

**SUSTAINABILITY AND TRIPLE BOTTOM-LINE
PERFORMANCE IN THE HORTICULTURE
SUPPLY CHAINS IN NAIROBI, KENYA**

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DECLARATION

I declare that the work contained in this project report is my original work and has not previously, in part or in its entirety, been presented at any other university for assessment or award of degree.

Signed Date

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This proposal was submitted for examination with my authority as the university supervisor.

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DEDICATION

I dedicate this project to my dear sponsor Karin Sohngen whose hope, believe and trust in me resulted to my achievements. The sincere prayers of my mother Nifa Musavi Muruli gave me hope and reason to soldier on. May Almighty God Bless you all for the great support.

ACKNOWLEDGEMENT

Honor and Glory goes back to the Most High since knowledge and wisdom belongs to Him. I am greatly indebted to my Supervisor Onserio Nyamwange who has seen me through the entire research. His support, input and guidance resulted into what am now celebrating to have successfully accomplished.

Lastly but not least I thank and recognize the support of my close friend Linah. May God Bless you and always show up at the point of your needs. Thank you for your encouragement, your many questions concerning progress of my project, your constant reminders of the need to work on my project has seen me finish the report.

ABSTRACT

The Triple Bottom-Line concept brings together three important dimensions- Environmental, Social and Economic. It is also referred to as the three Ps- Planet, People and Profits. These three are important dimensions of addressing sustainability in business operations. This study aimed at establishing the relationship between TBL, Sustainability and Performance in Horticulture Sector in Kenya. The study adopted a descriptive research design of cross sectional type where a census of all the registered horticulture firms within Nairobi and its environs were considered and took part in the study. Primary data was collected using the questionnaire from the 25 registered firms. Two respondents were targeted from each firm. The researcher received a response rate of 74% which formed part of the analysis and out of which the findings were interpreted, conclusions and recommendations drawn. The findings indicate that majority of horticulture firms in Nairobi and its environs have adopted the TBL dimensions to a large extent. It is also clear that contrary to the earlier norms, most horticulture firms are becoming more concerned about environmental and social dimensions with hope that they will equally translate to more profits. Several triggers which include compliance with government regulations, profitability goals, competitive forces and society concern for the environment were rated as the main drivers towards TBL for sustainability.

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ABBREVIATION AND ACROYNMS

ANOVA	Analysis of Variance
CSR	Corporate Social Responsibility
CSV	Creating Shared Value
EPZ	Export Processing Zones Authority
GAP	Good Agricultural Practice
GRI	Global Reporting Initiative
GSCM	Green Supply Chain Management
HCDA	Horticultural Crops Development Authority
ISO	International Standard Organisation
KMO	Kaiser- Meyer- Oklin
MDGs	Millennium Development Goals
PCA	Principal Component Analysis
RBV	Resource-Based View
SC	Supply Chain
SCM	Supply Chain Management
SD	Standard Deviation
SSCM	Sustainable Supply Chain Management
TBL	Triple Bottom Line
TPL	Third Party Logistics
WTO	World Trade Organization

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The focus on business sustainability rather than generic aspects of sustainability has highlighted more attention to sustainability of all sectors including food and horticulture. Few industries have received as much recent public attention as the food industry Pullman, Maloni and Carter (2009). From supply chain management vulnerabilities exposed by various quality-based food recalls (Roth, Tsay, Pullman and Grey 2008) to rapidly increasing food costs, food has been labeled “the new oil” (Bradsher 2008). Beyond quality and cost issues, the food industry is complicated by social and environmental sustainability concerns that have been emerging among the media and public for decades. Sustainability often attracts criticism of being more about rhetoric than reality and this may be substantiated when we consider sectors where consumption decisions are taken with less consideration of wider supply characteristics.

Sustainability issues are complex by nature (Lovins, Lovins, & Hawken, 1999). Sustainability is the law that guides our actions regarding economic, social and environmental options without affecting future generations. Thomas, Francis, Elwyn and Davies (2011) have defined business sustainability as “the increase in productivity and/or reduction of consumed resources without compromising product or service quality, competitiveness, or profitability while helping to save the environment.” Sustainability enables a firm to minimize long-term risks related to resource depletion, fluctuations in energy costs, product liabilities, and pollution and waste management. Sustainability is driven by the basic notion that a supply chain’s performance should be measured not just by profits, but also by the impact of the chain on ecological and social systems. Furthermore, firms’ performance is no longer viewed too narrowly; it is viewed too broadly along the Triple Bottom Line (TBL) perspective (Hubbard, 2006). To be truly sustainable a supply chain would at worst do no net harm to natural or social systems while still producing a profit over an extended period of time.

Food industry is confronted with issues ranging from migrant worker abuses, product safety and animal handling practices to the environmental impacts of soil erosion, habitat

destruction, fertilizer run-offs and use of herbicides and pesticides (Pullman et al., 2009). Because of the attention brought to the industry by sustainability concerns, certain members of the food supply chain have found that adopting various value-based or sustainable practices can offer a differentiating competitive advantage.

A growing number of companies and researchers have expanded sustainability objectives to more comprehensively address social, environmental and long-term economic stability considerations in the supply chain (Gladwin, Kennelly & Krause 1995; Starik & Rands 1995; Jennings & Zandbergen 2005; Carter & Rogers 2008; Pagell & Wu 2009). These different dimensions of sustainability could generate competitive advantage for a firm. Specifically, sustainability practices are part of a firm's capabilities and according to the resource-based view (RBV) of the firm, contribute to variability in performance across firms (Wernerfelt 1984; Barney 1991; Peteraf 1993).

In order for companies to safeguard the resources, there is need to practice sustainability in most of their operations. Carter and Easton (2011) assert that sustainability is becoming a popular practice not only in the business environment but also in the broader side of the society. Adoption of Triple Bottom Line approach by organizations will therefore lead to sustainability in supply chains.

1.1.1 Sustainability

Humanity uses the equivalent of 1.5 planets to provide the resources we use and to absorb our waste (Living Planet Report, 2010). In other words we are living on our savings and consuming more than we produce. This is but one example of non-sustainability. It is easy to agree on that there are global problems that need to be solved like the over consumption of global resources, the problem of humanity exceeding planetary boundaries (Rockström et al., 2009) and issues of poverty as described in the Millennium Development Goals (MDGs). According to Isaksson, Garvare and Johnson, (2015); For supply networks and companies to be sustainable they should be sustainable within the larger system. We should be able to operationalize company sustainability performance in such a way that it helps us to manage issues that are relevant for global

sustainability. That is, global limits should somehow be reflected in the measurement and management of company sustainability.

According to Newton (2003), Sustainability is reached when a social structure can be maintained profitably and indefinitely, without degrading the systems on which it depends. Most large companies today have sustainability reports. Companies are often clear about their sustainability and climate goals (Pivotgoals, 2014). The Global Reporting Initiative (GRI) guidelines are widely used by companies to report sustainability: “The Guidelines also offer an international reference for all those interested in the disclosure of governance approach and of the environmental, social and economic performance and impacts of organizations,” (GRI, 2013). Porter and Kramer (2011) elaborating on the creating shared value (CSV) approach on sustainability: “The concept of shared value can be defined as 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.” The message of Porter and Kramer (2011) is that companies should focus on Profit, but they do this by increasing the total value creation in the system where they operate, which means also increasing the value for other stakeholders, such as Planet and People.

1.1.2 Triple Bottom Line

The Triple Bottom Line is a concept that was coined by John Elkington in 1998. TBL focuses on three dimensions of an organization’s operations. The first dimension is the economic or financial, the second is social and the last is environmental (Fauzi, 2010).

As global awareness of environmental problems has grown, consumers have become the crucial factor in promoting green designs (Schischke, Hagelucken and Steffenhagen, 2005). Thus, consumers have become more aware of the consequences of their consumption decisions and their choices are increasingly affecting the product offerings (Andersen & Skjoett-Larsen, 2009; Defee, Esper & Mollenkopf, 2009). Consumers are no longer solely interested in the physical product, such as the materials used for production and pricing, but also wish to know, for instance, where the raw materials were

produced and purchased. In addition, many consumers take an interest in what happens to the product after its lifetime. In other words they are increasingly interested in the social and environmental impact of the entire supply chain (SC). As for the companies, they have been under increasing pressure to consider the environmental consequences of their products and services during the past 20 years (Kleindorfer, Singhal & van Wassenhove, 2005). It is becoming more and more important to be aware of the implications of supply-chain decisions for the life cycle of the product.

In Sustainable Supply Chain Management (SSCM) literature, the inclusion of sustainability into the theory of Supply Chain Management (SCM) is most often based on the TBL approach (Elkington, 1998) which calls for equal consideration of all three pillars of sustainability, namely, economy, ecology and society. According to Seuring and Müller (2008) SSCM refers to the management of material, information and capital flows 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 are derived from customer and stakeholder requirements.

1.1.3 Horticulture Sector in Kenya

Issues related to water, food and land are all concentrated in agriculture, which forms a focal point in the sustainability and security debate. The agricultural sector is a dynamic economic sector with many conflicting issues. In the late 1960s and early 1970s it was generally expected that agricultural production growth would be unable to keep pace with the rising needs for food by our world population (UNEP, 2008). But during the mid 1970s, world food production grew rapidly, thus reducing the threat of an ever increasing gap between supply and demand. Since the late 1980s, however, the optimism was tempered because of the persistent problems of insufficient food supplies in major parts of our world and the environmental and social concerns about intensive farming methods. Against these background observations, the notion of sustainable agricultural development in relation to international food security is quickly gaining importance (Lancker & Nijkamp, 2000; Nijkamp, 1999).

The horticultural sector in Kenya plays a major role in meeting domestic needs for food, the generation of income and foreign exchange and creation of employment (EPZA, 2005). The sector in Kenya has a likely positive impact on poverty. Horticultural produce includes: vegetables, flowers and fruits.

Food production and consumption can have both a positive or negative effect on the Environment, but it can also have an impact on consumer health, social inclusivity, job satisfaction, animal welfare and a variety of other sustainability indicators (Wiese & Toporowsky, 2013; Forsman-hugg, Katajajuuri, Pesonen, Makela, Jarvela & Timonen, 2013; Ilbery, 2005). The importance of sustainability is substantial, where the values, awareness, mindsets of society (Cetinkaya, 2011) and business reputation (Poudyal, 2012) play an important role in food supply chain decision making. As a result, social and environmental sustainability in food supply chains remains high on the political and economic agenda of the European Commission and the UK government, and reflects the missions of the International Standard Organization (ISO) and World Trade Organization (WTO) (Wiese and Toporowsky, 2013; Forsman-hugg et al, 2013; Maloni and Brown, 2006).

Despite the rapid growth and development of horticulture industry in Kenya however, concerns have been on environmental as well as social or human issues (Nyakango, 2007). For example, pesticides applied by the flower growers threaten Lake Naivasha, around which many plantations are concentrated and local hippo population is also under threat. The chemicals used on the flower farms are causing pollution, which also are the major cause for pathetic and deplorable working conditions for the employees. Besides, water usage does not adhere to sustainability concept. Employees who are working under bad environment also face the problem of poor pay or compensation.

1.2 Statement of the Problem

The ever changing and growing demand for food; the climatic changes cause challenges to many countries especially those with developing economies. The challenges are from supply chain management vulnerabilities exposed by various quality-based food recalls (Roth et al., 2008) to rapidly increasing food costs (Bradsher 2008).

Horticulture sector is an important sector in Kenya given the contribution it has to the economy (Export Processing Zones Authority (EPZA), 2005). Issues of sustainability especially in the flower farming has in the past remained big concern to the policy makers, stakeholders and authority (Horticultural Crops Development Authority (HCDA), 2003). According to HCDA, work environment, water usage, environmental issues i.e. chemicals used on the flower farms, and employee wages are key concerns. All these issues can be well addressed if organizations adopt the environmental, social and economic aspects of TBL into their supply chains (Pullman et al., 2009).

A number of studies have been carried out on sustainability and Triple Bottom Line approach in organizational supply chains. UNEP (2008), Unchaining Value Innovative approaches to sustainable supply focusing on several case studies including Unilever in Kenya. The study concluded that successful supply chain sustainability initiatives can lay essential ground for developing brand-enhancing partnerships that will help develop customer loyalty. Pullman et al. (2009) study on social versus environmental sustainability practices and performance outcomes established that food industry managers perceive both direct and mediated impacts of sustainability programs on performance.

Parmigiani, Klassen and Russo (2011) study on efficiency and accountability found need to consider stakeholder exposure (control and accountability) to particular social and environmental issues across their supply chains. Steglich, Keskin, Hall and Dijkman (2011), study on international market demands compatibility with domestic social needs, Challenges in strengthening innovation capacity in Kenya's horticulture industry. Using

HomeGrown Ltd as their object of analysis did conclude that an important element of success in this case was the formation of a range of linkages that enabled a systemic sector response to challenges rather than isolated actions of individual players. Wu and Pagells (2011) study on decision making in sustainable supply chain management (SSCM); Carter and Easton (2011) study on the evolution of future directions of sustainable supply chains; and Nyagari (2012) study on Triple Bottom Line and strategic sourcing decisions both established that SSCM need to consider all the three dimensions of TBL in their businesses.

Gopalakrishnan (2012) case study on the drivers of sustainability at British Aerospace concluded that for sustainable supply chain management to succeed there is need to approach this initiative from an integrated perspective that is capable of addressing pertinent economic, environmental and social issues. Anu Bask, Merja Halme, Markku Kallio and Markku Kuula (2013) study on consumer preferences for sustainability and their impact on SCM concluded that consumers are willing to pay a premium for sustainability features and that among the four clusters of purchasers there are environmentalists.

Bonnie and Scott (2014) study on situational variables and sustainability in multi-attribute decision making established that the environmental dimension of sustainability is the most influential followed by economic and social. Raine, Rickard and Mikael (2015) study on crippled bottom line- measuring and managing sustainability concluded that the relative indicators with focus on people utility compare to planet and people harm seem to be relevant for measuring the level of sustainability.

It was evident from the above studies that there was lack of research on the topic of sustainability of horticulture sector supply chains in Kenya. The researcher aimed to narrow the research gap by focusing on the case of horticulture sector and studying performance of sustainability and TBL from a supply chain perspective. The study questions included: To what extent are the TBL dimensions adopted in horticulture sector in Kenya? What are the triggers or drivers of sustainability in the horticulture sector in

Kenya? What is the relationship between SSCM and performance in horticulture sector in Kenya?

1.3 Research Objectives

This research addressed the following research objectives:

- i. To establish the extent to which Horticulture Sector has adopted TBL dimensions,
- ii. To establish the triggers/drivers of TBL in the horticulture sector in Kenya,
- iii. To determine the relationship between SSCM practices and performance in Horticulture Sector in Kenya.

1.4 Value of the Study

This study is hoped to contribute value in a number of ways. First, it will be useful to policy makers in specific to the government, government agencies and various stakeholders in the agricultural sector as they use the findings and recommendations of the study to improve food security in the country by applying sustainability and Triple Bottom-Line concept in farming practices as well as managing efficient and effective food supply chain. This study therefore contributes to policy development and management practice in the entire Agricultural sector in most of the developing countries.

Professionals and academicians are in position to clearly understand major practical challenges which need to be addressed. Equally the study contributes knowledge to SSCM practices and Triple Bottom-Line concept and their relationship. The study is also significant in facilitation of theory building in line of sustainability and Triple Bottom-Line in Agricultural sector thus used as reference for other studies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviewed existing literature on the various aspects under consideration. It sets out the conceptual framework covering the following areas: SSCM, TBL Measures and Outcomes. This chapter also discussed the propositions as depicted by the conceptual framework.

2.2 Theoretical Review

Organizations operate within a wider environment that is composed of a number of variables that include political, economic, socio-cultural, technological, ecological and legal. Any change in any one of these variables is expected to have far reaching implications in the way organizations operate. This compels organizations to adopt SSCM practices in addressing any change that may occur in any of the variables. The goals of businesses are achieved through the application of change management approaches including SSCM (Foran, Lenzen, Dey & Bilek, 2005). Windsor (2002) argues that for businesses to thrive, economic development should be balanced with the societal and environmental dimensions.

2.2.1 Sustainable Supply Chain Management

Supply Chain Management (SCM) is an important environmental and social subject relating to corporate sustainability (Ashby, Leat & Smith, 2012). Companies' interest in SCM has increased in recent decades because of growing global competition, outsourcing of companies' non-core activities and the shortening of product life cycles (Skjøtt-Larsen *et al.*, 2007). More importantly, companies' close long-term relationships with suppliers and other strategic partners have become a key factor in competitiveness (Christopher, 2005; Andersen & Skjøtt-Larsen, 2009). At the same time, companies have become more deeply committed to corporate social responsibility (CSR) and sustainability (Freeman, Harrison, Wicks, Parmar & Colle, 2010) by refusing to implement a reductionist corporate management model focused only on shareholders' interests (Wood, 2008). Under this scenario, sustainable management of supply chains has become a core strategic factor for companies worldwide (Seuring, 2012). SSCM is defined as reformist

SCM “which manages the material, information and capital flows 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 are derived from customer and stakeholder requirements” (Seuring & Müller, 2008).

Despite the rising popularity of Supply Chain Management, turbulence and the dynamism of business environment keeps on presenting new challenges. Pagell and Wu (2010) confirm the existence of economic and environment related challenges that have necessitated most contemporary organizations to re-examine their supply chains. Organizations therefore are forced to go ahead and transform their supply chains with the aim of making them more sustainable. Nowadays, sustainability is seen as a source of competitive advantage, and even as the backbone of innovation (Nidumolu, 2009).

The holistic view on sustainable supply chain management (SSCM) covers environmental, economic and social aspects. Carter and Rogers (2008) define SSCM as strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key interorganizational business processes for improving the long-term economic performance of the individual company and its supply chains. According to Carter and Easton (2011), SSCM relates to the long-term improvement of organizations and has implications for companies’ economic bottom lines. Arguing that engaging in SSCM is a requirement for successful business, they provide a framework that describes the relationships among these Triple Bottom Line aspects and assigns supply-chain professionals key roles in terms of implementing sustainable practices. The increasing significance of SSCM has arisen from the need to find new operational and managerial practices to reduce the environmental impact of the operations of individual companies and entire SCs. It is therefore of high interest to identify environmental and social initiatives that have had the greatest economic impact on SCs (Carter & Jennings, 2002), and research on corporate social responsibility (CSR) is increasingly linked to SSCM.

The concept of SSCM is considered across the entire supply chain; the upstream, the focal organization and the downstream supply chain. In the upstream, the suppliers are considered while in the downstream the consumers and ultimately its disposal are taken in consideration (Halldorsson & Kotzab, 2009). Environmental and social issues do not only affect the focal organization, but also other stakeholders across the entire supply chain. These stakeholders include: a network of suppliers, producers, distributors, Third Party Logistics (TPL) providers and customers. The definition of SSCM is based on TBL and supported by four facets of sustainability including risk management, transparency, strategy and organizational culture (Carter & Rogers, 2008).

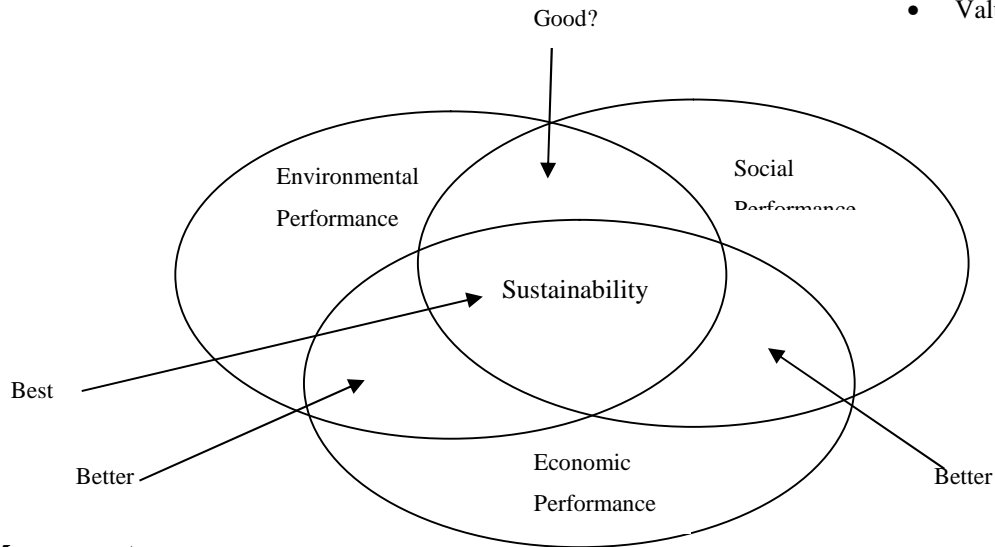
Figure 2.1: Sustainable Supply Chain Management

Strategy

- Sustainability as part of an integrated strategy

Organizational Culture

- Deeply Ingrained
- Organizational Citizenship
- Values and Ethics



Risk Management

- Contingency Planning
- Supply Disruptions
- Outbound Supply Chains

Transparency

- Stakeholder Engagement
- Supplier Operations

Source: (Carter & Rogers, 2008)

Figure 2.1 above was developed by Carter and Rogers (2008). It illustrates the relationship that exists among the three dimensions of the TBL. Each of the three circles represents one of the three TBL dimensions for an organization to achieve sustainable supply chain management. This is what the authors refer to as best because it represents an appropriate balance among the three TBL dimensions. It is also clear that if an organization only focuses on economic performance with either social or environmental performance, the overall performance will not be sustainable although it may appear to be better.

The organizations need sustainability not just for the sake of practicing but because it is a primary management principle that needs to be observed (Elkington, 2004). At the intersection of the three dimensions of the TBL is the core of sustainability and there are a number of activities that not only positively affect the environment and immediate society but also have positive economic implications on the organization. Carter and Rogers (2008) assert that one of the activities that are very significant at this level is management of risk. They further argue that sustainable supply chain management involves appropriate management of the short term financial outcome of an organization, reduction in environmental pollution through reduction of harm emanating from the firm's products and ensuring that both the employees of the firm and the members of the immediate society or public are safe from any harm.

The other activity that firms seeking to achieve sustainability need to do is to ensure that they have the right strategy and culture (Carter & Rogers, 2008). Shrivastava, (1995a) also supports this position by arguing that there is need to have a strong integration between the corporate strategy of the organization and sustainability initiatives made by the organization. Savitz and Weber (2006) also support this idea by asserting that organizations that integrate their corporate strategies with sustainability activities also change their culture as well as the way they approach issues. This means that the firm totally transforms the way it handles various issues in order to achieve sustainability.

The last activity necessary for a company that is aiming at achieving sustainability is promoting transparency in the operations of the firm. According to Holliday (2002), it is important for firms to uphold a high degree of transparency in all the activities touching on the three dimensions of environmental, social and economical. Transparency may involve providing appropriate reports to the various stakeholders of the firm and giving due consideration to suggestions made by the stakeholders for the purpose of improving the organization's performance.

Strategy, transparency, organizational culture and risk management are integrated part of SSCM practices.

2.2.2 Triple Bottom-Line

The TBL dimensions of economic, social and environmental which are also commonly called the three Ps (3Ps): people, planet and profits (Fauzi, 2010); started gaining prominence towards the end of 20th century as form of reaction towards the existing conflict between the environment and development. The concept captures the essence of sustainability by measuring the impact of an organization's activities on the world including both its profitability and shareholder values and its social, human and environmental capital. Mitchell (2007) assert that TBL is progressively more being used by firms to report on how they are responding to sustainability in terms of environmental, social and economic performance. The TBL enables organizations to monitor their actions through the development of sustainable objectives that are matched with each indicator. She further argued that for organizations to continue to function in the long term, they need to take actions that can lead to sustainable management of natural and human resources. The actions should also be able to enhance the wellbeing of the society and economy at large.

The proponents of the Economic Dimension assert that those in the management of an organization have a very significant responsibility of enduring that the organization achieves good financial performance since financial performance is a major area of concern to the stakeholders of the organization. Waddock and Graves (1997) assert that when the financial performance of an organization improves, it provides room for

enhancing the social performance of an organization the market-based approach; accounting-based approach and perceptual-based approach are applicable. According to Pava and Krausz (2002), the market-based approach derives the market value of a company from the prices of its stocks traded. This approach is based on the assumption that the main and significant stakeholders of any company are its shareholders. The accounting-based approach on the other hand focuses on the efficiency and effectiveness of a company as well as optimal deployment of the company assets.

Social responsibility of an organization is the overall relationship of the corporation with all of its stakeholders. The stakeholders of an organization include customers, employees, communities, owners or investors, government, suppliers and competitors. The important issues to consider in social responsibility include investing in community outreach programmes, good employee relations, creating and maintaining of employment, environmental stewardship and financial performance (Khoury, 1999). The social aspect of TBL deals with how organizations need to be socially responsible in their operations. Welford and Frost (2006) assert that organizations must be socially responsible on a wide range of issues. Community social responsibility (CSR) management tools are needed in developing and implementing a successful business strategy.

Partner and Howie (2007) assert that corporate environmentalism also referred to as green management emerged in towards the end of the 20th century and became popular internationally in the beginning of the 21st century. The need for environmental responsibility has been accelerated by pressure from various stakeholders such as green consumerism, regulatory agencies and non-governmental organizations. Other than this pressure, green management is considered an important tool to an organization. Researchers such as Ambec and Lanoie (2008); Hart (1995); Porter and Van der Linde (1995) argue that corporate environmentalism is a very important weapon of achieving competitiveness.

2.2.3 Sustainability and Triple Bottom-Line Performance

There is a direct relationship between sustainability and TBL performance outcomes of the organizations (Maloni et al., 2009). The application of Elkington's TBL in SC is meant to ensure that organizations operate sustainable supply chains, Carter and Rogers (2008). According to Carter and Rogers, the aim of TBL is not to suggest that firms should identify and engage in social and environmental activities not likely to harm economic performance but instead it guides managers to identify activities which improve economic performance and dictates the avoidance of social and environmental activities that lie outside of the intersection.

Performance refers to the actions, outputs and outcomes, and may not be limited to issues of accomplishment of results within the budget limits and in the most efficient way, whether there are any contingent outcomes, whether the performance achieved needs improvement or upholding (Flapper, Fortuin & Stoop, 1996; Mwitwa, 2000; Scotti 2004). It deals with doing things in the best way. It could be expressed in terms of effectiveness, efficiency or even productivity. Performance management broadly refers to the processes geared at coordinating and enhancement of work activities and outcomes within an institutional unit.

Carter and Rogers, (2008) state the supply chain activities that they believe fall within the Triple Bottom Line. These activities include: cost savings associated with reduced packaging and more effective design for reuse and recycling, lower health and safety costs as well as reduced turnover and recruitment costs due to safer warehousing and transport and improved working conditions; reduced labour costs in the form of higher levels of motivation and productivity and less absenteeism resulting from improved working conditions. Morali and Searcy (2001), indicate that sustainable supply chain practices, induced by environmental and social concerns lead to various advantages to the organization. Some of the advantages include cost savings due to reduced health and safety costs; reduced mitigation related costs; increased operational efficiencies; revenue generation as a result of good organizational reputation, increased quality; enhanced competitive advantage and general attractiveness to customers, employees and suppliers.

Organizations practicing SSCM value their suppliers' environmental and social performance beyond basic compliance. Companies are now implementing supplier scorecards to track sustainability performance throughout their supply chain in terms of energy use, waste and raw materials as well as labour and community indicators.

SSCM implementation face challenges that include: lack of understanding of the complicated relationship between economic, environmental and social activities and their effect on the economic bottom line; resource commitments; management and monitoring of supply chain risks; supply chain performance measurement; transparency of information and knowledge; aligning the firm's corporate strategy with SSCM initiatives; and rigid corporate culture, (Seuring & Muller, 2008b).

2.3 Empirical Review

The study proposed that sustainability and Triple Bottom Line concepts when supported and embraced by the organizations can be associated with performance and especially in food sector. The literature review presented the empirical studies to enable understanding of the role sustainable supply chain management and Triple Bottom-Line play and the subsequent impact. Table 2.1 below summarized some of the studies and literature related to SSCM and TBL concepts.

Table 2.1: Summary of the studies on SSCM and TBL on Performance

Author(s)	Focus of the Study	Research Findings	Gap
Nyagari (2012)	The Triple Bottom Line and Strategic Sourcing Decisions Among Commercial Banks in Kenya	Commercial Banks in Kenya have adopted TBL in strategic sourcing to varying degrees	Explored the banking sector and therefore need for looking on food sector which largely depends on natural resources. Also failed to look on SSCM holistically.
Wu and Pagells (2011)	Decision making in sustainable supply chain management (SSCM)	Established that SSCM need to consider all the three dimensions of TBL in their businesses	The study didn't look on the aspect of food sector
Anu Bask., et al (2013)	Study on consumer preferences for sustainability and their impact on SCM; Case of Mobile Phones	Concluded that consumers are willing to pay a premium for sustainability features and that among the four clusters of purchasers there are environmentalists.	Failed to discuss the other two aspects of TBL and the object of analysis to the study was mobile phones therefore need for food sector.
Nyakang'o (2007)	The relationship between Eco-Positioning and Performance of the Kenya Flower Council Member Firms	The researcher concluded that higher environmental certification (eco-positioning) enhance company performance in terms of sales volume, innovations and gaining new markets.	The study only focused on Kenya Flower Council Members thus failing to incorporate non-members. Also didn't involve other two members of horticulture family i.e. fruits and vegetables. Lastly, the study only concentrated on the two aspects of TBL and ignored the third one.
Kinoti (2012)	Green Marketing Practices, corporate image, organizational characteristics and performance of ISO 9000 and 14000 certified organizations in Kenya	The researcher found out that green marketing practices in general influence performance. She further asserts that in relation to individual measures of performance green marketing practices have statistically significant effect on innovativeness, effectiveness, competitive advantage and efficiency but do not influence sales turnover, market share and gross profit.	The study focused most on the environmental issues of green marketing but failed to equally address the social aspect and even the greening of the entire supply chain.

Source: (Researcher, 2015)

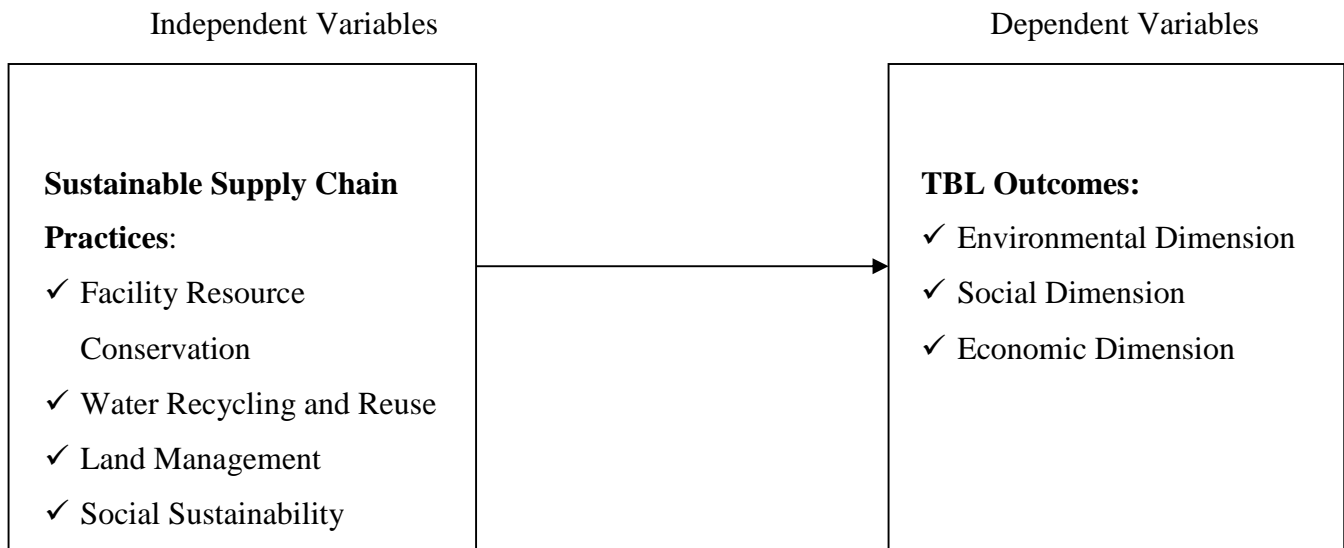
2.4 Summary of the Chapter and Research Gap

The application of TBL in supply chain is meant to ensure that organizations operate sustainable supply chains. Horticulture sector being a very important sector in any economy in the world, it is therefore of essence that the sector to be self sustaining by adopting all the three dimensions of the TBL concept.

From the above literature review and studies, it was evident that there existed little on the TBL and most importantly none of existing study on Sustainability and TBL Performance in Food Sector with specific interest of Horticultural. This study therefore narrowed down the existing gap.

2.5 Conceptual Model

Figure 2.2: Conceptual Model



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter described the steps, procedures and approaches that were followed in executing this study. It discussed the research design, target population, sampling design and sample size, data collection procedures and instrument, determination of reliability and validity as well as data analysis techniques.

3.2 Research Design

The study adopted a cross sectional survey and descriptive design. Tanur (1982) asserts that a survey is a means of collecting information about a large group of elements referred to as population. A survey has three characteristics: to produce quantitative descriptions of some aspects of the study population in which case it is concerned either with relationships between variables, or with projecting findings descriptively to a predefined population; data collection is done by asking people structured and predefined questions and data is collected from a fraction of the target population (Pinsonneault & Kraemer, 1992).

3.3 Population

The population of the study was all the horticultural firms in Nairobi and its environments. According to the Ministry of Agriculture (2015), 25 registered horticultural firms were operating within the locality of Nairobi and its environments. The researcher therefore carried out a census due to the manageable number of the horticultural firms.

3.4 Data Collection

It was the intention of the researcher to collect primary data from horticultural firms. The data were collected by use of questionnaires that were administered by drop and pick method. The questionnaire contained four sections (1, 2, 3 & 4). Section 1 sought data on firm profile, Section 2 had questions on environmental, social and economic variables, Section 3 sought data on the triggers/drivers of Sustainability in Horticulture Sector; and

Section 4 contained questions on the relationship between SSCM Practices and Performance.

Two respondents were considered from each firm to participate in the study. The researcher was interested with the supply chain managers or its equivalent as the respondents from the twenty five horticultural firms. Supply chain managers or their equivalents were considered because they deemed to be knowledgeable enough giving correct responses on the issues of study.

3.5 Data Analysis

The data was sorted and coded accordingly to allow more appropriate analysis to be carried out. Frequencies were used to show both the firm profile and the extent to which horticultural firms have adopted TBL concept and sustainability of supply chain; factor analysis was used for triggers/drivers of sustainability and regression analysis was applied to explain the relationship between TBL and performance outcomes. Three regressions were therefore performed for the three dimensions of the TBL concept. Tables and histograms were also used to enhance output presentation. The following model was used to show the relationship between sustainable supply chain management practices and performance: $y = 0 + 1X_1 + 2X_2 + 3X_3 + 4X_4 +$ Where: y = Sustainable Supply Chain Practices (Environmental Dimension, Economic Dimension and Social Dimension), 0 = Constant Term, 1 = Beta coefficients, X_1 = Facility resource conservation, X_2 = Water recycling and reuse, X_3 = Land management and X_4 = Social sustainability practices.

Table 3.1: Summary of Data Collection and Data Analysis

OBJECTIVE	SECTION	ANALYSIS
Firm Profile	Sec 1	Descriptive Statistics
Obj 1: The Extent to which Horticulture Sector has adopted TBL dimensions.	Sec 2	Descriptive Statistics
Obj 2: Triggers of Sustainability in Horticulture Sector.	Sec 3	Descriptive Statistics, Factor Analysis
Obj 3: Relationship between SSCM Practices and Performance in Horticulture Sector.	Sec 4	Regression Analysis

Source: (Researcher, 2015)

CHAPTER FOUR: RESEARCH FINDINGS AND INTERPRETATION

4.1 Introduction

The chapter presents the findings of the study giving the interpretation of the results as well relating the study findings with the studies of other researchers in the same area. The researcher successfully collected back 37 out of 50 questionnaires from the respondents representing a response rate of 74%. This response rate was satisfactory and representative to make conclusions for the study. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and above is excellent. Based on the assertion, the response rate was considered to be excellent.

4.2 Firm Profile

The firms' profile was sought from the respondents and the data analyzed using descriptive statistics. Table 4.1 presents the results on the firms profile.

Table 4.1: Firm Profile

Ownership	Frequency	Percentage (%)
Local	28	75.7
Foreign	9	24.3
TOTAL	37	100
Job Position	Frequency	Percentage (%)
Supply Chain Manager	22	59.5
Operations Manager	11	29.7
Other	4	10.8
TOTAL	37	100
Duration in operation	Frequency	Percentage (%)
Less than 10 years	20	54.1
10 - 20 years	17	45.9
TOTAL	37	100
Employees population	Frequency	Percentage (%)
21 – 50	4	10.8
More than 50	32	86.5
TOTAL	36	97.3
Range of Products	Frequency	Percentage (%)
Vegetables	1	2.7
Flowers	29	78.4
Vegetables & Fruits	3	8.1
TOTAL	33	89.2

Source: (Researcher, 2015)

The researcher sought information of the ownership of the horticultural firms in Nairobi area and its environments and the responses showed that 75.7% are locally owned while only 24.3% of the firms are foreign owned as depicted from table 4.1 above. Given the information that was required by the researcher using the questionnaire, the prime target of respondents were Supply Chain Managers and the Operations Managers. From table 4.1 above 59.5% of the respondents were Supply Chain Managers while 29.7% were Operations Managers. It is worth noting that the researcher also got 10.8% of the responses from the compliance officers. The researcher noted that most of the firms were not too old as it depicted by the number of years the firm has been in operation which majority registered 54.1% being below 10 years in operation and only 45.9% having operated in Nairobi Kenya for years spanning between 10 – 20 years. 86.5% of firms

having employees of above 50 thus confirming the need for sustainability and triple bottom-line.

Horticulture sector in Kenya is majorly dominated by flower farming. This in essence has been confirmed by the results generated from the questionnaires where 78.4% of the firms are flower farms or specialize in flower farming. It is also in the same sub- sector of horticulture that complains touching mostly on social and environmental aspects have emerged and existed for so long. Only 2.7% of the firms interviewed specialize in vegetables production while 8.1% does combination of vegetables and fruits. With 94.6% of the firms' market being foreign, it is evident therefore the amount in foreign currency the horticulture sector brings into the country. Other horticulture firms have established both local and foreign market at 5.4%. With these numbers in mind therefore sustainability and triple bottom-line performance in the horticulture supply chains ought to be researched and discussed extensively.

4.3 Environmental Dimension

The researcher sought to know the extent to which horticultural firms have adopted environmental aspect of TBL dimension. Questions revolving on the environmental issues were then asked to the respondents of which they rated the statements on likert scale of 1 to 5 i.e. 1 – not at all and 5- to a very large extent. The data were analyzed and results presented in table 4.2.

Table 4.2: Environmental Dimension Descriptive Statistics

	Mean	Std. Deviation
The firm makes use of recycled raw materials.	3.6216	.92350
The firm demands environmental standards certification from suppliers.	3.6486	1.05978
The company's packaging materials are bio-degradable.	3.7297	1.36725
The company usually carries out environmental audits.	3.7568	.95468
The firm emphasizes on suppliers who take environmental concerns seriously.	3.7838	.91697
A good percentage of the profit made is used to improve the environment.	3.8108	.93802
The company uses green label as an indicator of environmental friendliness.	4.1351	.71345
The firm has Formal Environmental Management System.	4.1818	.72692
The firm uses products with eco-benefits with an aim of preservation of the environment.	4.2432	1.01120
The company utilizes environmentally friendly cleaning materials throughout the premises (use of chemical free cleaning materials).	4.4324	.76524
The company uses pesticides that are not harmful to the environment.	4.6486	.75337
The firm has clearly stated its environmental objectives and action plans.	4.7568	.54800
Valid N (list wise)		

Source: (Researcher, 2015)

The table 4.2 above shows the environmental factors and their corresponding statistics. It is evident to the researcher that most horticultural firms practice and take some environmental issues more seriously than others as depicted by the statistics in the table. The firms having clearly stated environmental objectives and plans, use of pesticides that are not harmful to the environment, and the use of environmentally friendly cleaning materials are the most valued factors scoring highest mean of 4.76, 4.65 and 4.43 respectively.

4.4 Social Dimension

Social sustainability shifts the focus to the communities both internal (i.e., human resources) and external to an organization. According to social sustainability principles,

the organization should provide equitable opportunities, encourage diversity, promote connectedness within and outside the community, ensure quality of life and provide democratic processes along with open and accountable governance structures (Elkington 1994). For human resource sustainability for instance, the organization should recognize, value and promote the capability of its people with appropriate human resource policies and practices for equity, development and well-being (Daily & Huang 2001; Wilkinson, Hill & Gollan 2001).

It is from the above premise the researcher sought to understand some aspects of social dimensions that horticulture firms have embraced towards employees' welfare. The results of the social dimension are as follows:

As depicted in Tables 4.3 below, Corporate social responsibility, Job satisfaction of workers, Attainment of worker quality of life and Facilitation of worker skill development are the most key concerns of the horticulture firms as shown by means of 4.67, 4.51, 4.27 and 4.11 respectively. From the results it is evident that most companies have realized the benefits that accrue on the social dimension aspect.

Table 4.3: Social Dimension Descriptive Statistics

	Mean	Std. Deviation
The company does not use child labor on the farms.	3.9730	1.38417
The company's human resource is ensuring and facilitating worker skill development.	4.1081	.80911
The company ensures that worker quality of life is attained.	4.2703	.60776
Job satisfaction of workers is the key concern to the company.	4.5135	.60652
Corporate social responsibility is key to the company.	4.6667	.63246

Source: (Researcher, 2015)

4.5 Economic Dimension

The researcher was interested in knowing if the economic factors are considered more to the expense of the environmental and social dimensions. From the results presented in Tables 4.4 below, it is clear that economic factors are still key concern to the

management as it manifests itself by the highest means scored. Cost savings, maximization of shareholders' wealth and profit maximization, use of sustainable sources of energy such as solar and wind, minimum packaging materials on products to preserve the natural resources, and use of sustainable sources of raw materials are some of the interventions that work favourably to most horticultural firms.

Table 4.4: Economic Dimension Descriptive Statistics

	Mean	Std. Deviation
The company has an active recycling program for materials in all sections.	3.7297	.99019
The firm run and has embraced certified programs.	3.8649	1.41740
The company uses packaging made of recyclable materials.	3.8919	.99398
The company uses minimum transportation packaging materials for purposes of preserving natural resources.	4.0000	.91287
There is fair compensation (living wage) to all employees.	4.1622	.92837
The firm uses sustainable sources of raw materials.	4.2432	.64141
The firm uses minimum packaging materials on the products to preserve the natural resources.	4.3514	.67562
The firm uses sustainable sources of energy such as solar and wind.	4.5278	.69636
Priority is given to local suppliers especially those in which the firm is operating from.	4.5676	.95860
Cost savings, maximization of shareholders' wealth and profit maximization are key concerns to the senior management.	4.6757	.47458

Source: (Researcher, 2015)

4.6 Social and Environmental Positions

Among the factors that contribute to the social and environmental dimensions is the positions created that relates to the same with the sole purpose of advocating and advancing the agendas that relate to their portfolios. The researcher sought to understand the existence of various positions apart from the Supply Chain Manager and Operations Manager in the horticulture firms. The results of the research are presented in table 4.5 below.

Table 4.5: Social and Environmental Position/policy

A position of corporate social responsibility manager.	Frequency	Percent
Yes	29	78.4
No	8	21.6
Total	37	100.0
A position of environmental manager.	Frequency	Percent
Yes	28	75.7
No	9	24.3
Total	37	100.0
An environmental board of directors.	Frequency	Percent
Yes	33	89.2
No	4	10.8
Total	37	100.0
Corporate environmental policy.	Frequency	Percent
Yes	36	97.3
No	1	2.7
Total	37	100.0

Source: (Researcher, 2015)

It is evident from the results presented, that there is a corporate environmental policy in place as is shown by 97.3%. This is a clear indication the steps that majority of the horticulture firms are taking towards environmental dimension. The management does

realize the importance of the dimension and the long term benefits that come along with being environmental conscious. There is also a clear indication that most firms have established environmental board of directors, a position of environmental manager and a position of corporate social responsibility manager as shown by 89.2%, 75.7% and 78.4% respectively. Consequently, there are some firms which have not realized the importance of environmental and social dimensions and therefore having not seen the reason to have a position of environmental manager and corporate social responsibility manager as shown by 24.3% and 21.6% respectively.

However, it is worth noting that some horticulture firms have engaged in social responsibility activities for a good course. The researcher established that, they extend food donations to children's homes, assisting the less fortunate in the society, sponsorship of events mostly financing health programmes, building of schools and health centers for community around, general cleaning of the environment in their locality, sponsoring of bright poor students for education and tree planting initiatives by providing seedlings to the community.

4.7 Triggers/ Drivers of Triple Bottom-Line

The study sought to understand what drives the horticulture firms to either embrace TBL or want to adopt TBL. A number of factors and possible triggers were submitted to the respondents who gave their ratings and the results are as presented in the table 4.6.

As depicted from the results below it is evident that all the possible triggers/drivers of sustainability which were presented to the respondents are critical. This is clearly shown by the highest means that all the factors have registered, i.e. range of 4.05 to 4.97. Compliance with the government regulations, profitability goals, competitive forces, and the society concern over the environment tops the list as being among the critical drivers scoring means of 4.97, 4.91, 4.78 and 4.67 respectively.

Table 4.6: Descriptive Statistics- Drivers of TBL

	Mean	Std. Deviation
Compliance with Government Regulations	4.9730	.16440
Profitability Goals	4.9189	.27672
Competitive Forces	4.7838	.41734
Society Concern for The Environment	4.6757	.47458
Public Image and Goodwill	4.5676	.76524
Moral and Ethical Reasons	4.4865	.73112
Leadership Values and Managerial Attitudes	4.4865	.80352
Competitive Advantages	4.4865	.69208
Top Management Initiatives and Environmental Knowledge	4.4595	.55750
Environmental Problems that threaten The Environment and Human Life	4.4595	.69100
Individual Employee and Management Initiatives	4.3784	.72078
Increasing number of Green Consumers and their willingness to buy green products	4.3514	.53832
Size of the Firm and the nature of the industry	4.2703	.80445
Stakeholders Pressure	4.0811	.82927
Community and Environmental Pressure Groups	4.0541	1.26811

Source: (Researcher, 2015)

Table 4.7: The impact of SSCM Practices on Performance One- Sample Test

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Environmental performance improves with increased adoption of facility resource conservation, waste recycling and reuse, and land management environmental sustainability practices.	26.438	36	.000	4.62162	4.2671	4.9761
Quality performance improves with increased adoption of facility resource conservation, waste recycling and reuse, and land management environmental sustainability practices.	33.000	36	.000	4.64865	4.3630	4.9343
Cost performance improves with increased adoption of facility resource conservation, waste recycling and reuse, and land management environmental sustainability practices.	27.968	36	.000	4.21622	3.9105	4.5220
Environmental performance improves with increased adoption of social sustainability practices.	4.557	36	.000	5.10811	2.8348	7.3814
Quality performance improves with increased adoption of social sustainability practices.	37.982	36	.000	4.02703	3.8120	4.2421
Cost performance improves with increased adoption of social sustainability practices.	29.418	35	.000	3.97222	3.6981	4.2463
Quality performance improves with environmental performance.	35.153	36	.000	4.40541	4.1512	4.6596
Cost performance improves with environmental performance.	46.969	36	.000	4.13514	3.9566	4.3137
Cost performance improves with quality performance.	25.617	36	.000	4.35135	4.0069	4.6958

Source: (Researcher, 2015)

The researcher sought to determine whether the H0 hypothesis that “SSCM Practices did not have an impact on performance”. Respondents were required to rate the impact of SSCM Practices based on the above noted factors on a scale of 1 to 5; where 5 represents Very large extent, 4 – Large extent, 3 – Moderate extent, 2 – Small extent and 1- Not at all. A test value of 0 was used as the measure for required impact. The means of the above noted factors were compared in relation to this value. As shown in table 4.7 above SSCM Practices impact on Environmental performance, Quality performance and Cost

performance improve with increased adoption of facility resource conservation, waste recycling and reuse, and land management environmental sustainability practices; Environmental performance, Quality performance and Cost performance improve with increased adoption of social sustainability practices; Quality performance and Cost performance improve with environmental performance is statistically significant since its Sig. (2-tailed) value of 0.000 is less than 0.05.

4.7.1 Factor Analysis

The researcher further used factor analysis to confirm the results of descriptive statistics analysis. Factor analysis was performed using all the possible triggers of sustainability. Prior to Principal Component Analysis (PCA) the suitability of the data for factor analysis was assessed (Pallant, 2005). To test for appropriateness of factor analysis Kaiser-Meyer- Oklin (KMO) and Barlett’s test of Sphericity were used. KMO and Bartlett’s Test of Sphericity is a measure of sampling adequacy that is recommended to check the case to variable ratio for the analysis being conducted. The KMO ranges from 0 to 1, the world-over accepted index is over 0.6. Also, the Bartlett’s Test of Sphericity relates to the significance of the study and thereby shows the validity and suitability of the responses collected to the problem being addressed through the study. For Factor Analysis to be recommended suitable, the Bartlett’s Test of Sphericity must be less than 0.05.

Table 4.8: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.765
Bartlett's Test of Sphericity	Approx. Chi-Square	834.882
	Df	105
	Sig.	.000

Source: (Researcher, 2015)

Table 4.8 above show KMO Measure of Sampling Adequacy of 0.765, which is above the recommended value (Hair *et al.*, 1998; Pallant, 2005). In addition, Bartlett's Test of Sphericity reached statistical significance at ($p < 0.05$) which indicated that the matrix is not an identity matrix hence indicating appropriateness of factor analysis. After assessment of the suitability of data for factor analysis; Principal Component Analysis was applied to extract components.

Exploratory factor analysis was undertaken for drivers of sustainability using the principal component analysis extraction method. This is used to reduce a large number of variables into a smaller set of variables (factors), establish underlying dimensions between measured variables and latent constructs, thereby allowing the formation and refinement of theory and provides construct validity evidence of self-reporting scales (Williams, Brown, & Onsman, 2010). Components with eigenvalues below 0.5 were excluded and the factor analysis runs again. Four components were obtained which explained 81.364% of the variance. The components extracted include compliance with government regulations, profitability goals, competitive forces and society concern for environment.

Table 4.9: Total Variance Explained for drivers of sustainability

Initial Eigenvalues			Extraction Sums of Squared Loadings		
Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
5.140	34.264	34.264	5.140	34.264	34.264
2.602	17.350	51.613	2.602	17.350	51.613
2.482	16.548	68.162	2.482	16.548	68.162
1.980	13.202	81.364	1.980	13.202	81.364
.986	6.576	87.940			
.684	4.561	92.502			
.495	3.302	95.803			
.269	1.791	97.595			
.199	1.325	98.920			
.080	.532	99.452			
.047	.311	99.763			
.017	.116	99.879			
.012	.078	99.957			
.006	.042	99.999			
.000	.001	100.000			

Source: (Researcher, 2015)

The rotation converged in 7 iterations using Varimax rotation with Kaiser Normalisation. 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 4.10.

Table 4.10: Rotated Component Matrix^a

	Component			
	1	2	3	4
Compliance with Government Regulations	-.231	.092	.890	.207
Society Concern for The Environment	.301	.710	.181	.221
Increasing number of Green Consumers and their willingness to buy green products	-.205	.068	.363	.748
Environmental Problems that threaten The Environment and Human Life	.419	.868	-.069	.026
Competitive Forces	-.375	-.077	-.082	-.734
Profitability Goals	-.085	.089	.180	-.679
Competitive Advantages	-.368	.829	-.299	-.140
Moral and Ethical Reasons	-.040	.830	.341	.083
Top Management Initiatives and Environmental Knowledge	.466	-.109	.747	-.106
Stakeholders Pressure	-.138	.154	-.007	.791
Size of the Firm and the nature of the industry	.886	.083	-.024	.250
Community and Environmental Pressure Groups	.670	.666	.021	.105
Individual Employee and Management Initiatives	.664	.521	.440	-.037
Leadership Values and Managerial Attitudes	.907	.061	.191	-.246
Public Image and Goodwill	.281	.157	.921	-.056

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

a. Rotation converged in 7 iterations.

Source: (Research Data, 2015)

4.8 Relationship between Sustainable Supply Chain Practices and Performance

Relationship between SSC and performance of horticulture firms was of importance to the researcher and therefore three regression analysis were run, i.e. for environmental, social and economic dimensions.

Regression analysis is concerned with the distribution of the average value of one random variable as the other variables which need not be random are 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. A regression equation is in no way a mathematical linking two variables but serves as a pointer to questions to be answered. Basically, the regression analysis is used in two distinct ways; i.e. as a means of considering data taking into account any other relevant variables by adjustment of the random variable; and to generate mathematical forms to be used to predict the random variable from the other (independent) variables. The regression model used is as follows:

$$y = 0 + 1X_1 + 2X_2 + 3X_3 + 4X_4 +$$

Where:

y = Sustainable Supply Chain Practices (Environmental Dimension, Economic Dimension and Social Dimension)

0 = Constant Term

1= Beta coefficients

X₁= Facility resource conservation

X₂= Water recycling and reuse

X₃= Land management

X₄= Social sustainability practices

4.8.1 Sustainable Supply Chain Practices and Environmental Dimension

The model summary is presented in Table 4.11. The summary is highly significant (p=0.000) showing that the model is functional. The model has an R square value of 0.950 indicating that the percentage of the dependent variable variance that is explained by the independent variables is 95%. The P- value of 0.000 which is less than 0.05 implies that the model of environmental dimensional is significant at the 5 per cent significance. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table below there is a strong positive relationship between the study variables as shown by 0.975. Durbin-Watson is the

number that tests for autocorrelation in the residuals from a statistical regression analysis. The Durbin-Watson statistic is always between 0 and 4. A value of 2 means that there is no autocorrelation in the sample. Values approaching 0 indicate positive autocorrelation and values toward 4 indicate negative autocorrelation. The findings shows that Durbin-Watson value is 2.131 hence no autocorrelation in the sample.

Table 4.11: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.975 ^a	.950	.944	3.56447969 0827230E0	.950	153.212	14	113	.000	2.131

a. Predictors: (Constant), Facility resource conservation, water recycling and reuse, land management and social sustainability practices

b. Dependent Variable: Environmental dimension

Source: (Research Data, 2015)

ANOVA findings (P- value of 0.00) in Table 4.12 show that there is correlation between the predictor’s variables and response variable. An F ratio is calculated to represent the 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. The F value of 146.75 indicates that the overall regression model is significant hence it has some explanatory value. This indicates that there is a significant relationship between the predictor variables; facility resource conservation, water recycling and reuse, land management and social sustainability practices and environmental dimension. At 95 percent confidence interval i.e. P–value ($p=0.00 < 0.05$) implies that all the independent variables combined do influence the decisions to environmental dimension.

Table 4.12: Analysis of Variance (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9.392	4	2.348	146.75	.000 ^a
	Residual	.537	33	.016		
	Total	8.929	37			

a. Predictors: (Constant), Facility resource conservation, water recycling and reuse, land management and social sustainability

b. Dependent Variable: Environmental dimension

Source: (Research Data, 2015)

Table 4.13: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1(Constant)	.080	.416		.193	.847	-.743	.904		
Facility Resource Conservation	.429	.100	.383	1.296	.000	.231	.627	.293	3.411
Water recycling and use	.040	.014	.157	2.844	.005	.012	.068	.768	1.302
Land management	.239	.086	.317	2.767	.007	.068	.411	.448	2.231
Social sustainability practices	.120	.060	.159	4.996	.049	.001	.239	.919	1.088

a. Dependent Variable: Environmental dimension

Source: Research data, (2015)

From table 4.13, the variable had no multicollinearity since the VIF were less than 10.

Facility Resource Conservation has the most statistically significant coefficient as indicated by a t-ratio of 1.296 and P value (.000). This implies that one unit change in facility resource conservation will change environmental dimension by 0.429 units, water

recycling and use is statistically significant as indicated by a P value of 0.005 hence this implies that one unit change in water recycling and use will change environmental dimension by 0.040 units, land management has a P value of 0.007 implying that one unit change in land management will change environmental dimension by 0.239 units, and social sustainability practices will change environmental dimension by 0.120 units. Constant equals 0.08, shows that if the level of predictors are held at constant zero, environmental dimensional would be 0.08. The standardized coefficients (Beta) are what the regression coefficients would be if the model were fitted to standardized data, that is, if from each observation we subtracted the sample mean and then divided by the sample SD.

The established multiple linear regression equation becomes:

$$Y = 0.080 + 0.429X_1 + 0.040X_2 + 0.239X_3 + 0.120X_4$$

4.8.2 Sustainable Supply Chain Practices and Social Dimension

The model summary is presented in Table 4.14. The model is highly significant ($p=0.000$) showing that the model is functional. The model has an R square value of 0.264 indicating that the percentage of the dependent variable variance that is explained by the independent variables is 26.4%. The P- value of 0.000 i.e. less than 0.05 implies that the model of social dimensional is significant at the 5 per cent significance. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table below there is a strong positive relationship between the study variables as shown by 0.563. The findings show that Durbin-Watson value is 2.208 hence no autocorrelation in the sample.

Table 4.14: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin - Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.563a	.317	.264	3.02638	.317	5.971	9	116	.000	2.208

a. Predictors: (Constant), Facility resource conservation, water recycling and reuse, land management and social sustainability

b. Dependent Variable: Social dimension

Source: (Research Data, 2015)

The ANOVA from Table 4.15 shows that the F value of 50.955 indicates that the overall regression model is significant hence it has some explanatory value. This indicates that there is a significant relationship between the predictor variables i.e. facility resource conservation, water recycling and reuse, land management and social sustainability practices and social dimension. At 95 percent confidence interval i.e. P-value ($p=0.00 < 0.05$) implies that all the independent variables combined do influence the decisions to social dimension.

Table 4.15: Analysis of Variance (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	27.312	4	6.828	50.955	.015 ^a
	Residual	4.437	33	.134		
	Total	31.749	37			

a. Predictors: (Constant), Facility resource conservation, water recycling and reuse, land management and social sustainability

b. Dependent Variable: Social dimension

Source: (Research Data, 2015)

Table 4.16: Coefficients- Social Dimension

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1(Constant)	.240	.258		.930	.354	11.161	2.784		
Facility Resource Conservation	.294	.077	.297	3.798	.000*	.766	.929	.342	2.921
Water recycling and use	.230	.070	.188	3.290	.043*	.191	1.970	.321	3.112
Land management	.013	.062	.013	.215	.009*	1.755	3.796	.316	3.169
Social sustainability practices	.421	.077	.406	5.445	.000*	.437	.028	.967	1.034

a. Dependent Variable: Social dimension

Source: (Research Data, 2015)

From table 4.16 above, the variable had no multicollinearity since the VIF were less than 10. All the predictors were significant with P value less than 0.005. This implies that one unit change in facility resource conservation will change social dimension by 0.294 units, one unit change in water recycling and use will change social dimension by 0.230 units, one unit change in land management will change social dimension by 0.013 units, and social sustainability practices will change social dimension by 0.421 units. Constant equals 0.24, shows that if the level of predictors are held at constant zero, social dimensional would be 0.24. The standardized coefficients (Beta) are what the regression coefficients would be if the model were fitted to standardized data, that is, if from each observation we subtracted the sample mean and then divided by the sample SD.

The established multiple linear regression equation becomes:

$$Y = 0.240 + 0.294X_1 + 0.230X_2 + 0.013X_3 + 0.421X_4$$

4.8.3 Sustainable Supply Chain Practices and Economic Dimension

The model summary is presented in Table 4.17 which is highly significant ($p=0.000$) showing that the model is functional. The model has an R square value of 0.718 indicating that the percentage of the dependent variable variance that is explained by the independent variables is 71.8%. The P- value of 0.000 i.e. less than 0.05 implies that the model of economical dimension is significant at 5 per cent significance. R is the correlation coefficient which shows the relationship between the study variables. The findings shown in the table below indicate that there is a strong positive relationship between the study variables as shown by 0.847. The findings show that Durbin-Watson value is 1.981 hence no autocorrelation in the sample.

Table 4.17: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.847 ^a	.718	.699	.669	.718	38.490	8	121	.000	1.981

a. Predictors: (Constant), Facility resource conservation, water recycling and reuse, land management and social sustainability

b. Dependent Variable: Economic dimension

Source: (Research Data, 2015)

Table 4.18: Analysis of Variance (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.565	4	1.891	16.025	.035 ^a
	Residual	3.897	33	.118		
	Total	11.462	37			

a. Predictors: (Constant), Facility resource conservation, water recycling and reuse, land management and social sustainability

b. Dependent Variable: Economic dimension

Source: (Research Data, 2015)

The ANOVA from Table 4.18 shows that the F value of 16.025 indicates that the overall regression model is significant hence it has some explanatory value. This indicates that there is a significant relationship between the predictor variables i.e. facility resource conservation, water recycling and reuse, land management and social sustainability practices and economic dimension. At 95 percent confidence interval i.e. P-value ($p=0.00<0.05$) implies that all the independent variables combined do influence the decisions to economic dimension.

Table 4.19: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1(Constant)	1.34	0.76		0.54	0.035				
Facility Resource Conservation	.294	.123	.267	2.443	.029	.023	.134	.413	2.444
Water recycling and use	.121	.093	.134	1.241	.002	.232	.012	.332	2.432
Land management	.151	.043	.294	3.950	.031	.0134	.056	.883	1.123
Social sustainability practices	.470	.182	.784	2.573	.014	.100	.840	.456	3.565

a. Dependent Variable: Economic dimension

Source: (Research Data, 2015)

From the table 4.19, the variable had no multicollinearity since the VIF were less than 10. Constant equals 1.34, showing that if the level of predictors is held at constant zero, economic dimension would be 1.34. Water recycling and use has the most statistically significant coefficient as indicated by a t-ratio of 1.241 and P value 0.002. This implies that one unit change in Water recycling and use will change economic dimension by 0.121 units, facility resource conservation is statistically significant as indicated by a P value of 0.029 hence this implies that one unit change in facility resource conservation will change economic dimension by 0.294 units, land management has a P value of 0.031 implying that one unit change in land management will change economic dimension by 0.151 units, and social sustainability practices will change economic dimension by 0.470 units. The standardized coefficients (Beta) are what the regression coefficients would be if the model were fitted to standardized data, that is, if from each observation we subtracted the sample mean and then divided by the sample SD.

The established multiple linear regression equation becomes:

$$Y = 01.34+ 0.294 X1 + 0.121X2 + 0.151 X3 + 0.470 X4$$

It is evident from the analysis and results presented in this study that majority of horticulture firms in Nairobi Kenya have adopted the three dimensions of TBL. This supports the assertion of Fauzi et al., (2010) that TBL must address the three important dimensions of environmental, social and economic. The firms are progressively using TBL to address the issues of sustainability of horticulture supply chains. According to Mitchell et al., (2007) for organizations to continue to function in the long term, they need to take actions that can lead to sustainable management of natural and human resources. Pullman (2009), “Does implementation of environmental and social sustainability practices for the facility and its major suppliers directly improve firm (environmental, quality and cost) performance? What is the relationship between these sustainability-impacted performance outcomes?” Empirical researchers have found positive relationships between a firm’s environmental activities (internally in their operations and externally with their supply chain members) and their economic and environmental performance (Zhu & Sarkis 2004; Rao & Holt 2005).

Environmental issues in the flowers, fruits and vegetables supply chain include soil and water impacts, deforestation, chemicals- fertilizers, herbicides, pesticides; waste disposal and farming techniques (Boehlje 1993; Fox 1997; Wade 2001). Social sustainability issues also abound in the industry given growing and harvest operations characterized by low pay, harsh working conditions and labor migration (Martin 1991). Example labor problems include illegal immigrant and child workers (Kolk & Tulder 2002), human rights abuses (Roberts 2003), refusal of collective bargaining rights (Jorgensen, Pruzan-jorgensen, Jungk & Cramer 2003) and stagnant wages (U.S. Department of Labor 1997, 2000). Additional social concerns involve worker safety, sanitation, housing, training and pesticide poisoning (U.S. Government Accountability Office 1992, 2000). Moreover, seasonal migration of workers has been linked to worker job dissatisfaction and stress (Bardasi & Francesconi 2003). Finally, food safety could be categorized as another social issue (Abbott and Monsen 1979; Bromiley and Marcus 1989; Maloni and Brown 2006). Recent food safety problems (i.e., peanuts, spinach, tomatoes and pet food) have revealed serious flaws in industrial food supply chains (Roth et al. 2008). This therefore confirms the need for not only adopting the TBL dimensions but a relentless efforts to improve on them.

4.9 Discussion

The study findings have largely agreed with the findings of other researchers in the same area. Mostly, previous research has found that adoption of certain environmental supply management practices directly reduces costs (Carter et al. 2000). However, in Pullman's et al., (2009) study on "Food for Thought: Social versus environmental sustainability practices and performance outcomes", did not agree with Carter's assertion. They went ahead suggesting that food producers do not see direct cost improvements from implementation of environmental practices. The explanation given by Pullman et al., (2009) is that their finding may stem from the food industry's expansive and complex set of environmental practices relative to those studied within more traditional manufacturing settings. They further stated that environmental efforts in the food industry may reduce some costs, but these savings might be negated by related cost increases.

The current study finds it otherwise given the evidence presented and it is in support of the previous studies which agreed that adoption of environmental practices which lead to sustainability directly reduces costs. The overall findings of Pullman et al., (2009) agrees with other studies by stating that their findings suggest that environmental and social sustainability practices both have positive albeit often indirect impacts on firm performance. This justifies the need to include social practices in the sustainability framework and provides motivation for companies to pursue social sustainability projects.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings on the Sustainability and Triple Bottom-Line performance in the Horticulture Supply Chains in Nairobi Kenya. The study had three objectives to achieve: To establish the extent to which Horticulture Sector has adopted TBL dimensions, To establish the triggers/drivers of TBL in the Horticulture Sector in Kenya and To determine the relationship between SSCM practices and performance in Horticulture Sector in Kenya. The chapter also gives the conclusions drawn by the researcher; the recommendation arrived at based on the findings and suggestions for further research in this area.

5.2 Summary of Findings

The study established that most horticulture firms in Nairobi Kenya have operated for less than 10 years. This is a clear indication that they were established at the time when the TBL concept has already gained momentum and there are no alternatives. Around 45.9% of the firms have operated for a period between 10 to 20 years which shows that such horticulture firms were facing challenges to fully adopt the TBL concept in the entire supply chains. As noted by the researcher, some horticulture firms are undertaking the TBL dimensions i.e. the Environmental, Social and Economic with a lot of concerns. It was established that apart from the Supply Chain Manager and Operations Manager, Compliance Officer also existed in some firms whose core responsibility was to make sure that the company fully comply with all environmental and social issues. Majority of the firms have corporate social responsibility manager, environmental manager, environmental board of directors and a well elaborate corporate environmental policy.

The researcher found out that with enormous pressure from both the government, community and environmental pressure groups, stakeholders and green consumers, horticulture firms are making positive steps towards fully adopting TBL dimensions for sustainable supply chains. It is clear that most firms have embraced the initiatives of environmental dimension like Formal Environmental Management System with clear

environmental objectives and action plans. The respondents also acknowledged the efforts of the company using pesticides that are not harmful to the environment and utilizing environmentally friendly cleaning materials throughout the premises. Furthermore the respondents asserted that a good percentage of the profits made go to improve the environment. Other initiatives are through having some positions in the company which in the past has not been the norm. Corporate social responsibility, environmental manager, environmental board of directors are some of the positions created to take care of social and environmental issues. Corporate environmental policy also is additional efforts being made by the horticulture firms in order to fully embrace TBL dimensions.

5.3 Conclusions

The study concluded that majority of the horticulture firms are fully aware of the benefits of adopting TBL dimensions. They are therefore making efforts of adopting them fully while others have started implementing part of the environmental and social aspects. As indicated in the study findings, most of the firms which have already embraced the three dimensions have in mind of the relationship between TBL and performance. Most supply chain literature has examined environmental sustainability practices, while little research to expand sustainability considerations to social issues have been done. It was therefore the intent of this study to understand the impacts of adoption of environmental and social sustainability practices on performance outcomes for the firm.

The horticulture industry was chosen for its broad and unique set of sustainability issues on both social and environmental fronts especially in Kenya. The results demonstrate both direct and indirect effects of the different sustainability practices on performance, supporting some findings from existing research yet contradicting others. As such, the research findings presented herein indicate that continued exploration of sustainability practices and outcomes remains an important pursuit for supply chain researchers. Arguably, most companies will pursue sustainability programs only when performance improvements are measurable and attainable.

5.4 Recommendations

The study highly recommends that the TBL dimensions adoption should be a continuous process as compared to single day affair. By doing so there will be positive efforts towards sustainability and improvement of the entire horticulture supply chain. It is also important for the horticulture firms to embrace the dimensions as the norm or culture as contrary to being compliance to either rules and regulations, good public image or any other pressure from different groups.

5.5 Limitations of the Study

The researcher faced a number of challenges when carrying out the study. Firstly, some of the respondents were not very co-operative either by failing to receive the questionnaires for their responses or completely refusing to give the researcher audience to present his case. A good number of respondents declined to revert back the questionnaires forcing only a response rate of 74%. It is also worth to note that the researcher only used one method of collecting data i.e. by use of questionnaire as a tool. Use of other methods like interviews could have enriched data collection process.

5.6 Suggestions for Further Research

There are several opportunities for future research generated by this study. First, the analysis of the researcher is specific to the horticulture sector, which faces a relatively unique set of social and environmental sustainability challenges as well as a rapidly growing consumer base for sustainable products. Primary environmental and social sustainability issues and subsequent performance impacts in other industries will likely differ. Consequently, sustainability research may not easily generalize across industries, and industry-specific sustainability research may yield more practical and clear findings than cross-industry studies.

Industry differences also point to the need to integrate case and survey based research methods to rigorously isolate sustainability practices and expected outcomes specific to industries. Likewise, research could compare sustainability certified versus noncertified companies (Melnyk et al. 2003), though this is difficult to accomplish in some industries

like food with multiple, inconsistent sustainability standards. As another research opportunity, the study only collected responses from one level of the supply chain. Future research could compare differences in sustainability based performance outcomes across the chain, especially for those firms heavily affected by power influences of other supply chain members.

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APPENDICES

Appendix 1: Research Questionnaire

This questionnaire is designed to collect data on Sustainability and TBL Performance in Horticultural Sector Supply Chains in Kenya. This is entirely meant for academic purposes. All the information will be treated with confidentiality it deserves.

Section 1: Horticultural Firm Profile

Q1. (a) Name of the Horticultural firm (Optional)

.....

(b) Company ownership:

- a) Local []
- b) Foreign []
- c) Other [] Specify.....

(c) What position do you hold in the firm?

- i. Supply Chain Manager []
- ii. Operations Manager []
- iii. Other [] Specify

(d) Number of years the firm has been in operation.

- (i) Less than 10 years [], (ii) 10 – 20 years [], (iii) More than 20 years []

(e) What is the current number of employees in the firm?

- (i) Less than 20 [], (ii) 21 – 50 [], (iii) More than 50 []

(f) What range of products does your firm produce?

- a) Vegetables []
- b) Fruits []
- c) Flowers []
- d) Others [] Specify

(g) What is your firm's market?

- a) Local Market []
- b) Foreign Market []
- c) Others [] Specify

Section 2: Adoption of TBL Dimensions

Q2 (a) : Please indicate with a tick () the extent to which your firm has adopted the following TBL practices using a rating scale where 5 = to a very large extent, 4 = to a large extent, 3 = to a moderate extent, 2 = to a small extent and 1 = not at all.

NO	Environmental Dimension	5	4	3	2	1
1	The firm has Formal Environmental Management System					
2	The firm has clearly stated its environmental objectives and action plans					
3	The company uses pesticides that are not harmful to the environment.					
4	The company usually carry out environmental audits.					
5	A good percentage of the profit made is used to improve the environment.					
6	The firm emphasizes on suppliers who take environmental concerns seriously.					
7	The firm demands environmental standards certification from suppliers.					
8	The company's packaging materials are bio-degradable.					
9	The firm makes use of recycled raw materials.					
10	The firm uses products with eco-benefits with an aim of preservation of the environment.					
11	The company uses green label as an indicator of environmental friendliness.					

12	The company utilizes environmentally friendly cleaning materials throughout the premises (use of chemical free cleaning materials).					
	Social Dimension					
13	The company's human resource is ensuring and facilitating worker skill development.					
14	The company does not use child labor on the farms.					
15	Corporate social responsibility is key to the company.					
16	Job satisfaction of workers is the key concern to the company.					
17	The company ensures that worker quality of life is attained.					
	Economic Dimension					
18	The firm uses sustainable sources of raw materials.					
19	The company has an active recycling program for materials in all sections.					
20	The company uses packaging made of recyclable materials.					
21	The firm uses sustainable sources of energy such as solar and wind.					
22	Priority is given to local suppliers especially those in which the firm is operating from.					
23	Cost savings, maximization of shareholders' wealth and profit maximization are key concerns to the senior management.					
24	The company uses minimum transportation packaging materials for purposes of preserving natural resources.					
25	The firm uses minimum packaging materials on the products to preserve the natural resources.					
26	There is fair compensation (living wage) to all employees.					
27	The firm run and has embraced certified programs.					

Q2 (b): Please indicate by ticking () where appropriate or list where possible.

- i. A position of corporate social responsibility manager Yes
No.....

- ii. A position of environmental manager Yes
.....No.....
- iii. An environmental board of director Yes No
.....
- iv. Corporate environmental policy Yes No
.....
- v. What are some of the social responsibility that the company has engaged itself in.
.....
.....
.....
.....

Section 3: Triggers/Drivers of Sustainability in Horticulture Sector

Q3. Using the five point rating scale where 5 = Very large extent, 4 = Large extent, 3 = Moderate extent, 2 = Small extent and 1 = Not at all, indicate by ticking () in the appropriate box the extent to which the triggers listed below have influenced sustainability in your firm.

NO	Triggers/Drivers of Sustainability	5	4	3	2	1
1	Compliance with Government Regulations					
2	Society Concern for The Environment					
3	Increasing number of Green Consumers and their willingness to buy green products					
4	Environmental Problems that threaten The Environment and Human Life					
5	Competitive Forces					
6	Profitability Goals					

7	Competitive Advantages					
8	Moral and Ethical Reasons					
9	Top Management Initiatives and Environmental Knowledge					
10	Stakeholders Pressure					
11	Size of the Firm and the nature of the industry					
12	Community and Environmental Pressure Groups					
13	Individual Employee and Management Initiatives					
14	Leadership Values and Managerial Attitudes					
15	Public Image and Goodwill					
16	Any Other (Please Specify)					

Section 4: Relationship between SSCM Practices and Performance

Q4. Using the five point rating scale where 5 = Very large extent, 4 = Large extent, 3 = Moderate extent, 2 = Small extent and 1 = Not at all, indicate by ticking () in the appropriate box the relationship between SSCM Practices and Performance.

NO	SSCM Practices and Performance Outcomes	5	4	3	2	1
1	Environmental performance improves with increased adoption of facility resource conservation, waste recycling and reuse, and land management environmental sustainability practices.					
2	Quality performance improves with increased adoption of facility resource conservation, waste recycling and reuse, and land management environmental sustainability practices.					
3	Cost performance improves with increased adoption of facility resource conservation, waste recycling and					

	reuse, and land management environmental sustainability practices.					
4	Environmental performance improves with increased adoption of social sustainability practices.					
5	Quality performance improves with increased adoption of social sustainability practices.					
6	Cost performance improves with increased adoption of social sustainability practices.					
7	Quality performance improves with environmental performance.					
8	Cost performance improves with environmental performance.					
9	Cost performance improves with quality performance.					

Appendix 2: Introductory Letter

Cetric M. Muruli,

P.O. Box 36618 -00200,

Nairobi.

31.03.2015.

Dear Respondent,

I am a Master of Business Administration student at the university of Nairobi School of Business specializing in Procurement and Supply Chain Management. I am carrying a study in the area of Supply Chain; Study topic is “**Sustainability and Triple Bottom-Line Performance in the Horticulture Supply Chains in Nairobi Kenya**”. Your company has been selected to provide information for the purpose of this study.

I'm therefore requesting you to respond to the attached questionnaire as honestly as possible. I assure you that this information will be strictly used for academic purposes and will be treated with utmost confidentiality. At no particular point your identity will be revealed nor your responses since the outcome results will be inform of statistical report. Strict confidence will be adhered to.

The results and the final report of the study will be availed to you on request.

Yours Sincerely,

Cetric Muruli.

Appendix 3: Horticultural Firms

List of Vegetables and Fruits Companies

No	Company	Location
1	Avenue Fresh Produce	Nairobi
2	Horticultural Exporters Ltd	Nairobi
3	Vitacress (K) Ltd	Nairobi
4	Makindu Growers & Packers Ltd	Nairobi
5	Fian Green Ltd	Nairobi
6	Greenlands Agro producers Ltd	Nairobi

List of flower companies

No	Company	Location
1	Alora Flowers Ltd	Nairobi
2	Subati Ltd	Nairobi
3	Bawan Roses Ltd	Nairobi
4	Beverly Flowers Ltd	Nairobi
5	Sander (K) Ltd	Nairobi
6	Charm Flowers Ltd	Nairobi
7	Enkasiti Flowers Ltd	Nairobi
8	Sophia Roses Ltd	Thika
9	Redlands Roses	Ruiru
10	Loeland Ltd	Athi River
11	Longonot Horticulture Farm	Nairobi
12	Magana Flowers	Nairobi
13	Redhill Flowers Ltd	Nairobi
14	Primarose Flower Ltd	Nairobi
15	Simbi Roses Ltd	Thika
16	Waridi Ltd	Nairobi
17	Pollen Ltd	Ruiru
18	OI-Njorowa Ltd	Nairobi
19	P.J.Dave Flower Ltd	Nairobi

Source: (Ministry of Agriculture, 2015)