GREEN SUPPLY CHAIN MANAGEMENT PRACTICES AS DETERMINANTS OF SUPPLY CHAIN PERFORMANCE IN KENYA'S MANUFACTURING FIRMS: A CASE STUDY OF NAIROBI-BASED FIRMS IN THE FOOD AND BEVERAGE SECTOR

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GREEN SUPPLY CHAIN MANAGEMENT PRACTICES AS DETERMINANTS OF SUPPLY CHAIN PERFORMANCE IN KENYA'S MANUFACTURING FIRMS: A CASE STUDY OF NAIROBI-BASED FIRMS IN THE FOOD AND BEVERAGE SECTOR

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ABSTRACT

The study sought to establish whether reverse logistics, as a GSCM practice, determines supply chain performance in Kenya's food and beverage sector. Adopting a case design, the study utilized a questionnaire to collect data, and analysed it using Microsoft Excel, SPSS and SmartPLS. Results indicated that respondents had adopted reverse logistics practice to a significant degree. However, there was a disconnect between adoption and practice of this GSCM component since respondents affirmed incorporation of recyclable content and reusability of their packaging but a significant percentage (46%) remained non-committal on the issue of used-package collection, implying an incomplete reverse logistics loop. The study recommended institution of measures to facilitate collection of used packaging by having collection points where customers could drop off used oil/milk/beverage containers. Collection of expired products from customers for disposal was also recommended. These measures would complete the reverse logistics loop fully, thereby reducing the firms' environmental footprints.

Keywords: *Green, Supply Chain Management, Performance, Packaging, Reverse Logistics*

1. Introduction

Manufacturing is a vital link of the supply chain because its processes fulfil business and human purposes by providing benefits to customers through products and services. Supply chain activities however more often than not impact negatively on the environment hence the need for organizations to identify and adopt practices that not only yield competitive advantage at the supply chain level but also yield improved performance for the individual supply chain partners, while safeguarding the environment (Green *et al.,* 2008). Environmental awareness in the 21st century has continued to gain momentum due to the effects of climate change, pollution and depletion of non-renewable natural resources and the key global challenge is how to address these issues (Douglas, 2006; UN, 2007). To protect the environment therefore, there is need for businesses to go green in order to enhance economic development that generates wealth and meets the needs of the current generation while saving the environment for future generations (Daft, 2008).

Greening the supply chain is a major concern for the world, and governments across the globe are striving to build green supply chains. Integration of environmental issues and Supply Chain Management (SCM) has become a thriving subfield over the past two decades (Sarkis, 2012). The increasing number of studies focusing on Green Supply Chain Management (GSCM) within the 21st century further demonstrates the significance of this concept. Businesses are also facing increased competitive, regulatory and community pressures, including pressure for environmental sustainability, hence the need for strategies that will reduce the environmental impacts caused by the products and services they offer. Additionally, customers are becoming more aware of environmental issues, thereby raising the demand for ecological products. All this awareness of and sensitivity towards environmental issues continues to place certain demands on business functions to become greener (Smith & Perks, 2010).

1.1 Background of the Study

Extractive and manufacturing firms have been cited as the leading culprits in environmental degradation since they are at the heart of the supply chain, as large volumes of products originate and flow through them. According to the Kenya National Bureau of Statistics (2012), the manufacturing sector in Kenya handled products worth more than Kenya shillings 3.3 trillion between 2008 and 2011. This economic power demonstrates the influence that manufacturing firms in Kenya have on the supply chain, hence the need for greening their processes. Despite its increasing popularity in industrialized countries, GSCM is a relatively new concept in developing countries, Kenya included, although a number of manufacturing firms have already begun to implement these

practices, as demonstrated by various green studies done locally (Amemba, 2013; Andebe, 2013). Preuss (2002), Murray (2000) and Green *et al*. (1998) however observe that implementation of GSCM practices is more often in response to demand for environmentally sustainable products and services as well as to governmental environmental regulations. This observation concurs with Andebe's (2013) findings, which revealed that the textile industry in Kenya has adopted GSCM practices to a minimum extent and solely for compliance with the green regulation put forward by the government. Amemba *et al.* (2013) however propose viewing GSCM not just as a need for compliance, but as good business sense that can accrue numerous benefits to an organization such as cost reduction and supplier integration that promotes environmental innovation as well as higher profits.

This study set out to establish whether adopting reverse logistics could have any effect on the performance of the supply chain of Nairobi-based manufacturing firms in the Food and Beverage Sector. The study also evaluated the supply chain by considering three dimensions of performance - environmental, economic and social – as suggested by Teuteberg and Wittstruck (2012). The economic performance considered reduced cost and increased profitability, whereas environmental performance considered reduction in energy consumption, usage of hazardous material and material usage (Lin *et al.,* 2011*;* Zhu *et al,* 2005). The social aspect on the other hand was measured by considering intangible outcomes such as company and product image as proposed by Eltayeb *et al* (2011).

2. Theoretical Review

The theories discussed below attempted to link GSCM practices to supply chain performance.

2.1 Social Network Theory (SNT)

SNT is grounded on two major elements namely density, which measures the relative number of ties in the network that link actors together; and centrality which refers to the position of an individual organization in the social network and its ability to control the flow of information. With reference to external pressures, an increase in density results in a decrease in the organization's ability to resist external pressures from network members. As network centrality increases however, the organization's ability to resist external pressures also increases (Zhu & Liu, 2010; Rowley, 1997; Wasserman & Galaskiewicz, 1994). According to Maignan and Mcalister (2003), organizations with a greater number of locations, customers, suppliers, and general awareness in the public are likely to be under greater pressure to adopt GSCM practices. This demonstrates the notion of density, and the adoption of the practices will be more or less reactive. The centrality

notion however denotes organizations that have effective control over pressures to adopt GSCM practices, giving room to the organization to decide. This may denote proactive adoption of GSCM practices.

2.2 Institutional Theory

This theory examines how external pressures influence an organization's actions. The theory has three forms of isomorphic drivers namely; coercive, normative and mimetic isomorphic drivers. Coercive drivers emanate from influences exerted by those in power such as governments while normative arise from an enterprise's desire to conform and be perceived as having legitimate organizational activities. Mimetic drivers on the other hand occur when enterprises imitate the actions of successful competitors in the industry with the aim of replicating the path of their success i.e. benchmarking (Sarkis *et al.,* 2010; Ball & Craig, 2010; Hirsch, 1975). Rivera (2004) cites government agencies as an example of powerful institutions that may coercively influence the actions of an organization through, for example, fines and trade barriers. Increasing customer and market environmental expectations form the core normative pressure for manufacturers to implement GSCM. According to Zhu and Liu (2010), joint ventures (JV) are a perfect example of mimetic isomorphic drivers because JVs in a developing country may implement GSCM practices such as eco-design by imitating their parent companies, and then diffuse their experiences to other enterprises in the developing country.

3. Conceptual Model

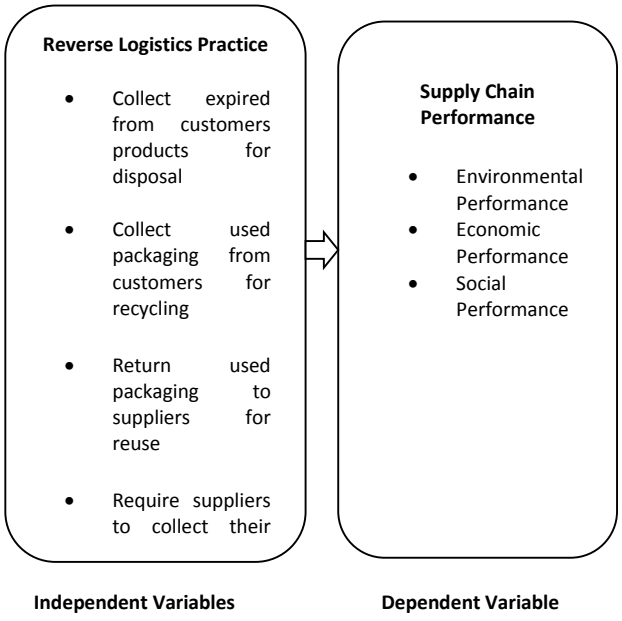

Figure 1: Conceptual Framework

4. Methodology

The study adopted a case study design due to its ability to allow investigation of a phenomenon in depth and within its real-life context (Yin, 2009), and focused on Kenya's manufacturing firms in the food and beverage sector. The Kenya Association of Manufacturers' (KAM) had a membership of 766 Companies on its list at the close of 2013 (KAM Directory, 2014). This constitutes 40% of the Manufacturing Value-add Industries in Kenya comprising of small, medium and large enterprises. KAM members are categorised into 14 Sectors according to the Raw materials they import or Manufacture. This research

focused on 126 firms in the Food and Beverage Sector within Nairobi locality, where a sample of 10% was drawn for the study. The study stratified the firms into their respective sub-sectors based on their products, where each sub-sector represented a stratum. Primary data was collected through a self-administered semi-structured questionnaire. It was analyzed with the aid of SPSS, SmartPLS and Microsoft Excel.

5. Research Findings

Reverse logistics received ratings slightly above average as 53.8% of the respondents confirmed that they collected as well as returned used/expired products/packaging upstream and downstream respectively. However, 46.2% remained non-committal on the aspect, an indication that respondents need to put more effort on this aspect. Findings revealed the construct's slight weakness along the respondents' supply chain, an indication that a significant margin of respondents do not fully understand that logistics does not stop with the delivery of goods to customers, but also requires stocks to be returned to suppliers via a feedback loop (Ritchie et al., 2000). To realize environmental sustainability via reverse logistics, respondents need to plan, implement and control the backwards flow of raw materials, in-process inventory, packaging and finished goods from manufacturing, distribution, up to the point of recovery or proper disposal, for this is the true meaning of reverse logistics according to European Working Group on Reverse Logistics (as cited in Pfohl *et al,* 2012).

Aided by SmartPLS v.2.0, the study assessed the impact of reverse logistics on supply chain performance. Results revealed a negative association between reverse logistics practices and environmental aspect of supply chain performance (-0.393). However, the construct depicted a positive link with supply chain's economic performance (0.322). Results also revealed that both environmental and economic performance were significantly linked to social performance and consequently to supply chain performance.

6. Conclusions

Results of the study revealed that to a large extent, the firms under focus had adopted reverse logistics as a GSCM practices, to a significant degree. Their inclination towards GSCM practices may therefore be indicative of normative and mimetic isomorphic drivers as proposed by the institutional theory, where in the case of normative, the firms desire conformance so as to be perceived as having legitimate organizational activities, while in mimetic drivers they are imitating actions of successful competitors in the industry in order to replicate their path of success. This may also be an indication that some firms adopted GSCM practices due to social network pressures in line with the Social Network Theory, where supply chain partners are driven to adopt GSCM practices, due to an increase in

density (i.e. number of ties linking supply chain partners), thus weakening a firm's ability to resist external pressures from network members.

7. Recommendations

Findings revealed that the firms in focus had adopted GSCM practices to a great extent. There was however a disconnect between adoption and practice in that, respondents affirmed that they had incorporated recyclable content as well as ensured reusability of their packaging. However, when it comes to collecting the same used packages under reverse logistics, a significant percentage (46%) was non-committal on whether they collect from customers/return to their suppliers or not. The study recommended institution of measures by manufacturers to facilitate collection of used packaging from their customers. They could for instance have collection points at supermarkets where customers could drop off used oil/milk/beverage containers for them to collect. Since their products are bar-coded, they could consider awarding customers loyalty points for every package returned to inculcate this habit in customers. The manufacturing firms should also put extra effort on collection of expired products from supply chain partners for disposal. This will complete the reverse logistics loop fully, thereby reducing the firms' environmental footprint.

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