

A REVIEW AND RESEARCH DIRECTION OF GREEN SUPPLY CHAIN MANAGEMENT IN KENYA

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ABSTRACT

Green Supply Chain Management (GSCM) has appeared as an ecological novelty which incorporates ecological concerns into supply chain management. GSCM has gained popularity with both academic and practitioners. The purpose of the study is to briefly review the recent literatures of the GSCM and also determine the new direction area of this emerging field in Kenya. A detailed review is used to sort out the literature and develop the research direction of the study. The review is focused on development of GSCM in a developed and Kenya as a developing country including all those researches which are relevant to ecological and societal sustainability towards supply chain management. It shows the lack of researches to examine the adoption and implementation of GSCM practices especially in developing countries such as Kenya. Thus, the study bring forward a proposed research direction on GSCM adoption and implementation in Kenyan's manufacturing industries.

KEYWORDS

Supply Chain Management, Green Supply Chain Management, Ecological Management and Kenyan Manufacturing Firms.

1. INTRODUCTION

The primary goal of most businesses is to create and maintain a supply chain that can improve their business performance (Sirmon, Hitt & Ireland, 2007). Since the early 1990s, researchers have discovered that supply chain management plays an important role in helping firms improve performance (Mentzer, DeWitt, Keebler, Min, Smith & Zacharia, 2001). Supply chain management (henceforth SCM) is the strategic coordination of resource flows among members of the upstream and downstream supply chain (Mentzer et al., 2001). Ultimately, the goal of SCM is improving the long-term performance of firms in the chain (Ketchen & Hult 2007; Combs & Todd 2008). To create value, supply chains need to be managed in a proactive way that creates processes and common goals among the supply chain members (Min, Mentzer & Ladd, 2007). Indeed, research supports the idea that proactive supply chain management may represent an "inimitable competitive weapon" in the business environment, one that can deliver value for the firm (Ketchen & Hult, 2007). Consequently, forward thinking firms have stated to realize that there could be greater benefit of the green technology adoption in business operation, which also could affect suppliers and customers. Environmental issues under legislation and directives from customer especially in the US, the European Union (EU), and Japan become an important concern for manufacturers (Ninlawan, Seksan, Tossapol, & Pilada, 2011). As a result, Green Supply Chain Management (GSCM) emerges as a new systematic environmental approach in supply chain management and is being increasingly accepted and practiced by forward-thinking firms (Zhu & Sarkis, 2004).

The current changing in ecological conditions that influenced manufacturing activities had increased attention in developing environmental management (EM) strategies for the supply chain (Beamon,1999). Thus, the concept of GSCM arises as a new systematic approach and becoming an important factor for business activities today. Zhu, Geng, Fujita, and Hashimoto, (2010) also claimed GSCM can be regarded as an ecological innovation. By integrating the 'green concept to the supply chain' concept, it has created a new research agenda where the SC will have a direct relation to the environment (Fortes, 2009). Thus, it becomes interesting issue because the past literatures showed these two paradigms were interrelated (Srivastava, 2007).

The purpose of this paper is to discuss an overview of the development of GSCM literature in a developed countries and developing countries. This study also is performed to determine the new research area of issues related GSCM's implementation. This study provides a thorough review from previous studies. At the end, it proposes the research direction framework for the study.

2. LITERATURE REVIEW

2.1. Green Supply Chain Management

Integrating environmental thinking into the planning and coordination of business practices to create a fit which deliver value to customers is what breeds green supply chain management concept (Lambert & Cooper 2000; Council of Supply Chain Management Professionals, 2009). Green SCM is defined as the intra- and inter-firm management of the upstream and downstream supply chain practices aimed at minimizing the overall environmental impact of both the forward and reverse flows (Klassen & Johnson 2004; Zhu, Sarkis & Lai, 2008). Green SCM practices fall into four primary dimensions of supply chain management (Zhu et al., 2008): green purchasing (in bound greening), green manufacturing (focal company), green distribution (out bound greening) and environmentally-oriented reverse logistics. These four dimensions of SCM capture key dimensions of green SCM practices (Zhu et al. 2008).Figure 1.1 brings these dimensions together and figuratively defines green supply chain. Green supply-chain management (GSCM) is gaining increasing interest among researchers and practitioners of operations and supply chain management. The past literature also shows that most researchers have studied the GSCM adoption and implementation on developed countries such as Japan, Germany, Portuguese, UK and Taiwan and so on.

However, limited studies have examined the GSCM practices in developing countries especially Kenya.

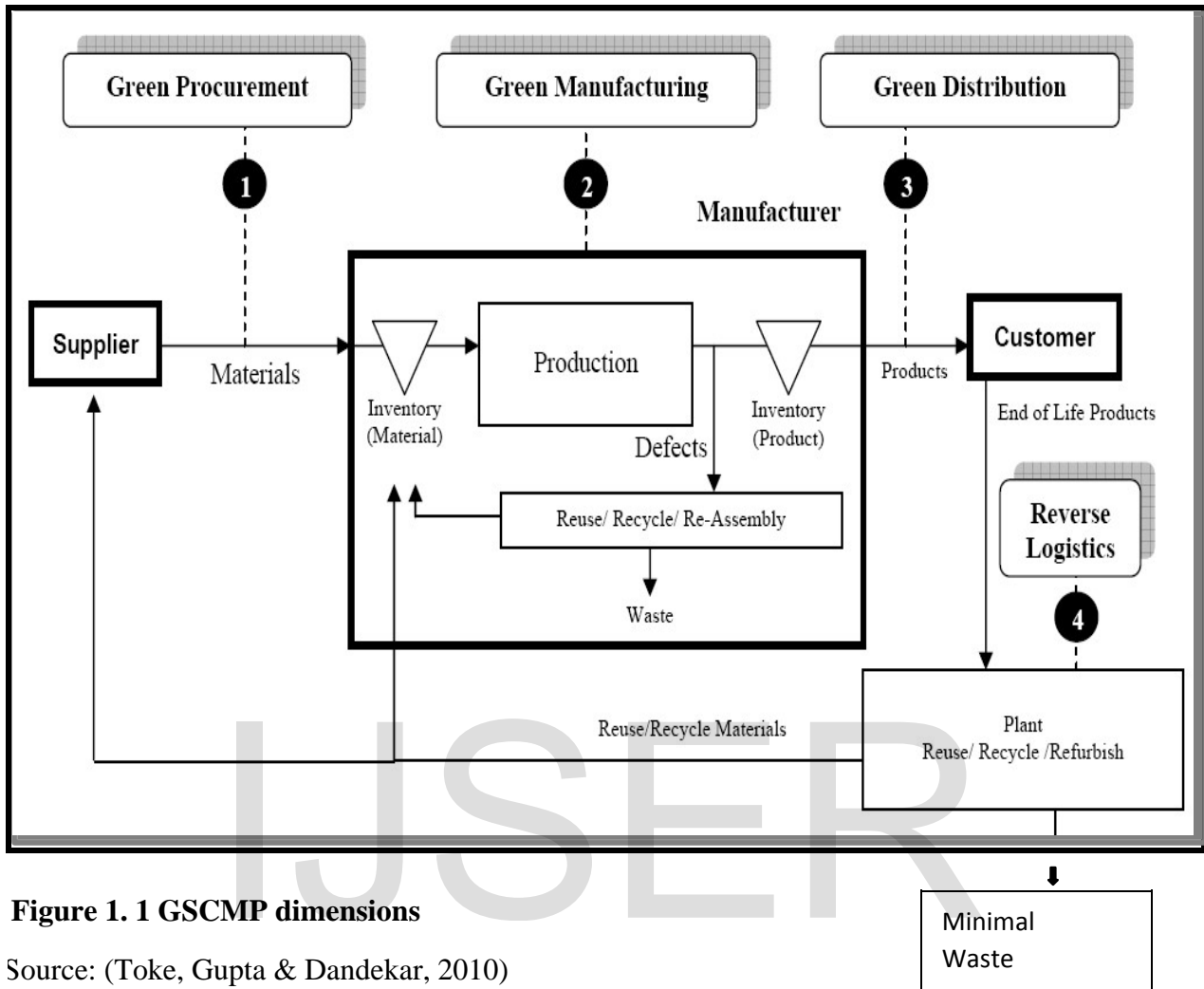


Figure 1. 1 GSCMP dimensions

Source: (Toke, Gupta & Dandekar, 2010)

2.2. Green Supply Chain Management in Developed Countries

Developed countries are defined according to their Gross National Income (GNI) per capita per year. Countries with a GNI of above US\$ 11,905 are defined as developed (specified by the World Bank, 2013). A developed country is a nation with a higher standard of living, developed industrial base, and high Human Development Index (HDI) relative to other countries (World Bank, 2013). Developed countries can be defined from this characteristic as those which have a higher HDI rating. Thus, the developed countries are believed to deal with lots of ecological issues and depletion problems due to their increasing economic development. Most researchers conducted their study in developed countries to examine the integration of environmental concept and supply chain management.

One study from Germany conducted by Large and Thomsen, (2011) identifies five potential drivers of green supply chain management performance: green supply management capabilities, the strategic level of purchasing department, the level of environmental commitment, the degree of green supplier assessment, and the degree of green collaboration with suppliers. Hsu and Hu, (2008) examine the links between green practices of supply chain management and supply chain performance in the context of the Portuguese automotive supply chain. This study obtains the conceptual model from data analysis that provides evidence as to which green practices have positive effects on quality, customer satisfaction and efficiency as well as negative effects on supply chain performance.

Shang et al., (2010) in Taiwan have explored the correlation between greening the supplier and green innovation in the Taiwan industry by using Structural Equation Modeling. They conclude that greening the supplier through green innovation leads to significant benefits to the environmental performance and competitive advantage of the firm. Cagno, Guido, Perotti, and Zorzini, (2011) also examine the Green Supply Chain Practices (GSCP) adopted by Third Party Logistics (3PLs) service providers such as specific practices implemented and level of adoption of each practices. They also examine the relationship between various GSCP implementation and company performance. In this study, the work offers an indepth understanding of potential effects of GSCP on company performance.

From Japan, Arimura, Darnalln and Katayama, (2011) determine the influence of ISO 14001 certification on the green supply chain management (GSCM) by using Japanese facility level data. The study proves that ISO 14001 and voluntary EMS government program significantly influence GSCM practices. Another study from Japan by Zhu, Geng, Fujita, and Hashimoto, (2010) seeks to introduce environmental / green supply chain management experiences of large Japanese manufactures. This work shows that the large companies can green their supply chain by creating win-win relationships with their partners, and hence realize the sustainable growth for the entire supply chains. Besides, it also indicates that suitable regulations and policies set by the government can help GSCM circulation from larger leading companies to smaller companies.

Hsu and Hu, (2008) investigate the consistency approaches by factor analysis that determines the adoption and implementation of GSCM in Taiwanese electronic industry. The fuzzy analytic hierarchy process method is applied to prioritize the relative importance of four dimensions and 20 approaches among nine firms in the electronic industry. Meanwhile, Shang et al., (2010) explore key green supply chain management (GSCM) capability dimensions and firm performance based on electronics-related manufacturing firms in Taiwan. On the basis of a factor analysis, four green supply chain management dimensions are identified: green manufacturing, green distribution, green procurement, and environmentally- oriented reverse logistics.

Holt and Ghobadian, (2009) investigate the level and nature of greening the supply chain in the UK manufacturing sector. This study explores the driving forces behind environmental management, the specific management practices that result, and the relationship between them. The study by Nawrocka, Brorson, and Lindhqvist, (2009) in Sweden, has concentrated on the role of ISO 14001 in environmental supply management practices in Swedish companies. The study describes the existing and potential role of ISO 14001 for three key operational tasks of environmental supply chain management: to communicate the requirements to the supplier, to motivate and enable the supplier, and to verify that the supplier follows the requirements.

Moreover, the study from South Korea carried out by Lee, (2008) has identified the drivers of participation in green supply chain initiatives by considering small and medium-sized suppliers and their most important stakeholders, including buyers and the government. Raymond, Lopez, Marche, Perron, and Wright, (2008) examine the relationship between supply chains and environmental performance of SMEs in Canada. This study proves that time and financial resources are the most limiting factors in dealing with solid waste and energy issues.

In addition, Chen, (2008) looks into the relationship between green innovation and green image of companies in Taiwan. The study proposes a new concept of green core competence. Chien and Shih, (2007) examine the adoption of GSCM practices among the electrical and electronic industry in Taiwan. They suggest an empirical study on the relationship between green supply chain management practices

and environmental performance, as well as financial performance. One study from Australia, conducted by Simpson, Power, and Samson, (2007) explores the moderating impact of relationship conditions existing between a customer and its suppliers and the effectiveness of the customer's environmental performance requirements (otherwise known as "green-supply"). Simpson et al (2007) propose further research on the moderating effect of supply chain ecocentricity on the performance of green supply chain management practices.

In the context of developing countries, little research attention has been devoted to the concern of GSCM especially in African region. The GSCM concept is a relatively new concept in the South East Asian and African regions and probably only a few companies are actually able to implement it (Rao & Holt, 2005). However, as claimed by Rao & Holt, (2005) in their study on green supply chain in South East Asian region (Philippines, Indonesia, Malaysia, Thailand, and Singapore) environmental supply chain practices had started to take place. Thus, the findings from those researches in the Asian region can be useful for manufacturing in developing countries in order to develop the appropriate GSCM practices and reducing the environmental problems.

Recent literature shows that most researchers are starting to investigate GSCM in the East Asian region, especially China as developing country. The issues related to GSCM have become even more critical in China. Although China gains more opportunities as a major manufacturing country, she also deals with huge environmental problems with this opportunity (Rao & Holt, 2005). Zhu, Geng, Sarkis, and Lai, (2011) investigate whether different Chinese manufacturer clusters varying in their extent of implementing GSCM exist from the ecological modernization perspective. The study also examines whether Chinese manufacturers' awareness of local and international environmental ESPR-oriented (enhancing energy savings and pollution reduction) compliance is related to GSCM implementation and also if a mediating effect of regulatory pressure plays a major role.

The study by Liu, Yang, Qu, Wang, Shishime, and Bao, (2011) in China has analyzed the relationship between green supply chain management level (GSCML) and the classified determinant factors. The study confirms that a company's environmental management capacities will be strongly enhanced by frequent internal training of employees to increase its involvement in GSCM practices. Another research from China by Li, (2011) examines the adoption levels of GSCM practices in China and explores the performance measurement for GSCM. The findings have demonstrated that GSCM is strongly balancing to other advanced management practices, and contributes to the improvement of environmental performance. A study of Ninlawan et al., (2011) in Thailand analyzed the recent green activities in computer parts' manufacturers and also measured the level of green supply chain management

The concept of GSCM is relatively new in developing countries. Recent literature has established that there are still limited research studies on GSCM adoption and implementation based on the developing country context. A study of Diabat and Govindan, (2011) in India analyze the green activities in computer parts' manufacturers and also measures the level of green supply chain management. The study conducted in India by Diabat and Govindan, (2011) identifies the drivers influencing the implementation of GSCM using an Interpretive Structural Modeling (ISM) methodology and extracts eleven drivers collected through past literature: Certification of suppliers' environmental management system; environmental collaboration with suppliers; collaboration between product designers and suppliers to reduce and eliminate product environmental impacts; government regulation and legislation; green design; ISO 14001 certification; integrating quality environmental management into planning and

operation process; reducing energy consumption; reusing and recycling materials and packaging; environmental collaboration with customers; and reverse logistics.

Most researchers use the manufacturing industry as their sample of study in order to investigate the GSCM adoption and implementation either in developed or developing countries. Manufacturing is believed to be the main cause of the emerging environmental problems due to its traditional business operations' nature (Lee, 2008). Traditional polluting industries such as manufacturers in chemical, electrical and paper industries generally experience higher environmental pressure. Therefore, the manufacturing industry as traditional polluters tend to be the potential sample of study as they tend to implement GSCM practices (Lee, 2008). Table 2.3 provides a summary of the past studies.

2.3. Green Supply Chain Management in Kenya

Modern environment management and planning in Kenya can be traced to the Rio Earth Summit of 1992, which helped a great deal in raising understanding about the link between environment and development (UNEP, 1996). Following the summit, Kenya initiated the national environmental action plan (NEAP) process. This was completed in 1994. It recommended the need for a national policy and law on the natural environment (RoK, 2009). The policy process culminated into the Draft Sessional Paper No. 6 of 1999 entitled "Environment and Development." The legislative process gave forth the Environment Management and Coordination Act (EMCA) No. 8 of 1999 as Kenya's first framework of environmental law (RoK, 1999) for addressing environmental challenges such as environmentally-related diseases, water and air pollution, climate change just to mention but a few. Indeed it is noted that Kenya's population is clearly vulnerable to environmentally related diseases, where the total disease burden caused by environmentally related causes stand at 24 percent largely due to manufacturing activities (WHO, 2004). This made the government, through the National Environmental Management Authority (NEMA) to act tough on the violators of the environmental regulations (RoK, 2009).

As a result, various economic sectors have embraced green supply chain practices in Kenya to comply with the government's environmental regulations and to address both environmental and performance issues (Ondiso, 2012; Jones, 2006). Nevertheless, the GSCM concept is a relatively new concept in Kenya and probably only a few firms have been able to implement it (Wilson, 2013). Firms in the agricultural sector have adopted environmentally friendly pesticides, afforestation, un-contaminated seedlings and irrigation practices which are eco-friendly. These are replicated across and within other sectors like tourism, wholesale and retail trade, manufacturing and construction (Kamande, 2011). For example, British America Tabaco (BAT) combines elements of SCM (procurement, vendor network management, waste disposal and product design) with natural environment sustainability capabilities and policies (products designed for the environment, choosing suppliers with strong environmental credentials, efficient use of energy, use of tobacco dust as fuel to provide heat, reduce waste to landfill and water and supplier involvement in environmental management systems) to create integrated green SCM practices intended to comply with the government regulations (BAT, 2012). Similarly, East African Breweries Ltd, Bidco Industries Limited and Unilever Kenya have all integrated aspects of green management practices in their supply chains with the goal of complying with the government regulations and gaining acceptance in their operating environment through corporate social responsibility (CSR) (East African Breweries Ltd, 2012; Bidco Industries Ltd, 2012; and Unilever Kenya, 2011). This is supported by Omonge and Nyamwange (2010) in their study "Green Supply Chain

management Practices and Competitiveness of Commercial Banks in Kenya". They established that environmental supply chain practices had started to take place.

The promulgation of the Constitution of Kenya, 2010 marked an important chapter in Kenya's environmental policy development. Hailed as a green constitution, it embodies elaborate provisions with considerable implications for sustainable development (RoK, 2010). These range from the right to clean and healthy environment enshrined in the Bill of Rights. Chapter V of the constitution is entirely dedicated to land and the environment. It also embodies a host of social, political and economic rights of an environmental character, such as the right to clean water, food and shelter (RoK, 2010). The country's new constitution (The Constitution Kenya, 2010) envisioned a green economy where all the players in the economic development of the country are expected to undertake their economic activities in a manner that minimizes the impact on the natural environment (RoK, 2010). It established a framework of natural environment management throughout the entire supply chain- Green Supply Chain Management (Kamande, 2011). This is in line with sustainable development objective of Vision 2030; Kenya road map for development (RoK, 2007).

Recent literature showed that most researchers have started to investigate on GSCM in Kenya especially in the manufacturing industry. The issues related to GSCM have become even more critical in Kenya. Although Kenya gains more opportunities as a major manufacturing country in Eastern Africa, there are emerging huge environmental problems with this opportunity (Wilson, 2013). Barasa (2014) investigated whether various firms in tea industry in Kenya implement GSCM from the ecological modernization perspective. A study by Wilson (2013) examined whether Kenyan manufacturers' awareness of local and international environmental ESPR-oriented (enhancing energy savings and pollution reduction) compliance is related to GSCM implementation and also either a mediating effect of regulatory pressure plays a major role. The study found that the varying pace of Kenyan manufacturers to environmental modernize with GSCM practices and the significance of regulatory pressure to distribute the practices adoption by Kenyan manufacturing industry.

Concern about the environmental issue has also rise the interest of researchers in Kenya to investigate the adoption and implementation of GSCM practices in various sectors of the country economy. A study by Amemba (2013) in the hospitality sector analyzed best practices in green supply Chain management and also measured the level of adoption of green supply chain management practices. The in-depth interview regarding green procurement, green manufacturing, green distribution, and reverse logistic was conducted. The study conducted by Omenge and Nyamwange (2010) on "Green Supply Chain management Practices and Competitiveness of Commercial Banks in Kenya" established that GSCMP has a significant positive relationship with competitiveness of a firm. Okello and Were (2014) established a positive relationship between Supply Chain Management practices and firm performance on listed firms in the Nairobi Stock Exchange. Malaba, Ogolla and Mburu (2014) established a relationship between green supply chain management strategy and procurement performance in the sugar industry in Kenya.

The concept of GSCM is relatively newer in Kenya. Recent literature found that there is still lack of research study on GSCM adoption and implementation based on Kenyan context as a developing country. One study from Kenya that has been carried out by Opiyo (2012) has identified the four key drivers or motivators to green supply chain initiatives: Regulations, customer requirements, expected business gains, and social responsibility. Jackson (2014) analyzed the relationship between green supply chain initiatives and performance outcomes and identified the key initiatives (eco-design) that have positive effect on the four types of outcomes (environmental, economic, cost reductions, and intangible outcomes).

2.4. Summary of Previous Studies on Green Supply Chain Management

The following is a review of previous literatures about issues related to GSCM and has been summarized into three sections namely by manufacturing (various industry), by manufacturing (focus industry) and by Kenyan country. Table 1.1 shows the previous studies of GSCM according to various industry in manufacturing. Most researchers used manufacturing industry as their sample of study in order to investigate the GSCM adoption and implementation either in developed and developing countries. Manufacturing is believed to be the main causes to the emerging environmental problems due to its traditional business operation and therefore tend to be the potential sample of study as they tend to implement GSCM practices.

Table 1. 1 Summary of the Previous Studies on Various Manufacturing Industries

Author/Year	Title/Design	Findings	Variables	Context
Large & Thomsen, 2011	Drivers of GSCM Performance: Evidence from Germany • Survey study	<ul style="list-style-type: none"> Green Supplier assessment and green collaboration has direct influence on Environmental performance. These two practices are driven by the strategic level of the purchasing department and the level of environmental commitment of the firm. Environmental practices has a positive impact on financial performance 	<ul style="list-style-type: none"> GSCM capabilities The strategic level of Purchasing department The level of environment commitment Green supplier assessment Green Collaboration with suppliers Performance: Cost efficiency, customer effectiveness	Germany: developed country Europe
Arimura et al. 2011	Is ISO 14001 a gateway to more advanced voluntary action? The case of green supply chain management • Case Study	<ul style="list-style-type: none"> ISO 14001 positively contribute to implementation of GSCM practices by firms Government program of encouraging EMS adoption directly influences ISO 14001 adopters to implement GSCM practices. 	<ul style="list-style-type: none"> ISO 14001 GSCM practices: green purchasing, green manufacturing, green distribution 	Japan: developed country- Asia
Shang et al. 2010	The Influence of Greening the Suppliers and Green Innovation on environmental Performance and competitive Advantage in Taiwan • Descriptive research	<ul style="list-style-type: none"> Greening the suppliers leads to green innovation and competitive advantage. The finding also support that the intervening variables of green innovation contribute to competitive advantage. 	<ul style="list-style-type: none"> Greening the suppliers Green innovation Environmental performance (environmental differentiation) Competitive advantage (cost efficiency, customer effectiveness) 	Taiwan: developed-Asia

Liu et al. 2011	Sustainable Production: Practices and Determinant Factors of Green Supply Chain Management of Chinese Companies •Exploratory research	<ul style="list-style-type: none"> Chinese companies are still at a preliminary stage of GSCM practices. The cooperation with external members of the GSC issues is very marginal. A company's GSCM is significantly and positively associated with external pressures from regulatory, domestic clients and business competitors. 	<ul style="list-style-type: none"> External pressures Internal factors GSCM practices Controls (company's size, industrial sector) 	China: developing country-Asia
Zhu et al. 2011	Evaluating Green Supply Chain Management among	<ul style="list-style-type: none"> The findings highlight the varying pace of Chinese manufacturers to ecological modernization with GSCM practices 	<ul style="list-style-type: none"> Environmental regulations/ policies Green Supply Chain Management 	China: developing country - Asia

	Chinese Manufacturers from the Ecological modernization Perspective • Descriptive research	<ul style="list-style-type: none"> Positive relationship between regulatory pressure and adoption of GSCM practices by Chinese manufacturing industry 	•Ecological Modernization	
Cagno et al. 2011	The impact of green supply chain practices on company performance: the case of 3PLs • Case study	<ul style="list-style-type: none"> There is still limited adoption of GSCP among the 3PLs service providers Some participant have shown a pro-active attitude and gained significant benefit from the adoption of GSCP. 	<ul style="list-style-type: none"> Green supply chain practices 3PLs performance: cost efficiency, environmental differentiation, customer effectiveness 	Italy: developed country-Europe
Zhu et al. 2010	Green Supply Chain Management in Leading Manufacturers: Case Studies of Japanese Large Companies •Case study	<ul style="list-style-type: none"> It was found that large Japanese companies have made significant improvements for environmental and financial performance but not for operational performance. 	<ul style="list-style-type: none"> GSCM drivers: Normative pressure, Coercive pressure and Mimetic pressure GSCM practices GSCM Performance :Economic, financial, operational 	Japan: developed country - Asia

Holt & Ghobadian, 2009	An Empirical Study of Green Supply Chain Management Practices Amongst UK manufacturers <input type="checkbox"/> Descriptive research	<ul style="list-style-type: none"> • legislation and internal drivers (IDs) provide greatest pressure to the adoption of GSCM practices • Environmental attitude (EA) is a key predictor of GSCM activity and those organizations that have progressive attitude are also operationally very active. 	<ul style="list-style-type: none"> • External drivers (Legislation, competitive, supply chain, societal) • Internal drivers 	UK: developed country - Europe
Nawrocka et al. 2009	The role of ISO 14001 in an environmentally-oriented supply chain practices • exploratory research	<ul style="list-style-type: none"> • ISO 14001 has a facilitating role in the environmental activities between a customer and a supplier. • Closer relationship with suppliers was seen as beneficial both for the successful outcomes of projects and as a facilitator for environmental work. 	<ul style="list-style-type: none"> • Communication of environmental requirements between a customer and a supplier. • Motivation and enabling of suppliers to comply with the requirements. 	Sweden: developed country- Europe
Lee, S. 2008	Drivers for the participation of small and mediumsized suppliers in green supply chain initiatives • Descriptive research	<ul style="list-style-type: none"> • Buyer environmental requirements and support have positive effect to their suppliers' willingness to participate in green supply chain initiatives. • The government regulatory requirement. 	Buyer GSC practices, Government involvement, GSC readiness, GSC participation	South Korea: developed country-Asia
Raymond et al. 2008	Influences, practices and opportunities for environmental supply chain management: A case of Nova Scotia SMEs • Case study	<ul style="list-style-type: none"> • SMEs have difficulties in allocating resources to initiatives that are not viewed as directly related to their core function, namely manufacturing the product or providing the service. 	<ul style="list-style-type: none"> • Environmental performance • Environmental issues 	Canada: developed country- North America

Source:

Table 1.2 presents a summary of the previous studies among focused manufacturing industry. These researchers had focused to specific industry in order to get depth understanding of GSCM practices without comparing to different industries.

Table 1.2 Summary of the previous studies among focused manufacturing industry

Author/Year	Title/R. Design	Findings	Variables	Context
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Hsu and Hu, (2008)	<p>The Influence of Green Practices on Supply Chain Performance: A Case Study Approach</p> <ul style="list-style-type: none"> Case Study 	<ul style="list-style-type: none"> The most widely adopted green practices: (ISO 140001, minimizing waste, decreasing the consumption of hazardous and toxic materials and reverse logistic) GPs positively influence SC performance 	<ul style="list-style-type: none"> Green practices: green purchasing, green manufacturing, green distribution SC performance: Cost efficiency, Customer effectiveness, Environmental differentiation 	Portuguese; Automotive Sector
Ninlawan et al., (2011)	<p>The implementation of GSCM Practices in Electronics Industry in Thailand</p> <ul style="list-style-type: none"> Descriptive research 	<ul style="list-style-type: none"> Both environmental and positive economic were relatively significant in GSCM performance Pressure from environmental regulations is the highest driver, followed by export pressure for GSCM practices implementation 	<ul style="list-style-type: none"> GSCM practices: green purchasing, green production, and reverse logistics GSCM performance: cost efficiency, customer effectiveness, environmental differentiation GSCM pressure: market, regulatory, competition 	Thailand; Electronic (Computer Part) sector
Diabat and Govindan, 2011	<p>An Analysis of the Drivers Affecting the Implementation of Green Supply Chain Management: A case of Aluminum sector in India</p> <ul style="list-style-type: none"> Case study 	<ul style="list-style-type: none"> Government regulation and legislation and reverse logistics are significant drivers for GSC management 	Drivers of GSCM (market, regulatory, competition)	India; Aluminum sector
Shang et al. 2010	<p>A taxonomy of green SCM capability among electronics-related manufacturing firms</p> <ul style="list-style-type: none"> Descriptive research 	<ul style="list-style-type: none"> The green marketing oriented group performed best. The competitive capability of the green marketing oriented group was higher than those of competitors 	<ul style="list-style-type: none"> Green packaging Environmental participation Green marketing Green Purchasing 	Taiwan; Electronic Industry

Hsu and Hu, 2008	Green Supply Chain Management in the Electronic Industry • Case study	• The most important approaches included establishing an environmental database of products, asking for products with environmental consideration and top management support	Approach for implementing GSCM: Supplier management, product recycling, life cycle management	Taiwan; Electronic Industry
Chen, 2008	The Driver of Green Innovation and Green Image – Green Core Competence • Correlation research	• Green core competences of firms were positively linked to their green innovation performance and green images	• Green core competence • Green innovation • Green image	Taiwan; SMEs electronics industry
Chien and Shih, 2007	An empirical study of the implementation of green SCM practices in relation to organizational Performances • Descriptive research	Green procurement and green manufacturing practices were found to positively influence environmental and financial performances for the respective companies.	• GSCM practices organizational performances • Environmental Performance (cost efficiency, customer effectiveness)	Taiwan; Electrical and electronic industry
Simpson et al. 2007	Greening the automotive supply chain: a relationship perspective • Correlation research	• Suppliers were found to be more responsive to their customers' environmental performance requirements where increasing levels of relationship-specific investment occurred.	• Customer environmental performance requirements • Supplier environmental commitment	Australia; Automotive industry

Meanwhile, Table 1.3 also presents a summary of the previous studies among Kenyan manufacturing industry. These researchers had focused only on the manufacturing firms in Kenya order to get depth understanding of GSCM practices within the country.

Table 1.3 summary of the previous studies among Kenyan manufacturing industry

Author/Year	Title/Design	Findings	Variables	Context
Okello J.O. and Were S., (2014)	Influence of Supply Chain Management Practices on Performance of the Nairobi Securities Exchange (Listed	Supply chain management Practices have a significant influence on the performance of food manufacturing	<ul style="list-style-type: none"> • Product development • Inventory management • Lead time • Technology 	Kenya: Food manufacturing Companies

	food			
	Manufacturing companies)	companies in Kenya		
Amemba S. C.,(2013)	Green Supply Chain Best Practices In Hospitality Industry In Kenya	Use of low energy bulbs, solar energy, solar water heaters, charcoal briquettes, eco-friendly detergents, Rainwater harvesting and storage, re-use and recycling, and so on	<ul style="list-style-type: none"> • Green Procurement • Green Design • Green Operations & Reverse Logistics • Green Manufacturing • Waste Management 	Kenya: Hospitality Industry In Kenya
Barasa P.W.,(2014)	Sustainable Supply Chain Management as a Strategic Tool for Competitive Advantage in Tea Industry in Kenya -Survey research design	A relationship between Supply chain collaboration practice, Supply chain sustainability management practice and Competitiveness of the Firm was established	<ul style="list-style-type: none"> • Supply chain collaboration practice, • Supply chain sustainability management practice • Competitiveness of the Firm 	Kenya: Tea Industry
Malaba, P.N., Ogolla, K., and Mburu, D.K.,(2014)	Influence Of Green Supply Chain Management Strategy On Procurement Performance Of Sugar Industry In Kenya	Green supply chain management strategy was found to significantly influence the performance of firms in the sugar industry	<ul style="list-style-type: none"> • Green Procurement • Green Manufacturing • Firm performance 	Kenya: Sugar Industry

Githui D.M., (2012)	Responsible Purchasing and Supply Chain Management in Kenya: A Critical Analysis of the Ethical Considerations in Procurement Management -case study	Ethical tendering process, transparency exists in the procurement processes, accountability of both suppliers and customers and fairness in the award of tender were to be significant factors for Responsible SCM	<ul style="list-style-type: none"> • Ethical tendering process • Transparency exists in the procurement processes • Accountability of both suppliers and customers • fairness in the award of tender 	Kenya:
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Based on these three tables, we can see that most studies were explored on developed countries and more focus to the manufacturing area. It can be concluded that most developed countries are chosen because they were facing a lot of environmental problems due to the greater economic consumption. The manufacturing industry can be seen as the major contributor to the environmental problems (Eltayeb, Zailani, & Ramayah, 2011).

3. RESEARCH DIRECTION

Green supply chain management continues to be an important research agenda among the researchers. However, there is still limited studies investigating GSCM adoption and implementation targeting manufacturing industry in Kenya as a developing country. Therefore, our research direction will focus on the manufacturing industry in the Kenyan context in order to extend the study about GSCM in more depth. Manufacturing industry will be focused because they are expected to be major contributor to the environmental problems (Eltayeb, Zailani, & Ramayah, 2011) and therefore are expected to take the lead in the adoption of GSCM practices. This is supported by the studies of Darnall, Jolley and Handfield, (2006) and Zhu, Sarkis, Cordeiro and Lai, (2008). The research direction of this paper is showed in Figure 2.

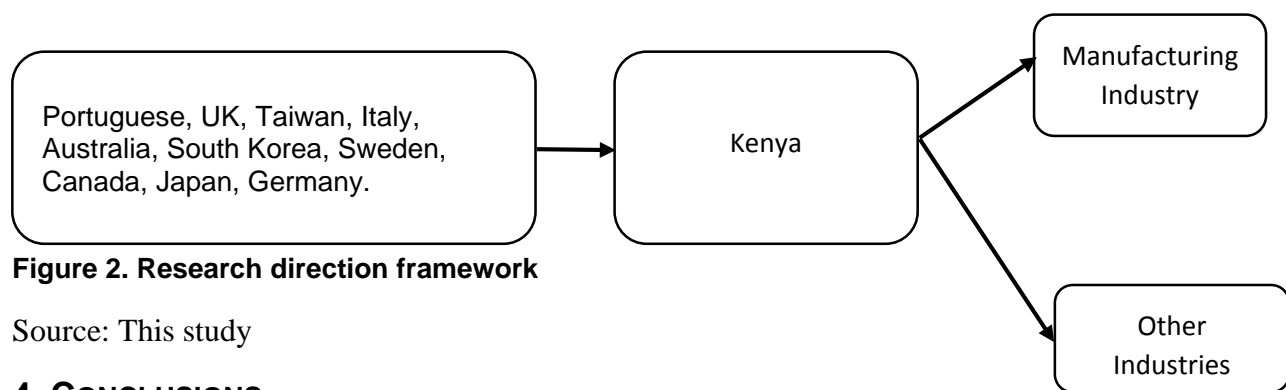


Figure 2. Research direction framework

Source: This study

4. CONCLUSIONS

The purpose of this paper is to discuss an overview of the development of GSCM literature in developed countries and Kenya as developing country. Although some studies in the literature discussed the GSCM implementation includes drivers, practices, and performance over the world, there has still little research evidence about the GSCM implementation and adoption in developing countries especially Kenya. Further study still required for more understanding toward the adoption

and implementation of GSCM and also the organization awareness level on ecological problems caused by business activities of the firms.

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