

**SUSTAINABLE SUPPLY CHAIN MANAGEMENT PRACTICES AND
COMPETITIVE ADVANTAGE IN CEMENT MANUFACTURING FIRMS IN
KENYA**

BY

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DECLARATION

I hereby submit that this research project is my novel idea and drudgery. It has on no occasion been tendered to any organization or learning institution for any award.

Signature 

Date 28/11/2019

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This research project has been presented for assessment with my consent as the student's supervisor

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DEDICATION

This prodigious academic milestone of my might and valour is dedicated to Mathews Swetah (my father), the man to whom I was named. As his soul rests with the angles up high in heavens, his constant watch over me since he passed on when I was barely two days old; gives me poignant reasons to face my destiny audaciously with uniqueness.

My beloved and highly cherished mother, Margaret Swetah, who has been the propelling force behind every step that I make towards my desired destiny; her prayers, support, sacrifices and care; are worth my mention in this dedication.

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Glory be to God the Omnipotent, the creator of Heaven and Earth, the maker of all things visible and invisible. The mystery about his presence is beyond human understanding. He granted me mental strength, physical strength and spiritual strength to make this work possible.

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To my beloved son, Benedict Braydon Swetah, the unit of continuity of our family, who kept on reminding me to go to the library to 'eat books' like yams, thank you.

ABBREVIATIONS & ACRONYMS

3Ps	-	Planet, People and Profit
AFR	-	Alternative Fuels and Raw Materials
CA	-	Competitive Advantage
CEO	-	Chief Executive Officer
CFI	-	Corporate Finance Institute
CSR	-	Corporate Social Responsibility
CO₂	-	Carbon dioxide
GCAIS	-	Global Compact Annual Implementation Survey
KAM	-	Kenya Association of Manufacturers
KEMSA	-	Kenya Medical Supplies Agency
NGOs	-	Non-Governmental Organizations
NOX	-	Nitrogen oxide
PCA	-	Portland Cement Association
SCM	-	Supply Chain Management
SC	-	Supply Chain
SCS	-	Supply chain sustainability
SD	-	Sustainable Development
SDGs	-	Sustainable Development Goals
SOX	-	Sulphur oxide
SPP	-	Sustainable Packaging Practices
SSCM	-	Sustainable Supply Chain Management
SSCMP	-	Sustainable Supply Chain Management Practices
TBL	-	Triple Bottom Line
UNWCED	-	The United Nation's World Commission for Environment and Development
VOCs	-	Volatile Organic Compounds
WBCSD	-	World Business Council for Sustainable Development

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ABSTRACT

Sustainability in the supply chain is steadily avowed among high-level executives as a keynote in delivering value. A sustainable supply chain annexes value invention prospects and advances substantial competitive plus for early implementors and process trendsetters. Firms are progressively welcoming onus to exploit sustainability past their fixed operations and invent pliable and reliable supply chains to be efficacious in a fast-revolutionizing world. Cement is a key infrastructure industry. Infrastructural milestones are beheld as pillars of economic and social development of a state, a country or institutions. This study aimed establishing SSCMP implementation by cement manufacturing firms in Kenya, to reveal correlation between SSCMP and competitive advantage among the Kenyan cement manufacturing firms; and to determine confronts faced by the cement manufacturing firms in Kenya in the execution of sustainable supply chain practices. This study assumed descriptive research design. The study embraced a complete enumeration where all the firms in the industry were investigated. Primary data was collected using questionnaires from the head of SCM, operations, marketing, human resource and finance in each firm. Analysis of data was achieved by use of descriptive statistics. Correlation between SSCMP and CA was established using linear regression. It was established that SSCMP have been adopted by the cement manufacturing firms in Kenya to a great extent. It was established that the firms have sustainability policy statements, regarded as a key pillar in their strategy, aligning it to their core business activities and practiced through their value chain. The study determined that there stands an explicit and substantial correlation linking SSCMP and speed, flexibility and dependability as competitive tools by the cement manufacturing firms in Kenya. It was however determined that the firms hardly compete on the basis of cost and quality owing to the nature of their products. It was further established that implementation of SSCMP by the firms has confronted drawbacks to a moderate scale, the most common challenge being stiff competition in the cement industry in Kenya both internally and externally. The study thus concludes that by incorporating SSCMP in its operations, a firm will be able to rival on the grounds of dependability, flexibility, and speed. The study recommends that firms should also consider using green energy as alternative sources. Attaining the required adequate response rate within the stipulated study period was a challenge to the study. Further studies can be conducted on SSCMP and competitiveness in other industries.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

History of the world reveals a pattern of evolution and progression (Ospina, 2018). Nonetheless, in the wake of industrial augmentation, political, economic and social upheavals are now gradually imperiling sustainability of the Earth in years to come and its natural resources (Abbasi & Nilsson, 2012). “Sustainable Development (SD) is the development that meets the needs of the present without compromising the ability of the future generations to meet their needs” (United Nations General Assembly, 1987). Sustainability is now a hot topic of debate in most of the global summits. Policy makers from developed and developing countries are coming together to deal with it (Carter & Rogers, 2008). The pursuit for sustainability is now commencing to revolutionize the competitive panorama, which will see companies changing their thinking about products, technologies, progressions and models of business (Nidumodu et al., 2009). By treating sustainability as a strategic weapon for competitiveness today, a company develops proficiencies that opponents will be daunting to beat (Nidumodu et al., 2009). Sustainability in SCM therefore centers on the overall well-being of the society and the environment; while also ensuring that the overall benefit of the business is not overlooked, that is, considering the triple bottom-line of sustainability.

Cement is a key infrastructure industry. Infrastructural milestones are beheld as pillars of economic and social development of a state, a country or institutions. Cement is often stared as a touchstone of progress in developing economies (Zuberi, 2017). Its contribution to economic development is hugely recognizable. This can be attested by the value the value contributed by the cement industry to Gross Domestic Product (GDP) of a nation, availing of employment fortunes to populace both directly and indirectly, receipt from exports and tax payment (Najabat, 2015). Kenya hosts at least 7 cement manufacturing companies today and the number is likely to rise, the market being oligopoly. In East Africa, Kenya is leading in both cement production and consumption (Otieno, 2016). Cement manufacturing process however instigates environmental effects. These comprise emissions of airborne pollution by means of dusts and gases; noise and trembling when operating machinery and through blasting in quarries; and limestone quarries (Narayanan, 2016). Cement companies in developing and developed economies are embracing practices of sustainability in supply chain management with an aim of attaining competitiveness.

Network Theory and Systems Theory was hence of great value to the study for they laid the ground upon which the best supply chain networks are developed and operated by organizations and most particularly as the firms are integrating sustainable supply chain practices into their operational strategies (Wellenbrock, 2013; Luai, 2011). Systems Theory holds that all elements of a system are interrelated and that the whole is better than the sum of its parts. Network Theory was deemed relevant in describing the relationships and engagements among supply and value chain partners such as contractors, distributors, suppliers, companies, customers and buyer (Wellenbrock, 2013).

1.1.1 Sustainable Supply Chain Management Practices

Supply chain network is an essential part of a business's sustainable development agenda or package. In ensuring a sustainable future, business enterprises need to know the degree of commitment, impact and viability of their value chain partners environmental, social, and economic undertakings (Doug, 2018). In their quest to improve the value of their shareholders capital, industries world over are strategically investing to reduce on the environmental footmark of their operations (Pfeiffer, 2000).

Supply chain sustainability is a an all-inclusive outlook of supply chain activities; including logistical activities and relevant technologies that are addressing the sustainable development aspects of the sections of the supply chain (Rouse, 2011). An organization's whole supply chain can make a substantial impact in promoting fair labour practices, human rights, community empowerment, environmental concerns and integrity guidelines (Dupont, 2014). When a firm bases its competitive strategy on sustainability, it is geared towards success and it should not be viewed as luxury (Collomb, 2001).

There are eight major sustainability practices that stand a chance to mold the cement industry's path towards an improved sustainable development. These include Productivity of the company's Resources, Protecting the Climate, Reduction of Emissions, Environmental Stewardship, Employees Welfare, Wellbeing of the community, Regional Development, Alternative Fuels and Raw Materials (PCA, 1991).

1.1.2 Competitive Advantage

Competitive Advantage (CA) is a characteristic that enables a company to beat its market rivals. It permits a company to attain greater margins compared to its market rivals and creates value to the company and its shareholders (Battelle, 2002; CFI, 2015). A firm's

competitive advantage can also be determined by its profit edge, turnover, return on capital, valuable assets/ resources such as brand reputation or flexibility in operations (Doemkes, 2016). Mar (2013) observes that Benchmarking a key practice in measuring competitive lead by the using a company's key performance indicators. Today, sustainable Competitive advantage can be identified through various features contained in the sustainability report; economic, social and environmental (Sahay, 2016).

Porter (1980) looks at competitive advantage through the lens of a management science. The main theme in Porter's competitive advantage theory is that CA can be achieved either by means of product differentiation, price reduction or customer focus (Porter, 1985). However, as observed and posited by Slack et al. (2013), Shakkya (2013), Ferdows and Meyer (1990) and Vencataya et al. (2015), through the lens of operations management; a firm's CA and most particularly in sustainable development, can be achieved as well though commitment to Quality output, Speed in terms of shortening lead times, Dependability hence winning customers trust and loyalty, and Flexibility in of response changing market demand in terms of tastes and preference. This study hence adopted the operations' management approach to a firm's competitiveness and use of SCM as a means to gaining competitiveness. All these are summarized in Table 2.2.

1.1.3 Cement Industry in Kenya

As observed by Nordqvist et al. (2002), Rehan and Nehdi (2005), cement manufacturing stands out to be an industry to have a lot of carbon impact on the environment. "Cement is the second most consumed material on the planet after water" (Klee, 2003; Damto et al., 2008; Watt, 2014). Construction in a state is vital for its economic development. It provides market for other commodities in an economy and also a source of employment. It is vital for growth on account of industrialization, urbanization, and infrastructural development. Nonetheless, as observed by Watt (2014), its gains must not cloud the massive risks that it poses to the earth, to mankind and to culture itself. There are plentiful of hindrances facing cement manufacturing companies ranging from environmental concerns, ethical or social issues and economic issues as far as profitability and competitiveness are concerned (Potgieter, 2012; Rodrigues & Joekes, 2010). Cement companies have great impact on environmental and social interests of sustainable development. For instance, reduction of emission of carbon-dioxide, caring for the workforce's welfare and creating value to the shareholders capital (Zimwara et al., 2012; Stajanca & Estokova, 2012).

The construction Industry in Kenya in the past decade has underwent prompt growth owing to the government laying concern on infrastructural projects like the standard gauge railway line and the Lamu Port-South Sudan-Ethiopia Transport (Laps-set) corridor (Mwende, 2015). Blooming construction sector, production and consumption of cement has hiked from 154,781 tonnes in January 2015 to 564,000 tonnes in January of 2007. As a result, this progress has attracted a number of cement manufacturing companies into the Kenya Cement market, bringing the total number of the companies in the industry to 6 (Mwangi, 2017). The construction sector in Kenya, where cement manufacturing firms are key players, not only provide job opportunities to thousands of Kenyans, but also contributes immensely to the country's GDP (Mwende, 2015).

1.2 Research Problem

The drift towards sustainable practices globally is in the rise. Nations, organizations and the public have realized intensifying environmental footprint that business and human activities have on our planet (Heal, 2012). Policy framers and decision makers are coming with strategic ploys to save the planet, create value for the investors capital and protect the present and future generations from any harm that may be emanating from businesses' exploitation of natural resources. Among the tools emerging as essential part of corporate tactic today to aid in attaining superior economic feat, expanded productivity, costs management, optimal resource and processes utility, quality product/service delivery and driving a firm to the competitive edge is Sustainable Supply Chain (Carter & Rogers, 2008).

Cement manufacturing stands out as an industry with a lot of carbon impact on the environment. Construction is vital for a state's economic development. It provides market for other commodities in an economy and it's a source of employment. It is vital for growth on account of industrialization, urbanization and infrastructure development (Nordqvist et al., 2002). Cement companies have great impact majorly on environmental and social interests of sustainable development. For instance, reduction of emission of carbon-dioxide, caring for the workforce's welfare and creating value to the shareholders capital (Zimwara et al., 2012; Stajanca & Estokova, 2012).

Globally, studies have recognized the vibrant role of Supply Chain Sustainability in propelling organizations to economic feat. Porter and Kramer (2011) examines supply chain sustainability and its influences on organizational achievements. Rao (2007) postulates that companies should incorporate the sustainability elements like economic, social and

environmental concerns into their supply chains to uphold the success of their firms. Carter and Rogers (2008) emphasized that firms which advantageously assume SSCMP are fated to attain economic feat superior to those firms that only pursue one element of sustainability. Few studies conducted in Kenya have tried to address SSCM particularly in tackling the 3Ps. However, none of those studies has been specific to address the 3Ps and CA in the cement industry in Kenya. Obiero (2008) on strategies of competitiveness adopted by the cement producing firms in Kenya, uncovers competitive approaches implemented by the firms in Kenya. Mulwa (2015) establishes SSCMP adopted by the UN Agencies, the relationship between the SSCMP adopted by the UN Agencies and their performance and also the setbacks encountered by the UN Agencies in instigating SSCMP.

Literature available on supply chain sustainability majorly tend to emphasize on one or two sustainability elements; either on social or environmental (Seuring & Müller, 2008; Ashby et al., 2012). Based on the findings above, no study has been conducted in the Kenyan cement manufacturing industry to address the triple bottom-line of SSCM and how they contribute to the CA of an individual firm. The study at hand projected to seal this gap by replying the following questions: What are SSCMP adopted by cement manufacturing firms in Kenya? What is the correlation between the SSCMP and competitive advantage among cement manufacturing firms in Kenya? What challenges are cement manufacturing firms in Kenya facing in the implementation of SSCMP?

1.3 Objectives of the Study

This study aspired at realizing the undermentioned objectives:

- i) To establish sustainable supply chain practices adoption by cement manufacturing firms in Kenya
- ii) To determine relationship between sustainable supply chain management practices and competitive advantage among the Kenyan cement manufacturing firms
- iii) To determine challenges faced by the cement manufacturing firms in Kenya in the implementation of sustainable supply chain practices

1.4 Value of the Study

The study findings will provide decision-makers and policy-framers in the cement industries both in Kenya and around the world, with sound basis and insight on how to structure their policies in meeting their business' goals through sustainable development. The findings of

this study provide stakeholders, shareholders, regulators, consumers, cement manufacturing industries and the entire public with visions and recommendations that they can together pursue to lead to a more sustainable tomorrow. The findings are also of significance to future researchers and academicians for it integrates a sound body of literature that may be used as a source of reference.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter present review of literatures pertinent to the problem under study. Subsections in this chapter includes theoretical foundations upon which the findings are interpreted, brief insight into SSCMP, challenges confronting cement manufacturing industry through the implementation SSCMP and conceptual framework.

2.2 Theoretical Framework

Theoretical framework is important because it allows the reader to conceptualize the study findings in a broader context (McLeans, 1972). Theoretical framework acts as a blue print of the study. It is the guide upon which the study is built and supported (Grant & Osanloo, 2014). This study was hence founded on two theories; Network Theory and System Theory.

2.2.1 Network Theory

This theory was advanced in the 1970s and the 1980s. It majored on connections between entities or tactical pacts, linking events or processes for a common gain (Harland, 1996). The theory is concerned with identifying the relationship among the supply chain members (Flint, 2004; Bentham et al., 2003). A network is a clique of relationships among companies aiming to create links based on relationship functions such as activities, resources and actors; aid in sharing of information along the chains (Luai, 2011). Networks have proven to be of value in many industries by cooperating with partners like Logistics providers, suppliers, customers. This theory was of value to the study in the sagacity that a firm's competitiveness depends on the cooperation and relationship with its partners along the supply chain (Watiri & Kihara, 2017).

2.2.2 Systems Theory

It pictures the globe in terms of interconnectedness of processes and resources aimed at meeting shared ends. In simplest terms, sustainable development encompasses three sub-systems, based on an analogy of three-legged stool: Economic, Ecological (Environmental) and Social (Nemetz, 2007; Ashby & Hudson, 2012). Systems in SSCM are often comprised of people, finances and data to deliver value in achieving the desired outcome (Jackson, 1991; Ulrich, 2003). This theory was hence relevant to the study in the sagacity that the ideas

of sustainability and sustainable development (SD) are examined from a systems viewpoint. SD has 3 components which are significantly dependent and whose correlation are elaborately illuminated through the lens of systems theory. Just like a system does to realize a desired end, so do Economic, Social and Environmental components of SD in an industry or organization. The findings of the study were hence assessed on the root of 3Ps and how they lead to a firm's competitiveness.

2.3 Sustainable Supply Chain Management Practices (SSCMP)

Supply Chain (SC) connects a firm's inputs with its outputs. It summarizes the process of manufacturing and availing value to the end user (Carter, 2003). Supply chain concerns a widespread range of key business areas that may enable a company to realize SD (Weagner, 2015). This includes sourcing for raw material, managing downstream and upstream logistics, all the activities involved in the production process, inventory management, distribution management, managing cash flow and data flow along the value chain, and employee's welfare (Mehra, 2005). In today's increasingly complex and global business landscape, SCM has become a key differentiator to many companies that are embracing sustainability (Oliveira, 2018).

Carter and Rodgers (2008) define Supply chain sustainability (SCS) as an all-inclusive outlook of SC events, logistics and technologies that do tackle environmental, social, economic and legal facets of SC's components. Pullman et al. (2009) observe that among other issues that have often influenced SCS in industries are the carbon footprint, waste emissions to the environment, air pollutions, violation of labour rights, deforestation, employees' safety and security, pressure from the populace for clean green manufacturing. Touboulic (2015) and Rouse (2011) posit that SCS is founded on the principle that a socially, ethically, environmentally and economically responsible operation will not only be of great value to the planet earth and the populace at large, but also build a solid brand awareness, and boost a company's viability and cost effectiveness.

According to Portland Cement Association, an American association of cement manufacturers (PCA, 1991) SSCMP include safety and health of their employees, neighbours and their customers. It considers manufacturing and delivery of a quality outputs, ensuring effective controls to reduce or eliminate the release of pollutants to the air, effective land use, proper water conservation and management, effective waste and disposal, use of green energy. Weiss et al. (2011) posit that strategies for Sustainable Economic Development can

be achieved by demonstrating innovations. It incorporates campaigns for renewable energy, clean technologies and preventing harmful impacts from wastes. Table 2.1 exhibits a condensation of sustainable social, environmental and economic practices that constitute SSCMP.

Table 2.1: Summary of Sustainable Supply Chain Management Practices

Sustainable Social Practices	Sustainable Environmental Practices	Sustainable Economic Practices
Employee safety and security	Proper water uses and water harvesting	Value for money
Fair remuneration	Green energy	Fair competition
CSR	Proper waste management	Tax laws
Stakeholders involvement	Carbon footprint	Audits
Adherence to labour law	Toxic gas control techniques	Financial Reporting
Good working conditions	Green sourcing	Lean management
	Reverse logistics	Ethical sourcing
	Green Procurement	
	Clean energy	
	Green Manufacturing	

Source: Author (2019)

2.4 Operational Measures of Performance and Competitive Advantage

Vencataya et al. (2015) observe that an Operational Performance of a firm is determined through the lens of cycle time, lead times, waste management, compliance to regulations and response to customer ends with value ahead of its rivals. Slack et al. (2004) postulate that there are 5 Operations Performance objectives: Cost (the capability to operate cost effectively), Quality (manufacturing according to customers specifications without defects), Speed (quick response customer wants and reducing lead times), Dependability (delivering on your promises). Flexibility (ability, capability and capacity to suit market demands in terms of volume, mix, delivery).

To get its 'license to operate' in the society, a business needs to remain sustainable by always strategically observing environmental and societal interests in its operations and quest to generate revenue to shareholder (Savitz & Weber, 2006). A company is more likely to remain successfully competitive in the long run if it focuses on the 3Ps of SD by monitoring costs, growing revenue, lessening risks, investing feasibly and reflecting the interests of stakeholder group in their decisions (Jabbour, 2013; Vencataya et al., 2015).

Table 2.2 displays a brief of different approaches to competitive advantage as pointed out by various authors, and the major points on which the respective approaches are founded. This

study however assumed operational measures approach to CA as depicted by Slack et al. (2013), Shakkya (2013), Ferdows and Meyer (1990) and Vencataya et al. (2015).

Table 2.2: Summary of some Approaches to Competitive Advantage

Approaches	Author	Major Point
Strategic approach & its variations	Porter (1980)	He developed 3 strategies; Cost focus, Product Differentiation and Customer Focus.
Core Competent Tactic	Hamel & Prahalad (1990) Hamel (1998)	The business majors mostly on its key capabilities
SCM method	Christopher (1998). Poirier & Reiter (1999) Tyndall et al. (1998)	It relies on the relationship between suppliers and customers for competitiveness
Operational Measures Approach	Slack et al. (2013), Shakkya (2013), Ferdows and Meyer (1990) and Vancataya et al. (2015)	This approach looks into speed, flexibility, quality, dependability and cost and how a firm can use them to gain competitive edge.

Developed from Vencataya et al. (2015)

2.5 The Five Operations Performance Objectives and how they translate to CA

The backdrop of Operations Decisions is founded on the objectives of the 3Ps, CSR and the investors' interests. These objectives can be categorized into; Cost, Quality, Flexibility, Dependability and Speed (Vencataya, 2015).

2.5.1 Quality

This is the constant conformance to the expectations of the customers. It is a merchandise that encounters and/or surpasses customers' expectations on a consistent basis (Miller, 1992: Oakland, 1993). Even though lots of customers may view a product's market price as the crucial factor in deciding where to spend their money, in the long run however, a business can benefit more from creating superior-quality products coupled with excellent customer service (Lee, 2018). Quality compliance enhances and improves customer satisfaction. Due to globalization and information revolution, the battleground for businesses competition has shifted to the platform of quality (Tsai, 2009).

2.5.2 Speed

The Speed with which business organizations respond to their customers' demands by reducing lead-times, quick response to customer inquiries and complaints, prompt payment to suppliers and contractors; grants them distinguished business worth with significant impact on returns and CA (Bouman, 2018). Speed remains a competitive weapon. With speed as a competitive advantage, a company does more with less and does it faster (Stein, 2014). Inside the operation, speed reduces the amount of inventory held and risks incurred (Slack et al., 2013). To help a company improve its customer service, increase revenue and remain at the competitive edge, it must strive to reduce its lead time (Jayaswal, 2016). With reduced lead-times, a company reduces its Carrying Cost, ensures streamlined operations, operations' flexibility during rapid market shifts, outpacing market rivals with faster stock replenishments and meeting deadlines with ease (Oppenheim, 1997; Edmund, 2000).

2.5.3 Dependability

It is the attribute of being reckoned with or relied on by the established and potential customers in a competitive market (Todd, 2017). In this highly competitive business industry, if you can be one thing, be dependable. If you want to win in this world, the most simple and effective tactic is to be the most dependable (Pearlman, 2011). An organization is dependable if it can be relied upon to honour its promises to employees, customers, partners, vendors, contractors or suppliers. It meets deadlines and appointments timely, effectively also efficiently. It demonstrates integrity, honesty, trust, competency and professionalism in delivering quality to its customers (Conley, 2017). As held by Knack (2018) and Weygandt et al. (2009), dependability is brought about by the company's ability to adhere to quality, to supply the right quantity, its production capacity to meet the market demand, ease of communication, cooperation with third-party quality control, regulatory and ethical compliance, comprehensive record keeping and proactive approach towards continuous improvement.

2.5.4 Flexibility

To thrive in an uncertain and competitive atmosphere, companies ought to respond to fluctuating customer tastes faster and supply chain flexibility is part of this response (Tosun & Uysal, 2016). Flexibility in business is its capability to react to ever shifting and intensifying wants of its clients and environment quickly and at low cost (Kara, Kayis & Kane, 2007). In the modern business world, organizations must be flexible. If your business

is too rigid, it's bound to fail. Customers' loyalty can easily be withered if a company cannot meet any of their needs at the appointed time (Tosun & Uysal, 2016). Flexibility has been identified as a vital criterion that offers a firm the ability to deal with and respond to uncertain demand behaviours (Counsens et al., 2009). There exists an explicit link between uncertainty and the worth of correlation (Merton, 1997). Even when the old methods seem to work just fine, a flexible company will be willing to try out new strategies (Lamarco, 2018).

Manufacturing flexibility is a multidepartment concept based on the change that a manufacturing system can adapt, such as tractability in delivery, product design flexibility, operations and process flexibility and mix flexibility (Jain et al, 2013). Process Flexibility is the haste at which a company can make verdicts, alter plans or modify current orders to meet customer needs (Holweg & Pil, 2001); Mix Flexibility is the capability of the operations to manufacture product variety (Boyer & Leong, 1996). Plants with high mix flexibility can combine a greater product variety with short lead times; Volume Flexibility is the operations capacity to yield different quantities or volumes (Jain et al., 2013); Delivery Flexibility – the operations' ability to flex the timing of the delivery of its products in response to changing customer preferences (Tosun & Uysal, 2016). It seeks improve mobility responsiveness (Garavelli, 2003).

2.5.5 Cost

Operational costs in a manufacturing company may include Labour Cost, Energy Costs, Taxes, Factory Rent, Transportation Costs, Maintenance, Raw Material Cost, Patent Expenses, wages, commissions, pensions (Kimmel et al., 2002). Reducing or eliminating costs along the supply chain enables a company to reduce its market prices leading to cost advantage (Vio, 2011). Cost competitiveness is advanced when a company utilizes its skilled workforce, low-cost raw materials, controlled expenditures and efficient operations for value delivery to consumers (Lombardo, 2018). Cost optimization in the age of information revolution and technological advancement can be achieved through processes automation, kaizen, effective and efficient customer care and business process outsourcing (Panetta, 2016). In the transformative age, sustainable enterprise cost reduction strategies that need to positively impact every aspect on an organization is vital (Tishkowski, 2018). Successful companies in Japan have used cost consciousness to improve their strategic position (Kato, 1993).

Table 2.3 presents a summary operational performance measures of CA and respective precise capacities on which they grant a firm the ability to compete.

Table 2.3: Summary of Operations' Performance and Competitive Factors

Excellent operation performance on...	Grants ability to compete on;
Cost	Reduced Prices
Quality	Superior Value
Speed	Swift Deliveries and shortened lead-times
Dependability	Dependable Deliveries, Faith and Loyalty
Flexibility	Frequent new products/services; Various products; Varying bulk of product/service deliveries

Developed from Vencataya et al. (2015)

2.6 Challenges of Implementing SSCMP

Internal Challenges may comprise of a lack of supportive organizational structures and activities (Walker et al., 2008; UNGCPD, 2003) and inadequate commitment from the top leading to failure on quality improvement efforts (Babakus, 2003). External hurdles may comprise of customers' craving for lower prices or competitive pressures from market rivals (Orsato, 2006; Cooper et al., 2000; Greer & Bruno, 1996). Regardless of the rising attention, there have been condemnations on the execution of SC initiatives that are environmentally ethical as being mere reactive to regulations (Adedamola & Kingsley, 2013). Government's directives may constrain SSCM (Zhu & Sarkis, 2006). The employment of SSCM may as well be stalled by inadequate training to the workforce on its values (Cooper et al., 2000).

Additional cost involved in investing on SSCMP may amount to a challenge and as a firm's adherence to environmental commitment results in added costs. As a result, firms' commitments to sustainable development may be greeted with decreasing their competitiveness. Embracing green procurement may consequently lock out a pool of qualified suppliers owing to stricter environmental guidelines (Min & Galle, 2001). Resistance to change amounting from hitches of interpretation, complexities encompassed in the implementation and the underlying business logic with regard to financial aspects, all leads to the inertia in attaining SSCM (Abbasi & Nilsson, 2012). The minds of the people within the company need to be captured if SSCM is to succeed (Abbasi & Nilsson, 2012).

2.7 Empirical Literature Review

There exists a strong link among Competitive strategy, supply chain strategy and sustainable development. Sustainability can be realized when social, economic and environmental aspects realign collectively to attain lasting economic feat (Carter & Rogers 2008; Styger, 2010). Jayaratne (2011) upholds that supply chain strategy acts as the link between corporate strategy and and sustainable development by creating and refining strategic issues on social, environment and economic aspects (Cohen & Roussel 2005; Flint, 2004; Bentham et al., 2003; Glavic & Lukman, 2007). Today, companies are shifting their attention to SSCM to accomplish a competitive superiority (Yusuf et al., 2014; Ding et al., 2014).

In the African milieu, Dei (1993) on “Sustainable Development in African context”, posits that any substitute approaches to development in the continent should involve the social, economic and environmental disquiets of the African people. Bartniczak and Raszkowski (2018), Raszkowski and Bartniczak (2018) and Ukaga (2005) stress the point that sustainable development in African should address socio-economic crusade aimed at incorporating political, economic and social interests in development for generations and generations to come. Arp et al. (2018) observed that lessening emissions in the cement sector is not only significant to South Africa, but the globe in totality. This is to be triumphed via embracing sustainable supply chain tactics.

Table 2.4 summarizes empirical review of literature by showcasing the study focus, methodology adopted, findings of the respective studies and the gaps of knowledge.

Table 2.4: Summary of Empirical Literature Review & Research Gap

Author	Study focus	Methodology	Findings	Gap
Musalia (2018)	Sustainable packaging practices and SCM performance in KEMSA	A case study Descriptive design	KEMSA doesn't have a reliable SPP. SPP could be of great value to KEMSA	The study ignored other aspects of triple bottom line of sustainability There are other ways that KEMSA could ensure sustainability
Obiero (2008)	Competitive strategies adopted by Kenyan cement firms	Census method	The firms adopt capacity expansion, technology improvement and innovative products	The findings tend to focus majorly on Bamburi Cement Company and ignores other firms. The study fails to link the identified strategies with any SSCMP
Mulwa (2015)	SSCMP and the performance of UN Agencies in Nairobi	Descriptive and cross-sectional	Social practices are adopted SSCMP has led to good performance SSCMP has led to cost benefits Adoption of SSCMP has met a number of challenges	UN agencies have limited effect on the 3Ps of sustainability It leaves a gap for this kind of a study to be based in a manufacturing industry
Donten will & Crespin (2012)	Impact of SD on Distributors Purchasing strategy	Exploratory case study	It is hard to adopt SD alone if the industry hasn't taken that direction The market must be knowledgeable about SD practices	It's an exploratory study based on a single firm, hence lacks generalizability It focused on the upstream SC and ignored downstream SC
Syamala et al. (2017)	Impact of cement industry on environment	Descriptive design	It leads to air pollution Toxic wastes to the environment Depletion of natural resources	The study majorly focused on health issues The study is based in Asia The study ignored other aspects of sustainability
Zimwar a et al. (2012)	Air pollution control techniques in cement manufacturing industry in Zimbabwe	case study	There is a need to adopt SD practices to minimize waste & pollution	The study only focused air pollution and ignored other areas through which the firms pollute the environment

Source: Own Compilation (2019)

2.8 Conceptual Framework

This helps in explaining at a glance, how the variables under investigation do relate. This study was guided by two main variables. Dependent variable and independent variables. Dependent variable was the main variable under investigation, that is, the firms' competitive advantage; the study will focus on cost leadership and customer focus. Independent variable was sustainable supply chain practices, that is, social sustainable practices, environmentally sustainable practices and sustainable economic practices as displayed in figure 2.1.

Independent Variable:

Sustainable supply chain practices

Sustainable Social practices

Sustainable environmental practices

Sustainable economic practices

Dependent Variable:

Competitive Advantage

- Cost
- Quality
- Speed (lead times)
- Dependability
- Flexibility

Figure 2.1: Conceptual Model

Source: Author (2019)

Figure 2.1 shows that when a firm adopts sustainable social, environmental and economic practices; it is most likely to have a CA on the basis of cost, flexibility, quality, dependability and speed.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter summarizes the path or ploy that this study followed in realizing the objectives of the study. The chapter briefly capture the research design, population of the study, techniques of data gathering and analysis the study exploited.

3.2 Research Design

This study assumed descriptive design, deemed ideal in systematically and accurately describing phenomenon the way they occur and in answering the questions what, when, where and how of the study variables (Saunders et al., 2009; Kothari 2014; Mugenda & Mugenda, 2012).

3.3 Population

The study adopted a complete enumeration where all the firms in the industry were investigated. As indicated by KAM (2019), there exist seven in cement manufacturing industry in Kenya. They all firm formed population of the study. Data was collected from the heads of supply chain management, operations, marketing, human resource and finance in each firm.

3.4 Data Collection

The questionnaires were directed to head of supply chain, operations, marketing, human resource and finance in each firm. The questionnaires were divided into four sections: General Information; SSCMP; Challenges for Adoption of SSCMP; Competitive Advantage. The SSCMP section was further divided into three, that is, Environmental Practices, Social Practices and Economic practices. The competitive advantage section was further divided into five, that is, Quality, Cost, Speed, Flexibility and Dependability. A five-point Linkert scale was employed for the sections B, C and D of the questionnaire. The questionnaires were administered though physical distribution. Follow-up were made to check on any clarifications by the respondents and a window period of five days was given for the questionnaires to be duly filled.

3.5 Data Analysis

Execution of data analysis was achieved by descriptive statistics. The findings were exhibited by means of mean, percentages and standard deviations. Five Linear regression were run to establish the link between SSCMP (sustainable environmental practices, sustainable social practices and sustainable economic practices) and competitive advantage. Statistical Package for Social Sciences (SPSS) was employed to analyze the data. Equation of regression was as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$$

Where Y = Competitive advantage (speed, quality, dependability, flexibility and speed).

α = constant

X_1 = Sustainable Environmental practices

X_2 = Sustainable Social practices

X_3 = Sustainable Economic practices

b_1 , b_2 and b_3 are the regression coefficient of dependent variables

Y was measured by means of Cost, Quality, Dependability, Flexibility and Speed.

3.6 Summary of Data Collection and Data Analysis

For each and every objective of the study, data will be gathered and evaluated as summarized in Table 3.1.

Table 3.1 Summary of Data Collection & Data Analysis

Objective	Data to be collected	Method collection	of Data analysis needed
SSCMP adopted by the firms in the industry	Primary	Questionnaires	Descriptive statistics (means and standard deviations)
Relationship between SSCMP and competitive advantage among the firms	Primary	Questionnaire	Regression analysis
Challenges faced by the firms in adopting SSCMP	Primary	Questionnaires	Descriptive statistics (means and standard deviations)

Source: Own compilation (2019)

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the data analysis, research findings and discussions.

4.2 Response Rate

Out of 35 questionnaires administered to the heads of supply chain, Operations, Marketing, Human resource and Finance in each of the cement firms, a total of all 30 questionnaires were received back, representing 85.7%.

4.3 Distribution of Respondents as per the Management Level

90% of the responders were in top management level, while 10% from middle management level. None of them was from the lower management level. This hence infers that they were part of the decision-making organ hence able to respond confidently on the aspects asked in the questionnaire. All the departments as indicated in the questionnaires were represented with the highest count being supply chain management department at 23%. This is summarized as shown in Table 4.1.

Table 4.1: Distribution of the respondents per level of management and Department

	Frequency	Percent
Management level		
Top	27	90
Middle	3	10
Lower	0	0
Department		
Supply chain management	7	23
Operations	6	20
Marketing	6	20
Human Resource	6	20
Finance	5	17

Source: Research Data

4.4 Distribution of firms on years of operation in Kenya & Firm's Workforce

Table 4.2 reveals that a margin of the 56% of the firms have been operating in Kenya for longer than 40 years. This reveals that cement manufacturing business has been in existent long enough to impact on the 3Ps of SSCM. 27% of the firms have been operating in the

country between the last 10 – 20 years while only 17% have operated in Kenya below 10 years. This depicts that there is a growth in the industry due to new entrance which also paints competition in the industry.

The study sought to ascertain the sum of employees per cement firm in Kenya. Analysis revealed that 56% of the firms had over 800 employees. 27% had workforce range between 200 – 400, while the remaining 27% of the firms had workforce range between 401 – 600 employees. This depicts that the cement industry touches lives of the populace economically and socially though proffering job opportunities.

Table 4.2 Distribution of firms on years of operation in Kenya & Firm's Workforce

	Frequency	Percent
Years of Operation		
Less than 10 years	5	17
10 - 20 years	8	27
21 – 30 years	0	0
31 – 40 years	0	0
over 40 years	17	56
Workforce Distribution		
Less than 200 employees	0	0
200 - 400 employees	8	27
401 – 600 employees	8	27
601 – 800 employees	0	0
Over 800 employees	14	56

Source: Research Data

4.5 Respondents Length of Service Distribution

The findings were presented as shown in Table 4.4. Analysis revealed that vast part of the responders (63%) had been employed in the firm for above 11 years. 27% had worked in the firm between 6 – 10 years, while only 10% had worked in the firm for between 2 – 5 years. Owing to the statistic that vast part of the responders had worked in their specific firms for over 6 years, they hence stood an advantageous position to authoritatively provide the required information for the study.

Table 4.3 Years of Service

Years worked	Frequency	Percent
Less than 2 years	0	0
2 - 5 years	3	10
6 - 10 years	8	27
More than 11 years	19	63
TOTAL	30	100

Source: Research Data

4.6 Distribution of firms' annual turnover and Production in million metric tonnes

In Table 4.5, the firms' annual turnover in Kshs divulges that majority of the firms (50%) have an annual turnover of between Kshs 11 – 20 billion, with 13% of the firms registering over Kshs 21 billion. This denotes the economic relevance of the industry to the country and the shareholders, hence puts the cement manufacturing firms in Kenya as valid cases for sustainable economic practices studies. This is echoed by the findings of Jasabat (2015) who maintains that the contribution of cement firms to economic development is hugely recognizable, as often attested by the value contributed by the cement firms to a nation's GDP and proffering of employment prospects to populace both directly and indirectly.

Table 4.5 also presents distribution of the firms' annual production in million metric tonnes. Analysis denotes that majority of the firms, presented by 50%, have often registered annual production of between 1.1 – 2.0 million metric tonnes, followed by 27% of the firms registering over 2.1 million metric tonnes. 13% of the firms have yearly production of between 0.5 – 1.0 million metric tonnes while only 10% of the firms record yearly production of less than 0.5 million metric tonnes annually. This information is vital in depicting and gauging the volume of natural resources consumption by the firms, waste emission and environmental impact rendering it vital for the study to investigate sustainable environmental practices adopted by the firms.

Table 4.4 Distribution of firms' annual turnover and Production in million metric tonnes

Turnover range	Frequency	Percent
Less than 5 billion	3	10
5 - 10 billion	8	27
11 - 20 billion	15	50
Over 21 billion	4	13
Annual production in metric tonnes		
Less than 0.5	3	10
0.5 - 1.0	4	13
1.1 - 2.0	15	50
Over 2.1	8	27

Source: Research Data

4.7 Adoption of Sustainable Supply Chain Management by the firms

The study pursued to ascertain the individual stance of cement manufacturing firms in Kenya pertaining to the adoption of SSCMP. As portrayed in Table 4.7, SSCMP have been adopted by the firms to a great extent, evidenced by the grand mean for all the practices at 4.52 with an overall standard deviation being .505. This is a reminiscent of the position upheld by Yusuf et al. (2014) and Ding et al. (2014) that today, companies are shifting their attention to SSCMP to attain a competitive edge.

Table 4.5 Adoption of Sustainable Supply Chain Management by the firms

Factors	mean	Std. dev
Our firm has a sustainability strategy statement obligating it to a program of enhancement	4.73	.450
Sustainability activities align to the firm's core business activities and its strategic plan. It connects to the firm's culture, mission and strategic direction.	4.70	.466
The firm drives sustainable resolutions across the entire value chain and supply chain	4.43	.504
The firm has entrenched Sustainability as a chief pillar in its ploy and ponders it a responsibility and enterprise prospect	4.2	.61
The firm sets sustainability aims against which accomplishments is gauged and appraised	4.6	.498
The firm communicate annual sustainability reports to the stakeholders, shareholders and the general public	4.43	.504
Overall score	4.52	.505

Source: Research Data

4.8 Sustainable Supply Chain Management Practices (SSCMP)

The study pursued to assess the degree to which Cement Manufacturing Firms in Kenya have adopted SSCMP. The independent variable (SSCMP) was composed of three constructs with each being an average of several practices. Each practice was rated on a five-point Likert scale with 1 = “not at all” and 5 = “to a very great extent”. The following subsections reviews the results obtained from each of these practices.

4.8.1 Sustainable Environmental Practices (SEP)

This construct was measured using 19 practices. As portrayed in Table 4.8, the grand mean for Sustainable Environmental Practices is 3.62, connoting that cement manufacturing firms in Kenya have adopted SEP to a great extent. The practice with the highest mean score, 4.43, was the firms’ use of biodegradable, eco-friendly and recyclable packaging materials. Having research and development budget aiming at delivering competences and lessening environmental waves had the lowest rating of 2.47, meaning the practice had been adopted to a small extent.

Table 4.6 Sustainable Environmental Practices adopted by firms

Practices	mean	std. dev
The firm continues to adopt Environmentally-friendly production processes that are free from release of pollutants to the environment	3.8	.961
The firm adopts waste reduction strategies in its supply chain	3.73	.785
The firm engages in measure to reduce emission of harmful substances to the environment	3.63	.928
The firm uses alternative sources of energy such as wind, solar, recycled wastes materials (e.g. Rice husks, used tyres) rain	3.53	1.167
The firm recycles wastes and defective inventory into production process	3.8	.961
The firm chooses associates in the supply chain on the base of ecological guidelines and sustainability efforts	3.07	1.23
The firm engages the local community in environmental protection programs	3.37	1.033
The firm's employees are committed to environmental protection programs	4.13	.973
The firm uses biodegradable, eco-friendly and recyclable packaging materials	4.43	.626
The firm uses Environmental Management Systems (EMS)	3.57	1.194
The firm have a Quality management system certified by ISO9001	4.13	.973
The firm uses waste management strategies such as landfills, incineration, recovery for energy, proper waste handling and transportation	3.7	.915
The firm has entrenched a culture of tree planting and forest protection	2.63	1.245
The firm has adopted rainwater harvesting initiatives to conserve water in line with its commitment to Sustainability	3.6	1.037
The firm engages in rehabilitation of its quarries and sustainable land use and landscape	3.73	.785
Having research and development budget aiming at delivering competences and lessen environmental waves	2.47	1.224
External air quality audits are undertaken annually as per the NEMA requirements to ensure that the ambient air quality at the plants is within the legislated limits	4.4	.855
The firm has worked on improving the performance of its logistics network so as to gain environmental and social benefits e.g. reduction of empty miles	3.57	.898
As part of its effort to reduce the impact of road transportation, the firm has embarked on an effort to increase the use of rail transport	3.47	1.008
Overall score	3.62	.989

Source: Research Data

4.8.2 Sustainable Social Practices (SSP) adopted by the firms

Table 4.9 portrays that the grand mean for sustainable social practices was 4.00, portraying that SSP have been implemented to a greater degree by the firms. The practice with the lowest count was on whether the firms practice corporate social responsibilities like empowering women, offering scholarships to needy students and training the community on safety measures, with a mean of 3.10.

Table 4.7 Sustainable Social adopted by the firms

Practices	Mean	Std. dev
The firm is loyal to attaining ends with nil harm to populace	3.30	1.022
The firm thrives in creating an ambiance where trustworthiness flourishes	4.23	.898
The firm thrives in tackling integrity in the business processes and in the society	3.97	.809
Employees are trained on how to ethically deal with clients	3.40	1.192
Employees are obligated to comply, with the rulebooks	3.80	.761
Refresher trainings are always held	3.50	1.28
Health and security of our staffs, clients and partners is our first priority	3.90	.845
The firm runs a number of initiatives to ensure good working condition	4.17	.834
Employees are trained on basic first aid and emergency response	4.00	.743
Employees under logistics are trained on overall road safety compliance	4.30	.702
The firm has proper risk detection and prevention strategies	4.60	.498
The firm ensures that it timely pays taxes and associated charges	4.87	.346
The firm participates in charity measures of the local public	3.60	.724
The firm applies fair employment practices to the local public	4.17	.648
The firm ensures constant employee training and development	4.00	.910
The firm abides by the guidelines and directives of the labour laws	4.40	1.042
The firm always ensures fair remuneration to its employees	4.40	.498
Employees are kitted with required Personal Protective Equipment	4.33	.884
Employees talents are nurtured and good performances are rewarded	4.03	.928
The firm practices corporate social responsibilities	3.10	1.242
Overall score	4.00	.840

Source: Research Data

4.8.3 Sustainable Economic Practices (SEP) Adopted by the firms

This construct was measured using 9 practices. Table 4.10 shows that the grand mean for sustainable economic practices is 3.89. This depicts that the firms have adopted SEP to a great extent. The practices with the highest counts, at 4.71, is on whether the firms communicate their annual financial report to the shareholders and stakeholders in timely. This denotes that the firms in the industry often make their sustainability report known to all timely and regularly. The practice with the lowest count was on whether the firms engage on reverse logistics and recycling as a cost reduction technique with a mean of 3.00.

Table 4.8 Sustainable Economic Practices

Practices	Mean	Std. dev
The firm thrives on guaranteeing that value for capital spent exists	4.14	.378
The firm communicates its annual financial report to the shareholders and stakeholders in timely	4.71	.488
The firm undergoes both internal and external audits regularly to ensure transparency	3.43	.976
The firm ensures fair competition with its market rivals	3.86	.690
The firm practices ethical sourcing with its suppliers	4.57	.535
The firm has adopted lean inventory management to reduce inventory costs	3.14	1.069
The firm engages on reverse logistics and recycling as a cost reduction technique	3.00	1.155
	3.57	.534
The firm adopts latest technology to ensure efficiency, value addition and to remain at the competitive edge	4.57	.535
The firm adheres to tax laws and regulations		
Overall score	3.89	.707

Source: Research Data

4.8.4 Summary of the SSCMP adopted by the firms

The summary in Table 4.11 shows that sustainable social practices has been adopted to a larger scope by the cement manufacturing firms in Kenya, with a grand mean of 4.00. This finding agrees with the findings of the report released by Portland Cement Association, an American association of cement manufacturers (PCA, 1991) which posited that SSCMP include safety and health of their employees, neighbours and their customers is the first consideration in the manufacturing and delivery of a quality outputs. It is also echoed by Mani et al. (2018) who observed that firms are unceasingly compelled to assimilate social

sustainability practices in their operations and supply chain management stratagems. Both sustainable economic practices and sustainable environmental practices have been adopted to a great extent as evidenced by a grand mean of 3.89 and 3.62 correspondingly.

Table 4.9 Summary of the SSCMP adopted by the cement manufacturing firms in Kenya

SSCMP	Grand Mean	Grand Std. Dev.
Sustainable social practices	4.00	.840
Sustainable economic practices	3.89	.707
Sustainable environmental practices	3.62	.989

Source: Research Data

4.9 Competitive Advantage

Competitive construct was measured using cost, flexibility, dependability, quality and speed.

4.9.1 Cost

Cost as a competitive edge was measured using 14 Practices. In Table 4.12, the grand mean for cost as a competitive advantage by the firms is 4.23. This is a reminiscent of the findings by Vio (2011) who posits that reducing or reducing costs along the supply chain enables a company to reduce its market prices leading to cost advantage. The practices with the highest count with a mean of 5.00 is on the firms' capability to entice, train and hold the true mix of highly talented manpower, to help and spearhead inventions and innovations and also cut on wages to non-value adding workforce. The practice with the least counts, both at a mean of 3.43, was the firms' adoption of green energy as alternative sources for cost reduction; and adoption of competitive and ethical sourcing to ensure that the firms gets value for money spent.

Table 4.10 Cost as a competitive advantage

Practices	Mean	Std. dev
The firm offers products whose quality matches the market prices	3.9	.662
Adoption of latest technology in the firm's SC has led to value addition along the value chain	4.43	.504
Reverse logistics and recycling of wastes resulted in lessening in operational costs	4.43	.504
Adoption of lean inventory systems has resulted in lessening total inventory management costs	4.33	.711
Adoption of green energy as alternative sources of energy has led to an overall cost reduction on energy and other raw materials	3.43	.504
Frequent internal and external audit has eradicated mismanagement of funds	4.54	.229
Reduction of empty miles during transportation results to a drop in overall transport costs	4.70	.466
Training and monitoring of the movements of the crew members in transportation has minimized losses, damages, deaths and delays hence reduction in overall operational costs	4.43	.504
Rain water harvesting has reduced the amount spent on water use	4.03	.556
Competitive and ethical sourcing ensures that the firm gets value for money spent	3.43	.504
Compliance with statutory requirements helps the firm to avoid attracting costs associated with government penalties and fines	4.4	.498
The firm attracts, trains and retains the right mix of highly talented manpower, to help and spearhead inventions and innovations and also cut on wages to non-value adding workforce	5	.000
The firm is located near the source of main raw materials to aid in cutting on transportation cost	4.3	.466
The firm ensures proper maintenance of its machines and software to cut on costs related to tear and wear, or breakdowns	4.13	.860
Overall score	4.23	.498

Source: Research Data

4.9.2 Flexibility

Flexibility as a CA was measured using 9 practices. In Table 4.13, Flexibility as a CA has a grand mean of 4.19. This shows that flexibility as a CA has being adopted to a large extent by the cement manufacturing firms in Kenya. The practice with the highest count was the firms' ability to gather and share information with its customers, suppliers and contractors, enabling them to act on up-to-date and reliable information in dealing with its supply chain partners,

with a mean of 4.73. This depicts that cement manufacturing firms in Kenya have adopted technologies that ensure flexibility in their operations. This finding is strongly upheld by that of Tosun and Uysal (2016) who observes that in the modern business world, organizations must be flexible. If your business is too rigid, it is bound to fail. Customers' loyalty can easily be withered if a company cannot meet any of their needs at the appointed time.

Table 4.11 flexibility practices adopted by the firms

Practices	Mean	Std. dev
The firm has adopted automation of major operations processes and supply chain activities along the product life so as to adjust to any variations in the market's tastes and preferences	3.77	.728
The firm constantly acquires market intelligence by conducting marketing research to understand market dynamics, and factors shaping tastes and preferences of its established and potential customers	4.17	.648
Reverse logistics enables the customers to return defective or wrong products for the right ones	4.47	.507
The firm's ability to gather and share information with its customers, suppliers and contractors enables it act on up-to-date and reliable information in dealing with its supply chain partners	4.73	.450
Proper and reliable channels of distribution through green logistics enables the firm to respond effectively to adjustments in their customers' delivery needs at different times and locations	3.87	.860
Attracting, training, retaining and motivating highly talented workforce makes the firm to be innovative and flexible in responding to varying customer needs	4.13	.860
The firm adopts manufacturing technologies that can react quickly to market changes, enhance customer satisfaction and increase profitability	4.17	.648
The firm has the ability to modify its production processes and adjust its resources to respond to different volumes of products that its customers may want	4.13	.629
The firm keeps positive and collaborative relationship with its partners in the supply chain to ensure faster response to any changes in the market demand	4.27	.450
Overall score	4.19	.642

Source: Research Data

4.9.3 Dependability

Dependability as a CA by the firms was measured using 10 practices. As shown in Table 4.14, dependability as a CA in the cement manufacturing firms in Kenya has a grand mean of 4.06, implying that the practice has been adopted to a large extent. The practice with the highest count was on whether the firms have the ability to listen to their customers and deliver the product as the customers' specifications to build customers' loyalty, with a mean

of 5.00. This resonates with the findings of Conley (2017) who posits that an organization is dependable if it can be relied upon to honour its promises to employees, customers, partners, vendors, contractors or suppliers. It meets deadlines and appointments timely, effectively also efficiently. It demonstrates integrity, honesty, trust, competency and professionalism in delivering quality to its customers. The practices with the least count however was on whether the firms' capacity to allow visibility and information sharing along the supply chain to speed up payments, order processing and response to customer demands, at a mean of 3.13.

Table 4.12 Dependability

Practices	Mean	Std.dev
The firm knows what creates value to its customers, it then innovates, differentiates and delivers on its promises to the clients	4.10	.662
The firm has the ability to listen to its customers and deliver the product as the customers' specifications this builds customers' loyalty	5.00	.000
The firm conducts sales promotions to make its products more appealing to established and potential customers, and to explain to the customers on better ways to get value from its products	4.10	.662
The firm holds training workshops or seminars with stakeholders and its customers on alternative technologies and materials in either road or building constructions	3.93	.785
The firm advises and educates their customers on the latest technologies to be used in either road construction or in building construction to ensure soil stabilization, quality and durability of buildings or roads	3.87	.629
The firm handles its customers, suppliers and contractors in an ethical and professional manner. This attracts their loyalty and faith	4.57	.504
The firm's ability to publish its sustainability report annually has attracted clients to the firm and retained its market share	4.43	.728
Corporate Social Responsibility (CSR) builds and maintains meaningful demand base for the firm and attracts best suppliers	3.47	.937
The firm allows visibility along the SC, speeding up payments, order processing and response to customer demand	3.13	.629
The firm is devoted to integrity	3.87	.629
Overall score	4.06	.617

Source: Research Data

4.9.4 Quality

Quality as a competitive advantage was measured using 14 practices. As portrayed in Table 4.15, grand mean for quality practices is 4.07. This denotes that adherence to quality practices

as a CA has been adopted to a larger extent. This resonates with the findings of Tsai (2009) who posits that quality compliance enhances and improves customer satisfaction, due to globalization and information revolution, where the battleground for businesses competition has shifted to the platform of quality.

Table 4.13 Quality

Practices	Mean	Std. dev
Value-based products due to implementation of technologies in the SC attracts and retains customers	3.86	.690
The firm invests on research and development to enhance innovations and inventions on its products in the market	3.70	.756
The firm's policies are clear on what creates value to its customers. It innovates, differentiates and delivers to its customers with a creative mindset and curiosity on our promises	4.29	.488
Customers proposals and criticisms on quality are effected.	4.00	.577
Quality performance goals and initiatives are communicated to all the relevant departments regularly	4.14	.690
There are regular supervisions, quality checks and process management to minimize wastes and defects in the production process.	4.43	.535
The firm adopts lean management strategies to minimize wastes and maximize on value creation	3.57	.535
There are regular employee trainings and seminars on quality assurance	4.14	.690
The firm ensures value is delivered to the customers	4.00	.578
There are Laboratory tests	4.14	.690
The firm's product is manufactured as per to the Kenya Standards; EAS 18-1	4.71	.488
We are issued with KEBS certification	4.57	.535
The firm is monitored by global quality managing regularities	4.00	.817
Overall score	4.07	.633

Source: Research Data

4.9.5 Speed

Speed as CA of the firms was measured using 9 activities. Table 4.16 portrays speed has been used to a great limit by the cement producing firms in Kenya, with a grand mean of 4.07. The practice with the highest count is the firms' use of recycled wastes as raw materials to shortens

production time, with a mean of 4.57. These findings are echoed Slack et al. (2013) and Stein (2014) who maintain that speed remains a competitive weapon. With speed as a competitive advantage, a company does more with less and does it faster. Inside the operation, speed reduces the amount of inventory held.

Table 4.14 Speed

Activities	Mean	Std. dev
The firm offers on-time delivery to site for its customers	3.83	.648
Firm's plants and equipment are adapted to customers project schedule to shorten lead times	3.87	.346
The firm offers timely delivery services with tidy offloading	4.40	.498
The firm has adopted modern technologies in ensuring that there are faster and efficient communication channels along the supply chain and value chain to ensure timely communication	4.00	.525
There is a quick response to customers inquiries and complaints	4.00	.743
The firm pays its suppliers/vendors/ contractors promptly	3.70	.702
The firm has adopted strategies to ensure quicker replenishment of its stock, to avoid stoppages	4.43	.504
The firm shares planned and forecasted demand with its suppliers to minimize surprises	3.80	1.126
The firm's use of recycled wastes as raw materials shortens production time	4.57	.504
Overall score	4.07	.622

Source: Research Data

4.10 Relationship Between SSCMP and Competitive Advantage

Linear regression calculation was used to determine the correlation between SSCMP and Competitive advantage (CA). Five Linear regression analysis were run on SPSS to determine whether there exists relationship between SSCMP and the firms' competitiveness on the root of quality, speed, cost, dependability and flexibility.

4.10.1 Relationship Between SSCMP and cost

Analysis of Variance (ANOVA) provides a statistical technique which are used for testing the significance of a regression model used. From Table 4.15, the model significance value $F(3,36) = 2.245$, $P = .033$ which is less than the alpha value of .05 (5%). This implied that the regression analysis was statistically substantial in testing the correlation between SSCMP and cost.

Table 4.15 Analysis of Variance for cost

Model		Sum of squares	df	Mean square	f	sig.
1	Regression	.229	2	.076	1.202	.033 ^b
	Residual	1.653	27	.064		
	Total	1.882	29			

a. dependent variable: cost

b. predictors: (constant), economic, social, environment

Source: Research Data

4.10.2 Regression Coefficient Analysis for Cost

Results in Table 4.16 indicate that none of the SSCMP is a significant predictor of cost as a CA in the cement firms. Since they all have significant value greater than P-value of .05.

Table 4.16 Regression Coefficient Analysis for cost

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.103	1.024		2.053	.050
	environmental	-.211	.175	-.224	-1.200	.241
	social	.230	.172	.246	1.337	.193
	economic	.035	.154	.042	.228	.822

a. Dependent Variable: cost

Source: Research Data

4.10.2 Relationship Between SSCMP and Quality

From Table 4.17, the model significance value $F(3,36) = 2.245$, $P = .046$ which is less than the alpha value of .05 (5%). This implies that the regression analysis was statistically substantial in testing the correlation between SSCMP and quality.

Table 4.17 Analysis of Variables for quality

Model		Sum of Squares	df	Mean Square	F	Sig.
1	regression	.013	2	.234	1.101	.046 ^b
	residual	1.073	27	.041		
	total	1.085	29			

a. dependent variable: quality

b. predictors: (constant), economic, social, environment

Source: Research Data

4.10.2.1 Regression Coefficient Analysis for Quality

Outcomes in Table 18 denote that none of the SSCMP adopted by the cement producing firms is a noteworthy predictor of quality as a competitive advantage. Since they all have significant value greater than P-value of .05.

Table 4.18 Regression Coefficient Analysis for Quality

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.546	.825		3.086	.005
	environmental	-.010	.141	-.014	-.071	.944
	social	-.048	.139	-.068	-.349	.730
	economic	.050	.124	.080	.404	.690

a. dependent variable: quality

Source: Research Data

4.10.3 Relationship between SSCMP and Dependability

In Table 4.19, the R^2 is 0.243. It indicates that there is a substantial correlation between SSCMP and dependability. This hence infers that 23.4% of the variance in Dependability could be explained by the SSCMP adopted by the firms. This is acceptably convincing relationship (Cohem, 1988)

Table 4.19 Model Summary for Dependability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.493 ^a	.243	.020	.57159

a. Predictors: (Constant), economic, social, environmental

Source: Research Data

4.10.3.1 Analysis of Variance for Dependability

From Table 4.20, the model significance value $F(3,36) = 2.245$, $P = .043$ which is less than the alpha value of .05 (5%). This implied that the regression analysis was statistically important in testing the correlation between SSCMP and Dependability.

Table 4.20 Analysis of Variance for Dependability

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.797	2	.266	.814	.043 ^b
	Residual	8.495	27	.327		
	Total	9.292	29			

a. dependent variable: dependability
b. predictors: (constant), economic, social, environment

Source: Research Data

4.10.3.2 Regression Coefficient Analysis for Dependability

In Table 4.21 Sustainable environmental practices ($t = .537$, $P\text{-value} = .046$), Sustainable Social practices ($t = .171$, $P\text{-value} = .035$) and Sustainable Economic practices ($t = .151$, $P\text{-value} = .041$); which connotes that there exist a positive and noteworthy correlation linking SSCMP and dependability as a competitive lead in the cement manufacturing firms in Kenya. Both sustainable environmental, social and economic practices shouldered by the firms do influence their ability and capability to compete on the foundation of dependability. The model shows that with all variables held at constant (zero) the value for dependability will be 5.461. Nevertheless, keeping other factors steady, a unit variation in sustainable environmental practices will result to 0.611 upsurge in dependability, a unit variation in sustainable social practices will result to 0.067 increase in dependability, while a unit variation in sustainable economic practices will result to 0.053 increase in dependability. This finding is echoed by the verdicts of Pearlman (2011) who upholds that whoever wants to win the hearts of customers and partners, the most modest and efficacious tactic is to be the most dependable.

Table 4.21 Regression Coefficient Analysis for Dependability

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.461	1.321		1.352	.003
	environmental	.611	.398	.293	.537	.046
	social	.067	.390	.032	.171	.035
	economic	.053	.350	.029	.151	.041

a. Dependent Variable: dependability

Source: Research Data

4.10.4 Relationship between SSCMP and Flexibility

In Table 4.22, the R^2 is 0.247. It indicates that there is a significant relationship between SSCMP and flexibility. This hence implies that 24.7% of the variance in flexibility could be explained by the SSCMP the firms adopted.

Table 22 Model Summary for flexibility

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.497 ^a	.247	.048	.31365

a. Predictors: (Constant), economic, social, environmental

Source: Research Data

4.10.4.1 Analysis of Variance for flexibility

From Table 4.23, the model significance value $F(3,36) = 1.490$, $P\text{-value} = .041$ which is less than the alpha value of .05 (5%). This implied that the regression analysis was statistically considerable in testing the correlation between SSCMP and Flexibility.

Table 4.23 Analysis of Variance for flexibility

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.440	2	.147	1.490	.041 ^b
	Residual	2.558	27	.098		
	Total	2.998	29			

a. dependent variable: flexibility

b. predictors: (constant), economic, social, environmental

Source: Research Data

4.10.5 Regression Coefficient Analysis for Flexibility

In Table 4.24 Sustainable environmental practices ($t = .883$, $P\text{-value} = .031$), Sustainable Social practices ($t = .413$, $P\text{-value} = .043$) and Sustainable Economic practices ($t = .485$, $P\text{-value} = .032$); which connotes that there exists a convincing and noteworthy connection linking SSCMP and flexibility as a competitive lead in the cement manufacturing firms in Kenya. Sustainable environmental, social and economic practices shouldered by the firms do influence their ability and capability to compete on the foundation of flexibility. The model illustrates that when all variables are maintained at zero, value for flexibility will be 3.143. Nonetheless, fixing other factors constant, a unit variation in sustainable environmental practices will result to 0.411 increase in flexibility, a unit variation in sustainable social practices will result to 0.088 increase in flexibility, while a unit variation in sustainable economic practices will result to 0.093 increase in flexibility. This finding echoes the findings of Counsens et al. (2009) which posit that flexibility has been identified as a vital criterion that offers the firm the ability to deal with and respond to uncertain demand behaviours. It seeks to improve mobility and responsiveness (Garavelli, 2003).

Table 4.24 Regression Coefficient Analysis for Flexibility

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.143	1.274		2.468	.002
	environmental	.411	.218	.347	.883	.031
	social	.088	.214	.075	.413	.043
	economic	.093	.192	.089	.485	.032

a. Dependent Variable: flexibility

Source: Research Data

4.10.6 Relationship between SSCMP and Speed

In Table 4.25, the R^2 is 0.249. It indicates that there is an important correlation between SSCMP and flexibility. This hence infers that 24.9% of the variance in speed could be explained by the SSCMP the firms adopted.

Table 4.25 Model Summary for speed

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.499 ^a	.249	.051	.16660

a. Predictors: (Constant), economic, social, environmental

Source: Research Data

4.10.6.1 Analysis of Variables for Speed

From Table 4.26, the model significance value $F(3,36) = .515$, $P\text{-value} = .034$ which is less than the alpha value of .05 (5%). This implied that the regression analysis was statistically substantial in assessing the correlation between SSCMP and speed.

Table 4.26 Analysis of variable for Speed

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.026	2	.042	.515	.034 ^b
	Residual	.722	27	.028		
	Total	.848	29			

a. Dependent Variable: speed

b. Predictors: (Constant), economic, social, environmental

Source: Research Data

4.10.6.2 Regression Coefficient Analysis for Speed

In Table 4.27 Sustainable environmental practices ($t = 1.620$, $P\text{-value} = .017$), Sustainable Social practices ($t = 1.398$, $P\text{-value} = .034$) and Sustainable Economic practices ($t = .736$, $P\text{-value} = .48$); which denotes that there is a noteworthy linkage between SSCMP and speed as a competitive lead in the cement manufacturing firms in Kenya. Both sustainable environmental, social and economic practices shouldered by the firms do influence their ability and capability to compete on the foundation of flexibility. The model shows that with all variables are kept at constant (zero) value for speed would be 5.574. Nevertheless, retaining other factors invariable, a unit change in sustainable environmental practices leads to 0.188 increase in speed, a unit variation in sustainable social practices would results to 0.159 increase in speed, while a unit variation in sustainable economic practices leads to 0.075 increase in speed. This verdict concurs with the discoveries of Stein (2014) who posit that speed remains a competitive weapon. With speed as a competitive advantage, a company does more with less and does it faster.

Table 4.27 Regression Coefficient Analysis for Speed

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.574	.677		8.239	.000
	environmental	.188	.116	.298	1.620	.017
	social	.159	.114	.253	1.398	.034
	economic	.075	.102	.135	.736	.048

a. Dependent Variable: speed

Source: Research Data

The findings are also supported by the Network Theory on the foundation that a firm’s competitiveness depends on the cooperation and relationship with its partners along the supply chain. As submitted by Watiri and Kihara (2017) that networks have proven to be of value in many industries by cooperating with partners like Logistics providers, suppliers, contractors, customers, stakeholders and shareholders. Systems Theory also supports the study findings on the footing that sustainable development encompasses three sub-systems based on an analogy of three-legged stool: Economic, Ecological (Environmental) and Social (Nemetz, 2007; Ashby & Hudson, 2012).

4.11 SSCMP Implementation Challenges

This construct was measured using 12 challenges. Each challenge was rated on a five-point Likert scale with 1= not at all, 2= to a small extent, 3 moderate extent, 4= to a great extent, 5= to a very great extent. Table 4.20 denotes that implementation of SSCMP by the firms has faced challenges to an average notch, with a mean of 3.39. The challenge with the highest count was stiff competition from within the country and other global companies trying to penetrate the Kenyan market has hindered the firms’ ability to effectively compete on the basis of sustainable development. This finding resonates with the findings of Ondoro (2018) on SCM practices and CA in hotel industry in Nairobi region, who also posits that the implementation of SCM practices faced numerous challenges.

The study however observes that changing the culture and mindsets of the supply chain partners to embrace supply chain sustainability has not been a challenge. This is echoed by the findings of Melanie (2018) who advances that while shifting to a sustainable supply chain may be expensive firstly, it has been attested by other companies that greater sustainability brings huger efficiency. This notable decrease in expenditures in the long term is appealing to manufacturers and customers equally and with the worth to the environment, all parties reap something from this move regarding a sustainable trade (Melanie, 2018). There is adequate top management support towards the implementation of SSCMP.

Table 4.28 Implementation Challenges for SSCMP

Challenges	Mean	Std. dev
Changing the culture and mindsets the supply chain partners to totally embrace supply chain sustainability has not been easy	1.71	.488
Global warming has been a big challenge in environmental preservation and value creation	4.29	.488
Natural occurrences e.g. adverse weather, droughts, affecting afforestation efforts	4.29	.488
Illegal logging and deforestation destroying key water catchment areas, hence affecting rain water harvesting	4.43	.535
High cost of acquisition, implementation and maintenance of latest technologies to aid in value creation along sustainable supply chain has been a big challenge to the firm	3.57	1.133
Internal resistance from a section of employees for losing jobs when lean management is being adopted	2.29	.488
Lack of support from contractors, suppliers and other partners along the supply chain in ensuring collective responsibility for sustainable supply chain implementation	2.00	.577
The firm's inability to anticipate disaster has been a challenge in attaining sustainable economic progress		
High overall cost increase in implementing sustainable development hinders the firm from attaining sustainable economic progress	3.86	.378
Stiff competition from within the country and other global companies trying to penetrate the Kenyan market has hindered the firm's capability to effectively compete on the basis of sustainable development	4.57	.535
Consumers desire for lower prices hinders the firm's efforts to compete on the basis of high-quality product which meet the required international standards on the of SD	4.00	1.155
Lack of top full top management support has delayed the lower level managers' efforts to fully embrace sustainability practices in their respective departments	1.43	.535
Overall score	3.39	.607

Source: Research Data

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter reports summary of the findings, conclusions, recommendations and propositions for more studies.

5.2 Summary

The study pursued to establish the individual position of the cement manufacturing firms in Kenya pertaining to adoption and implementation of SSCMP. It was established that SSCMP are adopted by the firms to an enormous scope. The study established that the firms have sustainability policy statements, regarded as a key pillar in their strategy, aligning it to their core business activities and practiced through their value chain. The study further sought to establish SSCMP adopted by the cement manufacturing firms in Kenya. It was established that the firms have adopted the 3Ps of triple bottom-line of SSCM, which comprises of sustainable environmental practices, sustainable social practices and sustainable economic practices; which in turn comprises several practices in each bottom line. The study nevertheless established that sustainable social practices have been adopted by the firms to a greater extent, while the other SSCMP are assumed to a moderate scale.

The study pursued to determine the link between SSCMP and CA among the cement manufacturing firms in Kenya. The study settled that there exists a substantial correlation between SSCMP and dependability, flexibility and speed as competitive tools in the cement firms in Kenya. The study divulges that adoption of SSCMP significantly influences the firms' capability to contend on the root of speed, flexibility and dependability. The study however established that that none of the SSCMP adopted by the cement manufacturing firms is a significant predictor of cost and quality as a competitive advantage. This hence point that the firms tend to compete on speed, flexibility and dependability rather than cost and quality.

The study further pursued to verify difficulties faced by the cement manufacturing firms in Kenya in the employment of SSCMP. It was established that implementation of SSCMP by the firms has faced hurdles to a moderate level, the most common challenge being robust competition in the cement industry in Kenya both internally and externally, rendering most of the firms lame to compete on grounds of cost and quality with regard to SSCMP. The study

however ascertained that the implementation has never faced any resistance from the SC partners as well as top management.

5.3 Conclusion

Owing to the study findings, and borrowing from a plethora of available body of literature behind the value of adoption of SSCP by manufacturing firms today, the study hence concludes that there exists a noteworthy link between adoption of SSCMP and competitiveness of a firm on the basis of speed, flexibility and dependability. The study thus concludes that by incorporating SSCMP in its operations, a firm competes on the grounds of Speed (e.g. recycled wastes as raw materials shortening lead times), Flexibility (e.g. by recruiting, training and retaining skilled workforce; adoption of latest environmentally friendly technologies and timely information sharing along the SC) and Dependability (by supply the right quantity, capacity to meet the market demand, ease of communication, ability to cooperate with third-party quality control regulatory and ethical compliance, comprehensive record keeping and proactive approach towards continuous improvement).

5.4 Recommendations

Grounded on its discoveries, the study advocates that the cement manufacturing firms in Kenya ought to entrench the culture of tree planting and fully engage the local community in the exercise. The firms should also consider using green energy as alternative sources of energy such as wind, solar, rain and recycled wastes. The firms should also consider having a research and development budget aiming at delivering efficiencies and reducing environmental impact. This will assist in conducting marketing research to acquire market intelligence to understand market dynamics and factors shaping tastes and preferences of its established and potential customers.

The firms should also have a risk detection and prevention strategies in their operations. The firms should consider practicing ethical and competitive sourcing throughout in their SCs. The firms should consider automating major operations and processes along their SC and value chain so as to adjust to changes in the market demand. The firms should develop the capacity to attract, train and retain the right mix of highly talented manpower to help in spearheading inventions, innovations and cutting on wages to non-performing workforce. The firms should also consider adopting lean SCM and reverse logistics as cost reduction techniques.

5.5 Limitations

Coming up with the most appropriate tool for data analysis, with reference to the population of the study, owing to the fact that there were only 7 cement manufacturing firms in Kenya at the time of data collection, was an uphill task. Similarly, the researcher had to make copious follow-ups to ensure that response rate was sizeable enough for further analysis. However, a response rate of 86% was secured hence the quality of the research was never compromised.

5.6. Suggestions for Further Research

The study centered on SSCMP and CA in the cement manufacturing firms in Kenya. A comparable study hence can be carried out based in a dissimilar manufacturing set up e.g. with sugar, milk processing, etc.

REFERENCES

- Abbasi, M. & Nilsson, F. (2012). Themes and Challenges in making supply chains environmentally sustainable. *Supply Chain Management: An International Journal*, 17.
- Abdifatah, H., (2012). Supply Chain Management Practices and their Impact on Performance among Humanitarian Organizations in Kenya. *Project Research presented to the University of Nairobi, School of Business*.
- Abidi, H. and Klumpp, M., (2013). Performance measurement in Humanitarian Logistics: A Literature Review. In Proceedings of the Nordic Logistics Research Network 2013, Gothenburg.
- Alexandra, S. (2018). Business Strategy & Innovation Sustainable Business Strategy: What Does "Sustainability" Mean in Business? *Journal of Global Business Insights*.
- Amemba, C., Nyaboke, P., Osoro, A., & Mburu, N., (2013). Elements of Green Supply Chain Management. *European Journal of Business and Management*, 5(12)
- Annual Report on UN procurement (2013). United Nations for Project Services, Marmorvey 51, 2100. Copenhagen, Denmark.
- Ashby, A., Leat, M., Hudson, M., (2012). Making Connections: Are View of Supply Chain Management and Sustainability Literature, Supply Chain Management? *An International Journal*, 17 (5).
- Beske P., (2012). Dynamic Capabilities and Sustainable Supply Chain Management. *International Journal of Physical Distribution & Logistics Management*, Vol. 42
- Cauvery, R., Nayak, U., Girija, M., and Meenakshi, R., (2003). Research Methodology. New Delhi: Chand & Company Limited.
- Christine, H. (2005). Supply Chain Management: Relations and Networks. *British Journal of Management*, 7.
- Craig, R., & Dale, S. R. (2008). Sustainable Supply Chain Management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38 (5).
- Elkington, J., (1998). Partnerships from Cannibals with Forks: The Triple Bottom Line of 21st- Century Business. *Environmental Quality Management*, Vol.6
- Field, A. (2005): *Discovering Statistics Using SPSS*, 2nd ed., Sage, London. From Vietnam. Community Development.
- Gold, S., Seuring, S., Beske, P., (2010). Sustainable Supply Chain Management and Inter-Organizational Resources: A Literature Review. *Corporate Social Responsibility and Environmental Management*. 17,

- Hilson, G. & Murck B. (2000): Sustainable development in the mining industry: clarifying the corporate perspective. *Resources Policy*, 26.
- Hilson, G. (2000): Barriers to implementing cleaner technologies and cleaner production (CP) practices in the mining industry: a case study of the Americas. *Minerals Engineering* 13.
- Hilson, G. (2000): Pollution prevention and cleaner production in the mining industry: an analysis of current issues. *Journal of Cleaner Production*, 8.
- Hindle, K. (2009). The relationship between innovation and entrepreneurship: easy definition, hard policy. Paper delivered to the refereed stream of the 6th AGSE International Entrepreneurship Research Exchange. 3-6 February. Adelaide, South Australia, Australia
- Holder, M. & Moore. C. (2008) Sustainable Community Development: A Social Approach
http://www.cips.org/Documents/Products/Sustainable_Procurement_Review_%20ne
- Jibrán, Z. & Martin, P. (2017). Bottom-up analysis of energy efficiency improvement and CO2 emission reduction potentials in the Swiss Cement Industry. *Journal of Cleaner Production*, 142.
- Kanter, R.M. (2010). In conversation. *Ivey Business Journal*.
- Knut Haanaes (2016). Why all businesses should embrace sustainability: Some top companies are leading the way. Research and Knowledge Articles.
- Lee, L., Liu, X. & Lin, X. (2010). Specification and estimation of social interaction models with network structures. *The Econometrics Journal*, 13 (2).
- M., Nilsson, F., (2012). Themes and challenges in making Supply Chains environmentally sustainable *Supply Chain Management: An International Journal*, 17 (5).
- Mugenda, O. M., & Mugenda, A.G. (2003). Research Methods: Quantitative and Qualitative approaches. *African Center for Technology Studies*, Nairobi, Kenya.
- Mulwa, V. M. (2015). Sustainable supply chain management practices and the performance of united nations agencies in Nairobi, Kenya. *Research Project Presented to the University of Nairobi, School of Business*
- Musalia M. (2018). Sustainable Packaging Practices and Supply Chain Performance: A case Study of Kenya Medical Suppliers Authority. *Research Project Presented to the University of Nairobi, School of Business*
- Najabat, A., Anwer, M., Abbas, J., Syed, M., & Raza, Z. (2015). The Cement Industry of Pakistan: A SWOT Analysis. *Journal of Studies in Management and Planning*.
- Nidumolu, R., Prahalad, C.K. & Rangaswami, M.R. (2009). Why Sustainability Is Now the Key Driver of Innovation. *Havard Business Review*, 6.

- Niehaus, G., Feiboth, H. W., & Goedhals-Gerber L.L. (2018). Investigating supply chain sustainability in South African organizations. *Journal of Transport and Supply Chain Management*, 12.
- Obiero, H. O. (2008). Competitive strategies applied by cement manufacturing firms in Kenya. *Research Project Presented to the University of Nairobi, School of Business*
- Ondoro, V. O. (2018). Supply Chain Management Practices and Competitive Advantage in the Hotel Industry in Nairobi Region. *Research Project Presented to the University of Nairobi, School of Business*
- Ospina, S. M., Esteve, M. & Lee, S. (2018). Assessing Qualitative Studies in Public Administration Research. *Public Administration Review Articles*, 78(4).
- Porter, M. E. (1991). America's Green Strategy. *Scientific America*, 264 (4).
- Porter, M. E., & Van der Linde, C. (1995). Towards a new conception of environmental competitiveness relationship. *Journal of Economic Perspectives*, 9(4).
- Rouse, R.W. (2011). Supply Chain Management Information: Recent developments. *Journal of Corporate Accounting & Finance*, 22 (2).
- Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research methods for business students*. 5th ed. Essex: Pearson Education Limited.
- Tripti, S. & Rameswar, D. (2013). Soft TQM practices in India cement industry – An empirical study. *International Journal of Productivity and Quality Management*, 11.
- Vencataya, L., Keshwar, A., Seebaluck & Doorga, D., (2015). Assessing the Impact of Supply Chain Management on Competitive Advantage and Operational Performance: A Case of Four-Star Hotels of Mauritius. *International Review of Management and Marketing*, 6(4).
- Walker, H., & Jones N., (2012). Sustainable Supply Chain Management across the UK Private Sector. *Supply Chain Management: An International Journal*, 17.
- Wamalwa B., (2014). Sustainable Supply Chain Management as a Strategic tool for Competitive Advantage in the Tea Industry in Kenya. *Journal of Management & Sustainability*. Vol 4. 2014.
- Wellenbrock, M., (2013). Theoretical basis of supply management: The Network theory in Supply Management. *Semantic Scholar*.

APPENDICES

Appendix I: Research Questionnaire

Responses to this questionnaire are handled with strict adherence to secrecy and anonymity. The questionnaire will be divided into sections A, B, C and D. The respondents will be required to mark as appropriate.

SECTION A: GENERAL INFORMATION

1. Which management level are you?

- i) Top
- ii) Middle
- iii) Low

2. Kindly indicate your department

- Supply Chain Management Human Resource Management
- Operations Marketing
- Finance

3. How old is your establishment in Kenya?

- i) Less than 10 years
- ii) 10 – 20 years
- iii) 21 - 30 years
- iv) 31 – 40 years
- v) Over 40 years

4. Kindly indicate the size of your workforce

- i) Below 200 staffs
- ii) 200 – 400 staffs
- iii) 401 – 600 staffs
- iv) 601 - 800
- v) Over 800 staffs

5. For how long have you served in the firm?

- i) Less than 2 years
- ii) 2 – 5 years
- iii) 6 – 10 years
- iv) More than 11 years

6. What is your firm's annual turnover (KSE)?

- i) Below 5 billion
- ii) 5 – 10 billion
- iii) 11– 20 billion
- iv) Over 20 billion

7. What is your firm's annual production (million tonnes)?

- i) Less than 0.5
- ii) 0.5 – 1.0
- iii) 1.1 – 2.0
- iv) Over 2.0

SECTION B: SUSTAINABLE SUPPLY CHAIN PRACTICES

With regard to sustainable supply chain management practices, kindly rate the extent to which they have been adopted and are used in your firm. Use the scale 1 – 5. Where 1=not at all, 2=to small extent, 3= to a moderate extent, 4=to a large extent, 5= to a very large extent.

No	Sustainable Supply Chain Management Practices	1	2	3	4	5
1. Adoption of Supply Chain Management Sustainability by the firm						
a)	Our firm has a sustainability strategy statement obligating it to a program of					

	enhancement					
b)	Sustainability activities align to the firm's core business activities and its strategic plan. It connects to the firm's culture, mission and strategic direction.					
c)	The firm drives sustainable solutions through the entire supply chain					
d)	The firm has entrenched Sustainability as a chief pillar in its ploy and ponders it a responsibility and enterprise prospect					
e)	The firm sets sustainability aims against which accomplishments is gauged and appraised					
f)	The firm communicate annual sustainability reports to the stakeholders, shareholders and the general public					
2. Sustainable Environmental Practices						
a)	The firm continues to adopt Environmentally-friendly production processes that are free from release of pollutants to the environment					
b)	The firm adopts waste reduction strategies in its supply chain					
c)	The firm engages in measure to reduce emission of harmful substances to the environment					
d)	The firm uses alternative sources of energy such as wind, solar, recycled wastes materials (e.g. Rice husks, used tyres) rain					
e)	The firm recycles wastes and defective inventory into production process					
f)	The firm chooses collaborators in the supply chain on the basis of ecological guidelines and sustainability efforts					
g)	The firm engages the local community in environmental protection programs					
h)	The firm's employees are committed to environmental protection programs					
i)	The firm uses biodegradable, eco-friendly and recyclable packaging materials					
k)	The firm have a Quality management system certified by ISO9001 to demonstrate its ability to consistently provide products and services that meet customer's needs and regulatory requirements.					
l)	The firm uses waste management strategies such as landfills, incineration, recovery for energy, proper waste handling and transportation					
m)	The firm has entrenched a culture of tree planting and forest protection					
n)	The firm has adopted rainwater harvesting initiatives to conserve water in line with its commitment to Sustainability					
o)	The firm engages in rehabilitation of its quarries and sustainable land use and landscape					

p)	Having research and development budget aiming at delivering competences and lessen environmental waves						
q)	External air quality audits are undertaken annually as per the NEMA requirements to ensure that the ambient air quality at the plants is within the legislated limits.						
r)	The firm has worked on improving the performance of its logistics network so as to gain environmental and social benefits e.g. reduction of empty miles						
s)	As part of its effort to reduce the impact of road transportation, the firm has embarked on an effort to increase the use of rail transport						
3. Sustainable Social Practices							
a)	Employees are trained on how to ethically deal with clients						
b)	Refresher trainings are always held to ensure that all employees are up-to-date with what is required of them.						
c)	Partners, employees and the community's health and safety, is our first priority						
d)	The firm runs a number of initiatives to ensure good working condition e.g. reduction of dust emissions and noise production within the plant						
e)	Employees are trained on basic first aid and emergency response						
e)	Employees under logistics are trained on overall road safety compliance and safety observations, and their conducts monitored						
f)	The firm has proper risk detection and prevention strategies						
g)	The firm ensures that it timely and legally pays taxes and associated charges						
h)	The firm participates in charity measures of the local public						
i)	The firm applies fair employment practices to the local public						
j)	The firm ensures constant employee training and development						
k)	The firm abides by guidelines and directives of the labour laws						
l)	The firm always ensures fair remuneration to its employees.						
m)	Employees are properly kitted with required Personal Protective Equipment (PPE) and fire safety equipment are availed at places of work						
n)	Employees talents are nurtured, their innovations and good performances are rewarded.						
o)	The firm practices corporate social responsibilities like empowering women, offering scholarships to needy and bright students, training the community on safety measures, tree planting						
4. Sustainable Economic Practices							
a)	The firm thrives on guaranteeing that value for capital spent exists						

b)	The firm communicates its annual financial report to the shareholders and stakeholders in timely					
c)	The firm undergoes both internal and external audits regularly to ensure transparency					
d)	The firm ensures fair competition with its market rivals					
e)	The firm practices ethical sourcing with its suppliers					
f)	The firm has adopted lean inventory management to reduce inventory costs					
g)	The firm engages on reverse logistics and recycling as a cost reduction technique					
h)	The firm adopts latest technology to ensure efficiency, value addition and to remain at the competitive edge					
i)	The firm adheres to tax laws and regulations					

SECTION C: COMPETITIVE ADVANTAGE

With regard to competitive advantage of your firm, kindly indicate the extent to which you agree or disagree with each of the following statements' contribution to your organization's competitive gain in the cement industry in Kenya, on the basis of Cost, Quality, Flexibility, Dependability and Speed. Use the five-point Likert scale provided, where 1=not at all, 2=to small extent, 3= to a moderate extent, 4=to a large extent, 5= to a very large extent.

No	Competitive Advantage aspects	1	2	3	4	5
1. Cost						
a)	The firm offers products whose quality matches the market prices					
b)	Adoption of latest technology in the firm's SC has led to value addition along the value chain					
c)	Reverse logistics and recycling of wastes has resulted in lessening operational cost					
d)	Adoption of lean inventory systems has resulted in dropping total inventory costs					
e)	Adoption of green energy as alternative sources of energy has led to an overall cost reduction on energy and other raw materials					
f)	Frequent internal and external audit has eradicated mismanagement of funds					
g)	Reduction of empty miles during transportation results to a drop in overall transport costs					
h)	Training and monitoring of the movements of the crew members in transportation has minimized losses, damages, deaths and delays hence reduction in overall operational costs					
i)	Rain water harvesting has reduced the amount spent on water use					

j)	Competitive and ethical sourcing ensures that the firm gets value for money spent						
k)	Compliance with statutory requirements helps the firm to avoid attracting costs associated with government penalties and fines						
l)	The firm attracts, trains and retains the right mix of highly talented manpower, to help and spearhead inventions and innovations and also cut on wages to non-value adding workforce						
m)	The firm is located near the source of main raw materials to aid in cutting on transportation cost						
n)	The firm ensures proper maintenance of its machines and software to cut on costs related to tear and wear, or breakdowns						
2. Flexibility							
a)	The firm has adopted automation of major operations processes and supply chain activities along the product life so as to adjust to any variations in the market's tastes and preferences						
b)	The firm constantly acquires market intelligence by conducting marketing research to understand market dynamics, and factors shaping tastes and preferences of its established and potential customers						
c)	Reverse logistics enables the customers to return defective or wrong products for the right ones						
d)	The firm's ability to gather and share information with its customers, suppliers and contractors enables it act on up-to-date and reliable information in dealing with its supply chain partners						
e)	Proper and reliable channels of distribution through green logistics enables the firm to respond effectively to adjustments in their customers' delivery needs at different times and locations						
f)	Attracting, training, retaining and motivating highly talented workforce makes the firm to be innovative and flexible in responding to varying customer needs						
g)	The firm adopts manufacturing technologies that can react quickly to market changes, enhance customer satisfaction and increase profitability						
h)	The firm has the ability to modify its production processes and adjust its resources to respond to different volumes of products that its customers may want						
3. Dependability							
a)	The firm knows what creates value to its customers, it then innovates, differentiates and delivers on its promises to the clients						
b)	The firm has the ability to listen to its customers and deliver the product as the customers' specifications this builds customers' loyalty						

d)	The firm conducts sales promotions to make its products more appealing to established and potential customers, and to explain to the customers on better ways to get value from its products					
e)	The firm holds training workshops or seminars with stakeholders and its customers on alternative technologies and materials in either road or building constructions					
f)	The firm advises and educates their customers on the latest technologies to be used in either road construction or in building construction to ensure soil stabilization, quality and durability of buildings or roads					
g)	The firm handles its customers, suppliers and contractors in an ethical and professional manner. This attracts their loyalty and faith					
h)	The firm's ability to publish its sustainability report annually has attracted clients to the firm and retained its market share					
i)	Corporate Social Responsibility (CSR) builds and maintains meaningful demand base for the firm and attracts best suppliers					
k)	The firm allows visibility and information sharing along the supply chain, speeding up payments, order processing and response to customer demands					
4. Quality						
a)	Value-based products due to implementation of technologies in the SC attracts and retains customers					
b)	The firm invests on research and development to enhance innovations and inventions on its products in the market					
c)	The firm's policies are clear on what creates value to its customers. It innovates, differentiates and delivers to its customers with a creative mindset and curiosity on our promises					
d)	The firm's policies innovates, differentiates and delivers to its customers' promises					
e)	Customers proposals and criticisms on quality are actioned					
f)	Value performance goals and initiatives are communicated to all the relevant departments regularly					
g)	There are regular supervisions, quality checks and process management to minimize wastes and defects in the production process.					
h)	The firm adopts lean management strategies to minimize wastes and maximize on value creation					
j)	There are regular employee trainings and seminars on quality assurance and management					
k)	The firm applies the Code of Conduct, local laws and ethics in all situations to ensure value is delivered to the customers					

l)	There are Laboratory tests						
m)	The firm's product is produced in accordance to Kenya Standards, KS EAS 18-1						
n)	We are issued with (KEBS) certification						
m)	The firm is monitored by LafargeHolcim through Global quality M management Systems applicable to all cement manufacturing companies globally						
5. Speed							
a)	The firm offers on-time delivery to site for its customers						
b)	Firm's plants and equipment are adapted to customers project schedule to shorten lead times						
c)	The firm offers timely delivery services with tidy offloading						
d)	The firm has adopted modern technologies in ensuring that there are faster and efficient communication channels along the supply chain and value chain to ensure timely communication						
e)	There is a quick response to customers inquiries and complaints						
f)	The firm pays its suppliers/vendors/ contractors promptly						
g)	The firm has adopted strategies to ensure quicker replenishment of its stock, to avoid stoppages						
h)	The firm shares planned and forecasted demand with its suppliers to minimize surprises						
i)	The firm's use of recycled wastes as raw materials shortens production time						

SECTION D: CHALLENGES FACING SUSTAINABLE SUPPLY CHAIN MANAGEMENT STRATEGIES IMPLEMENTATION

With regard to the challenges or barriers facing the implementation of sustainable supply chain management practices in your firm, kindly indicate the extent to which you agree with the following statements. Use the scale 1 – 5. Where 1=not at all, 2=to small extent, 3= to a moderate extent, 4=to a large extent, 5= to a very large extent.

No	Implementation Challenges	1	2	3	4	5
a)	Changing the culture and mindsets the supply chain partners to totally embrace supply chain sustainability has not been easy					
b)	Global warming has been a big challenge in environmental preservation and value creation					
c)	Natural occurrences e.g. adverse weather, droughts, affecting afforestation efforts					
d)	Illegal logging and deforestation destroying key water catchment areas, hence affecting rain water harvesting					

e)	High cost of acquisition, implementation and maintenance of latest technologies to aid in value creation along sustainable supply chain has been a big challenge to the firm					
f)	Internal resistance from a section of employees for losing jobs when lean management is being adopted					
g)	Lack of support from contractors, suppliers and other partners along the supply chain in ensuring collective responsibility for sustainable supply chain implementation					
h)	The firm's inability to anticipate disaster has been a challenge in attaining sustainable economic progress					
i)	High overall cost increase in implementing sustainable development hinders the firm from attaining sustainable economic progress					
j)	Stiff competition from within the country and other global companies trying to penetrate the Kenyan market has hindered the firm's capacity to effectively battle on the basis of sustainable development					
k)	Consumers desire for lower prices hinders the firm's efforts to compete on the basis of high-quality product which meet the required international standards on the of sustainable development					
l)	Lack of top full top management support has delayed the lower level managers' efforts to fully embrace sustainability practices in their respective departments					

Appendix II: List of Cement Manufacturing Firms in Kenya

Rank	Company	Year established	Annual production
1.	Bamburi Cement Limited	1951	2.1 million tonnes
2.	Mombasa Cement Limited	2007	1.6 million tonnes
3.	East Africa Portland Cement Company	1956	1.3 million tonnes
4.	Savanah Cement Limited	2012	1.5 million tonnes
5.	ARM Cement Limited	1974	1 million tonnes
6.	National Cement Company Limited	2008	1 million tonnes
7.	Rai Cement	2015	730,000 tonnes

Source: KAM (2019)

Appendix III: Field Introductory Letter



UNIVERSITY OF NAIROBI

COLLEGE OF HUMANITIES & SOCIAL SCIENCES

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Telex: 22095 Varsity

P.O. Box 30197
Nairobi, KENYA

02 October 2019

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

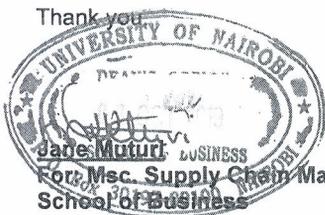
INTRODUCTORY LETTER FOR RESEARCH
SWETAH MATHEWS OTIENO- REGISTRATION NO. D67/9911/2018

This is to confirm that the above named is a bona fide student in the Master of Science in Supply Chain Management (MSc. Supply Chain Management) option degree program in this University. He is conducting research on ***"Sustainable supply chain management practices and competitive advantage in cement manufacturing firms in Kenya"***.

The purpose of this letter is to kindly request you to assist and facilitate the student with necessary data which forms an integral part of the research project. The information and data required is needed for academic purposes only and will be treated in **Strict-Confidence**.

Your assistance will be highly appreciated.

Thank you



James Muturi
For Msc. Supply Chain Management Coordinator,
School of Business