis to foresee and reduce business risks as a desirable measure in order to make the organization competitive. Use of supply chain operations reference models in the business contingency reduces risk exposure because managers can plan their raw materials purchases, determine the sources, schedule the correct production targets, deliver on timely basis to customers and have feedback real-time. From a risk assessment point of view (Slack, Chambers & Johnston, 2010), the model provides benchmarking databases from which companies make strategic decisions to use the model to compare supply chain performance based on their respective processes and identify differential gaps that could pose vulnerability to the companies. Once gaps are identified, it is easy to develop control measure to mitigate risks.

Uncertainty and risk mean that there is no full knowledge of future events, however, the managers may know alternatives available should the events occur. According to Bruel (2017), legal risks that are judicial and regulatory can affect the implementation of SCRAS especially in supplier selection and relationship strategies. Legal issues may crop up where there were illegal evaluation and subcontracting of suppliers. In the analysis, the suppliers' risk assessment profile proves capability of supporting uninterrupted supplies but in reality, regulatory issues place the parties in an opposing position.

Conceptual Framework

The study reveals that SCRAS such as risk audit, health and safety appraisal, distribution channels retail audit, feasibility studies, and process mapping reviews lead to organizational performance. However, there are some mitigating factors such as use of technology, type and size of business and Figure 1 below shows this relationship.

Figure 2.2 Conceptual Framework



Source (Authors, 2019)

Research Methodology

The study was carried out through descriptive cross-sectional survey design and was conducted within Kajiado County covering the beverage distributions channels that distribute in the county for manufacturing companies in order to determine the characteristics of the firms in risk assessment strategies. The investigations about SCRAS on the performance of those beverage distribution channels clearly showed the relationship among those variables (Churchill, Iacobucci, & Israel, 2009).

The population of interest was the channels that distribute beer, sodas, and juice in Kajiado County, which was 1,200. In the population frame was the distribution channels such as distributors, and stockiest. The target population contained all the records with the desired information that was used to provide answers on the set objective. For sample size determination, Yamane (1967) formula for calculation of sample size

from a population was used for a 95 percent confidence level, that is alpha (α) value was 0.05 and size was calculated as:

$n = [N/1 + N(e)^2] = 1,200/[1 + 1,200*(0.1)^2] = 92.31$ – which is approximately 92 channels, where, N is the population size and *e* is the level of precision. The study had 95 percent confidence level with ±10 percent precision; the degree of variability within the population was at 50 percent.

The selected samples were adequate for the general conclusion about the entire population and for the statistical tools that were used in the data analysis. According to Mugenda and Mugenda (2003), resource and time factor influences the sample to use. The researcher covered towns of interest in Kajiado County in order to get a representative sample from the entire population. The sampling technique used was probabilistic stratified random in order to have each member of the population have equal chance of selection into the sample. The strata included either beer, soda or juice outlets within the distribution channel outlets.

Primary data was used where a structured questionnaire was used to collect data that was organized in four parts part A collected details about the organizational profile; part B provided details about SCRAS adopted by beverage distribution channels in Kajiado County; part C had details about the impact of the supply chain risks assessment strategies in beverage distribution channels in Kajiado County; and part D had details concerning the challenges faced by beverage distribution channels as they implement SCRAS in Kajiado County The questionnaire was chosen because the researcher has control over types of data at the time of data gathering. The reliability of the instrument was measured through a test-retest method to ensure that channels management had similar questions that could provide similar answers. The respondents were presented with descriptive statements about the management involvement in SCRAS in a Likert scale that was used to score. Secondary data was collected through the county publications, and any other relevant materials that provided the required information. The questionnaire was administered through drop and pick, targeting procurement, dispatch, stores, operations managers responsible for decision making in the 92 distribution channels.

When the measurement instrument provides consistent results, then reliability is achieved (Bryman & Bell, 2011). The measurement has two components first; the stability of the measure through test-retest. The method involves carrying out the test in one instance and re-doing the same sample to ascertain the correlation between two variables. Test re-test validity tests were carried out on several outlets and the difference between various test were not significant as to cause any problems in the results. The risk assessment strategies variables were measured in different occasions and checked for correlation in the two separate tests. The second component was internal reliability, which was tested through the split half technique, where the indicators were for the given measure was divided into two using random method and correlation computed for the two halves.

Analysis and Interpretation

Linear regression analysis was done to determine the extent to which SCRAS were being adopted by beverage distribution channels in Kajiado County and the findings are shown in Table 1 below. From the findings, the adjusted R^2 was 0.632 which meant that 63.2 percent variations of dependent variables can be explained by challenges of supply chain and impact of supply chain and 36.8 percent can be attributed to other factors. The overall regression model was significant since p-value was less than α, (0.000 < 0.05) and all the independent variables were significant, since all the p-values were less than α-value. Therefore, the linear regression model was OP = 23.47 + 0.62RA + 0.27OSH + 0.28DCRA + 0.20FS + 0.33PM + 0.23SA, where OP is operational performance; RA is risk audit; OSH is Occupational safety and health; DCRA is distribution channels retail audit; FS is feasibility studies; PM is process mapping; and SA is supplier audit.

The study established when holding all the variables constant performance of beverage distribution in Kajiado County, would be at 23.47. One unit increase in risk audit when holding all the other variables constant would lead to 0.62; a unit increase in OSH appraisal in health and safety when holding all the other variables constant, would lead to 0.27; one unit increase in distribution channels retail audit when holding all the other variables constant would lead to 0.28; a unit increase in feasibility studies when holding all the other variables constant would lead to 0.20; a unit increase in process mapping and reviews when holding all the other variables constant would lead to 0.33; and one unit increase in supplier audit for labour best practices when holding all the other variables constant would lead to 0.23 increase in performance of beverage distribution in Kajiado County. Therefore, all the independent variables significantly influenced the performance of beverage distribution in Kajiado County. However, looking at the standardized coefficients in Table 1 below, process mapping and reviews was the most important independent variable.

Table 1 Model Summary, Analysis of Variance and Coefficients of Regression

Model	R	R Square	Adjusted R Square		Std. Error
1	.802[a]	.643	.632		1.98042
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	466.476	2	233.238	59.468	.000[b]
Residual	258.857	66	3.922		
Total	725.333	68			

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Beta		
(Constant)	23.468		4.914	.000
Risk Audit	.615	.678	8.785	.000
OSH appraisal in health and safety	.266	.269	3.489	.001
Distribution channels retail audit	.275	.476	4.176	.003
Feasibility studies	. 200	.478	2.776	.004
Process mapping and reviews	.326	.991	3.876	.000
Supplier audit for labour best practices	.225	. 676	3.087	.001

a. Dependent Variable: Operational Performance

b. Predictors: (Constant), risk audit, OSH appraisal in health & safety, distribution channels retail audit, feasibility, studies, process mapping and reviews, supplier audit for labour best practices

Conclusion and Recommendations

This study aimed to examine the relationship between SCRAS and performance of beverage distribution channels in Kajiado County. The finding from the study confirms that SCRAS helped the beverage distribution channels in Kajiado County to hedge against operational, supply, and demand risks. These strategies helped the channels become more competitive and satisfy their customers. The study concludes that that these activities carried out to support the strategies in reducing operational, supply and demand risks led to operational performance of the distribution channels. These activities which include purchase orders being raised and sent electronically, goods being delivered only when needed to avoid overstocking, promotion of safety gears for protective purpose, supplier audit to check on supplies capacity, use of computer packages to keep and reconcile stocks , use of mobile

transactions for goods payments, market research on consumer tastes, and implementation of standard operating procedures to guide on the selling processes led in supporting the adoption of SCRAS thus, performance of the distribution channels.

The impact of the adoption of the SCRAS was performance of the distribution channels in Kajiado County. From the findings, R^2 was 64.3 percent, which meant that 64.3 percent variations of dependent variable was explained by the independent variables challenges of supply chain and impact of supply chain and 35.7 percent can be attributed to other factors. There was increased customer satisfaction due to timely deliveries, health and safety policies eliminated work related injuries, there was better demand forecasting through supplier collaborations, continuous supplies to the market increases revenue, minimum stock level management led to higher sales, higher stock turn-over increased revenue due to repeat and referral customers, supplier audit on capacity ensured there is continuous supplies, better understanding of consumer tastes led to improves sales, electronic payment system minimized the risks of money loss, that faster feedback from market through online infrastructure, improved delivery times due to distribution efficiency. Lastly, the study concluded that regular service on vehicles and machines improved productivity and revenue.

There were, however, challenges that the study identified, such as the uncertainty of future events demand planning, lack of top management support affecting performance, lack proper strategies to deal with challenges is another shortcoming, use of traditional methods, government regulations on channels operations, and lack of training. The challenges identified were drawbacks to the effects of SCRAS meant to create operational performance on the distribution channels in Kajiado County. The study recommends that campaign need to be carried out to the management team to reduce problems associated with non-cohesion between employees. Top management can adopt strategies and policies on training of employees on use of modern technology to ensure proper analysis of trend of product demand. The study also recommends that proper policies to be laid down to control unexpected future happenings. These policies should ensure that the government and the public anticipate what might happen from any pending bills that may create by-laws that may affect businesses. The study further recommends that the government should formulate proper policies to support the growth of firms and stakeholder participation is very key to ensure that opening and closing times are business friendly.

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