Sustainable Supply Chain Management Practices and Performance of United Nations Agencies in Nairobi, Kenya

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Abstract

This paper presents results from a study on influence of Sustainable Supply Chain Practices on performance of UN Agencies in Nairobi, Kenya. The study was guided by the following research objectives: to establish the SSCP adopted by UN agencies in Kenya and the extent to which these practices have been adopted; to determine the relationship between SSCP adopted by UN agencies and their performance; and to establish challenges faced by UN agencies in implementing SSCP. The research adapted a correlation cross-sectional research design in collecting data from respondents. The study involved a census of the UN Agencies in Nairobi. The primary tool for collecting data was questionnaires administered by the researchers to allow for further probing on issues that not unclear to

the respondents. The data was analyzed using descriptive statistics, regression analysis, correlation analysis and factor analysis with the aid of SPSS 20.0.

Findings from the study revealed that stakeholder engagement, having a diverse supplier network, ensuring suppliers have a sustainable policy, good working conditions for employees, employee health and safety as well as ethical sourcing, production and distribution were highly adopted. The findings also showed that through adoption of SSC practices, UN agencies were able to get new market opportunities, increased their operational as well as production efficiencies, reduced their costs and improved the organizations' corporate image. Funding limitation and delays, procurement delays, strains in control, and staff resistance to adopting change were shown to be some of the challenges faced by UN Agencies. It is suggested that training of employees, community training and having a sustainable policy would help in curbing the challenges. It is evident from the correlation analysis that adopting SSC practices had an effect on performance of these organizations.

Introduction

Background

Over the past 10 years, environmental issues have steadily encroached on businesses' capacity to create value for customers, shareholders and other stakeholders. Globalized workforces and supply chains have created environmental pressures and attendant business liabilities. The rise of new world powers, notably, China and India has intensified competition for natural resources, especially oil. Externalities such as carbon dioxide emissions and water use are fast becoming material—meaning that investors

consider them central to a firm's performance and stakeholders expect companies to share information about them (UNGC-A, 2013).

However, it is important to note that the current world consumption and production levels are 25 percent higher than the earth's sustainable carrying capacity (Schaefer et al., 2006). Environmental degradation, global poverty, lack of human rights, far-reaching health deficits and corporate governance resulted in sustainable supply chain management (SSCM) to emerge as key enabler that could push organization to focus on alleviating environmental issues, providing economic and social benefits (Kovacs, 2014). Developing sustainable business practices is not only critical to the future of a company, but also for the benefit of future generations. Sustainable practices are leading organizations to sustainable growth, both profitably and responsibly.

Porter and Kramer (2011) proposed a Creating Social Value (CSV) theory, which suggests that people can create economic value in a way that also creates value for society by addressing its needs and challenges. The suggestion is that by reconnecting company success with social progress, humans can achieve the next phase of global economic growth. This has to do with sustainability whereby, for example, if a company develops cleaner ways of emitting its waste, it can reduce its tax burden (private welfare), its carbon footprint (public welfare), and potential future emission accidents (tort reduction). Porter and Kramer(2011) define shared value as the "policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates." Porter and Kramer (2011) also mention areas where CSV can be particularly helpful including energy use, employee skills, worker safety, and water use. Thus, it is evident that sustainability is an emerging issue and organizations are concerned about sustainability now more than ever.

Sustainable Supply Chain Management Practices

Seuringand Muller (2008) merge definitions for SCM and sustainability and dene SSCM as "the management to material, information and capital ows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social into account which is derived from customer and stakeholder requirements." According to the Sustainable Supply Chain Foundation (SSCF), Sustainable Supply Chain Management involves integrating environmentally and financially viable practices such as recycling, refurbishing, waste management and so forth into the complete supply chain lifecycle, from product design and development to material selection (including raw material extraction or agricultural production), manufacturing, packaging, transportation, warehousing, distribution, consumption, return and disposal. All supply chains can be optimized using sustainable practices. Sustainability in the supply chain encapsulates a number of different priorities: environmental stewardship, conservation of resources, reduction of carbon footprint, financial savings as well as viability and social responsibility.

Sustainable development meets needs of people today without compromising the ability of people in future to meet their needs (CIPS, 2014). Sustainability integrates social, environmental, and economic systems. Social aspects include following applicable laws and international treaties using open and transparent participatory processes that actively engage relevant stakeholders, establish rights and obligations, and emplace a long-term sustainability plan with periodic monitoring; and ensuring decent wages and working conditions, the safety of workers, and workers' rights to organize as well as collectively bargain (Mukanga, 2011). Environmental sustainability occurs when processes, systems and activities reduce the environmental impact of organizations' facilities, products and operations. Economic sustainability is used to define strategies that promote utilization

of socio-economic resources to their best advantage. A sustainable economic model proposes an equitable distribution and efficient allocation of resources. The idea is to promote use of those resources in an efficient and responsible way that provides long-term benefits as well as establishes profitability (UNGC-Accenture, 2013)

Kovacs (2014) opines that supply chain sustainability is a holistic perspective of supply chain processes and technologies that go beyond the focus of delivery, inventory and traditional views of cost. This emerging philosophy is based on the principle that socially responsible products and practices are not only good for the environment, but also they are important for long-term profitability. Therefore, sustainability is a business strategy that drives long-term corporate growth and profitability by mandating inclusion of environmental and social issues into the business model. It is intended to generate a maximum increase in company, consumer and employee value by embracing opportunities including managing risks derived from environmental as well as social developments.

Performance of Humanitarian Organizations

Huber (1991) described the role of humanitarian organizations like that of saving lives, alleviating suffering and maintaining human dignity during and after occurrence of man-made crises and natural disasters as well as to prevent and strengthen preparedness for occurrence of such calamities.The rationale underlying humanitarian aid is to help people in need. The SPHERE standards (2011) state two principles guiding humanitarian operations: "those affected by disaster or conflict have a right to life with dignity and, therefore, a right to assistance; and second, that all possible steps should be taken to alleviate human suffering." However, humanitarian aid has been criticized for its ineffectiveness at a macro-economic leveland and even condemned for constraining development (Moeiny, 2011).

Performance management is a series of organizational processes and applications designed to execute organizational strategy (Ioannou, 2011). A disaster response operation involves trade-offs of speed, cost and accuracy with regard to the type of goods that are delivered and their quantities. Balancing these trade-offs requires means for measuring supply chain performance. Performance measurements are meant to mean the process of analyzing and reporting information on performance, and they exist to clarify whether an organization or operation meets the set performance objectives. Various performance measurements have been suggested for humanitarian organizations such as output, resources, flexibility, customer service, financial efficiency and donation to delivery time (Abidi and Klumpp, 2013).

According to McLanchlin, Larson and Khan (2009), humanitarian supply chains tend to be unstable and prone to political as well as military influence and inefficient due to lack of joint planning and inter-organizational collaboration. However, humanitarian supply chain management does not only deal with delivering goods, materials or information to the point of consumption for the purpose of alleviating suffering of vulnerable people, but also needs to manage and give value to donors including other stake holders. In order to build value, humanitarian organizations have to incorporate sustainable practices in their operations (Malerba, 2013).

SSCM Practices and Organizational Performance

According to Kinyua (2013), performance refers to degree of fulfilling the requirement of a job and it is measured in terms of results. It can also be defined as the ability to perform or capacity to achieve desired results. Neeley and colleagues (1995) defined performance measurement as the process of quantifying efficiency and effectiveness of an action. It is the process whereby an organization establishes parameters within which the

organization reach its desired goals. Sustainable supply chains performance measurement is threefold. It is not only measured according to economic performance but also according to the environmental and social performance (Beske, 2012).

For humanitarian organizations, their main performance expectation is that of saving lives (Kovacs and Spens, 2007), decrease human suffering and contribute to development (ICRC, 2010). Generally, donors are interested in performance of programs they support as well as their societal impact. Although aid effectiveness is focus of all humanitarian and development activities, assessing the economic impact of humanitarian aid is tricky from an organizational, and especially a supply chain perspective (Kovacs, 2014). Most of the performance expectations on humanitarian aid, they can also be understood as sustainability expectations. Saving lives and decreasing suffering correspond with social responsibility, while contributing to development corresponds with longer term aims of development, especially if combined with ecological aspects of sustainable development. Literature often differentiates between economic, ecological and social dimensions of sustainability following the triple bottom line model.

In a study by Ioannou (2011) on impact of corporate sustainability on organizational performance, there was evidence that companies that focus on sustainability issues outperform their counterparts in the long-term both in the stock market and accounting performance. Hasan (2012) provides some of the SSCM practices that companies may implement to improve their performance. Such SSCM practice dimensions and items have been based on previous literature that addressed various aspects of SSCM. A description of the GSCM practices and performance constructs is given below: There is agreement within literature that environmental management practices in the organization are key to improve enterprise performance.

United Nations Agencies in Kenya

The world is facing an increase in humanitarian crisis due to climate change and terrorism. This calls for new supply chain strategies in handling volatile and changing demands that these humanitarian disasters present. In recent years, humanitarian organizations have come under immense pressure from donors, pledging millions in aid and goods to prove that they are meeting objectives in the most efficient and effective way.

There are many humanitarian organizations operating in Kenya, some of which are purely originated and managed by Kenyans while others have originated from foreign countries and managed by foreigners (Kariuki, 2010). Moeiny (2011) observed that humanitarian organizations in Kenya rely on donor funding to finance their operations and hence, it is an enormous accountability responsibility

The primary purpose of the United Nations is "to achieve international co-operation in solving international problems of an economic, social, cultural, or humanitarian character." Numerous bodies have been created to work towards this goal primarily, under the authority of the General Assembly and United Nations Economic and Social Council (ECOSOC). The United Nations has been in the lead in advocating for sustainable supply chain practices. Thus, this study sought to explore sustainable supply chain practices the UN has adopted and to further describe the effect of the practices on overall United Nations' competitiveness. The study focused on three components of sustainability: social, environmental and economic components.

The United Nations has worked since its founding to achieve a shared, secure and sustainable future for all of the world's people. The vision and aspirations of the first United Nations members in 1945, as they set out to be the "architects of a better world," remains a beacon today, not just for governments, but also for the thousands of companies and civil society organizations that have become key partners in tackling our world's most

pressing challenges (UNGC, 2007). The UN is committed to designing sustainability into their products and processes, and helping customers as well as suppliers do the same. These and other sustainable practices are helping UN make a bigger impact in the marketplace, while leaving a smaller footprint in the world.

Research Gap

Sustainability is the ultimate goal of all development aid and it is the ability of host country entities to continue to apply new as well as evolving capacities and sustain achievements through providing reliable resources generated from a country's own efforts (Kopinak, 2013)**.** In the recent years, there has been considerable interest on the humanitarian sector. The United Nations and its agencies form the biggest group of humanitarian organizations in the world today. Its commitment to designing sustainability into their products and processes, and helping its customers and suppliers do the same helps the UN make a bigger impact in the marketplace, while leaving a smaller footprint in the world. Therefore, such pattern has made researchers and scholars to gain an interest in studying operations of the United Nations and transfer some of the lessons learnt into their industries. A number of studies have been carried out concerning SCM and sustainability in the humanitarian sector.

Mukanga (2011) conducted a study to establish sustainability strategies adopted by international NGOs based in Nairobi. It was found that the organizations adopted strategies such as engaging in consultancy work, adopting a strategic plan, innovativeness, engaging in income generating activities, engaging in partnerships and collaboration, capacity building as well as empowerment of communities, transparency, good management practice, staff training and development and better pay. Abdifatah (2012) also carried out a study on Supply Chain Management Practices and their

impact on performance among humanitarian organizations in Kenya. Findings from the study indicated that maintaining good supplier relation, effective and efficient internal operations, continuous improvement, flexible production processes, use of technology to speed up humanitarian work, inter-organization integrations and simplicity in internal operations are among practices prevalent among humanitarian organizations in Kenya (ibid.).

Elsewhere, a study conducted by Walker and Jones (2012) on Sustainable Supply Chain Management across the UK private sector found that most UK private sector companies have a SSCM policy reviewed annually. It also established that some barriers to SSCM such as strategic issues, reputational risk and SSCM processes not being robust enough which the organizations have had to deal with (ibid.). Furthermore, it also established some of the enablers of SSM such as leadership, internal integration, academic involvement, improved industry performance and so on (ibid.).

In a study by Kinyua (2013) that sought to establish the status of humanitarian response and factors associated with its performance in humanitarian organizations in Kenya, found that most humanitarian operations are handled by international organizations and they spend up to one third of their funding to supply chain commitments. Majority of humanitarian organizations were also found to have performing supply chains that delivered goods and services in the right quantities, to the targeted beneficiaries and in a timely manner (ibid.). The main reasons for non-performance were funding limitations and delays, environmental challenges, especially during rainy seasons, procurement delays, poor coordination as well as turf wars between grantees, sub-grantees and implementers (ibid.). Besides, Lisanza (2013) conducted a study that sought to establish the relationship between SCM integration and performance of international humanitarian organizations. The study established that SCM integration influenced the performance of humanitarian organizations. It was also

established that most of the international humanitarian organizations in East Africa have integrated their SCM functions (ibid.). The concept, among other benefits, was also found to lead to faster delivery and efficient goods, works and services to the beneficiary (ibid.). Munguti (2013) also conducted a study that sought to establish supply chain management practices in disaster response among international humanitarian organizations in Kenya. Munguti (2013) found out that most humanitarian organizations in Kenya use SCM practices such as assessment of the needs for the vulnerable population, ordering of services and other materials, management of donations to an optimal level, practices that promote the best warehousing, documentation, cataloging, consolidation and recording practices, practices that enhance adequate flow of products, enhance flow of finances and cash and inventory management practices.

Kovacs (2014) conducted a study to establish perspectives of humanitarian supply chains. Kovacs (2014) revealed four perspectives of sustainability, namely, societal perspective, beneficiary perspective, supply chain perspective and program perspective. He (ibid.) also established that in the humanitarian setting, donors have sustainability as a goal as they carry out their operations.

It is evident from the studies that there has been very limited focus on sustainability issues, especially within the humanitarian aid sector and this a major issue today. Therefore, this study aimed at filling this gap and consequently, sought to establish the SSCMP that have been adopted by humanitarian organizations with a specific interest in the UN agencies in Kenya. Furthermore, the study aimed at establishing whether or not adopting SSCMP affects performance of these organizations and the challenges that these organizations encountered in their bid to implement sustainable supply chain practices.

Research Objectives

This study was guided by the following study objectives:

i. To establish the SSCMP adopted by UN agencies in Kenya and the extent to which these practices have been adopted;

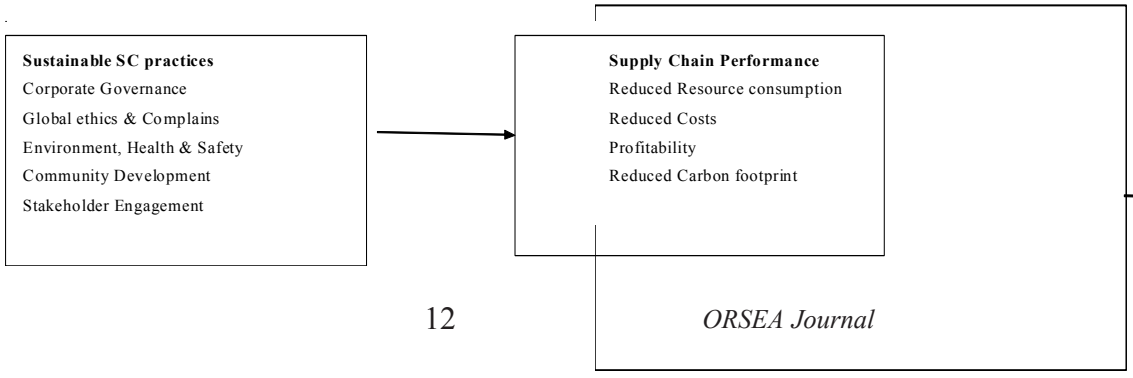
ii. To determine the relationship between SSCMP adopted by UN agencies and their performance; and

iii. To establish the challenges faced by UN agencies in implementing SSCMP.

Conceptual Framework

The conceptual framework links the independent variables to the dependent variable (Kombo et al., 2006). A variable is a concept that can take different qualitative values (Kothari, 2008). According to Kothari (2008), a dependent variable is a consequence of the other variable, whereas an independent variable is the variable that is antecedent to the dependent variable. The independent variable is the presumed cause, whereas the dependent variable is the presumed effect. These constructs and their relationships are illustrated in the following Table 2.4

Table 2.4: *Conceptual Model*



Research Methodology

This study adopted a descriptive cross-section survey design to investigate the influence of sustainable supply chain practices on performance of organizations. Descriptive research design helps to ascertain and be able to describe the characteristics of the variables of interest in a situation (Sekaran, 2006). It portrays characteristics of a particular situation and it has advantages of accuracy and flexibility (Cauvery et al., 2003). According to Kothari (2008), survey is a research method for collecting information from a selected group of people using standardized questionnaires or interviews.

The target population for this study comprised the 23 UN agencies based in Nairobi. All UN agencies are formed to serve different purposes in their mission. Most of them are specialized in their product offerings but are involved in procurement activities, in one way or another. The study also targeted the Procurement managers or Supply Chain managers working for these Agencies because they were in a better position to respond appropriately on matters being researched. This study focused on all 23 UN Agencies in Nairobi and therefore, a census was conducted.

This study utilized primary data where data were obtained using questionnaires. The questionnaires contained questions and statements based on research objectives. They comprised both close-ended and open-ended questions because they were easier to administer and analyze as well as aided the researchers obtain in-depth responses on the survey.

Data were analyzed using Statistical Package for Social Sciences (SPSS) programme.Means and standard deviations were used to show the extent to which UN Agencies have adopted SSC practices. Regression analysis and correlation analysis were used to explain the relationships between SSC practices and Performance Outcomes. Factor analysis was also used to extract practices often used. The final report was then compiled after subjecting data through thorough analysis.

Research Results

Extent of Adoption of Supply Chain Practices

Respondents were asked to indicate the extent to which they adopted various sustainable supply chain practices in their organization using a scale of 1 to 5, where (1) denoted to a very small extent, (2) to a small extent, (3) to medium extent, (4) to a large extent and (5) to a very large extent. Table 4.1 provides summary of mean scores with a low margin above 3 and average of 4/5 to a very large extent; affirming that the sustainable supply chain practices adopted by the UN agencies, to a large extent.

The sustainable supply chain practices that were adopted mostly are stakeholder engagement with a mean 4.21 as indicated by respondents. This agrees with literature review as an organization can build support for its actions and avoid social backlash through stakeholder engagement. Interacting with stakeholders enables an organization to identify and address their concerns, an aspect, which reduces risks and deadlocks that can result from misunderstandings hence the organization will operate in a more stable socio political environment (Danny King, 1997).

Also respondents indicated that having a diverse supplier network and buying from local suppliers were among supply chain practices adopted, to a large extent, by UN agency by means of 4.32 and 3.74, respectively. These findings concur with the literature review because it enables businesses to tap into innovation, flexibility, cost-savings and support local economic regeneration (Seuring, 2014). The respondents were also asked whether or not ensuring suppliers have a sustainable policy and corporate social responsibility were supply chain practices adopted by UN agency. Respondents indicated that they were adapted, to large extent, by means of 4.11 and 3.84, respectively. This indicates that UN agencies execute their social responsibility to conduct fair and equitable transactions throughout the supply chain. In addition, respondents indicated the organization had adopted good working conditions for employees, decent

employee wages, employee health and safety, ethical sourcing, production and distribution with a mean of 4.26, 4.32, 4.21 and 4.47, respectively. The findings concur with literature review in that legal compliance, respecting human rights, labour, safety, and health as well as environmental protection that have led to increased morale of employees, meeting customer needs, reduction in costs and improved efficiency in the overall supply chin value (Seuring and Muller, 2008).

Table 4.1: *Extent of Adoption of Sustainable SCM Practices*

	Mean	Std. Deviation
Climate change commitment safety	4.63	1.86
Ethical sourcing, production and distribution	4.47	.70
Decent employee wages and salaries	4.32	.89
Having a diverse supplier network	4.32	.75
Good working conditions for employees	4.26	.65
Stakeholder engagement	4.21	.85
Employee health and safety	4.21	.79
Ensuring suppliers have a sustainability policy	4.11	.74
Sustainable supply network management	4.00	1.25
Corporate social Responsibility	3.84	.96
Managing products returns	3.79	.71
Life cycle assessment	3.74	1.19
Companywide environmental audits	3.74	1.19
Buying from local suppliers	3.74	1.41
Green purchasing strategies	3.57	1.12
Suppliers' ISO-14000 certification	3.47	1.50
Sustainability labeling schemes	3.37	1.30
Managing waste disposal	3.32	1.34
ISO-14000 certification	3.26	1.48
Recycling of material	2.95	1.31
Reuse of material	2.63	1.07

Source: Research data (2015)

Other adapted practices included climate change commitment safety, life cycle assessment, managing product returns, companywide environmental audits, managing waste disposal, sustainability labeling schemes, green purchasing strategies, suppliers' ISO-14000 certification, recycling of material, reuse of material and ISO-14000 certification. This indicates that UN agencies reduce risks of costs thereby they realize improved efficiency and performance. The presented results generally, agree with literature to the effect that an organization that adopts sustainable supply chain practices has better performance and hence, increases their competitive edge. When incorporating social and environmental issues into a company's corporate behaviour, organizational capabilities develop and present potential sources of competitive advantage due to their imperfect imitability by competitors (Gold et al., 2010). According to Wamalwa (2014), companies that embraced and implemented green supply chain strategies in their manufacturing processes gained as well as sustained greater competitive advantage in terms of goodwill, market share, returns on investment and even profitability.

Performance Outcomes of Implementing Sustainable SSCM Practices

On a scale of 1 to 5, where (1) denoted for strongly disagree, (2) disagree, (3) not sure, (4) agree, and (5) strongly disagree, respondents were asked to indicate performance outcomes of implementing sustainable supply chain practices.

Table 4.2: *Performance outcomes of implementing sustainable supply chain practices*

	Mean	Std. Deviation
Improved corporate image	4.42	.61
Production efficiency	4.37	.76
New market opportunities	4.32	.67
Efficient allocation of resources	4.32	.48
Increased efficiency	4.11	.46
Reduced material costs	4.05	.97
Lower occupational safety expenses	4.00	1.00
Product quality improvement	3.95	.97
Increase in profitability	3.95	.91
Enhance employee motivation	3.95	.78
Increased competitive advantage	3.89	1.05
Better management of risk	3.84	.69
Reduction in carbon footprint	3.79	1.18
ISO certifications	3.74	.81
Cost savings	3.68	1.16
Higher returns on investment	3.58	1.02
Efficient use and management of natural resources	3.58	.96

Source: Research data (2015).

Table 4.2 furnishes summary of mean scores with a low margin above 3 and average of 4/5 agreed thereby affirming that implementation of supply chain management practices impact on performance of UN agencies. Improved performance is mainly reflected through cost savings as indicated by respondents who agreed with a mean of 3.68. This indicates that UN agencies drive out inefficiencies from business processes. The presented finding agree with literature review. Keamey (2011) found out that 25 percent of suppliers achieved cost-savings linked to emission reduction programmes, an aspect, which is one of initiatives of sustainable supply chains.

Also respondents were asked to indicate whether or not implementing sustainable supply chain practices enhances employee motivation. Most of the respondents agreed as shown by a mean of 3.95 in Table 4.2. This shows that UN agencies' top management curb the tendency to micromanage and instead, they display confidence in the ability of their team members. In addition, they trust them to do their work efficiently thereby promote trust and loyalty among the employees as well as encourage better teamwork among them and they develop a sense of ownership towards the company. The findings concur with literature review because adoption of sustainable practices especially concerning employee welfare, health and safety, organizations have been able to create good and conducive working environments for their employees (Mukanga, 2011). Such pattern has been able to enhance employee motivation and morale at the work place thereby increasing on their productivity and enhancing performance of the organization.

Also respondents agreed that implementing the practices led to product quality improvement as evidenced by a mean of 3.95. This concurs with literature reviewthat improved performance is enhanced through sourcing raw materials and being ethical, which makes their products highly appealing to customers and attracts a large pool of customers from their competitors impacting on their bottom line through increased profits (Walker & Jones, 2012). Other benefits associated by implementing sustainable supply chain practices include new market opportunities, increased competitive advantage, improved corporate image, efficient allocation of resources, production efficiency and increased efficiency. This indicates that UN agencies come up with innovative strategies to improve their performance. The findings agree with literature review in that companies that embraced and implemented green supply chain strategies in their manufacturing processes gained as well as sustained greater competitive advantage in terms of goodwill, market share, returns on investment and even profitability (Wamalwa, 2014). The UN agencies' management continuously reviews these practices for relevance given the rapidly changing business environment and its diversification.

UN agencies, just like any other organization that practices sound supply chain practices, as reflected in literature review, has grown and sustained its competitive edge and performance. Thus, no wonder about its market leadership position in the world. There is urgent need to sensitize internal customers on criticality of sustainable supply chain management practices but most importantly, for top management in driving these initiatives is imperative.

Challenges Faced in Implementing Sustainable SCM Practices

In examining possible challenges UN agencies experience when implementing the SC improvement approaches, respondents were asked to rate some possible limitations on a scale of 1 to 5, where (1) denoted for strongly disagree, (2) disagree, (3) not sure, (4) agree and (5) strongly agree. The challenges pointed out by respondents when implementing supply chain practices included high overall cost increase, difficulty in operationalizing sustainable development, changing culture and mindset and strains in control. Others included management of demand and supply uncertainties, complexity of problems, staff resistance to adopting the change, funding limitations as well as delays, procurement delays, lack of support from partners, inability to anticipate disaster(s) and lack of robust supply chains. This concurs with literature review as change of culture and mindsets hinders implementation of supply chain practices, staff resistance to adopt the change due fear from change connected to difficulties of interpretation, complexity involved, and the underlying business logic with its clear focus on financial aspects, all contribute to the inertia in reaching sustainable supply chains (Abbasi and Nilsson, 2012). According to Abbasi and Nilsson (2012), high overall costs increase is a challenge due compliance with sustainable regulation that obliges the supply chain members to implement possibly costly adaptation processes that can affect their competitiveness and profits as much as they transform production/service methods and systems.

The respondents indicated that they were not sure whether or not the

following were challenges to the UN agencies: competitive pressures, managing tradeoffs, resistance from communities, lack of commitment among suppliers, consumer desire for lower prices and lack of supportive corporate structure as well as processes. Others included lack of management support and reliance on traditional accounting methods, which do not facilitate recording of triple bottom line measures. This means top management supports employees in terms of decision-making to ensure success in implementation of sustainable supply chain practices, suppliers ensure that they deliver raw materials on time to meet customer demands and needs. Hence, company reputation is maintained and consumers desire quality goods despite their prices. These findings differ with results from other studies. Table 4.3 shows a detailed representation.

Table 4.3: *Challenges faced in implementing sustainable supply chain practices*

	Mean	Std. Deviation
Funding limitations and delays	4.00	1.33
Procurement delays	3.89	1.24
Strains in control	3.89	.66
Management of demand and supply uncertainties	3.84	.96
Staff resistance to adopting the change	3.82	.82
Complexity of problems	3.79	1.03
Lack of support from partners	3.74	1.28
Changing culture and mindset	3.74	.73
Inability to anticipate disaster	3.61	1.29
Difficulty in operationalizing sustainable development	3.58	1.07
Lack of robust supply chains	3.58	1.22
High overall cost increase	3.53	1.02
Competitive pressures	3.26	1.33
Managing tradeoffs	3.21	1.13
Resistance from the communities	3.11	1.24
Lack of commitment among suppliers	3.00	1.33
Consumer desire for lower prices	3.00	1.37
Lack of supportive corporate structure and processes	3.00	1.25
Reliance on traditional accounting methods which do not facilitate recording of triple bottom line measures	3.00	.94
Lack of management support	3.00	1.15

Source: Research data (2015).

Ways of Dealing with Challenges

In examining possible solutions when implementing sustainable supply practices, respondents were asked to indicate some possible solutions on a Likert scale of 1 to 5, where (1) denoted for strongly disagree, (2) disagree, (3) not sure, (4) agree and (5) strongly agree. Most of the respondents pointed out that they can overcome challenges by observing instituted code of ethics, training of staff, ad top management support and commitment as indicated by means of 4.57, 4.47 and 4.68, respectively (Table 4.4).

Table 4.4: *Ways of dealing with challenges*

	Mean	Std. Deviation
Top management support and commitment	4.68	1.05
Having a code of ethics in place	4.58	.51
Training of employees	4.47	.51
Having a sustainability policy	4.47	.51
Sustainability measurement and audits	4.32	1.17
Community training	4.11	.74

Source: Research data (2015).

This means that training of staff is important because it helps them be up-to-date in the new technology required for better improvement in the sustainable supply chain management and practices. Codes of conduct offer an invaluable opportunity for responsible organizations to create a positive public identity for themselves, an aspect that can lead to a more supportive political and regulatory environment together with an increased level of public confidence and trust among important constituencies as well as stakeholders. Top management support and commitment involve

providing resources and training, overseeing implementation at all levels of the organization, and evaluating as well as revising the policy in light of achieved results. Other possible solutions include community training, having a sustainability policy, and sustainability measurement including audits to enhance public confidence.

Factor Analysis

Exploratory factor analysis was undertaken for sustainable supply chain practices adopted by the UN agencies using the principal component analysis extraction method. This is used to reduce the large number of variables into a smaller set of variables (factors), establish underlying dimensions between measured variables and latent constructs thereby allowing formation including refinement of theory and provides construct validity evidence of self-reporting scales (Williams, Brown, and Onsman, 2010). Components with eigen values below 0.5 were excluded and the factor analysis was run again. Six components were obtained that explained 82.026 percent of variance. Extracted components included climate change commitment safety, ethical sourcing, production and distribution, having a diverse supplier network, decent employee wages and salaries, good working conditions for employees and employee health as well as safety. Only items with Eigen values (>1.0) and factor loadings (Min .50) were ideal for Pearson's correlation analysis and multiple regression analysis. The total variance explained for sustainable supply chain practices adopted by UN agencies is presented in Table 4.5.

Table 4.5: *Total Variance Explained for Sustainable Supply Chain Practices*

Component		Initial Eigenvalues			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Dimension0	1	6.554	31.208	31.208	6.554	31.208	31.208
	2	3.823	18.206	49.414	3.823	18.206	49.414
	3	2.567	12.226	61.640	2.567	12.226	61.640
	4	1.770	8.431	70.071	1.770	8.431	70.071
	5	1.385	6.594	76.665	1.385	6.594	76.665
	6	1.126	5.361	82.026	1.126	5.361	82.026
	7	.942	4.488	86.514			
	8	.756	3.600	90.114			
	9	.593	2.826	92.940			
	10	.459	2.184	95.124			
	11	.356	1.693	96.818			
	12	.232	1.106	97.924			
	13	.164	.780	98.704			
	14	.159	.757	99.461			
	15	.063	.301	99.762			
	16	.039	.186	99.948			
	17	.010	.049	99.997			
	18	.001	.003	100.000			
	19	2.025E-16	9.644E-16	100.000			
	20	-1.239E-16	-5.898E-16	100.000			
	21	-3.532E-16	-1.682E-15	100.000			

Extraction Method: Principal Component Analysis

The rotation converged in 6 iterations using Varimax rotation with Kaiser Normalization. Factor analysis as noted by Pallant (2005) is possible when there are large numbers of related variables.

The rotated component matrix after principal component analysis is presented in Table 4.6.

Table 4.6: *Rotated Component Matrix*[a]

	Component					
	1	2	3	4	5	6
Buying from local suppliers	.053	-.101	.886	.236	.069	.125
Good working conditions for employees	.103	.033	.733	-.526	.260	-.057
Ethical sourcing, production and distribution	-.057	.218	.828	-.267	-.102	.111
Managing products returns	.532	.066	.680	-.093	-.107	-.299
Recycling of material	.127	.320	-.159	.684	.223	-.304
Reuse of material	.102	.195	-.067	.816	.445	.026
Managing waste disposal	.286	-.056	-.084	.041	.842	.068
ISO-14000 certification	.204	.875	-.033	.234	-.159	-.014
Green purchasing strategies	.312	.470	.331	.210	.408	-.064
Corporate social Responsibility	.441	.674	-.018	-.108	-.086	-.204
Sustainability labeling schemes	.840	-.002	-.071	.134	.207	-.131
Life cycle assessment	.790	.093	.281	.075	.334	.077
Employee health and safety	.504	.505	.101	-.311	.366	-.160
Ensuring suppliers have a sustainability policy	.523	.519	.213	.302	.214	.125
Climate change commitment safety	.185	-.220	.599	-.163	-.149	.327
Decent employee wages and salaries	.011	.021	.149	-.104	.063	.931
Suppliers' ISO-14000 certification	-.042	.907	.036	-.006	-.058	.029
Companywide environmental audits	.092	.918	-.076	-.041	.278	.067
Having a diverse supplier network	-.063	.185	.079	-.836	.255	.034
Sustainable supply network management	.917	.279	-.078	-.035	-.040	.062
Stakeholder engagement	.820	.160	.394	.136	.096	.105

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations

Pearson's Correlation Analysis

The Karl Pearson's coefficient of correlation (simple correlation) is a measure of degree of relationship between two variables and is denoted by r. The Pearson's correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. As cited in Wong and Hiew (2005), the correlation coefficient value (r) ranging from 0.10 to 0.29 is considered weak, from 0.30 to 0.49 is considered medium and from 0.50 to 1.0 is considered strong. However, according to Field (2005), correlation coefficient should not go beyond 0.8 to avoid multi co-linearity. The results showed that there was high correlation between sustainable supply chain management practices and organizational performance with a value of 0.684 as shown in Table 4.7. The correlation coefficients on the main diagonal are always 1.0 because each variable has a perfect positive linear relationship with itself.

Table 4.7: *Pearson's Correlation Coefficients Matrix*

Pearson Correlation	*Organizational Performance*	*Sustainable supply chain practices*
Organizational Performance	1.000	.684
Sustainable supply chain practices	.684	1.000

**. Correlation is significant at the 0.01 level (2-tailed).

Regression Analysis

Regression analysis is concerned with distribution of an average value of one random variable like the other variables that need not be random allowed to take different values. A multivariate regression model was

applied. The regression model specifically connects the average values of y for various values of the x-variables. Basically, the regression analysis is used in two distinct vraiables including being means for considering data taking into account any other relevant variables by adjustment of the random variable and generating mathematical forms to be used to predict the random variable from the other (independent) variables.

The regression model was as follows:

$Y=\beta_0+\beta_1 x_1+\varepsilon$Where;
β_0= constant
β_1, =coefficient
X_1= sustainable supply chain management practices
ε= error term

Table 4.8: *Regression Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
dimension01	.891[a]	.793	. 745	.194

a. Predictors: (Constant), Sustainable supply chain practicesb. Dependent Variable: Organizational performance

Table 4.9 shows that the coefficient of determination (the percentage variation in the dependent variable being explained by changes in independent variables) R^2 equals .793, that is, sustainable supply chain practices, leaving only .207 percent unexplained. The P- value of 0.000 (Less than 0.05) implies that the model of organizational performance is

significant at 5 percent significance. Then R is the correlation coefficient, which shows the relationship between the study variables. Thus, from the findings shown in Table 4.9, there was a strong positive relationship between study variables as shown by 0.891.

Table 4.9: *ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.392	6	1.233	19.151	.000[a]
	Residual	.837	13	.064		
	Total	8.229	19			

a. Predictors: (Constant), sustainable supply chain practices

b. Dependent Variable: Organizational performance

ANOVA findings (P- value of 0.00) in Table 4.11 show that there is correlation between the predictor variables (sustainable supply chain practices) and response variable (organizationalPerformance). An F ratio is calculated to represent variance between the groups, divided by the variance within the groups. A large F ratio indicates that there is more variability between the groups (caused by the independent variable) than there is within each group, referred to as the error term (Pallat, 2005). Therefore, this is an indication of a better predictor model. A significant F test indicates to reject the null hypothesis that states that the population means are equal (in this case that sustainable supply chain practices do not have an effect on organizational performance).

Table 4.10: *Coefficients*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.981	.453		2.165	.006
	Sustainable supply chain practices	.237	.160	.198	1.479	.012

a. Dependent Variable: Organizational Performance

The established linear regression equation becomes:
$Y = 0.298 + 0.237 X_1$

Where
Constant = 0.298 shows that if the level of sustainable supply chain practices is held at constant zero, organizational performance would be 0.298.

In addition, $X_1 = 0.237$ shows that one unit change in sustainable supply chain practices results in 0.237units increase in organizational performance. The Standard Errors are standard errors of regression coefficients. They can be used for hypothesis testing and construct confidence intervals. For example, the standard error of sustainable supply chain practices coefficient is 0.160. A 95 percent confidence interval for the regression coefficient for sustainable supply chain practices is constructed as ($0.237 \pm k\ 0.160$), where k is the appropriate percentile of the t distribution with degrees of freedom equal to the Error DF from the ANOVA table. The degree of freedom is 13 and the multiplier is 2.00. Thus, the confidence interval is given by (0.237 2.00 (0.160). The Standardized coefficients (Beta) are what the regression coefficients would be if the models were fitted to

standardized data, that is, if from each observation subtracted the sample mean and then divided by the sample SD.

The t statistic tests the hypothesis that a population regression coefficient isâis 0, that is, H_0: â= 0. It is the ratio of the sample regression coefficient B to its standard error. The statistic has the form (estimate - hypothesized value)/SE. Since the hypothesized value is 0, the statistic reduces to Estimate/SE and hence, t statistic (0.237)/0.16. Sig. labels the two-sided P values or observed significance levels for the t statistics. The degree of freedom used to calculate the P value is given by the Error DF from the ANOVA table. The P value for the independent variable tells whether or not the independent variable has statistically significant predictive capability. From Table 4.10, the significance value is 0.006, which is less than 0.05 and hence, the independent variable is significant.

Conclusions

Based on the findings from the study, it is clear that there exists very strong sustainable supply chain management practices that have contributed to good performance within the supply chain. and conversely, impacting on the UN agencies' overall performance and their competitive strength in the challenging business environment. From the study findings, the study concludes that adoption of sustainable supply chain management practices improves organizational performance. The improved performance is reflected through cost-savings, enhanced employee motivation, product quality improvement and new market opportunities.This shows that sustainable supply chain management practices was a properly customized process to suit change needs of UN agencies' very well defined supply chain practices. Such sustainable supply chain management practices would give sustainability and higher success rate to the change process.

Furthermore, it can be concluded that sustainable supply chain management practices being adopted by UN agencies in Kenya faced

various challenges that hindered effectiveness of the adoption process. The main challenges included resistance to change from various management cadres due to fear from loss of power, lack of adequate support from their partners, divergent perception between managers and subordinates about the sustainable supply chain management practices adoption and strains in control. Therefore, the UN agencies faced diverse challenges that slowed down the sustainable supply chain management practices adoption process.

Moreover, it can be surmised that the challenges can be overcome by the UN agencies' training staffs to be up-to-date with technology, having code of conduct to regulate employees' behaviours and by having top management support to provide resources for successful implementation of sustainable supply chain management practice to improve organizational performance.

Recommendations

Sustainable supply chain performance management practices need to be embraced to help the management team appreciate the direct impact of these initiatives. Management support and further investment together with involvement of supply chain practitioners in key business projects will also add value. Adoption of flexible sustainable supply chain practices through appropriate research will help efficiently and effectively meet the business diverse yet drastic changing needs as well as address challenges arising from a dynamic global business environment. Management should embrace both qualitative and quantitative aspects in their decision-making and embracing highly sustainable supply chain management practices integration across the group will yield synergies. The sustainable supply chain management practice is a heavy matter as evident from the study, clearly reflecting how they marry with corporate strategy to yield improved performance. To achieve effective implementation of the various sustainable

supply chain management practices, it requires clear policies to be formulated, implemented and monitored to ensure that they remain relevant to the business.

The theory as captured in literature review stage is such that organizations that adopt sound sustainable supply chain management practices outperform those who do not. Furthermore, the gap keeps widening and as such, organizations continue to innovatively implore fresh sustainable supply chain management practices targeting further and faster creation of value given immense competition and pressure from the stakeholders. In due regard, sustainability of those who do not embrace such best practices is at stake. The outcome of this case study on UN agencies clearly supports this theory.

With globalization and stiff competition, there is not much time left to slow copying organizations. Thus, proactively and innovatively investing in appropriate sustainable supply chain management practices should be the core calling of supply chain managers if their organizations are to grow and be going concerns.

Constraints

There was lack of response from some of the targeted respondents. Others failed to return the questionnaires by claiming that they had no time to fill them, while others argued that it was against the company's policy to disclose any information related to their organizations making support from their organizations a challenge.

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