EFFECT OF SUPPLY CHAIN MANAGEMENT PRACTICES ON PERFORMANCE OF TEA SUBSECTOR INDUSTRY IN KENYA

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Effect of Supply Chain Management Practices on Performance of Tea Subsector Industry in Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

I dedicate this thesis to my loving dad Mr. Shem Matuga and mum Mrs. Mary Matuga whose words of encouragement, and push for tenacity played a pivotal role in my success. I also dedicate this thesis to my sisters Elfira, Emma, Harriet and my brothers Amos, Obed, Seth and Linus who have always been by my side and given me words of encouragement during my study program and research process. I similarly dedicate this thesis to my friends, research assistants, supervisors and church family for their spiritual, moral, administrative, and professional support offered throughout the research study process. Finally, I dedicate this thesis to God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength and good health throughout this Ph.D. program and it’s on his wings that I have been able to accomplish this thesis. May the Almighty God shower all that have played a key role in this whole process with blessings.

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ABBREVIATIONS AND ACRONYMNS

AFFA	Agricultural, Fisheries and Food Authority
AFDB	Africa Development Bank
CBK	Central Bank of Kenya
CI	Customer Integration
CRM	Customer Relationship Management
CTCT	Cut Tear and Curl Tea
C.E.O	Chief Executive Officer
CIPS	Chartered Institutes of Purchasing and Supply
ERP	Enterprise Resource Planning
ECOWAS	Economic Community of West Africa States
EAC	East African Community
EWS	Electronic Weighing Solution
EFA	Exploratory Factor Analysis
EOQ	Economic Order Quantity
FAO:	Food and Agriculture Organization
GDP	Gross Domestic Product
GSCM	Global Supply Chain Management
HIV	Human Immunodeficiency Virus
HRM	Human Resource Management
ICT	Information Communication Technology
IFC	International Finance Corporation

IS	Information Sharing
ITC:	International Tea Committee
ITC	International Trade Center
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KTDA	Kenya Tea Development Agency
KRA	Kenya Revenue Authority
KMO	Kaiser- Meyer –Olkin
MBA	Master of Business Administration
NSE	Nairobi Securities Exchange
NVA	Non-Value Adding
NACOSTI	National Commission for Science Technology and Innovation
PIN	Personal Identification Number
POS	Point of Sale
ROK	Republic of Kenya
RDCs	Regional Distribution Centers
RBV	Resource Based View
RFI	Request for Information
SCC	Supply Chain Collaboration
SCM	Supply Chain Management
SCMS	Supply Chain Management Systems
SADC	Southern Africa Development Community
SCDA	Special Crops Development Authority

SI	Supply Integration
SEM	Structural Equation Model
SPSS	Statistical Package of Social Sciences
TBK	Tea Board of Kenya
TMR	Transparency Market Research
TRIK	Tea Research Institute of Kenya
TNC	Transnational Company
UAE	United Arab Emirates
UK:	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
VRINN	Valuable, Rare, Imperfectly mobile, Not imitable and Not substitutable
VIF	Variance Inflation Factors
VMI	Vendor Management Inventory
VFM	Value for Money
WTO	World Trade Organization
WB	World Bank
WHO	World Health Organization

DEFINITION OF TERMS

Customer Relationship Management	Is the combination of practices, strategies and technologies that companies use to manage and analyze customer interactions and data throughout the customer life cycle (Khan, Salamzadeh, Iqbal, & Yang, 2022).
Logistics Management	Is the part of the supply chain process that joins the movement of products, services, data, and capital from the stage of raw materials to the consumer end product (Kushakova, 2022).
Performance	Is how well an organization achieves its market-oriented goals as well as its financial goals (Nayal *et al.*, 2022).
Supplier Relationship Management	Is the systematic approach to evaluating vendors that supply goods, materials and services to an organization (O'Brien, 2022).
Supply Chain Integration	Is a large-scale business strategy that brings as many links of the chain as possible into a closer working relationship with each other (Shou, Kang, & Park, 2022).
Supply Chain Management	Is the management of the flow of goods and services and includes all processes that transform raw materials into final products (Yusuf & Soediantono, 2022).

Value Chain Management : is the process of monitoring and managing all the components that comprise manufacturing, including procurement, production, quality control and distribution (Dördüncü, 2022).

ABSTRACT

The general objective of this study was to assess the effect of supply chain management practices on performance of tea subsector industry in Kenya. The specific objectives of the study were to establish the effect of supplier relationship management practice on performance of tea subsector industry in Kenya; to determine the effect of value chain management practice on performance of tea subsector industry in Kenya; to assess the effect of customer relationship management practice on performance of tea subsector industry in Kenya; to evaluate the effect of logistics management practice on performance of tea subsector industry in Kenya and to determine the moderating effect of supply chain integration on supply chain management practices and performance of tea subsector industry in Kenya. The theoretical framework of the study was guided by Resource Based View Theory (RBV), Porter's Value Chain Theory, Supply Chain Network Theory and Supply Chain Integration Theory. A positivism research philosophy, a quantitative nonexperimental research method and a cross-sectional research design was adopted to address the formulated hypotheses. Stratified random sampling technique was used to select a sample size of 155 firms from the target population of 254 firms in the tea subsector industry in Kenya. The study selected 2 respondents from every firm sampled of 155 firms each drawn from top management and middle level management to make a sample size of 310 respondents. Primary data was collected by use of self-administered structured questionnaires which were distributed through the drop and pick method. Secondary data collected from various tea subsector bodies websites, in annual and published financial statements, in national newspapers, during annual general meetings and in-house magazines, important business disclosures in journals, manuals and the various firm's documents were used to cross validate the primary data information collected. A total of 229 questionnaires were completed, returned, and used for analysis. Data was analyzed by use of descriptive statistics and inferential statistics using Statistical Package for Social Sciences (SPSS) version 24. The Pearson's product moment correlation analysis and standard multiple regression analysis were used for hypotheses testing. The data was presented using tables, and figures for the purpose of giving a pictorial view of the results. The findings indicated that supplier relationship management practice had a statistically significant and positive effect on performance of tea subsector industry in Kenya; value chain management practice had a statistically significant and positive effect on performance of tea subsector industry in Kenya; customer relationship management practice had a statistically significant and positive effect on performance of tea subsector industry in Kenya; logistics management practice had a statistically significant and positive effect on performance of tea subsector industry in Kenya and supply chain integration had a statistically significant and positive moderating effect on supply chain management practices and performance of tea subsector industry in Kenya. The study recommended for the adoption of supply chain management practices by the tea subsector industry in Kenya in order to enhance the performance of tea subsector industry in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Supply chain management is the most crucial part in any firm. A hole in the supply chain network will have an effect on the entire firm's supply chain network system hence the need for proper supply chain integration (Bechtel & Jayaram, 2016). It is noteworthy that a firm's growth cannot be achieved unless it is pursued in tandem with the goals of the firm's supply chain strategy (Barasa, Namusonge, & Iravo, 2015). This is because both sets of goals converge at some point in the management of the firm. Supply chain management practices contribution to performance have long attracted the attention of researchers (Barasa, Namusonge, & Iravo, 2015; Namusonge, Mukulu, & Iravo, 2017; Wanja & Chirchir, 2013; Nyamasege & Biraori, 2015). Depending on different objectives, researchers emphasize different aspects of supply chain management practices (Botlhale, 2017).Tea subsector industry in Kenya, just like any other form of business industry, are supposed to carry out supply chain management functions that will enable them, among other reasons, to enhance competitive performance by integrating the internal functions within a company and linking them closely with the external operations of suppliers, customers and other members of the supply chain network (Ghosh, 2017).

Tea is an important commodity with many benefits to human life and global economies. Globally, tea is the most popular and lowest cost beverage consumed next only to water. Drinking tea has become a culture and it is consumed by a wide range of age groups in all levels of society. Mbui,Namusonge and Mugambi (2016) assert that tea as a commodity sustains lives of growers, pickers, factory workers as well as being the leading foreign exchange earner in Kenya as it contributes about four (4%) of the country's Gross Domestic Product (GDP) (KTDA, 2019). Kenya earned from tea in 2016 Kshs.125.25 billion, representing 28% share of the total supply chain export earnings (AFFA, 2016). Kenya is the fourth largest producer of tea in the world after India, China and Sri Lanka with 73% of tea produced meant for export (WTO, 2014). The large export volume of tea to international markets demands for a well-structured and supported supply chain network in order to achieve proper coordination of tea export to global markets and end customer. The high tea production in Kenya has attracted multinational enterprises to enter the country's tea sector and they are operating with huge capital, holding more power to influence the whole supply chain in the tea sector either for better or worse. They certainly play an important role to Kenya as a developing country in the tea industry and trade (Wanja & Chirchir, 2013).

The world has experienced the consumption of tea to more than three billion cups per day (FAO, 2019). Therefore, tea is considered to be part of the huge beverage market and should not be seen in isolation as just a commodity. Africa, South America and Asian region produces tea varieties with reputation in the international markets of high quality (WTO, 2014). Asia specifically has an upper hand of every share of importing market in the world because of its high quality of tea produced. Global tea production has overcome supply chain demand by 3.9% during the period 2010 to 2015 (WTO, 2015). In addition, huge employment opportunities have been created by the global tea market and the growing adoption of green tea in beauty and skin treatments are estimated to propel the growth of the market in the near future to a high level (TMR, 2016).

On the flip side, the availability of alternatives for tea and the side effects of over-consumption are some of the major factors curbing the growth of the global tea market. However, the global tea market is projected to grow to a tune of USD $ 48.9 billion by the year 2020 (World Bank, 2016).The global tea market has been classified on the basis of product type into leaf tea and Crush Tea Curl (CTC) tea. The leaf tea segment has been further sub-classified into green tea, oolong tea, and black tea. In 2013, the black tea segment held the largest share in the overall tea market (ITC, 2015). However, the green tea segment is predicted to grow rapidly in the coming years, thanks to the growing awareness regarding the health benefits of consuming tea. By geography, the global tea market has been categorized into Asia Pacific, Europe, North America, and Rest of the World (TMR, 2016). In 2013, Asia Pacific dominated the global tea market and is projected to remain in its leading position throughout the forecast period. The rapid growth of this region can be attributed to the tremendous demand from China and India (UNCTAD, 2016).

Moreover, the highest revenue is generated in the Asia Pacific tea market, owing to the huge quantity of tea exported from countries such as China, India, and Sri Lanka across the globe. On the other hand, the North America tea market holds a comparatively smaller share in the overall market at present; nevertheless, it is estimated to witness sluggish growth in the near future.

The tea industry in Africa started with the first commercial farms laid out in the 1920s, at Kericho in the Kenyan highlands west of the Rift Valley. These were followed by similar farms in Malawi, Uganda and Tanzania. These tea estates, owned by multinational companies such as Unilever, now cover hundreds of square kilometers, carpeting the slopes in bright green as far as the eye can see. They employ thousands of people, many of whom are housed on the estates and benefit from amenities including education and some of the best medical facilities available (TMR, 2016). It is a modern plantation model, underpinned by what might be described as local economic block, and supported by certification schemes such as Fairtrade and Rainforest Alliance. It is large-scale industrial tea farming, where yield, quality, consistency and costs are the key drivers. But there is more to tea in Africa than these giant commercial estates. Most of the increase in tea growing over the last 20 years has come from smallholder farmers, who typically grow a small amount of tea as a cash crop alongside staple food crops (World Bank, 2019). The green leaf is not processed by the farmers, but delivered to a processing factory owned by a large company or co-operative. Most of the large estate companies buy a sizeable proportion of their leaf from local smallholders, and provide them with training and support to help improve yields and quality. Arrangements like this can have a significant beneficial impact on the community, by helping to generate growth in the local economy (AFDB, 2014).

The most successful tea smallholder model is the Kenya Tea Development Agency (KTDA). The KTDA is the umbrella body for over 500,000 smallholder farmers spread across the main tea producing zones, and grouped to 62 processing factories that are collectively owned by the farmers (TBK, 2014). The KTDA manage the factories and market the tea, but the sale proceeds are shared by the farmers. It is a unique model, and extremely successful, with KTDA farmers now producing over half the Kenya tea crop (RoK, 2013). The KTDA factories around Mount Kenya produce some of the best quality CTC tea in the world (TBK, 2014).

Average global prices of tea have been declining due to the obvious oversupply of tea in the market. The situation has been worsened by the escalating costs of production, labor, fertilizers, electricity, management costs as well as high taxation costs (IFC, 2019). Moreover, there has been new entrants in the tea sector globally with countries such as Nepal, Rwanda, and Vietnam joining the league while in Kenya there has been an increase in production due to expansion in tea planting and provision of high tea yielding varieties of tea plants by the Tea Research Institute of Kenya (TRIK, 2012). Due to these developments, tea industries in some countries have collapsed such as South Africa and this poses a serious challenge to the future growth and direction of tea industry in Kenya. Therefore, in Kenya, just like in Sri Lanka and India, the tea industry should re-evaluate its operations and supply chain processes so as to remain profitable and competitive at global level. Sri Lanka, India and China have already taken measures to solve these challenges by enhancing the efficiency of their supply chains and exports through value addition, product diversification and aggressive promotion (TBK, 2014).

Tea is considered as having a share of the global beverage market which is a highly competitive field. There is a wide range of tea products which continue to be developed through product and process development for added value as market shares become more sophisticated and competitive. This requires the existence of excellent supply chain management practices among tea corporations that can make the product available to the market in a convenient manner (Wanja & Chirchir, 2013). Modern organizational competition emanates from external activities taking place outside the demarcation and boundaries of the organization (Beamon, 2013). Therefore, organizations need to effectively link their various operations with suppliers such as wholesalers, retailers, and end customers so as to survive the complex corporate competitive world. Hence the most important function of supply chain management is to provide firms with ways of integrating functions at both the upstream and downstream levels (Bozarth, Warsing, & Flynn, 2009).

Therefore, the overall objective of supply chain management is to enhance the performance of the entire supply chain and not an individual organization. Various studies have indicated that effective implementation of supply chain management practices has the potential of contributing to enhanced organizational performance (Carneiro, 2015). These studies have shown that companies that have a higher degree of integration with suppliers and customers have shown very high performance.

1.1.1 Global Perspective of Supply Chain Management Practices and Performance

Supply chain is an entire network of interlinked entities either directly or indirectly and interdependent in serving the final customer or consumer (Bechtel & Jayaram, 2016). Supply chain management practices are the strategies employed by management to perform or achieve certain functions or outcomes through a set of controllable and measurable actions (Boscheck *et al*., 2008). The supply chain management practices may entail aspects such as value addition management, supplier relationship management, logistics management, and information sharing and technology deployment among others (Fujita & Thisse, 2013).

The term supply chain management practices reflect the major role of strategic management in adapting, integrating and reconfiguring resources, organizational skills and functional competencies to respond to the challenges of the external environment (Eljelly, 2015).

Supply chain management practices are complex and require skills and accumulated knowledge so as to determine a company's capacity of general efficiency and ability (Keller & Cappelli, 2014). When supply chain management practices are employed through organizational processes, they enable firms to manage coordination of activities and efficiently use assets (Richey *et al*., 2011). Boscheck *et al*. (2008) refer to supply chain management practices as those management attributes, abilities, organizational processes, knowledge, and skills that allow a firm to achieve superior performance and sustained competitive advantage over competitors. It is a management's task to exploit and leverage firm specific assets and capabilities so as to get the best.

Supply chain capabilities are the foundation blocks for enhanced firm competitive advantage, performance, and overall success (Schmenner, 2012). When the organization's supply chain management practices are correctly aligned with its objective, the company enjoys a competitive advantage leverage over its competitors that is of superior performance and an extremely strong market position. With supply chain management practices in place, operational and sustainable excellence can also be achieved. The supply chain management practices exist at different levels, where there is supply chain planning and projections and implementing the supply chain plans (Lebaron & Lister, 2015). Ghosh (2017) suggests there is an exceptional link between proficiency concerning supply chain management and exceptional organization profitability.

He classifies this management processes into three categories namely external processes management capabilities which refers to the group of management capabilities that enables the company to compete by forecasting and acting on changes in markets through the development of sound relationships with suppliers, channel members, and customers (Ali, Namusonge, & Sakwa, 2016). Internal management processes capabilities that refer to those internal management capabilities that enable the firm to exploit opportunities in the environment. In other words, they facilitate the company acting on information in a manner that brings value to customers and assures the organization viability in the long run; Spanning management processes capabilities relate to the processes that support the anticipated needs of patrons being fulfilled by the business (Cardy & Munjal, 2016). They do so primarily through integrating the external and internal management capabilities.

1.1.2 Regional Perspective of Supply Chain Management and Performance

Africa presents unique, varied, and continually evolving challenges for supply chain management networks. Even companies with long track records in the region are being forced to find new and creative ways to maintain growth and extend their reach into new countries and markets. While some of the lessons learned in other emerging regions are also applicable to Africa, it is likely that they will be only part of the solution (AFDB, 2014). The rest will come from unique approaches tailored to specific countries, markets, and consumer groups. In particular, firms will need to adapt their supply chain management solutions through various approaches so as to navigate the African supply chain management network and ensure firm profitability (Mckinsey, 2013).

Firms have had to take advantage of African regional economic block agreements and growing trade corridors so as to extend their supply chain management networks. To achieve economies of scale in African distribution networks, most companies with aspirations to serve large parts of the continent have adopted a regional approach. Picking the right regional breakdowns and developing the right supply chain network design within those regions have had a critically important effect on the reach, speed, and cost of coming up with such supply chain networks (UNCTAD, 2013).Many organizations have found it useful to consider Africa as four zones, with roughly the same-sized GDPs. These zones are: Maghreb, Western Africa, South of Africa, and Eastern Africa (World Bank, 2013).

For example, Supply Chain Management System (SCMS), a specialty supply chain partnership for medicines to support victims of human immunodeficiency virus (HIV), established regional distribution centers (RDCs) in three out of these four zones: in Ghana, Kenya, and South Africa. Ghana was chosen as the best location for the RDC in West Africa due to the availability of a nearby port facility, the country's relative economic and political stability, the willingness of the government to have the facility located there, and its proximity to Nigeria and Côte d'Ivoire (two countries with high patent risk).Kenya was chosen in East Africa for similar reasons, including the receptivity of the government to the RDC, its location in the center of the region, and the availability of a good airfreight hub, while South Africa's good infrastructure and access to ports for imports from the United States and Asia made it the logical choice for the South (WHO, 2013) .

Some companies have developed supply chain management network approaches that serve regions beyond Africa itself. Ford Motor Company, for example, set up a parts distribution center in Nigeria to serve not only the entire African continent but also to reach several countries in the Middle East (Namusonge, Mukulu, & Iravo, 2017). Recent investments in transportation infrastructure have provided better direct access to Africa's established industrial and urban markets as well as improved access to newer markets. For example, better rail networks have greatly improved the connections between smaller countries like Uganda, Rwanda, and Burundi with the port of Mombasa in Kenya hence strengthening the supply chain networks. These links have facilitated trade in both directions, allowing easier importation of foreign products while providing a more efficient means of exporting natural resources and agricultural products manufactured in the region (Mckinsey, 2013).

Despite these improvements, much of Africa continues to struggle with poor logistics infrastructure and high distribution costs, requiring careful design of physical distribution networks (warehousing and transport) for commercial supply chains networks (AFDB, 2014). Establishing distribution networks within these regional alliances should enable improved service levels to customers. However, there is significant variation in the legal and regulatory strengths of the countries within the economic alliances, something that should be taken into account as supply chains are developed. For example, relatively weak legal systems and more complex and costly processes make it more challenging to establish supply chains in the 15 members of the Economic Community of West African States (ECOWAS) than in the smaller East African Community (EAC). Meanwhile, the Southern African Development Community (SADC) is larger, better regulated, and simpler to operate in than either ECOWAS or EAC (UNCTAD, 2013).

1.1.3 Local Perspective of Supply chain Management Practices and Performance

The Kenyan field of supply chain management can be termed as being at its pupae stage. However, the concept of supply chain management practices and performance is not entirely new. Namusonge, Mukulu and Iravo (2017) did a study on the influence of supply chain capabilities on performance of manufacturing entities in Kenya where they used procurement capabilities, inventory management capabilities, logistical capabilities, customer service capabilities and information communication technology (ICT) capabilities as the independent variables and established that supply chain capabilities play a key role in the performance of manufacturing entities in Kenya.

Wanja and Chirchir (2013) did a study on supply chain management practices and performance of Kenya Tea Development Agency managed factories and indicated that supply chain management practices play a pivotal role in aiding the performance of Kenya Tea Development Agency managed factories.They strongly indicated that the process of obtaining tea leaves from farmers,taking it to the local weighing centre,processing it in the factories and eventually selling it locally or internationally requires a well coodinated and sophisticated supply chain management network.Ondieki and Oteki (2015) did a study on the effect of supplier relationship management on the effectiveness of supply chain management in the Kenyan public sector and recognised that supplier relationship management created a harmonious scenario of dealing with suppliers in the Kenya public sector.

Bolo (2011) did a study on empirical investigation of selected strategy variables on firm's performance: A study of supply chain management in large private manufacturing firms in Kenya, discussed the effect of selected strategy variables on corporate performance in supply chain management. The selected strategy variables entailed core competencies of supply chain, core capabilities of supply chain strategy and strategy implementation. Focusing on the core competencies and core capabilities of supply chain and was determined that core capabilities and competencies do have effect on corporate performance in large private manufacturing firms in Kenya. The independent effect of core competencies and core capabilities on firm's performance may also create competitive advantage for a firm, but nevertheless, over time may be imitated by competitors (Bolo, 2011).

To make the economy more vibrant and to improve productivity, proper corporate structure and governance need to be put in place where SCM competencies, strategy, capability, can be used to create synergy (Barratt, 2004). The progress development of the supply chain management capabilities individually over time can lead to a snowball effect in terms of overall supply chain capabilities enhancement thus resulting in a synergetic effect on performance (Chege, Ngugi, & Ngugi, 2017). Therefore, in Kenya the area of supply chain management practices ought to be developed so as to bring out its full potential to the production sector in terms of performance.

1.1.4 Tea Subsector Industry in Kenya

Before Kenya attained independence, indigenous Kenyans were restricted by law from growing tea. When it approached independence, the legislation was repealed to allow the indigenous people to commence tea growing. Following this development in 1960, the colonial government created the Special Crops Development Authority (SCDA) to promote growing of tea by Africans under the auspices of the ministry of Agriculture (RoK, 2013). After independence, Kenya Tea Development Authority was formed through legal notice No.42 of 1964 and took over the liabilities and functions of the SCDA to promote and foster the growing of tea in small farms, which were previously said to be unviable in view of the expertise and costs required, as witnessed in the plantation sector. Due to privatization, Kenya Tea Development Authority was converted to Kenya Tea Development Agency Limited and was incorporated on 15th June 2000 as a private company under (CAP 486) of the laws of Kenya, becoming one of the largest private tea management agencies (KTDA, 2019).

KTDA offers management services to the small-scale tea subsector in Kenya. The company is managed by a board of directors from the twelve zones that represent the tea growing regions of Kenya. Each zone has a collection of factories under their management. A factory has six directors that are elected by farmers. The elected directors meet at the zonal level to elect a board member to KTDA (TBK, 2019). There are one hundred and seven factories under the management of KTDA. All factories are managed in a similar business model. The company has a sole responsibility of buying tea leaves from small scale farmers, processing of the tea and ensuring the same is marketed appropriately. All these activities involve value addition and complex supply chains that need good supply chain management practices at both the upstream and downstream levels (Wanja & Chirchir, 2013). Without proper supply chain management practices, KTDA factories may not be able to operate profitably since their supply chain activities may be derailed thus leading to losses (KTDA, 2019).

In 2019, Kenya's gross domestic product (GDP) amounted to around 102.43 billion U.S. dollars (World Bank, 2020). Thus, KTDA contributes a lot to agriculture which is the mainstay of the Kenyan economy since it directly contributes 24% of the Gross Domestic Product (GDP) annually, and another 27% indirectly (CBK, 2016). The agricultural sector accounts for 65% of Kenya's total exports and provides more than 70% of informal employment in the rural areas in terms of tea pickers and factory workers (RoK, 2013). Therefore, the agricultural sector is not only the driver of Kenya's economy but also the means of livelihood for the majority of Kenyan citizens and major foreign exchange earner. In the Vision 2030 blue print, the agricultural sector is broken down into six major sub-sectors, namely: industrial crops, food crops, horticulture, livestock, fisheries and forestry. Tea and coffee fall under the industrial crops. Kenya is the leading exporter of tea in the World, with its exports in 2014 reaching 441 million kilograms, and accounting for about 22% of the global tea export volumes (TBK, 2014). Tea is also the leading foreign exchange earner in the country accounting for 21% of the total export earnings (RoK, 2013). Tea also supports over 3 million people directly and indirectly and accounts for 4% of Gross National Product (GDP) (TBK, 2014; Mbui, Namusonge, & Mugambi, 2016).

Kenyan tea is predominantly sold in bulk after the initial primary tea processing. After tea is plucked from the farms in green form, it is taken through the primary processing. This process entails subjecting the green leaves to the withering process and thereafter the leaf is cut into small pieces, torn into small sizes and finally curled. The product is taken through oxidation process and then subjected to dryers to undergo the heating process (TRIK, 2012). The final product is black CTC tea which is later graded into various sizes depending on grain sizes. This product is thereafter packed into packages of between 50-80 kilograms which is now sold as bulk tea. This entire process is the primary level of tea processing (KTDA, 2019; Mbui, Namusonge, & Mugambi, 2016).

The actual supply chain of the tea subsector industry in Kenya begins with the farmer who is the supplier of green leaves. The green leaves are plucked at the farm by casual workers, loaded into specially made African baskets and carried on their heads or backs as a simple means of transport by the farmer/casual workers to the tea collection center at the zonal level (RoK, 2013; Wanja & Chirchir, 2013). At the collection Centre, weighing of tea leaves is done using an Electronic Weighing

Solution (EWS) whereby both the farmer and center attendants keep the records in terms of number of kilograms of leaves supplied by the farmer. The green leaf is then transported to the factory using tea collection trucks. At the factory the green leaf is received and the weight is confirmed before processing begins. Once the processing is completed, the processed tea is packaged and transported to a Mombasa warehouse where auction is done and the tea ends up either with a local or international buyer (KTDA, 2019). This study focused on the supply chain process from tea plucking in the fields till the tea export to global markets hence requiring a high level of supply chain management process.

1.2 Statement of the Problem

Kenya is the leading exporter of tea in the world in terms of volume, but it takes second position in terms of earnings after Sri Lanka (ITC, 2019). In 2019, Kenya earned US$ 1.17 Billion (US$ 2.40 per kg) from exports of 497 million kilograms of tea, while Sri Lanka earned US$ 1.24 Billion (US$ 4.10 per kg) (or 3% higher) from export of 300 million kilograms (or 25% lower volumes) hence huge revenue leakage for Kenya which has a negative trickling down effect to the tea subsector industry players (World Bank, 2019). A report by EATTA (2020) claim that the main reason why Kenya earns less from tea export compared to other countries like Sri Lanka could be due to failure to incorporate supply chain management practices such as value chain management as Kenya exports bulk of primary processed tea while Sri Lanka exports value added tea. If Kenya was able to replicate Sri Lanka's supply chain management practices and earn similar price of US$ 4.10 per kg in 2019, then it could have pocketed US$ 2.037 Billion (Ksh 204 billion) in revenue earnings instead of US$ 1.17 Billion (Ksh 117 billion). Incorporating sophisticated supply chain practices will guarantee high earnings and hence high profit to tea industry players' thus creating employment and boost in the country's GDP (TBK, 2019).

Although there is a wide range of literature on supply chain management practices and performance, the area needs further research due to mixed research outcomes which have created a dilemma hence occasioning a research gap. Wanja and Chirchir (2013) carried out a study on supply chain management practices and performance of

Kenya tea development agency managed factories. Christine (2010) carried out a study on distribution strategies used by Chai Trading Limited to penetrate the Middle East markets in bulk tea exports. Mbui,Namusonge and Mugambi (2016) sought to establish the effects of strategic management practices on export value addition in Kenya tea subsector. It is in this view that this study sought to establish the effect of supply chain management practices on performance of tea subsector industry in Kenya to answer questions regarding supply chain management practices and performance.

1.3 Research Objectives

1.3.1 General Objectives

The general objective of the study was to assess the effect of supply chain management practices on performance of tea subsector industry in Kenya.

1.3.2 Specific Objectives

The specific objectives which guided the study were:

1. To establish the effect of supplier relationship management practice on performance of tea subsector industry in Kenya.
2. To determine the effect of value chain management practice on performance of tea subsector industry in Kenya.
3. To assess the effect of customer relationship management practice on performance of tea subsector industry in Kenya.
4. To evaluate the effect of logistics management practice on performance of tea subsector industry in Kenya.
5. To determine the moderating effect of supply chain integration on supply chain management practices and performance of tea subsector industry in Kenya.

1.4 Research Hypotheses

The study was guided by the following null hypotheses:

$H_0$1: Supplier relationship management practice has no significant effect on performance of tea subsector industry in Kenya.

$H_0$2: Value chain management practice has no significant effect on performance of tea subsector industry in Kenya.

$H_0$3: Customer relationship management practice has no significant effect on performance of tea subsector industry in Kenya.

$H_0$4: Logistics management practice has no significant effect on performance of tea subsector industry in Kenya.

$H_0$5: Supply chain integration has no significant moderating effect on supply chain management practices and performance of tea subsector industry in Kenya.

1.5 Significance of the Study

The study may be beneficial and relevant to the following parties:

1.5.1 Tea Manufacturing Organizations

The study may provide information to the management of tea manufacturing organizations that will enable them to conduct their functions and duties in a more efficient and effective manner. This in turn will lead to better performance and profitability in the industry. It may also provide insight on the various supply chain management practices that can be adopted so as to achieve a competitive advantage and operational excellence. Additionally, tea producers who are involved in production, processing and marketing of tea can also benefit from the findings to identify opportunities for upscaling their activities, in the entire supply chain network.

1.5.2 Suppliers

The study may enable suppliers understand how the tea subsector industry conduct their operations with regards to supply chain management, thus they will be in a better position to also plan their operations in terms of lead time, logistics, tendering and quoting. KTDA which particularly manages small scale farmers shall greatly benefit from the study as it would understand supply chain management practices which can ultimately increase revenue to small scale tea farmers and the tea industry in Kenya as a whole.

1.5.3 Academicians and other Researchers

Academicians and other researchers may benefit from this research since it provides more insight on supply chain management especially in the Kenyan context. Kenya is among the leading exporters of tea in Africa, which generates significant revenues for the country, thus, carrying out research on supply chain management practices in the tea subsector industry in Kenya is an interest whose results can yield valuable implication to Kenya's tea subsectors amongst others. This research will be used as a basis of further study in the future. The study's recommendations would generate more research in the field of supply chain management in the tea sector. It may also create ways of resolving emerging problems in the tea subsector industry both in Kenya and at global arena.

1.5.4 Policy Makers

This study is of great value to policymakers in the Kenyan tea subsector industry. It provides concrete information on supply chain management practices and how this may be approached in the Kenyan situation. Policy makers especially Ministry of Agriculture and Tea Board of Kenya can be able to use the findings of this study to examine critical issues surrounding supply chain management and to formulate appropriate and relevant policies to form a guiding framework for supply chain management of Kenyan tea subsector industry. The government, through the findings of the study can appreciate the importance of partnerships in the tea subsector industry in promoting supply chain management which will also help the country expand its processing and packaging capabilities. The management of the tea subsector industry can also benefit from the findings of the study as it comes in handy in identifying gaps that may need to be addressed in order to control supply chain management practices.

1.5.5 Supply Chain Professionals

Supply chain professionals may gain through acquiring new knowledge on supply chain management capabilities and practices at a time when supply chain management is evolving under challenges that are particularly being faced by the industry at large. The findings may also assist in growth and development of supply chain management both locally and internationally. Tea exporters who have predominantly over the years relied on exports of bulk teas can be guided accordingly by the study to make a business shift to supply chain management practices which can increase their tea income earnings accordingly.

1.5.6 Community and Farmers

The study may benefit the entire community and farmers involved in the tea subsector industry in Kenya. By enhancing the supply chain function in the tea subsector industry and reducing inefficiencies, more finances will be available for other tea development research projects that will immensely benefit the community and tea farmers' financially. In addition, the community will benefit from better production and supply chain operation processes which in turn may lead to superior tea products and services in the market.

1.6 Scope of the Study

This study focused on the Effect of supply chain management practices on performance of tea subsector industry in Kenya. The supply chain management practices that were considered in the study are: supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice and supply chain integration. The study focused on supply chain management practices in the Kenyan tea sector which is spread across the country. Tea is the leading foreign exchange earner in Kenya, contributing to about four (4%) percent of the country's Gross Domestic Product (KNBS, 2019). Supply chain management practices have got the capability to spur earnings from tea export while also creating employment amongst other benefits (TBK, 2014). The study was conducted in Kenya and used sampled respondents in the Kenyan tea subsector industry drawn from tea factories, tea packers and tea exporters.

1.7 Limitation of the Study

The researcher encountered a number of challenges while undertaking the research study. However, the limitations did not have a significant interference with the outcome of the study. The first challenge was that some of the respondents did not feel comfortable to share some classified information regarding their firms as they had fears that the information, they provided could be used against them or bear some adverse effects on their firms and therefore they did not wish to participate in the study. However, this situation was diagnosed by the researcher as the participants were well briefed on the confidentiality of the information they were to give and that it would be used for academic purposes only. Similarly, the researcher outlined the necessary steps put in place to ensure the information was kept confidential without revealing the participants identity in any way.

The second limitation was accessing the senior managers targeted for the research study in their respective firms. Due to the busy schedule of the managers, the researcher encountered difficulties of accessing them since most of the time the senior managers offices were manned by office secretaries and junior officers who could not allow the researcher to access the manager’s offices without official appointment. To mitigate this situation, the researcher booked for appointments at the convenience of the targeted firm managers and used an introductory letter from Jomo Kenyatta University of Agriculture and Technology and also a research permit from National Commission for Science, Technology and Innovation to facilitate the exercise. The researcher also deployed excellent communication and interpersonal skills with the respondents and explained to them the importance of the study and promised them of high confidentiality of the information they gave.

The third limitation was the delayed response to the questionnaires by some managers and some even lost them in the process thus occasioning failure to achieve 100 percent response rate. The challenge was however mitigated as the research assistants deployed were able to make follow-ups and clarify the questions that respondents were not able to digest. The research assistants also frequently provided additional questionnaires to those respondents who had lost questionnaires issued to them and were willing to continue with the research exercise. This greatly reduced the number of unfilled sections in the questionnaires and increased the response rate.

Lastly, the research concentrated on only few aspects of supply chain management practices namely; supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice. There are other aspects of supply chain management practices which were not explored such as electronic supply chain management, supply chain communication systems, warehousing management systems, supplier training management etc. that may have an effect on performance of tea subsector industry in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presented literature review of the theories that informed the variables in this study which were supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice and supply chain integration. Similarly, it reviewed both critical and empirical literature of all the key variables mentioned. It also provided a summary and critique of the literature reviewed. It also presented a conceptual research framework which formed the basis for the research hypotheses.

2.2 Theoretical Framework

The theoretical perspective relevant to this study was based on effect of supply chain management practices on performance of tea subsector industry in Kenya. The theories discussed in this section were resource-based view theory, porter's value chain theory, supply chain network theory and supply chain integration theory. However, this study was mainly anchored on the resource-based view theory and supply chain network theory from which the variables of the study were derived.

2.2.1 Resource Based View Theory

This is a grand theory in this research which tries to explain all the independent variables and moderating variable of study namely, supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice and supply chain integration. Barney (1991) as cited by Namusonge, Mukulu and Iravo (2017), assert that the resource-based view (RBV) is a managerial framework used to determine the strategic resources a firm can exploit to achieve sustainable competitive advantage.

Barney's 1991 article "Firm Resources and Sustained Competitive Advantage" is widely cited as a pivotal work in the emergence of the resource-based view theory. However, some scholars argue that there was evidence for a fragmentary resource-based theory from the 1930s.RBV proposes that firms are heterogeneous because they possess heterogeneous resources, meaning that firms can have different strategies because they have different resource mixes (Barney, 1991).The RBV focuses managerial attention on the firm's internal resources in an effort to identify those assets, capabilities and competencies with the potential to deliver superior competitive advantages.

Firms have realized the critical importance and interdependencies that mutually exist between the organization’s internal operational processes and those of suppliers and customers (Luo & Child, 2015). Organizations are focusing at improving their operational level performance and as a result a good number of firms are developing explicit linkages with suppliers and customers so as to reap the benefits of such linkages (Regner, 2015). Supply chain management linkages refers to the pillar connections that a firm creates with critical entities in its supply chain network in order to fully manage the flow of inputs from suppliers into the firm and outputs from the firm to customers who are end users. These linkages can only be implemented through practices such as seeking suppliers and customers input on innovation of new products and product diversification, vendor management inventory system to allow sharing of information between various parties in the supply chain, supplier and customer relationship management, and value addition management among other critical supply chain components (Rungutusanatham, Salvador, Forza, & Choi, 2013).

In order to have a proper insight on the critical significance which exist between supply chain management linkages, supply chain network performance and organizational performance, some theories have been borrowed and applied in supply chain management from other related disciplines such as economics and management science so as to provide a rich insight for better understanding the benefits that firms derive from supply chain management linkages between suppliers and customers. The resource-based view of the firm is borrowed and applied in supply chain management from the strategic management discipline.

The resource-based view of the firm has been applied successfully to develop insights into the inter-firm relationships and alliance for better performance

(Volberda & Karali, 2015). Thus, a better understanding of the resource-based view play a pivotal role in advancing conceptual and pragmatic understanding of the firm's supply chain management interactions and its impact on overall performance. The resource-based view theory is a theoretical perspective that initiates the attempt to describe, explain and predict how firms can achieve a sustainable competitive advantage through acquisition of rare, valuable, in-imitable and non-substitutable control over resources (Namusonge, Mukulu, & Iravo, 2017).

Resource based view theory asserts that resources include both tangible assets such as buildings and equipment's and intangible assets such as capital knowledge that facilitate the production and delivery of goods and services (Arend & Levesque, 2010).Firms seek to gain permanent or semi-permanent control over resources that can provide a competitive advantage over competitors in the volatile market. As a result, firms may exert different levels of control over different types of resources and they would differ in terms of the collective whole commonly referred to as bundle of resources or resource endowment that would be available to them (Barney, 1991). These unique differences, in turn, should lead to innovation of different product through product differentiation that ultimately account for the firms' competitive advantage position (Helfat & Peteraf, 2003).

Barney (2003) and Peteraf (2011) as cited by Nyang'au, Rotich and Ngugi (2017), discussed the five critical characteristics of a resource that would allow firms to attain a sustainable competitive advantage. First, the resource must be valuable in that it improves firm efficiency and effectiveness in providing unique and distinguished performance from its competitors. Second, the resource must be rare so that by exercising control over it, the firm can exploit it to the disadvantage of its competitors and use it to gain competitive advantage over its competitors. Third, the resource must be imperfectly imitable to prevent competitors from being able to easily imitate innovation and develop the resource in-house. Fourth, the resource must be imperfectly mobile to discourage the ex-post competition for the resource that would offset the advantages of maintaining control of the resource. Fifth, the resource must not be substitutable; otherwise, competitors would be able to identify and innovate different products which can be strategically equivalent resources to be used for the same purpose.

How a particular resource fits within a firm's resource endowment and interacts with firm's other resources can also reduce imitability and deter mobility. More specifically, the integration of a resource within a complex social network would likely raise the stakes of the resource making it even more difficult to replicate and this phenomenon is commonly referred to as "social complexity". The social complexity of a team effect, especially for successful teams that interact within a system of facilities, decreases the likelihood of such teams being successful in other contexts – an argument that may explain the failures of quality circles outside of Japan (Carneiro, 2015).The intangibility of a desirable resource, as well as legally imposed restrictions and regulations such as patents, licenses, and industrial espionage laws also serves to protect the resources from being readily duplicated or traded.

Resource based view of the firm theorists have explored how resources can create and sustain a competitive advantage of the firm. Grant (2009), as cited by Nyamasege and Biraori (2015), equated the concept of performance to core competencies in the organizational routines. He explicitly argued that organizational routines which he defined as "regular and predictable patterns of activity and sequence of coordinated actions that deploy rent-yielding resources, hence creating a competitive advantage" (Grant, 1991). Amit and Schoemaker (1993), as cited by Nyang'au, Rotich and Ngugi (2017), made the same argument and extended the definition of performance as "information-based, tangible and intangible processes that provide enhanced productivity of its resources, as well as strategic flexibility and protection for its final product or service".

In summary, the major highlights of resource based view theory are: To compete effectively, each firm seeks to acquire, control, and bundle resources with unique performance attributes; Resources are classified as tangible and intangible assets that are key inputs into the production effort and delivery of goods or services; Performance attributes are organizational routines practices and mechanisms that enable a firm to acquire and deploy unique resources to facilitate the production and delivery of goods or services; Resources that are valuable to the firm, rare , imperfectly mobile, not imitable by competitors, and not substitutable provide the firm with a sustainable competitive advantage.

When a firm controls resource that bare the attributes of resource-based view theory i.e., rare, valuable, in-imitable, on-substitutable and imperfectly mobile or simply VRINN resources, the firm gains a unique sustainable competitive advantage. When a firm creates unique supply chain networks with its suppliers and customers, resulting into connections that exclude competitors from forming the same connections with the same critical suppliers and customers for the same purpose, the firm gains a competitive advantage which benefits them immensely. These benefits should directly be credited to the performance of the firm since the connections in supply chain linkages facilitate the flow of quality materials such as raw materials into the firm and finished goods and services out of the firm (Schmenner, 2012).

In concurrence with the resource-based view of the firm thinking perspective, supply chain management practices that facilitate availability of quality materials from suppliers to a firm and from the firm to customers represent a VRINN (rare, valuable, in-imitable, imperfectly mobile and non-substitutable) resource and can create an organizational performance advantage for the firm. However, performance advantage tends to be a temporary reprieve for the firm and in order for a firm's supply chain management practices and linkages to provide a sustainable organization performance benefit, a firm must continually endeavor to protect the integrity of the VRINN resource properties of its supply chain network linkages (Morali & Searcy, 2013).

Therefore, the resource based view approach can be modelled into two perspectives as follows; In the short-run, a firm's supply chain network linkages represent a VRINN resource that provides superior but temporary performance advantages to the firm and that the extent to which a firm is able to continually protect the integrity of the VRINN resource properties in its supply chain network linkages will determine whether or not the firm will enjoy sustainable superior performance advantages from such connections with critical suppliers and customers (Cawley & Snyder, 2012). In conclusion, this theory is relevant to supply chain management practices contribution to performance as it advocates for better control of firm's resources that are VRINN. The firm can gain a sustainable competitive advantage by proper control and management of supply chain network by deploying proper supply chain management practices such as supplier relationship management and value addition management which are key resources to the success of any organization.

2.2.2 Michael Porter’s Value Chain Theory

The value chain theory of the firm (Porter, 1985; Porter, 1990; Porter, 1991; Porter, 2001) views the firm as being a collection of discrete but related production functions, if production functions are defined as activities (Chang, 2022). Drawing on the value chain theory of the firm, the study sought to determine the effect of value chain management practice on performance of tea subsector industry in Kenya. Scholars aver that the value chain theory of the firm is a relevant theory for understanding the effect of value chain management practice on firm performance (Ali, Arslan, Chowdhury, Khan, & Tarba, 2022). Extant literature posits that the value chain theory also known as Porter’s Value Chain Analysis is a business management concept that was developed by Michael Porter (Pujawan & Bah, 2022). Scholars opine that Porter (1985) described a value chain is a collection of activities that are performed by a company to create value for its customers in the book entitled competitive advantage (Chege, Ngugi, & Ngugi, 2017; Pujawan & Bah, 2022). Scholars avow that Porter (2001) explains that value creation is the added value which leads to competitive advantage and ultimately, added value also creates a higher profitability for an organization (Nyamah, Attatsi, Nyamah, & Opoku, 2022).

The value chain analysis is based on Michael Porter’s generic value chain model (Porter, 1990), developed in 1985 and used to explore Porter's model of competitive advantages through differentiation and cost leadership strategy. A value chain disaggregates a firm into its strategically relevant activities in order to understand the behavior of costs and the existing and potential sources of differentiation (Mbui, Namusonge, & Mugambi, 2016). Porter has always warned of the danger of being “stuck in the middle” (Porter, 1990). Porter’s value chain consists of a set of activities that are performed to design, produce, market, deliver and support its product (Pujawan & Bah, 2022).

Porter’s value chain theory states that chains are broken down into single activities hence allowing the firm to get a full picture of which parts of its operations create value and which ones do not create value (Das & Salwan, 2013). The main aim of Porter's value chain theory is to cut the entire complicated supply chain network of a company into smaller units. The value chain analysis works in such a manner that a product gains value as it passes through the vertical stream of production within the firm's supply chain (Thompson, Dolan, Mayer, Roll, & Yeoman, 2017). When product value is created, it exceeds the costs associated with product transformation hence generating profit (Srai, 2015). The Porter's model of competitive advantage through differentiation and cost leadership strategy was originally introduced for companies in the manufacturing industry which have a significant impact on service firms. The value chain model is segmented into primary and support activities (Pujawan & Bah, 2022).

Primary activities encompass those roles involved with a product's physical creation, sales and distribution, and after-sales service. In detail, the primary activities involves inbound logistics, operations, outbound logistics, marketing and sales, service in the core value chain creating direct value (Harrison & Wicks, 2013). Primary activities are always defined as value-added activities which are those that customers perceive as adding utility to the goods or services they purchase (Cefis & Marsili, 2006). Support activities provide the assistance necessary for primary activities. In detail, support activities involve procurement, technology development, human resource management, firm infrastructure supporting the value creation in the core value chain (Harrison & Wicks, 2013). Both the primary and support activities are not part of the closer value chain but they are included in every function of the value chain (Pujawan & Bah, 2022).

Normally most organizations do not produce all components of goods and services by themselves and have a set of incoming already-finished products. In this scenario, the firm is part of a larger supply chain network and needs to consider linkages with external activities in the supply chain management network (Garriga, 2014). Porter (1990) also identified the importance of supply chains and networks which lie outside the parent organization and are controlled by other companies (Zott & Amit, 2013). The upstream-suppliers (preceding company) provide input to a company which adds value (own company), which then down streams the products to the next company (following company) (Bechtel & Jayaram, 2016).

The target of a well-planned and organized supply chain network is to maximize value creation while minimizing costs, where all activities of a firm link efficiently and effectively together (Harrison & Wicks, 2013). The result of adding together the total value and the cost of creating value is, according to Porter (1985), the margin. The total value is referred to as the price a customer is willing to pay for a good or service. Johnson (2010) asserts that in service providing organizations, the organizational culture has an impact on creating service value as culture includes the way people perform the service and which if successfully enhanced, competitive advantages will surface and with differentiated service, it will be difficult for competitors to copy (Pujawan & Bah, 2022).

With the help of the value chain concept as one of the pillars in supply chain network management, companies can analyze and describe their source of competitive advantage (Porter, 2001). An effective value chain strategy along the supply chain network approach enables an organization to identify the core competencies necessary to compete and to produce and deliver customer value expectations and to coordinate the value addition process as goods and services move along the supply chain (David, 2011). Given the fact that tea processing management in Kenya undergoes through various value addition process both locally and internationally, it is therefore imperative to understand the practical approach of Michael Porter’s Value Chain Analysis as a basic powerful management tool of enhancing value chain management practice and performance of tea subsector industry in Kenya.

2.2.3 Supply Chain Network Theory

The supply chain network theory is one of the grand theories in this research covering all the independent and moderating variables. It is one of the theories for purchasing and supply chain management which has been introduced during the last decades (Barasa, Namusonge, & Iravo, 2015). Mainly the supply chain network theory is considered to describe the relationships in which companies, suppliers, customers or buyers are engaged. Barasa, Namusonge and Iravo (2015) assert that the theory was first introduced during the 1970s and the 1980s and developed from the focus on relationships between just two entities, or strategic alliances, towards an approach which entails multiple relationships between different counterparts throughout the supply chain.

Harland (1996), as stated by Nyang'au, Rotich and Ngugi (2017), defines the supply chain network as a specific type of relation linking a defined set of persons, objects or events. Chang, Chiang and Pai (2012) further state that the supply chain network is a complicated network model, and its specific context depends on the relationships among the network members. Moreover, supply chain networks are seen as beneficial for every company embedded through the investments and actions of the other counterparts involved in the process (Chicksand, Watson, Walker, Radnor, & Johnstone, 2012).

Furthermore, it was found that there are several underlying assumptions, as for instance that a central position of companies within a supply chain network could lead to competitive advantage, or that companies share information and knowledge with their partners (Badar, Sammidi, & Gardener, 2013). Moreover, in terms of the contribution to purchasing it can be said that the theory is applicable to the most important decision points. The theory helps with the demand planning through the simplification of the resource allocation reached through the settlement of strategic long-term partnerships (Barasa, Namusonge, & Iravo, 2015).

Moreover, companies embedded in a network have the ability to choose from a greater set of suppliers and through this can even ensure the supply of critical commodities. Furthermore, the relationships among companies are assumed to be trustworthy and thus contribute to the value addition on both sides and further simplify the decision about the selection of the supply strategy. Lastly, the supply chain network theory contributes to the fourth decision point, namely the negotiation, since companies in networks aim to engage in long-term contracts through which strong partnerships between the counterparts are designed (Chicksand *et al*., 2012).

Previous empirical research into real-world supply chain networks has recognized seemingly universal supply chain network properties (Bullmore & Sporns, 2009). These properties exhibit a short characteristic path length, a high clustering coefficient and the presence of a power law connectivity distribution (Barabasi, 2009). Hearnshaw and Wilson (2011) assert that a supply chain infrastructure can be modelled as a supply chain network by a set of "nodes" that represent autonomous and independent business units as firms which are able to exercise sovereign power choices and a set of "connections" that link these firms holding them together for the purposes of creating products and services. The existence of linkages between firms represents exchange of relationships and the underlying performance contract if present. The critical connection types in supply chain networks are the presence of contracts and various flow types such as material flows through logistics, information flows through various systems and financial flows as a result of profit incomes through firm's performance.

The supply chain network theory is descriptive in nature and has primarily been applied in supply chain management to map activities along the supply chain network, the main actors in the supply chain network and capability resources in the supply chain. The focus of supply chain network theory has been on developing long-term supply chain relationships which are trust-based between the members of the supply chain network such as buyer-supplier relationships, third party logistics provision and management roles in supply chain networks (Gunasekaran, Irani, & Papadopoulos, 2014). Supply chain management is widely saluted as a strategic tool for companies because they contribute and aid in building and maintaining a competitive advantage (Badar, Sammidi, & Gardener, 2013).

Supply chain management has become more influential because there is an increasing dependence on suppliers so as to meet firms target and objectives. The dependence nature of supply chain networks makes supply chain management practices a thumb rule for supply chain practitioners in the firm (Closs, Bolumole, & Rodammer, 2014). Tang (2006) asserts that supply chain network management should have a positive impact on the performance of the firm if properly and competently managed. Many researchers have enumerated several supply chain management strategies that can be used to spur the growth and performance of the firm through maximizing profits and minimizing costs. These include supplier relationship management, value chain management, customer relationship management, supply chain logistics management and supply chain integration into the firm's core departments and activities (McInerney, 2015).

Organizations should invest heavily on the diversification of suppliers as a strategy to handle disruptions and this leads to a wider access of supply chain base enabling firms to inject in additional supply chain production lines and quickly shifting volumes and productions in case of disruptions thus ensuring continuity of the firm's day to day activities therefore decreasing the negative impact any single player can have on the supply chain network stream (Kooi, Dutta, & Feudel, 2013). Supplier selection criteria becomes one of the most important practices in supply chain network performance and overall performance (Karjalainen & Moxham, 2013). Supplier selection is done after the firm has made a decision on either single sourcing strategy or multiple sourcing strategy.

Supplier selection strategy should be based not only on the price of acquiring goods and services but also on a wide scope of metrics such as quality, organizational parameters and capabilities with a view to getting the best returns on expenditures thus propelling organizational growth (Manuj, Omar, & Yazdanparast, 2013) .Supplier selection criteria based on quality, pricing, delivery and performance of product have significant relationship with the four elements of customer satisfaction which include -product quality, product variety, delivery service and competitive pricing thus overall performance (Calton, 2015). This explains the importance of supply chain network theory in trying to explain one of the variables which is customer relationship management and performance.

Building a collaborative supply chain network base with suppliers is the key element in supplier selection strategy. Chopra, Meindl and Kalra (2007) referred to trust, mutuality, information exchange, openness and communication as important recipes in supply chain management process. Gimenez and Sierra (2013) asserts that buyer-supplier relationships are becoming more popular in supply chain network because of their ability to reduce fraction and uncertainty thus ensuring performance. Wahl and Bull (2014) assert that long-run collaborative relationships with key suppliers contribute immensely to firm's performance.

Chopra, Meindl and Kalra (2007) states that a supply chain contract specifies what governs the buyer-supplier relationship as it guides the behavior and performance of all the parties in the supply chain network. In addition to volume or capacity, lead time, price and liabilities, penalties are part of the contracts which keep both parties on their toes to ensure supply chain network performance and hence overall organizations performance. Supply chain contracts are structured in such a manner to increase profitability, reduce risks by giving accurate information and enhance flexibility of operations without any hitch (Murray, 2013). Dekker, Sakaguchi and Kawai (2013) also stated that well-specified supply chain management contracts might promote more cooperation between supply chain members, long-term relationships and trusting information's exchange relationships. Well-specified supply chain management contracts also play a critical role in supply chain risk management transfer such as transferring the risks to third party service providers like logistics and storage thus removing the burden of financial loss from the organization in case of any risk eventuality hence ensuring company incomes and profits stay intact.

Dekker, Sakaguchi and Kawai (2013) also argue that contracts and relationships are complementary since using structured supply chain management contractual mechanisms, organizations can improve and coordinate better with suppliers and secure a variety of supply chain options. Williams *et al*., (2008) assert that suppliers are vital to the success of a firm, in terms of their reliability in provision of contractual agreements, availability and on the competitive edge of supplying the final product to the end user. Supplier selection criteria, diversification of suppliers, supplier partnership and alliance, supply chain contract agreement, value chain management along the supply chain, supply chain logistics management, information's sharing along the supply chain and supply chain integration are some of the strategies used as supply chain management practices which if competently administered have got the potential of propelling the firm to a competitive advantage thus ensuring performance. Hence this theory covers all the variables under study in this research.

2.2.4 Supply Chain Integration Theory

This theory instigates the moderator variable which was to determine the moderating effect of supply chain integration on supply chain management practices and performance of tea subsector industry in Kenya. Supply chain integration theory

(SCI) is, to a great extent, concerned with the development of more integrated approaches that hold out the prospect of eliminating many of the inefficiencies directly attributable to supply chain fragmentation. The integrative philosophy of supply chain integration theory (SCI) involves internal, supplier and customer integration. Integration in this context refers to the extent to which various supply chain activities and processes work together in a seamless manner as possible (Hsu, Tan, & Zailani, 2016). It has long been recognized that traditionally managed businesses and supply chains, often characterized by high levels of fragmentation, have failed to achieve their true potential in terms of profitably meeting customer expectations (Gimenez & Sierra, 2013).

The internal integration aims to eliminate traditional functional silos and integrate the functional departments of a company into a single entity in order to meet the requirements of customers at the lowest system-wide cost (Flynn, Huo, & Zhao, 2013). Brown (1983), as cited by Barasa, Namusonge and Iravo (2015), suggested that inter-functional integration should be based on the theory of interdependence, whereby the relations between two working units are described as individual or collection activities and behavior of individuals or of a group. The internal integration can be optimal when the complementary cross-functional teams of a firm, including procurement, production, logistics, marketing, sales and distribution, act as a whole to coordinate the information flow, share resources and work as a team to achieve a mutual organizational goal (Carneiro, 2015). The internal integration can be operative or functional integration (Bechtel & Jayaram, 2016). Supply Chain Integration should not just focus on a single entity and it should look at various sub-systems, activities, relationships and operations hence it requires all the nodes in the network, whether inside or outside the firm, to communicate, exchange and share detailed and current information (Chang, Chiang, & Pai, 2012).

Kumar (2013) asserts that supply chain integration links an organization with its customers, suppliers and other channel members by integrating their relationships, activities functions, processes and locations thus providing a breeding ground for firm’s competitive advantage and performance. Sharif, Alshawi, Kamal, Eldabi and Mazhar (2014) asserts that successful supply chain management practices require the cross-functional integration of key business processes within the firm and across the supply chain networks of organizations that consist of the supply chain. Organizations must integrate their daily operations with trading partners in order to have a sustainable competitive advantage for the whole supply chain network (De Sousa & Fairise 2014).

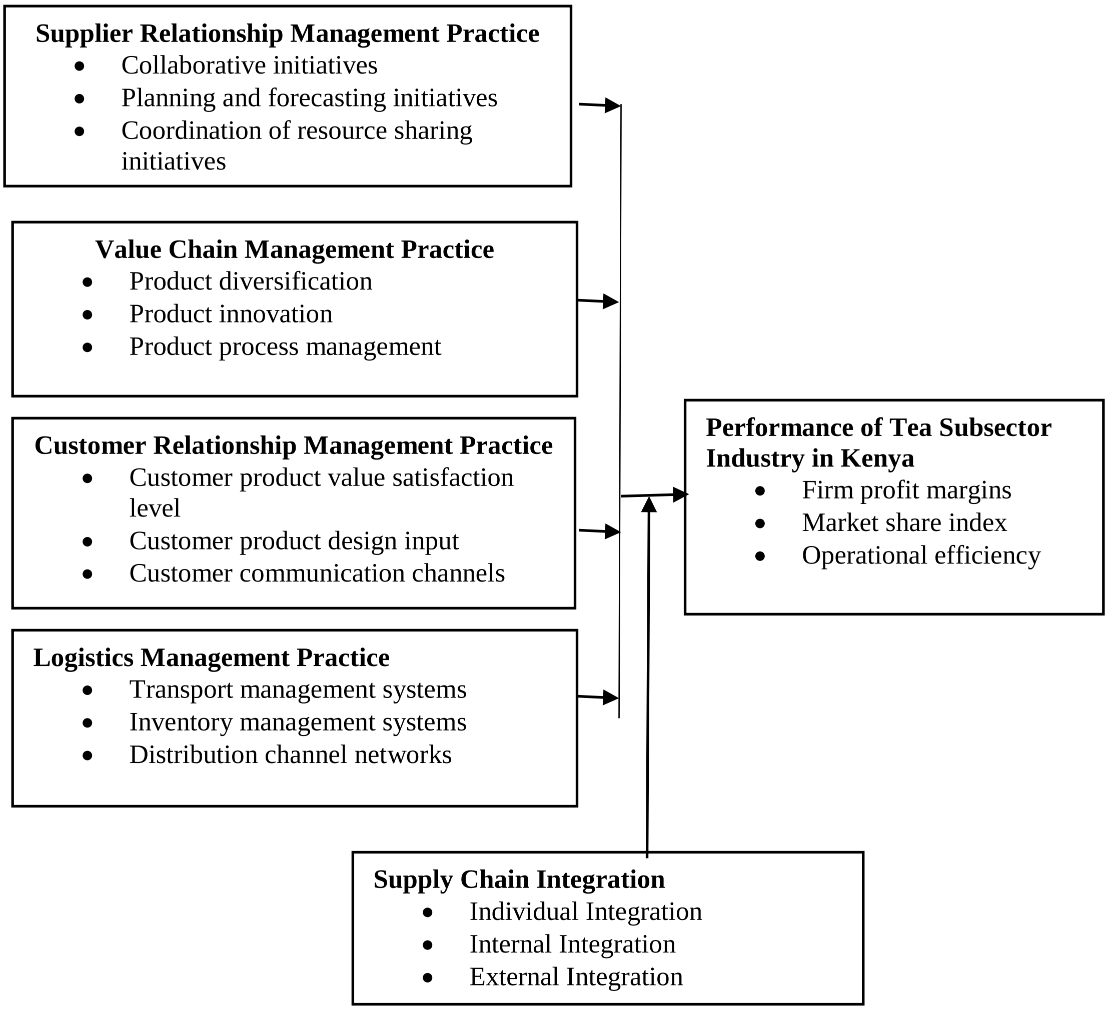
Power (2005) asserts that integration involves the cooperation among supply chain players, collaboration with supply chain partners, information sharing systems along the supply chain network, mutual trust in supply chains, partnerships and alliances, technology deployment and a fundamental shift away from managing individual functional processes to managing integrated supply chains of processes. Kwon and Suh (2004), as stated by Barasa, Namusonge, and Iravo (2015), consider supply chain integration as a strategic tool that aims to reduce supply chain costs and thus increasing customer and shareholder value. Supply chain integration is a good approach for improving business process performance in a highly competitive market (Wu, Huatuco, Frizelle, & Smart, 2013). Bandaly, Shanker, Kahyaoglu and Satir (2013) assert that the highest levels of integration with both suppliers and customers have the highest correlation to an organization's performance.

The main challenge experienced in supply chain integration is the ability to coordinate activities across the supply chain network so that the enterprise can improve performance by reducing costs, increasing service levels, reducing the bullwhip effect, better utilization of resources and effectively responding to changes in the market place (Simchi-Levi, Kaminsky, & Simchi-Levi, 2009). Chopra and Meindl (2015) argues that supply chain coordination is experienced when all the different levels of supply chain work toward the objective of maximizing total supply chain profitability rather than each stage devoting itself to its own profitability.

2.3 Conceptual Framework

A conceptual framework is a graphical representation of the theorized interrelationships of the variables of a study Kothari and Gang (2014). The conceptualization of variables in any academic study is important because it forms the basis for testing hypotheses and coming up with generalizations in the findings of the study (Sekaran, 2015). The independent variables of this study included supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice. Supply chain integration represented moderating variable while the performance of tea subsector industry in Kenya represented the dependent variable. The conceptual framework further explained the sub variables tested in each variable which were the measures that were tested.

Figure 2.1 presents the conceptual framework for the study.



Independent Variable Moderating Variable Dependent Variable

Figure 2.1: Conceptual Framework

2.4. Review of Literature on Study Variables

2.4.1 Supplier Relationship Management Practice

Supplier Relationship Management refers to the discipline that an organization embraces while strategically planning and managing all interactions with organizations that supply goods and services in order to maximize the value of those interactions. It involves the aspect of information sharing, supplier development, collaborative initiatives, supplier performance and supplier selection criteria (Dianah & Joseph, 2012). Strategic supplier partnership refers to a long-term relationship between the firm and its suppliers since it is designed to leverage the strategic and operational capabilities of individual participating companies to help them achieve significant emphasized benefits (Li, Ragu-Nathan, & Subba, 2012). A strategic partnership is centered on direct, long-term association and encourages mutual planning and problem-solving efforts and enables companies to work more effectively with a few critical suppliers who are willing to share responsibility for the success of the product. Suppliers participating early in the product-design process can offer more cost-effective design choices, help select the best components and technologies and help in design assessment (Dianah & Joseph, 2012).

Collaborative approaches have been shown to deliver a wide range of benefits which enhance competitiveness and performance in terms of better cost management, improved delivery time, improved resource management, improved risk management and delivering incremental business value and innovation (Lysons & Farrington, 2012). Competitive supply chains should be able to integrate supply and demand through collaboration in order to deliver significantly improved performance (Barratt, 2004). Organizations that have incorporated supply chain collaboration among their chain member realizes improved forecast, more accurate and timely information, reduced costs, reduced inventory and improved customer service in their business operations (Simatupang & Sridharan, 2005).

Collaborative supply chain initiatives continue to be developed and are gaining prominence based on the assumption that closer inter-enterprise relationships and enhanced information exchange will improve the quality of decision-making and hence improve supply chain performance in an organization (Ahmed & Ullah, 2012). Vertical collaboration enables the suppliers to quickly respond to customer expectations, good product innovations and anticipate customer needs (Albino, Dangelico, & Pontrandolfo, 2012). Derocher and Kilpatrick (2013) affirmed that a strong relationship increases the likelihood for organization to exchange critical information as required to collaboratively plan and implement new supply chain strategies.

Simatupang and Sridharan (2015) argues that effective collaboration requires mutual objectives, integrated policies, appropriate performance measures, a decision domain, information sharing, and incentive alignment. Ryu, SoonHu and Koo (2016) asserts that when companies collaborate, they create access to their information, knowledge and assets to their partners. Sharing of information, decision synchronization and incentive alignment aid the members to maximize their market share, minimize running costs and ensure reliable and timely delivery of products to customers (Sandberg, 2017).

Supply chain relationships can help in the coordination of the entire supply chain. Chopra and Meindl (2015) assert that supply chain coordination results when all the different stages of supply chain network put their effort towards the objective of maximizing total supply chain profitability rather than each stage devoting itself to its own profitability. Integration of key business processes in a supply chain is best achieved through coordination and collaboration of business partners (Christopher, 2015). Collaborative relationships are multi- dimensional and might involve parties including external partners or alliances, suppliers and customers who work together. Handfield and Nichols (2013) argue that without a foundation of effective supply chain relationships, any effort taken to manage the flow of information or materials in a supply chain is likely to be unsuccessful.

Supply chain relationships can be understood as a form of co-operative inter-organizational relationships, which are socially contrived mechanisms for collective action. Supply chain relationships occurs when firms in the network set common goals and work jointly to achieve the overall supply chain performance and value to the customer through resources and information exchange between the supply chain network partners. Stank *et al*. (2014) proposes that supply chain relationships and collaborations are the construct of coordination, participation and joint problem solving between supply chain partners. In order for the sharing of critical information to materialize, a high degree of trust must exist among the collaborating partners (Frankel *et al*., 2015).

Demand forecasting and having the right demand forecasting systems play in the overall profitability of businesses (Albino *et al*., 2012). Demand forecasting forms an essential component of the supply chain process. It's the driver for almost all supply chain related decisions. While demand forecasting is undeniably important, it's also one of the most difficult aspects of supply chain planning (Badar, Sammidi, & Gardener, 2013). Demand is often volatile making demand forecasting both an art and a science. Demand forecasting is defined as the process by which the historical sales data are used to develop an estimate of the expected forecast of customer demand. Demand forecasting provides an estimate of the goods and services that customers will purchase in the foreseeable future. Demand forecasting facilitates critical business activities like budgeting, financial planning, sales and marketing plans, raw material planning, production planning, risk assessment and formulating mitigation plans (Bechtel & Jayaram, 2016).

Trust has been identified as one of the most recognized social norms for managing and coordinating inter-organizational exchange (Jap, 2017). Kwon and Suh (2015) opined that it is difficult to imagine a serious business commitment without trust. Success of supply chain relationships and collaboration has been equated with the ability and readiness of managers to create trust and build long-term relationships among supply chain network partners (Panayides & Venus-Lun, 2013). Supply chain relationships require trust and commitment for long-term cooperation along with a willingness to share risks (Brockhaus, Kersten, & Knemeyer, 2013).

2.4.2 Value Chain Management Practice

Process management in value chain is defined as all the efforts an organization puts in place in order to analyze and continually improve fundamental activities such as manufacturing, marketing, communications and other major elements of firm's operations (Peter *et al*., 2011).A business process is defined as a complete and dynamically coordinated set of activities or logically related tasks that must be performed to deliver value to customers or to fulfill other strategic goals of the organization (Strnadl, 2012). The changing economic operational environment has led to an increased interest in improving organizational business processes in order to enhance performance in terms of value processing (McCormack *et al*., 2009).

An effective value chain management strategy approach makes an organization to identify the core competencies necessary to compete, produce and deliver customer value expectations thus these needs coordinating the whole value production process (David, 2011). Peter *et al*. (2010) asserts that value surrounds the movement of resources through the transaction process. Murray (2013) argues that a value chain stream map takes into account not only the activity of the product, but also the management and information systems that support the basic process of manufacturing the product as well as alignment of People, Process, and Products that are essential for long-term success.

Product diversification has proved to be the growth engine for markets in terms of market size, and consumer mix all over the world (Beamon, 2013). Product diversification simply refers to the several product lines which are developed for same markets and customers which ultimately increase revenues to the business (Richard, Devinney, Yip, & Johnson, 2015). Baus and Pils (2009) stated that "Unless a new major crop is introduced in the area, efforts in diversification will most likely be at individual level, based on quick diffusion of innovations. Small-scale farmers" lack the resources and marketing expertise in the vertical dimension of diversification in value addition which will be dominated by established actors. Vertical diversification will gain more and more meaning in the post-coffee society as a form of value addition which will lead to increased sales and profit margins".

Innovations, more so technological innovation is one of the key aspects of a learning organization that attempts to continuously align itself to economic development and continuously address the competitive environment in which it operates. This way the organization aims at coming up with new ideas backed with modern technological advancements (Closs, Bolumole, & Rodammer, 2014). Many organizations in the world today have created centers of excellence whose main purpose is to collect new ideas both from the internal and external environment, while continuously focusing on its core business mandate (Charles, 2012). For example, in Kenya, Equity Bank has a center of excellence headed by people with different skills and talents as think-tanks to drive change and growth in the bank. This has greatly helped the bank to grow in technology which is relevant and able to timely address the needs of its target customers.

When technical innovation is given the attention it requires, it becomes the growth engine of a business and in most cases, it is able to be aligned with the Enterprise Resource Planning (ERP) of that business (Carneiro, 2015). Therefore, it is assumed that successful innovation depends upon the ability to provide added value through a relevant customer experience. The customer experience represents all of the outcomes necessary for customers to feel the desired effects of innovation. In a mass market, the total market is segmented into similar groups of customers and their relevant experiences (Freeman, 2010).

While value creation is the ultimate goal of the firm, sustainable value creation requires that value is created for everyone involved: the customer, the service provider, the supplier and all the stakeholders (Theuri, Mugambi, & Namusonge, 2014). In the frameworks under consideration, all imply that service innovations require all stakeholders to gain over the long-term for the interrelationships to be sustainable. However, the customer tends to be the initial focal point for driving value (Johnson, 2010). Keller and Cappelli (2014) states that many industries have the geographic distribution of work changing significantly. For instance, service providers such as utility companies or banking or investment companies have their bill payment centers located far from some people, as a result firms have found that they can overcome this challenge and make their services accessible to users through technology.

Mobile phones for instance have been the best source of technology where customers can transact without having to be physically present in the service companies. Furthermore, such arrangements can take advantage of the time differences so that critical projects can be worked on nearly around the clock. Technology provides the opportunity to fasten service provision to customers which has helped in avoiding people joining large queues just to pay for their utilities or to get other services. For instance, Kenya Revenue Authority initiative of the online PIN (personal identification number) registration assisted in registering so many people who never had their personal identification numbers just because they “feared” the long queues in the KRA towers (Chege, Ngugi, & Ngugi, 2017).

2.4.3 Customer Relationship Management Practice

Customer Relationship Management (CRM) refers to an effort to maintain a life time quality relationship with all customers for mutual benefit since the customer is the only source of income in a supply chain network. It also involves business strategy, people, processes, performances (Dekker, Sakaguchi, & Kawai, 2013). The underlying factors of customer relationship management are the integration of distinctive competences, resources and capabilities (Dekker, Sakaguchi, & Kawai, 2013). Validity and fame of an organization in producing goods with proper and actual quality and advertisement of whatever exists, the proper contact of employers with customers, and customer assumptions can be effective in customer attraction (Chopra & Meindl, 2015).

Customer satisfaction is a term frequently used in supply chain management. It is a measure of how products and services supplied by a company meet or surpass customer expectation (Cardy & Munjal, 2016). Customer satisfaction is defined as "the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals (Das & Salwan, 2013). It is seen as a key performance indicator within business and is often part of a balanced scorecard. In a competitive marketplace where businesses compete for customers, customer satisfaction is seen as a key differentiator and increasingly has become a key element of supply chain business strategy. A customer's expectations about a product tell us how he or she anticipates how that product will perform.

Namusonge *et al*. (2017) assert that consumers may have various "types" of expectations when forming opinions about a product's anticipated performance. For example, four types of expectations are identified by Beamon (2013): ideal, expected, minimum tolerable, and desirable. While, Calton (2015) indicated that among expectations, the ones that are about the costs, the product nature, the efforts in obtaining benefits and lastly expectations of social values are key in customer satisfaction. Perceived product performance is considered as an important construct due to its ability to allow making comparisons with the expectations. It is considered that customers judge products on a limited set of norms and attributes.

Keller and Cappelli (2014) designed their researches as to manipulate actual product performance, and their aim was to find out how perceived performance ratings were influenced by expectations. These studies took out the discussions about explaining the differences between expectations and perceived performance. Regner (2015) has been able to establish that customer satisfaction has a strong emotional and affective component. Still others show that the cognitive and affective components of customer satisfaction reciprocally influence each other over time to determine overall satisfaction (Ghosh, 2017). Especially for durable goods that are consumed over time, there is value to taking a dynamic perspective on customer satisfaction. Within a dynamic perspective, customer satisfaction can evolve over time as customers repeatedly use a product or interact with a service. The satisfaction experienced with each interaction (transactional satisfaction) can influence the overall, cumulative satisfaction (Mckinsey, 2013). Schmenner (2012) showed that it is not just overall customer satisfaction, but also customer loyalty that evolves over time.

Organizations need to retain existing customers while targeting non-customers. Measuring customer satisfaction provides an indication of how successful the organization is at providing products and/or services to the marketplace (Cravens & Piercy, 2009). Customer satisfaction is measured at the individual level, but it is almost always reported at an aggregate level. It can be, and often is, measured along various dimensions (Wolf, 2014). A hotel, for example, might ask customers to rate their experience with its front desk and check-in service, with the room, with the amenities in the room, with the restaurants, and so on. Additionally, in a holistic sense, the hotel might ask about overall satisfaction 'with customers stay.

As research on consumption experiences grows, evidence suggests that consumers purchase goods and services for a combination of two types of benefits: hedonic and utilitarian (Kumar, 2013). Hedonic benefits are associated with the sensory and experiential attributes of the product (Kazi, 2012). Utilitarian benefits of a product are associated with the more instrumental and functional attributes of the product (Morali & Searcy, 2013). Customer satisfaction is an ambiguous and abstract concept and the actual manifestation of the state of satisfaction will vary from person to person and product/service to product/service. The state of satisfaction depends on a number of both psychological and physical variables which correlate with satisfaction behaviors such as return and recommend rate (Namusonge, Mukulu, & Iravo, 2017). The level of satisfaction can also vary depending on other options the customer may have and other products against which the customer can compare the organization's products.

Design inputs are the king of supply chain product development. If a product that is in the market has issues, odds are the issue can be traced back to the design inputs defined during product development (Harrison & Wicks, 2013). Design inputs are the foundation of supply chain products, and the firm’s product is only as effective as the inputs used to create it. Well established design inputs can make the rest of supply chain product development easier as a result (Albino, Dangelico, & Pontrandolfo, 2012). Once the organization has defined design inputs, it’s ready to engage in core development. In supply chain, this is one of the most enjoyable aspects of product development.

Core development is the stage in which the firm will be creating device prototypes and bench testing them (Lundqvist, Liu, & Lundberg, 2015). This process leads to establishing design outputs, which define the supply chain product components and how it will be received by the customer. Each product or service developed by an organization, and every change made to those products and services, is done for the purpose of attracting more consumers.

Whether it’s a brand-new product or a new feature added to an existing product, it is all done for the sole purpose of meeting consumers’ needs so that businesses can draw more sales (Bechtel & Jayaram, 2016). Therefore, if all of organization’s product development is done with the end goal of satisfying consumers, then the organization target demographic should be involved in the product development process. Too many businesses develop their products in a sort of vacuum, with no input from the very people they’re creating the products for (Lambert, 2011). It’s not until the product is launched that they learn what they’ve created is not something people want.

The best way firms can avoid making this mistake is to gather input from consumers through every stage of product development (Jap, 2017). Successful businesses like

Unilever, the company behind big haircare products like Suave, use consumer insights to generate ideas for new products and marketing techniques all the time (Carneiro, 2015). In fact, it’s one of the techniques that has made them so successful. By constantly gathering input from consumers, firms will be able to identify pain points, learn how to better communicate with their target audience, and use the information they share to lead to breakthrough ideas in their business.

In any supply chain business, communication is essential. It serves as a point of connection that enables information to be easily exchanged between company and the clients (Bullmore & Sporns, 2009). So, ensuring that customers can easily access the firm is imperative. Firm’s need to offer various channels through which consumers can communicate with them, such as social media, phone, email, chat, and text (Mckinsey, 2013). These networks offer clients comfort and reassurance in knowing that the company can meet them when and where they want to talk. Open channels diminish the barrier between company and customer, enabling clients to feel more connected to firm’s brand (Cravens & Piercy, 2009).

Communication channels are tools used by companies to establish a relationship and communicate with their audience. They enhance the experience between the customer and the brand, boosting relationship marketing, generating recognition for the company and impacting sales. It’s through them that firms can: Present a new product or service to their customers; Keep people informed about everything regarding their area of operation; Answer their audience’s questions and reply to their comments; Share material that can bring their audience closer to their brand.

Therefore, when firms are choosing the channels to be used, they should choose the one in which it’s possible to provide information that adds value to their audience by helping them and offering solutions. Firms should get to know their consumers’ pains, doubts, desires, and goals (Inayat, 2012). This way, firms will be able to create useful content to establish a relationship with clients. Communication channels help firms to build and establish their brand with their consumers by increasing sales and contributing to helping organizations understand their audience’s behavior (Franken, 2014). They create a bridge between the firm and their audience. Therefore, knowing what they are and how to work with each channel is as essential as choosing their persona, because this will be the foundation for firm's digital marketing strategy.

There is no specific channel that will bring a firm greater and bigger results. It will all depend on the firm's business and their customers' profile (Bechtel & Jayaram, 2016). But since there are several communication channels, it's recommended that a firm should have more than one channel. This way, their audience will have more than one customer service option and the firm will have more opportunities to strengthen relationship with customers. Ideally, a firm should choose a form of communication that's related to company's culture and that is able to easily and adequately dialog on each channel.

Successful customer relationship management is based on keeping interaction by listening to the customer, maintaining the efforts to offer goods and services based on customer values and paying attention to the continuous changes of customers' needs as they differ from each other in all aspects of life (Oyedijo, 2012). The important process of customer relationship management includes proactive customer business development and building partnership relationship with most important customers. This leads to superior mutual value creation with the customer. Customer relationship management comprises the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers and improving customer satisfaction (Schmenner, 2012).

It is a comprehensive strategy and process of acquiring, retaining and partnering with selective customers to create superior value for the company and the customer through the integration of marketing, sales, customer service and the supply-chain functions of the organization to achieve greater efficiencies and effectiveness in delivering customer value (Dianah & Joseph, 2012). Ali (2008) considered customer relationship management as the core business strategy that integrates internal processes and functions, and external networks, to create and deliver value to targeted customers at a profit. In order to realize this, the organization must identify customers' requirements and then provide the right combinations of transportation, storage, packaging and information services (Harrison & Wicks, 2013).

Proper management of customer service would lead to customer satisfaction which in turn will result in repeat purchases and later enhance the firm's performance with regards to total sales volumes. The ability to generate higher levels of customer satisfaction is regarded as an important differentiator and has therefore become a key element of many firms' business strategies. Furthermore, increasing and maintaining high levels of customer satisfaction enhances customer loyalty and serves as a safeguard against increasing price competition and the commoditization of products (Ibrahim & Hamid, 2012). The general consensus is that higher customer satisfaction leads to higher levels of repurchase intent, customer advocacy, and customer retention (Das & Salwan, 2013). In turn, higher satisfaction and loyalty leads to improved revenue, profitability, and cash flows (Dekker, Sakaguchi, & Kawai, 2013). Improved revenue, profitability and cash flows are some of the parameters that can be used to measure performance.

2.4.4 Logistics Management Practice

Logistics management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flows and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements. Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply/demand planning, and management of third-party logistics services providers (David, 2011). Tilokavichaian and Sophatsathit (2011) assert that effective logistics management provides the right product in the right place at the right time hence the reason why it has received much attention over the past decade from practitioners and governments as it improves overall performance.

Supply chain logistics is that part of a firm's resources including all assets, competencies, organizational processes, firm attributes, information and knowledge which allow the firm to conceive and implement strategies that improve efficiency and effectiveness (Namusonge, Mukulu, & Iravo, 2017). Logistics management has been widely studied and measurement scales have been developed to link logistics management with competitive advantage and superior performance (Zhao, 2001). These studies found that logistics activities affect performance with regards to revenue enhancement as well as cost reduction. The use of logistics management as a means to create differentiation was also investigated. These researchers found that logistics management makes a major contribution to corporate strategy and performance and sometimes provides competitive advantage (Marta *et al*., 2013). The role of the logistics system is a critical part of the firm's success in time and quality-based competition.

Transport management system is the planning, controlling and decision making on operational area of logistics that geographically moves and positions inventory (Gimenez & Sierra, 2013). Because of its fundamental importance and visible cost, transportation has traditionally received considerable managerial attention and almost all enterprises, big and small, have managers responsible for transportation (Mentzer *et al*., 2014). Transportation occupies one-third to two thirds of the amount in the logistics costs provision hence transport management influences the performance of logistics system immensely (David, 2011). Transporting is required in the whole production procedures, from manufacturing to delivery of the final product to consumers and reverse logistics. Only a good management system and coordination between each component in the transport management system would bring the benefits of logistics to a maximum.

A good transport management in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality on firms (Cawley & Snyder, 2012). Obviously, a product has more value at a retail store than it has in a firm's warehouse, because in the retail store it is available for sale (Murray, 2013). At the store it could generate revenue, while in the warehouse it is simply sitting there waiting to be moved. This is where transportation adds value to goods. Whether the good is moved from the manufacturer to the warehouse and then to a retail store, straight from the manufacturer to the retail store, or simply from one warehouse to the next, the product becomes more valuable to the company as it moves closer to the end user (Schmenner, 2012).

From the logistical system point of view, three factors are fundamental to transportation performance: cost, speed, and consistency (Brockhaus, Kersten, & Knemeyer, 2013). The cost of transport is the payment for shipment between two geographical locations and the expenses related to maintaining on-transit inventory. Logistical systems utilize transportation systems that minimize total system cost (Ali, 2008). Namusonge *et al*. (2017) assert that speed of transportation is the time required to complete a specific movement. Speed and cost of transportation are related in two ways. First, transport firms capable of offering faster delivery typically charge higher rates for their services. Second, the faster the transportation service is, the shorter the time interval during which inventory are on transit and the higher the charges (Namusonge *et al*., 2017). Thus, a critical aspect of selecting the most desirable method of transportation to a firm is to balance speed and cost of service.

Transportation consistency refers to variations in time required to perform a specific movement over a number of shipments. Consistency reflects the dependability of transportation. For years, logistics managers have identified consistency as the most important attribute of quality transportation (Cravens & Piercy, 2009). When transportation lack consistency, inventory safety stocks are required to protect against service failure, impacting both the sellers and buyers overall inventory commitment. With the advent of advanced information technology to control and report shipment status, logistics managers have begun to seek faster movement while maintaining consistency. Speed and consistency combine to create the quality aspect of transportation (Ahmed & Ullah, 2012).

In designing a logistical system, a delicate balance has to be maintained between transportation cost and service quality. In some circumstances low-cost, slow transportation is satisfactory while in other situations, faster service is essential to achieving operating goals (Nyang'au, Rotich, & Ngugi, 2017). Finding and managing the desired transportation mix across the supply chain network is a primary responsibility of logistics management. Transport management efficiency is therefore dependent on how much value a firm is able to gain based on how much they are able or willing to spend on transportation. Lastly it is transport management that makes firm’s goods and products move with lower cost, speed and consistency and provides timely and effective delivery of firm products.

The inventory of company includes its raw materials; work in process; supplies used in operations as well as finished goods (McInerney, 2015). Managing an inventory is aimed at satisfying customer requirement while minimizing total operational cost in a firm. Ellinger *et al*. (2012) defines inventory management as an approach to manage the product flow in a supply chain, to achieve the required service level at an acceptable cost. Inventory management basically implies controlling the business stock or controlling the flow of goods and services as per their demand. Controlling inventory is need of the hour as it formulates the business success/failure as competition is intense, growing day by-day. Knowledge about inventory management to academics and managers is vital for reducing costs, enhancing product quality, service enhancement, improving competitive ability and operational flexibility through pull systems (Swami & Shah, 2013).

For proper inventory management, services of middlemen or intermediaries are required which is often known as supply chain management. Supply chain in simple words means sequence of partners/members/intermediaries engaged or involved to supply and manage the flow of manufactured products to the ultimate customers (Githii, Kimani, & Kagira, 2012). These partners/ members/intermediaries are known as channel functionaries encompassing suppliers, manufacturers, wholesalers, retailers and the ultimate customers. These members collaborate and work together by forming a network chain to ensure the goods are moved to the markets (customers) known as supply chain. Supply chain is often known as all the parties/ channel members involved in satisfying the end customers (Charles, 2012).

In lean supply chain thinking, inventory is regarded as one of the seven "wastes" and, therefore, it is considered as something to be reduced as much as possible (Chopra & Meindl, 2015). Similarly, in agile supply chains, inventory is held at few echelons, if at all with goods passing through supply chains quickly so that companies can respond rapidly to exploit changes in market demand (Cardy & Munjal, 2016). There have been various supply chain taxonomies based on these concepts and most stress the need for inventory reduction within each of the classifications. For example, Volberda and Karali (2015) state that a lean supply chain "generates high (inventory) turns and minimizes inventory throughout the chain" in an agile supply chain companies "make in response to customer demand"

and in a hybrid supply chain companies "postpone product differentiation and minimize functional components inventory". There is thus an emphasis on inventory reduction in each of these supply chain classifications. Whilst inventories provide some security against fluctuations in the level of customer demand, there is concern that they may reduce the ability of supply chains to respond to changes in the nature of that demand. Inventories in international supply chains may, therefore, act as a buffer against one risk whilst increasing another type of risk (Krishnapriya & Rupashree, 2014).

A distribution channel is the path by which all goods and services must travel to arrive at the intended consumer (Das & Salwan, 2013). Conversely, it also describes the pathway payments make from the end consumer to the original vendor (Charles, 2012). In a supply chain, a distribution network is an interconnected group of storage facilities and transportation systems that receive inventories of goods and then deliver them to customers (Carneiro, 2015). It is an intermediate point to get products from the manufacturer to the end customer, either directly or through a retail network. A fast and reliable distribution network is essential in today's instant gratification society of consumers.

The supply chain for goods can involve a far-reaching distribution network depending on the product and where the end customers are located (Franken, 2014). A manufacturer may have a distribution network to serve wholesalers, who in turn have their own network to ship to distribution networks operated by retailers, who at the last link of the supply chain would sell the goods in their retail stores. Alternatively, a simplified supply chain could involve a manufacturer shipping finished products to its distribution network and then directly to end consumers (Nyaberi & Mwangangi, 2014).

Location (proximity to the customer) and infrastructure quality are important attributes of a distribution network. Additionally, the storage, handling and transportation functions at a distribution site are set up to suit the particular needs of the company to serve its customer base in a geographic area (Kazi, 2012). There can be a high level of sophistication at a single site and by extension, the entire distribution network to optimally process order flow of finished goods, whether a handful of large items such as farm tractors or thousands of goods for a retail chain. For the entire distribution network, a company must plan out needs for equipment, workers, information technology systems and transportation fleets. The company must determine whether a hub-and-spoke distribution network is right for its business or a decentralized network (Calton, 2015).

Establishing an effective distribution network requires a studied approach because it is increasingly considered a critical asset in this new age of e-commerce (Gimenez & Sierra, 2013). Walmart, for example, with 147 distribution facilities at the end of its fiscal year 2017, is still allocating more capital to build out additional fulfillment centers for its distribution network as it evolves with the competitive demands of the market (Mckinsey, 2013). Amazon has also increased its distribution network, building out enormous robotically controlled warehouses across the world and operating its own freight trucking fleets and cargo planes (Mckinsey, 2013). Amazon has even discussed using autonomous drones to deliver goods to customers, which would be an innovation in the distribution of goods (Mckinsey, 2013).

Distribution channels can be short or long, and depend on the amount of intermediaries required to deliver a product or service (Lysons & Farrington, 2012). Goods and services sometimes make their way to consumers through multiple channels which involves a combination of short and long channels. Increasing the number of ways, a consumer is able to find a good can increase sales. But it can also create a complex system that sometimes makes distribution management difficult. Longer distribution channels can also mean less profit each intermediary charges a manufacturer for its service. Channels are broken into two different forms i.e., direct and indirect (McInerney, 2015). A direct channel allows the consumer to make purchases from the manufacturer while an indirect channel allows the consumer to buy the good from a wholesaler or retailer (McInerney, 2015). Indirect channels are typical for goods that are sold in traditional brick-and-mortar stores.

Generally, if there are more intermediaries involved in the distribution channel, the price for a good may increase (Luo & Child, 2015). Conversely, a direct or short channel may mean lower costs for consumers because they are buying directly from the manufacturer. While a distribution channel may seem endless at times, there are three main types of channels, all of which include the combination of a producer, wholesaler, retailer, and end consumer (Stank *et al*., 2015). The first channel is the longest because it includes all four: producer, wholesaler, retailer, and consumer (Stank *et al*., 2015). The wine and adult beverage industry is a perfect example of this long distribution channel. In this industry, thanks to laws born out of prohibition, a winery cannot sell directly to a retailer. It operates in the three-tier system, meaning the law requires the winery to first sell its product to a wholesaler who then sells to a retailer. The retailer then sells the product to the end consumer (Stank *et al*., 2015).

The second channel cuts out the wholesaler whereby the producer sells directly to a retailer who sells the product to the end consumer (Stank *et al*., 2015). This means the second channel contains only one intermediary. Dell, for example, is large enough to sell its products directly to reputable retailers such as Best Buy (Stank *et al*., 2015). The third and final channel is a direct-to-consumer model where the producer sells its product directly to the end consumer (Stank *et al*., 2015). Amazon, which uses its own platform to sell Kindles to its customers, is an example of a direct model. This is the shortest distribution channel possible, cutting out both the wholesaler and the retailer (Stank *et al*., 2015).

Not all distribution channels work for all products, so it's important for companies to choose the right one (Kooi *et al*., 2013). The channel should align with the firm's overall mission and strategic vision including its sales goals. The method of distribution should add value to the consumer (Kooi *et al*., 2013). Do consumers want to speak to a salesperson? Will they want to handle the product before they make a purchase? Or do they want to purchase it online with no hassles? Answering these questions can help companies determine which channel they choose (Kooi *et al*., 2013). Secondly, the company should consider how quickly it wants its product(s) to reach the buyer. Certain products are best served by a direct distribution channel such as meat or produce, while others may benefit from an indirect channel. If a company chooses multiple distribution channels, such as selling products online and through a retailer, the channels should not conflict with one another. Companies should strategize so one channel doesn't overpower the other (Keller & Cappelli, 2014).

The success of supply chain management is dependent on adopters developing specific logistics management capabilities (Mentzer *et al*., 2014) including designing flexible organization, developing a trusting relationship with its suppliers, seeking total supply chain collaboration, enhancing communication to reduce uncertainty and inventory levels, outsource non-core competencies, implement build-to-order manufacturing, reduce inventory and reduce costs. The alignment of supply chain strategy, inventory management and product characteristics are extremely important for the successful operations of a company (Namusonge *et al*., 2017).

2.4.5 Supply Chain Integration

Supply chain integration is the extent by which a firm strategically collaborates with its supply chain partners and collaboratively manages intra- and inter-organizational processes (Flynn, Huo, & Zhao, 2013). The definition of integration has gone through various modifications owing to research in different perspectives. An increase in the level of supply chain integration management will provide rapid access to required source of information, more sensitivity towards the needs of customers and enabling faster response, timely creating a competitive edge among competitors (Sharma, Giri, & Rai, 2013). Leach (2013) suggested that well-integrated supply chains create value for the shareholders by decreasing costs and increasing market share. Given the importance of supply chain integration, prior studies have examined a variety of topics to understand the composition of supply chain integration management along with the factors that facilitate it, and the consequences of achieving it.

Specifically, the integration activities can be dealt either through forward mechanism which is from a supplier to a buying firm or through backward system going from a customer to a buying firm (Chopra & Meindl, 2015). Kim (2013) recognized the role of participants in dealing with the flow and generating value arise due to the direction of the integration being associated with the flow of material and information. Flynn *et al*. (2013) established the link between supply chain integration (customer, supplier and internal integration) and their interactions on performance. Gimenez, Vaart and Donk (2012) in their research show that supply chain integration increases performance moderated by a context variable like supply chain complexity.

In order for the supply chain to efficiently measure the overall performance, it has to distinguish itself from other performance measurement models by including suppliers, distributors etc. thereby making it multiple enterprises multiple measures type model.

The relationship between individual integration competencies and supply chain has a direct bearing on supply chain integration management and performance (Chopra & Meindl, 2015). Supply chain management professionals work in an internal organization and multifunctional world. As supply chain leaders, they need to understand the big picture. They also need the ability to use a variety of tools and techniques to understand and manage the supply chain network, as well as general skills to work with people and move their organizations forward (Charles, 2012). Operating within socially-rich network structures and utilizing varied non-hierarchical forms of collaborative activities which involves identifying problems and obtaining solutions turn out to be the attributes of a supply chain managers (Lebaron & Lister, 2015).

While performing various activities like building relationships with supply chain partners, sharing optimal information, synchronizing decisions etc.; managers within supply chain networks collaboratively execute supply chain operations while maintaining their discretion and responsibility within their own organizations (Nyang'au, Rotich, & Ngugi, 2017).Possessing both technical and social competencies that are relational and contingent in nature have proved to be effective in sustaining supply chain network dynamics (Hearnshaw & Wilson, 2011). Supply chain professionals when equipped with knowledge, skills, abilities and behavior (put together as competencies) required for integrated supply chain network are likely to influence the long-term orientation of the focal firm, effective sharing of information among supply chain members and help in building collaborative relationship with supply chain partners thus enhancing the performance of the firm (Bullmore & Sporns, 2009).

Internal integration focuses on cross-functional collaboration and real-time process synchronization (Flynn *et al.*, 2013). To achieve such an objective, organizational routines must follow a common standard and work in a centralized system. The inter-functional information transparency helps firms to achieve accurate demand forecasts, level scheduling, efficient warehouse management, etc., which can significantly improve quality and customer service and reduce waste and production costs (Swami & Shah, 2013). Thus, internal integration is expected to be more effective in organizations with a cost leadership strategy. Internal integration involves cross functional teams that may bring together a carefully selected array of specialists who share information and make product, process, and manufacturing decisions, jointly and simultaneously (Kooi, Dutta, & Feudel, 2013).

Internal integration is defined as a process of inter-functional interaction, collaboration, coordination, communication and cooperation that bring functional areas together into a cohesive organization (Flynn, Huo, & Zhao, 2013). Furthermore, supply chain partners who exchange information regularly are able to work as a single entity, and can understand the needs of the end customer better and hence can respond to market change quicker (Huntgeburth, Parasie, Steininger, & Veit, 2012). A prerequisite for successful supply chain management is quality internal integration (Lambert, Cooper, & Janus, 2013). Also, companies with a low internal integration strategy will achieve low level of external integration and companies implementing the full internal integration strategy will have the highest levels of external integration (Gimenez & Sierra, 2013).

Lee, Klassen, Furlan and Vinneli (2014) have identified that internal integration is the most important contributor to cost containment while integration with the supplier is the best strategy to achieve supply chain reliable performance and hence overall performance. The potential of supply chain integration to be used as a business competitive strategy have been explored in the supply chain literature since the first steps of its development. Generally, it is believed that firms achieve a relatively high degree of internal integration before they attempt to develop a higher degree of external integration (Kululanga & Kuotcha, 2014). Internal integration can be accomplished through automation and standardization of each internal logistics function, the introduction of new technology, and continuous performance control under formalized and centralized organizational structure (Cousins, Lamming, & Bowen, 2014).

In order to attain strategic advantage over other supply chain networks, firms require both the exploitation of existing internal and external firm-specific capabilities and developing new ones (Chae, 2015). In a way, competencies at a firm level impact internal integration of the firm. Consequently, organizations that are not internally integrated have fragmented and uncoordinated activities, and often spread throughout various organizational functions. Thus, as stated by Lambert (2011), internal integration means unifying functions and processes within the firm. Thus, it is expected that this tactical approach will propel the firm into the margins of high performance as a result of supply chain integration management.

As the competitive environment is becoming increasingly challenging, firms are undertaking efforts to compete along multiple fronts. However, many firms find it difficult to compete in the market by relying on their internal resources and competencies alone. They have turned to collaborate with their customers and suppliers to obtain information and complementary resources, which they can deploy to build competitive advantage (Franken, 2014). External supply chain integration reveals two major areas of emphasis. They are: Customer integration (CI) and Supply integration (SI). Supplier integration also called "backward" integration (Hsu, Tan, & Zailani, 2016) refers to the process of interaction and collaboration between an organization and its suppliers to ensure an effective flow of supplies (Zhu & Sarkis, 2014). Customer integration, also called "forward" integration (Zhu, Sarkis, & Lai, 2018) refers to the process of interaction and collaboration between an organization and its" customers to ensure an effective flow of products and/or services to customers (Zhu, Sarkis, & Lai, 2013). Customer integration involves sharing demand information, helping the manufacturer to understanding better the customer needs and to forecast better customer demand, as well as collaborative involvement of customers with respect to product design, provision of better-quality products at lower cost and more flexibility in responding to customer demand (Flynn *et al.*, 2013).

Experts believe supply chain integration involves efficient management of information and closer organizational collaboration among supply chain partners. A closely integrated supply chain is effective only when it engages in information sharing activities and joint operational planning, which can be associated with firms' long term relationship orientation (De -Giovanni & Esposito -Vinzi, 2012). The movement of supply chain from coordination to collaboration or integration requires high levels of trust and commitment among partners. Morali and Searcy (2013) suggest that trust and commitment, collaborative awareness, are key foundations of external integration and partnerships because they are key drivers of joint plans and actions. Trust and commitment are key relational norms for building and sustaining partnerships among supply chain participants (Glas, Schaupp, & Essig, 2017).

The relationship between supply chain integration and overall performance has been given a valid attention with the intention of exploiting competitive advantages exhibited by supply chain management and supply chain integration into the firm's activities. Supply chain integration is expected to combine partners' resources and perspectives into a firm's value propositions, thereby allowing all companies in the network to excel in performance. There has recently been a realization for the need for empirical research to justify the effects of supply chain integration on multiple performance outcomes.

2.4.6 Performance

Performance refers to how well an organization achieves its market-oriented goals as well as its financial goals (Kim & Choi, 2014). There are two aspects which must be considered when attempting to define performance: its time frame and its reference point. It is possible to differentiate between past and future performance and past superior performance does not guarantee that it will remain superior in the future (Yoo & Kim, 2012). Performance is divided into constructs of operational and organizational performance, which was identified as a typical way of measuring performance in past studies on supply chain management fit (Bair & Palpacuer, 2015). Lu,Liang and Shan (2015) provide extensive reviews of typical operational performance measures, which cover typically lead times, on-time deliveries, work-in-process inventories, finished goods inventories, value additions and in-stock rates. Typical corporate performance measures are firm average profit, profit growth, market share growth and sales (Richey *et al*., 2011).

Thus, in general performance measurement is all about focusing on the internal process of quantifying the effectiveness and the efficiency of action with a set of metrics (Johnson, 2010). The measures and indicators act as baseline pillars for organizational phenomena and decision making. Performance measurement represents management and control systems that produce information to be shared with internal and external users (Mclnerney, 2015). It also encompasses all aspects of the business management cycle which constitutes a process for developing and deploying performance direction. A well-defined system of performance measures can be a powerful tool for prioritizing organizational goals and achieving the set targets (Cardy & Munjal, 2016). Performance measures are intended to be used in the strategic planning process and projections. Therefore, strategic management planners and measures should inform key stakeholders as to problems that require attention and should allow planners to monitor progress toward goals.

The profit margin is an accounting measure designed to gauge the financial health of a business or industry (McKinsey, 2014). In general, it is defined as the ratio of profits earned to total sales receipts (or costs) over some defined period. The profit margin is a measure of the amount of profit accruing to a firm from the sale of a product or service. It also provides an indication of efficiency in that it captures the amount of surplus generated per unit of the product or service sold (Eljelly, 2015). In order to generate a sizeable profit margin, a company must operate efficiently enough to recover not only the costs of the product or service sold, operating expenses, and the costs of debt, but also to provide compensation for its owners in exchange for their acceptance of risk. Profit margin measures the flow of profits over some period compared with the costs, or sales, incurred over the same period.

A market share index is a hypothetical portfolio of investment holdings which represents a segment of the financial market (Apuoyo, 2014). The calculation of the market share index value comes from the prices of the underlying holdings. Some indices have values based on market-cap weighting, revenue-weighting, float-weighting, and fundamental-weighting (Atrill, 2013). Investors follow different market share indexes to gauge market movements (Botlhale, 2017).

Market share indices measure the value of a portfolio of holdings with specific market characteristics (Gitman, 2014). Each market share index has its own methodology which is calculated and maintained by the market share index provider (Kamula, 2012). Market share Index methodologies will typically be weighted by either price or market cap. A wide variety of investors use market indices for following the financial markets and managing their investment portfolios (Kiraka, Kobia, & Kattulo, 2013). Market share Indexes are deeply entrenched in the investment management business with funds using them as benchmarks for performance comparisons and managers using them as the basis for creating investable market share index funds (Lyrondi & Lazardis, 2015).

Operational efficiency means whatever a firm produces or performs; it should be done in a perfect way (Linton, Klassen, & Jayaraman, 2017). Although, effectiveness has a broader approach, which means the extent to which the actual results have been achieved to fulfill the desired outcome i.e. doing accurate things (Mason-Jones, Naylor, & Towill, 2015). These are the metric used to gauge the performance of an organization. Efficiency and Effectiveness are the two words which are most commonly juxtaposed by the people; they are used in place of each other; however, they are different. While efficiency is the state of attaining the maximum productivity, with least effort spent, effectiveness is the extent to which something is successful in providing the desired result (Ray, Barney, & Muhanna, 2014).

Performance measurement is intended to produce objective, relevant information on program or organizational performance that can be used to strengthen management and inform decision making (Galbreath, 2012). Galbreath (2012) further notes that organizational performance can be measured using profitability measures such as return on assets (ROA) and return on Equity (ROE).The performance of some organizations such as humanitarian organizations is affected by a number of factors such as good supplier relationship management, the existence of effective and efficient internal operations, ensuring that there is continuous improvement in the supply chain, having in place flexible production processes, use of technology to speed up humanitarian work, inter-organization integrations and simplicity in internal operations are among the practices prevalent among humanitarian organizations in the world (Hunt, 2011).

Ganeshkumar and Nambirajan (2013) state that performance can be measured by the following factors: Market share, Sales growth, Profit margin, Overall product quality, overall competitive position, Average selling price, Return on investment and the Return on sales. The approach in measuring performance can be divided into two categories which are financial measures and non-financial measures. Alternative, performance can be measured by financial measures and strategic measures. Nonfinancial measures include aspects such as customer satisfaction, employee satisfaction, environmental performance, social performance, efficiency, effectiveness and relevance. In line with the above literature, financial measures and non-financial measures will be adopted to measure organizational performance in this study.

Osoro, Muturi, and Ngugi (2015) analyzed the effect of crude oil price as a determinant on performance of supply chain systems in the petroleum industries in Kenya. The study employed a censuring sampling frame due to the fact that the targeted populations of entire stakeholders was about 73 companies who are involved daily in the oil industry management. It was established that cost of crude oil affects performance of supply chain systems in the petroleum industries and hence overall performance of the firms in this sector. Okanda, Namusonge and Waiganjo (2016) investigated the influence of supply planning practice on the performance of the unit of vaccines and immunizations in the Ministry of health, Kenya and found out that supply planning practices such as optimum inventory procurement, determination of health requirements of health facilities at every node, aggregate determination requirements and joint coordination with suppliers if adopted by the unit of vaccines and immunizations will increase the performance positively.

2.5 Empirical Review

2.5.1 Supplier Relationship Management Practice and Performance

Marta, Beatriz, Lorenzo and Francesco (2013) carried out a study on cooperation strategy in buyer-supplier relationships and its effect on buyer performance. The purpose of the study was to explore the relationship between manufacturing firms and their suppliers, and its impact on financial performance of Spanish manufacturing companies. They used exchange of information, supplier development, and mutual dependence as indicators of buyer supplier relationships. The sample consisted of 1,980 firms and its distribution by sector in the Spanish manufacturing industry. They designed a supplier cooperation indicator from the variables suggested in the existing literature, which were exchange of information, supplier development and mutual dependence. Their results indicated that supplier's capabilities and partnerships have a significant positive correlation, and they positively influence competitive advantage thus leading to performance.

Inayat (2012) indicates that the essence of strong relationship between buyer and supplier is trust, which in turn affects the supplier performance and consequently the organizational performance. His study used correlation and regression to analyze a set of data collected from the survey of 54 Indian manufacturing organizations. The results demonstrated that face to face communication and fair treatment of supplier by buyer is positively related to development of trust and that development of trust has a positive influence on readiness of supplier to invest in the specific requirements of buyer or firm. On the other hand strong relationship between buyer and supplier positively affects supplier performance, and supplier performance is positively related to the organizational performance.

Sukati *et al*. (2011) investigated the relationship between supply chain management practices and the competitive advantage of firm. Supply chain management practices that he adopted included supplier partnership, customer relationship and information sharing. The study was conducted in Malaysia manufacturing industry by sending questionnaires to 200 supply chain practitioners. The study showed that there is a positive relationship between supply chain management practices and the competitive advantage of the firm hence overall performance.

Raskovic and Makovec (2012) objective was to analyze which and how much specific relational and/or transactional dimensions of buyer-supplier relationships affect transnational company (TNC) buyer-supplier relationship competitiveness. A sample of 130 international suppliers (approx. 30 % response rate) was obtained and provided the basis for their analysis (n=130). They surveyed suppliers to a large TNC, headquartered in Slovenia, and with manufacturing operations in Slovenia, Russia, Serbia and the United Arab Emirates. Based on an illustrative empirical example, they tested a simple variance based reflective Structural Equation Model (SEM) with main effects based on a sample of 130 TNC buyer-supplier relationships. Their results showed that buyer-supplier relationship competitiveness is mostly driven by interpersonal trust and joint problem solving (both relational determinants). They recommended that managers should pay equal (if not even larger) attention to relational dimensions in their buyer-supplier relationships Vis-à- Vis existing transactional dimensions, especially in well-established buyer-supplier relationships. Additionally, Raskovic and Makovec (2012) observed that each relationship is prone to conflicts and problems. In this regard, joint problem solving should be seen as the second key managerial tool which drives not only buyer-supplier relationship competitiveness, but also facilitates trust as well.

Nyamasege and Biraori (2015) conducted study that aimed at assessing the effect of supplier relationship on the effectiveness of supply chain management practices in Kenyan public sector: case of Ministry of Finance. The study adopted a descriptive case research design. The study gathered both quantitative and qualitative data that described the nature and characteristics of factors affecting the effectiveness of supply chain management practices in the ministry of finance. The study population comprised of 120 management staff and 60 respondents selected randomly. The study findings indicated that supplier relationship management greatly determine the effectiveness of supply chain management practices in the ministry of finance. Supplier collaboration and development enhances effectiveness in SCM in acquiring goods and services.

Nyamasege and Biraori (2015) study noted that lack of a comprehensive approach for managing interactions with suppliers affected realization of increased effectiveness on supply chain processes between an organization and the suppliers. The study recommended that to manage supplier relationship management, the ministry should intensify centralization of common user items. The organization should create a data base on supplier activities such as delivery schedules, complaints, quality management processes. The procurement managers in the organization should increase the level of interaction with suppliers. The interaction should involve efficiently providing suppliers with expectations of how the communications and flow of products/services are to be provided in order to ensure performance of the ministry.

Barasa, Namusonge, and Iravo (2015) carried out a study on contributions of supply chain management practices on performance of steel manufacturing companies in Kenya. They used joint planning and forecasting, mutual goals with clients, clear coordination and resource sharing as indicators of supply chain collaboration and performance of steel manufacturing firms in Kenya. The sample consisted of 32 steel firms distributed in the Kenyan manufacturing industry. The results demonstrated that there is a degree of association between the supply chain collaboration practice and the performance of steel manufacturing companies in Kenya hence organizations should invest in the specific requirements of supplier relationships.

Namusonge, Mukulu, and Iravo (2017) objective was to analyze the influence of supply chain capabilities on performance of manufacturing entities in Kenya. They used procurement capabilities, inventory management capabilities, logistical capabilities, customer service capabilities and information communication technology capabilities as indicators of supply chain capability and performance of manufacturing entities in Kenya. A sample of 69 manufacturing entities in Nairobi was randomly selected to participate in this study. Their results showed that there is a degree of association between the supply chain capabilities and the performance of manufacturing entities in Kenya. They recommended that managers should pay attention to supply chain capabilities dimensions in the manufacturing firms so as to propel performance of manufacturing entities in Kenya.

Mugambi, Mukulu, and Karanja (2011) did a study on the role of supply chain relationships in the growth of small firms in Kenya. The purpose of the study was to understand the role played by supply chain relationships among small enterprise firms in Kenya. They used customer relationships, internal enterprise systems and sound policies as indicators of supply chain relationships. Purposive sampling method was used to select 200 small enterprises localized in Nairobi and its environs for the purpose of the study. Their results indicated that supply chain relationships have a significant positive correlation and they positively influence the growth of small firms in Kenya. They recommended that policy makers should pay attention to supply chain relationship dimensions so as to propel growth of small enterprise firms in Kenya.

2.5.2 Value Chain Management Practice and Performance

Ponsignon, Maull and Smart (2013) objective was to explore both the similarities and differences in the process improvement approaches of organizations. More specifically, they sought to identify process redesign principles and the combinations of these principles that are used successfully by practitioners. They used Q-methodology to explore the viewpoints of a range of practitioners about the success of 16 process improvement practiced. The questionnaire was developed for process experts who represented their respective organizations. They obtained a total of 62 responses, of which they retained 48 for the analysis phase. The findings suggested that removing non-value-adding tasks and resequencing tasks can be described as foundational principles of process improvement and that they are universally applicable. They recommended that regardless of process characteristics, product or service orientation, and business and organizational contexts, new improvement initiatives should concentrate on identifying and eliminating the Non Value Adding (NVA) tasks from the process. Following the identification and removal of such tasks, managers should approach the optimization of the process based on the most natural sequence of execution of the remaining tasks. This is undertaken through the consideration of logical dependencies between tasks in the process.

Biegon (2009) did a study on challenges facing the Kenyan tea industry in exporting of value-added (Branded) tea. The broad objective of the study was to establish the challenges facing the Kenyan tea industry in exporting of value-added (branded) tea. The target population of the study comprised of 12 tea producers, 136 tea packers, and selected key informants from the Ministries of Agriculture, Trade and Industry, export promotion council and Tea board of Kenya. To enhance effectiveness of this study in the light of a population of 136 tea packers and 12 tea producers, the researcher used a sample size of 30 % of the population of tea packers and a census for the tea producers, which led to a sample of 52 respondents drawn from both categories proportionately. The findings of the study established that the challenges facing the Kenyan tea industry in exporting of value-added tea (branded) arise due to lack of domestic support either from the government, relevant agencies/institutions, or from the players within the tea industry itself; restrictions to market access; stringent Sanitary and Phyto-sanitary measures and the standards set by importers of tea on the basis of climatic conditions of the source country; unexpected changes in prices in the world tea markets; and terms-of-trade losses. They recommended for government intervention to offer domestic support so as to enhance value addition and performance of firms engaged in tea production and export of tea.

Baten, Kamil and Haque (2010) investigated the productive efficiency of the tea industry using a stochastic frontier approach. Their study attempted to measure the status of technical efficiency of tea-producing industry for panel data in Bangladesh using the stochastic frontier production function, incorporating technical inefficiency effect model. The study estimated that the average technical efficiency of tea producing industries in Bangladesh is 59%. The results indicated that there is a great potential that exists for the tea industry to further increase the value added by forty one percent using the available input, technology and efficiency improvement, thereby reducing the cost of production. The study identified that the mean efficiency of tea industries for value added vary among the regions and year-wise mean efficiency seems to be unstable during the study period and therefore, continued efforts to update technologies and equipment are required in pursuit of efficiency in tea industry thus performance of firms engaged in tea processing.

Adamu, Zubairu, Ibrahim and Ibrahim (2011) sought to determine the influence of diversification on the performance of some Nigerian construction firms. The findings revealed that undiversified firms outperformed the highly diversified firms in terms of Return on Total Assets and Profit Margin. Similarly, the moderately diversified firms were found to outperform the highly diversified firms in terms of Return on Equity, Return on Total Assets and Profit Margin. However, no performance difference was found between the undiversified firms and the moderately diversified firms based on the three measures used. A nonlinear relationship was found between the extent of diversification and performance. It was concluded that diversification does not necessarily lead to an improvement in profitability. The implication is that firms are better-off remaining focused if the aim is to improve financial performance.

Oyedijo (2012) analyzed the effects of product and market diversification strategy on corporate financial performance and growth in Nigeria. A significant difference was also found between the performance of firms that develop through related or unrelated diversification and the performance of firms that remained specialized, with firms that remained specialized performing better on all parameters and growing faster in sales than those that develop through related and unrelated diversification only. The study concluded that the financial performance and sales growth of firms in Nigeria are significantly affected by the mode of diversification used and recommended that Nigerian firms that are seeking a sustainable fast growth and superior performance should pursue a related product-market diversification strategy or a specialization strategy but not both.

Theuri, Mugambi, and Namusonge (2014) sought to determine the strategic management determinants of value addition in the sea food processing sub-chain: a survey of industrial fish processors in Kenya. They used strategic planning practices, technological competitiveness, market competition and cooperate policies as indicators of strategic management in value addition. This study adopted a descriptive research design whereby the target population was 17 industrial fish processing firms in Kenya. Responses were given by officers that were involved in value addition, for example those that were involved in the process of filleting, skinning, trimming, packaging as well as freezing and storage.

In addition, Theuri, Mugambi, and Namusonge (2014) included decision makers in the regulatory organizations such as those working under the Ministry of Fisheries, Kenya Marine Fisheries Research Institute, with specific bias to value addition who were also targeted in this study to give a comprehensive picture of the whole chain. A proportionate sample size of approximate 127 respondents which was 10% of the population was selected using stratified random sampling technique. The output given from the findings indicated that there was significant positive relationship between strategic management determinants and value addition in the industrial fish processors.

Theuri, Mugambi, and Namusonge (2014) concluded that industrial fish processors didn't engage in any strategic planning activities and as a result most of them failed to identify the key strategies of adding value. They recommended that value addition within the seafood value chain should be given priority in government planning. Private investors should be encouraged to invest in seafood value addition. The government can do this by, for instance, zero-rating imported value addition machinery. This would ensure the industry embraces cutting edge technology that will make them produce value added products that makes them compete competitively in the market.

Okello and Were (2014) conducted a study on the Influence of supply chain management practices on performance of the Nairobi securities exchange's listed, food manufacturing companies in Nairobi. The study identified product development processes, inventory management, lead time, technology and innovation as supply chain management practices in the study. They asserted that five supply chain management practices have a significant influence on the performance of food manufacturing companies in Kenya. They suggested that supply chain interventions need to be put in place to address issues such as negotiating contracts with external suppliers, involvement of E-procurement, creation of a close relationship with suppliers and provision of continuous tracking over the physical movement of inventor.

Mbui, Namusonge, and Mugambi (2016) sought to establish the effect of strategic management practices on export value addition in the tea subsector in Kenya. They used market promotion, business partnerships, product diversification, cost leadership and technological innovation as indicators of strategic management practices in export value addition. Their study adopted a descriptive research design whereby the target population was 254 firms in the tea sub-sector industry in Kenya. Responses were given by top management and middle level management officers in the tea sub-sector industry that were involved in day to day management of the firms. A proportionate sample size of approximate 127 firms was selected using stratified random sampling technique and two respondents at the rank of top management and middle level management from each of the 127 firms thus making a sample size of 254 respondents.

Mbui, Namusonge, and Mugambi (2016) results showed that there was significant positive relationship between strategic management practices and export value addition in the tea subsector in Kenya. They recommended that export value addition in the tea subsector industry in Kenya should be given priority by the government planning through; the government ensuring that the policies and regulations are put in place that can stabilize the business environment and lower cost of doing business, policies should be put in place that will cushion the local industry players against strategic shocks like additional taxes, global financial crisis, the management of tea factories should also collaborate with the government and other policy makers so that they can promote international markets through drafting of agreements with international trade distributors and other global value chain players in tea sector.

Chege, Ngugi, and Ngugi (2017) sought to establish the influence of internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya. They used supplier relationship management practices, process management practices, customer relationship management practices and information technology support practices as indicators of internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya. Their study adopted a cross-sectional and descriptive survey research designs whereby the target population was 499 large scale manufacturing companies operating in Nairobi where 80% of their members are based. A proportionate sample size of 200 firms was selected using stratified random sampling technique. The results showed that there was significant positive relationship between internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya. They recommended that the government should come up with policies that emphasis best practices of internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya.

Christine (2010) carried out a study on strategies used by Chai Trading Limited to promote and penetrate the Middle East markets. The research design was a case study. An in-depth understanding of the global tea markets was required. Primary data was used in this study and was collected through interviews with senior managers at Chai Trading Limited. The interviews which consisted of open-ended questions were guided by an interview guide. The study found that Chai Trading Limited has opened an office in Dubai. The office was also to facilitate demand for Kenya's tea abroad and also as a window to venture into tea value addition with a view of sustaining and growing business to profitability.

Nyangito and Kimura (2009) carried out a study on challenges in the tea sector. The study found that the main challenge in the Kenyan tea sub- sector is that small scale farmer’s tea is mainly exported in semi-processed form to produce some of the well-known global tea brands. The research found that Kenya’s tea plays a very important role in blending with other teas to improve their quality. Value addition of Kenyan tea exports is minimal. The key players in the world tea exports like United Kingdom and Germany are not tea producers themselves but generate up to fifty percent of Kenya tea export earnings through adding value. Thus, the limited value addition and high costs of production makes tea export from Kenya less competitive in world markets .They recommended value addition measures locally in Kenya so as to enhance competitiveness of Kenyan tea globally and increased earnings for tea industry players.

Githii, Kimani and Kagira (2012) examined the strategies to curb challenges facing small holder tea sector in Kenya. The researchers provided some solutions to the challenges, borrowing from some supply chain management practices to culminate into competitive strategies. Various strategies to enhance competitiveness in this sector were outlined and among these strategies are: supplier and customer relationships, value addition, information technology and flexibility in internal operations/processes. Therefore, value chain management is key and critical component of supply chain management practices which plays a pivotal role in the performance of the organization.

2.5.3 Customer Relationship Management Practice and Performance

Tim, Timothy, and David (2012) objective were to examine the impact of customer relationship management (CRM) on performance using a hierarchical construct model. They tested their hypotheses on a cross-sectional sample of business-to-consumer firms based in Australia. Their results revealed a positive and significant path between a superior CRM capability and performance. Additionally, they observed that the impact of IT infrastructure on superior CRM capability is indirect and fully mediated by human analytics and business architecture. They also found that CRM initiatives jointly emphasizing customer intimacy and cost reduction outperform those taking a less balanced approach. They recommended that whereas there is a temptation for managers to be normative about the pursuit of competitive advantage and direct attention and resources toward particular CRM capabilities, technical, human and business capabilities, this approach would seem to be flawed, since in isolation these capabilities are insufficient to generate competitive superiority. Each capability is nested within an intricate organizational system of interrelated and interdependent resources. An over-emphasis on customer intimacy to the exclusion of operational efficiency and analytic orientations actually diminish performance.

Mehrdad and Mohammad (2011) objective was to investigate the impact of customer relationship management on competitive advantage in industrialized manufactures of Trucks. The method of conducting the research was descriptive while data was gathered using a questionnaire. The results obtained from the data analysis showed that all the relations are meaningful at the 5% of deviation using spearman correlation test. They assert that the ideal position of variables in the given company from the managers' perspectives was as follows: meeting customer's complaints, attracting and protecting customers being faithful, improving and specializing the relations with the customers and understanding and separating of the customers. One of the most important factors in achieving the competitive advantage is the absolute concentration on the customer. This study concluded that customer relation management is effective for achieving the competitive advantage in such companies. Therefore, it is recommended to promote cooperative plans in the company, provide the customers with more facilities and make efficient systems for interaction with customers.

Siti, Norfaridatul, Juhaini and Izaidin (2014) aimed to explain the impact of CRM practices to organizational performance through a proposed conceptual model in Malaysian small and medium enterprises (SMEs) food manufacturing industry. The model was developed and empirically tested through survey data obtained from 369 organizations. The results indicated that customer relationship management (CRM) practices have a significant positive effect on organizational performance. Additionally, the results revealed that enhanced key customer focus and relationship marketing leads to better organizational performance.

Toyin (2012) carried out a study in Nigerian manufacturing companies on the impact of supply chain management practices on the performance. He used strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing and postponement as indicators of supply chain management on performance of manufacturing firms in Nigeria. Out of the 100 manufacturing companies contacted as part of the survey, only 31 companies responded indicating a response rate of 31%. Basically, questionnaires were administered on managers of the respondent companies whom were perceived to be responsible for supply chain activities within their respective companies. The result of the correlations between the variables of their study indicated that SCM practices are positively correlated to SCM performance. Suffice to say that the more the effort being put into implementing SCM practices the direct impact it will have on performance. The study thus showed that SCM practices definitely impacts performance.

Chege, Ngugi, and Ngugi (2017) sought to establish the influence of internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya. One of the variables they used in their study was customer relationship management practices with customer interaction, customer satisfaction, customer expectations and consumer value being its indicators. Their study adopted a cross-sectional and descriptive survey research designs whereby the target population was 499 large scale manufacturing companies operating in Nairobi. A proportionate sample size of 200 firms was selected using stratified random sampling technique. Their study found out that customer relationship management practices that relate to business value chain management jointly emphasized on customer intimacy and cost reduction.

Chege, Ngugi, and Ngugi (2017) study revealed that relationship between CRM practices and supply chain performance was positive and significant. The study recommended that large manufacturing firms should embrace CRM practices that foster value addition in the bid to satisfy the customer. Such practices should include using software technology and advanced databases which enables an organization measure and evaluates customer satisfaction in the local, regional and global markets on a continuous basis. They further recommended for the implementation of relationship programs, such as community building websites and loyalty card programs so as to develop a trusting relationship among consumers in a bid to gain their confidence and increase repeat purchases. Hence with this kind of a practice that provides database on customers an organization can be able to monitor customers' behavioral changes that may signify customer changing needs and adjust accordingly.

Namusonge, Mukulu, and Iravo (2017) sought to establish the influence of supply chain capabilities on performance of manufacturing entities in Kenya. One of the variables they used in their study was customer service capabilities with satisfaction level, customer complaints, value added services and order flexibility being its indicator. Their study adopted a descriptive survey research designs whereby the target population was 680 manufacturing companies based in Nairobi. A proportionate sample size of 69 firms was selected using random sampling technique. The study picked the head of department of Supply Chain Management or procurement of each of the manufacturing firms to take part in the study. Their study found out that the customer satisfaction level influenced the performance and also the order flexibility influenced the performance. It was also established that the value-added services and additional features influenced the performance. In addition, the study found out that customer complaints negatively influenced the performance of the manufacturing entity. The study recommended that the management of manufacturing entities in Kenya could adopt customer relationship management as a remedy for improved performance.

Barasa, Namusonge, and Iravo (2015) carried out a study on contributions of supply chain management practices on performance of steel manufacturing companies in Kenya. One of the variables they used in their study was customer relationship management practice with documented customer complaints, training of customers, soliciting customer input in product design and developed account for customers being its indicators. Their study adopted a descriptive survey research designs whereby the target population was 258 steel firms distributed in the Kenyan manufacturing industry. A proportionate sample size of 32 firms was selected using purposive sampling technique, specifically judgmental sampling method. The 32 firms each contributed 12 respondents in order to make a total of 384 respondents for their study.

Barasa, Namusonge, and Iravo (2015) findings of the study indicated that customer relationship management practice contributes significantly to the performance of steel manufacturing companies in Kenya. Majority of the respondents, 87.3% agreed that customer relationship management practice contributes to the performance of steel manufacturing companies in Kenya. The study recommended that the management of steel manufacturing companies in Kenya should adopt customer relationship management practices so as to enhance their organizational performance.

Musuya and Namusonge (2013) assessed the factors that affect the implementation of JIT supply chain practices in public health sector in Kenya and found that product demand/ supply stability variable influence on the ability to implement JIT in Ministry of public health. Mutuetandu and Iravo (2014) investigated the impact of Supply Chain Management Practices on Organizational Performance: A Case Study of Haco Industries Limited (Kenya).The study found out that supply chain management practices like customer relations, strategic partnerships, training and information sharing have a positive effect on the organization’s performance. Kimani (2013) investigated the supply chain management challenges in Kenya petroleum industry: Case of national oil corporation of Kenya and found out that four independent variables namely; information technology, supply chain design, collaboration issues and people issues are very critical to effective supply chain management in the petroleum sector.

2.5.4 Logistics Management Practice and Performance

Ristovska, Kozuharov, and Petkovski (2017) sought to determine the impact of logistics management practices on company’s performance in Macedonia. They used inventory, transportation, storage and information to demonstrate the importance of logistics in performance. The research was conducted in eighty companies in the Republic of Macedonia of different size and industries in the period September to October 2015. The questionnaire had been distributed to 80 examinees, managers on middle and high-level positions, employed in these companies. Their study found out that logistics management practices had a positive significance on company's performance in Macedonia. The study recommended that the management of this companies should adopt logistics management practices as a way of creating high performance in organizations.

Sa´nchez, and Pe´rez (2005) did an Empirical survey of a representative sample of 126 Spanish automotive suppliers during the months of September and October 2003 to analyze the relationship between logistics flexibility dimensions and performance dimensions, and between logistics flexibility dimensions and environmental uncertainty dimensions. A multivariate analysis studied the determinants of logistics flexibility. This research found a positive relation between a superior performance in flexibility capabilities and performance, although flexibility dimensions were not equally important for performance. On the other hand, the results showed that companies enhanced more the basic flexibility capabilities (at the shop floor level) than aggregate flexibility capabilities (at the customer-supplier level). However, aggregate flexibility capabilities were more positively related to performance than basic flexibility capabilities. Thus, companies could miss opportunities to improve competitiveness by underestimating customer-supplier flexibility capabilities.

Nyaberi and Mwangangi (2014) sought to establish the effects of logistics management practices on organization performance in Kenya: a case of Rift Valley Bottlers Limited in Uasin Gishu County. They used order processing management practice, transport management, inventory management and information systems as indicators of logistics management practices on organization performance in Kenya. The findings showed that inventory control and logistics management assisted in the performance of Rift Valley Bottlers Limited through costs of maintenance of stock reduction, quality of the product remained intact, production flow improved and cost of breakages reduced.

Nyaberi and Mwangangi (2014) study recommended the following: formulation and frequent updating of ordering logistics management practices so as to be compliant with the current dynamics in purchasing procurement and logistics management; Incorporation of transport logistics management practices in all aspects of purchasing since this constitutes a larger component of logistics management practices, hence its paramount to design appropriate logistics management practices in line with the organizations activities and line of production; Inventory logistics management practices should be formulated so as to control the costs of fraud and theft, organizations lose millions of money through pilferage and less effective control systems are affected through logistics management, business will make less profits. Formulation and design of information systems logistics management so as to fasten the flow of information and create seamless operations which in turn will attract more customers and reputation in the competitive environment.

Musau, Namusonge, Makokha, and Ngeno (2017) sought to establish the effect of inventory management on organizational performance among textile manufacturing firms in Kenya. They used inventory accuracy, stock out, stock availability, stock coverage and capacity utilization as indicators of inventory management on organizational performance among textile manufacturing firms in Kenya. The findings showed that use of diverse practices to manage inventory as found out in the study points to textile firms as being keen to focus on synchronizing the flow of materials across their supply chain. Their study concluded that inventory management is a supply chain determinant of performance. Systems such as ERP, VMI, EOQ, and RFI have potential to optimize inventory and material flow. The recommendation for this study was that management should look to encourage continued use of modern inventory systems in order to optimize performance of the supply chain and by consequence overall performance of the firms.

Mwangangi, Guyo, and Arasa (2016) sought to establish the influence of logistics management on performance of manufacturing firms in Kenya. They used transport management, inventory management, order processing management, information flow management and logistics information systems as indicators of logistics management on performance of manufacturing firms in Kenya. Their study adopted both descriptive and explanatory research designs whereby the target population was

1,604 manufacturing firms that are classified into various segments and located across the country. A proportionate sample size of 320 firms was selected using stratified sampling technique.

Mwangangi, Guyo, and Arasa (2016) study established that all the five logistics management dimensions significantly influenced performance. Their study provided evidence that transport management, inventory management, order process management and information flow management are significantly and positively influenced by the performance of manufacturing firms in Kenya. This implied that an increase in performance of manufacturing firm was likely through embracing transport management practices within logistics management. The study recommended that managers in manufacturing firms in Kenya should incorporate transport management, inventory management, order process management and information flow management in their operations processes such as procurement of raw materials and distribution of products in order to increase overall cost efficiency, enhanced market share, and reduced lead time thereby impacting positively on their performance.

Okemba and Namusonge (2014) conducted research to establish whether reverse logistics as green supply chain management practices determine supply chain performance in Kenya's manufacturing firm: A case study of Nairobi based firms in the food and beverage sector. Findings revealed that the firms in focus had adopted GSCM practices to a great extent, however, there was a disconnect between adoption and practice in that, respondents affirmed that they had incorporated recyclable content as well as ensured reusability of their packaging but when it comes to collecting the same used packages under reverse logistics, a significant percentage (46%) was non-committal on whether they collect from customers/return to their suppliers.

Namusonge, Mukulu, and Iravo (2017) sought to establish the influence of supply chain capabilities on performance of manufacturing entities in Kenya. One of the variables they used in their study was logistics capabilities with transport and distribution Network, lead-time and logistical flexibility being its indicators. Their study adopted a descriptive survey research designs whereby the target population was 680 manufacturing companies based in Nairobi. A proportionate sample size of 69 firms was selected using random sampling technique. The study picked the head of department of Supply Chain Management or procurement of each of the manufacturing firms to take part in the study. Their study revealed that there was a strong positive relationship between logistical capabilities and the performance of manufacturing entities Kenya. The study recommended that it would be appropriate for the management of manufacturing entities to exploit the logistical capabilities on the day-to-day operation with the aim of ensuring a competitive advantage over other market competitors thus attaining superior performance.

2.5.5 Supply Chain Integration and Performance

Krishnapriya and Rupashree (2014) sought to determine supply chain integration - a competency-based perspective in organizational performance. They used individual competencies, organizational competencies, and inter-organizational competencies as indicators of supply chain integration competency. They concluded that by leveraging the capabilities required for higher integration, each member in the supply chain can achieve superior performance. Collaborating Operations Management with HRM can help Supply Chain partners in developing resilient inter firm relationships and creating knowledge sharing routines. Furthermore, it is becoming imperative to strategically build competencies internally as well as externally to ensure sustainable performance at all levels.

Georgise, Thoben, and Seifert (2014) carried out a research on supply chain integration in the manufacturing firms in developing country: an Ethiopian case study. Their study was based on the field works conducted on the Ethiopian manufacturing industries. These manufacturing industries were mainly producers of basic consumer products. They identified four stages of supply chain integration. The first stage represented the fragmented operations within the individual company. The characteristics of second stage were limited to integration between adjacent functions, for example, purchasing and materials control. In the third stage, the integration required the internal integration of the end to-end planning in the individual company. Finally, the last stage represented the true supply chain integration including upstream to suppliers and downstream to customers. Based upon the findings of the research, the companies investigated seemed to be oriented towards inter-organization integration. The results revealed that degree of integration was low when it comes to Ethiopian firms but there were some promising initiatives undergoing.

Ibrahim and Hamid (2012) carried out a study on supply chain management practices and supply chain performance effectiveness in manufacturing companies in Sudan. They collected data through questionnaires by sending to supply chain managers or top-level executives in 150 large manufacturing corporations among Sudanese listed in and registered in ministry of industry. They found that Integration, information sharing, customer management and speed of responsiveness were the supply chain management practices that were adopted in the study. The study revealed that there is a positive relationship between supply chain management practices and performance through effectiveness.

Wanja and Chirchir (2013) sought to determine supply chain management practices and performance of Kenya tea development agency managed factories. They used Supplier relationship management, Customer Relationship management, Information sharing, Outsourcing, supply chain integration, strategic supplier partnership, Quality of Information, Postponement, Quality improvement and Customer service management as indicators of supply chain management practices on performance of Kenya tea development agency managed factories. Their study adopted a descriptive research design whereby the target population was 63 KTDA managed factories in Kenya. The study involved a census of all the 63 factories in the country hence there was no sampling. The supply chain managers or their equivalent from the factories were selected to participate in the study. One respondent from each factory was selected and this gave a total of 63 respondents.

Wanja and Chirchir (2013) findings of the study revealed that the ten independent variables of the study which constituted ten supply chain management practices that is, supplier relationship management; information sharing; customer relationship management; outsourcing; supply chain integration; supplier partnership; quality information; postponement; quality improvement and customer service management had positive coefficients and explained 45.7% of the variance on the performance of the tea factories. This was a confirmation that they explain a significant portion of the performance of the KTDA managed tea factories in Kenya. The study recommended that it will be important for the tea factories to be urged to adopt equally these practices in order to enhance performance.

2.6 Critique of the Existing Literature Relevant to the Study

While Sukati *et al*. (2011) examined the relationship between supply chain management practices and the competitive advantage of firm, the study failed to diversify on the respondents to get the input of other practitioners within the manufacturing industry in Malaysia as it only used supply chain practitioners hence inviting some form of biasness in responses and findings. The lack of multiple and diverse informants from the chosen firms offers the opportunity for further research. It would be informative to survey multiple sources and informants within the participating firms.

Although Nyamasege and Biraori (2015) examined the effect of supplier relationship on the effectiveness of supply chain management practices in Kenyan public sector with a case study of Ministry of Finance, the study did not carry out analysis of the effect of each of the independent variables on the dependent variable. This led to a generalized analysis, findings, conclusions and recommendations which did not give the contribution of each of the independent variable to the dependent variable. Barasa, Namusonge, and Iravo (2015) research on contributions of supply chain management practices on performance of steel manufacturing companies in Kenya failed to conclusively state which supply chain management practices would fit each of the firms chosen for the study given the diversity and contexts of each of the firm in implementing supply chain management practices.

While Namusonge, Mukulu, and Iravo (2017) investigated the influence of supply chain capabilities on performance of manufacturing entities in Kenya, the study failed to clearly articulate on whether the supply chain capabilities influenced the financial or operational performance. The study did not examine which capabilities influenced the financial performance and which capabilities influenced operational performance. The researchers focused on procurement capabilities, inventory management capabilities, logistical capabilities, customer service capabilities and information communication technology capabilities as indicators of supply chain capability and performance of manufacturing entities in Kenya. The study failed to explain well how, when and why a relationship existed between the independent variables and what exactly determined the inter-relationships on financial or operational performance.

Although Okello and Were (2014) examined the influence of supply chain management practices on performance of the Nairobi Securities Exchange's listed, food manufacturing companies in Nairobi failed to give a concrete explanation on why they chose the food and beverage companies listed on the Nairobi Securities Exchange at the expense of the entire food and beverage industry in Kenya and thus the sample was biased towards only listed food and beverage firms hence the results may therefore not reflect the situation in the whole food and beverage industry in Kenya. This limits the potential generalization of the study results to all types of food and beverage industry in Kenya.

While Christine (2010) carried out a study on strategies used by Chai Trading Limited to promote and penetrate the Middle East markets, the research design was a case study. An in-depth understanding of the global tea markets was required. Primary data was used in this study and was collected through interviews with senior managers at Chai Trading Limited. However, the study did not collect data from the global tea markets or target market which in this case was Middle East Markets to gather crucial information from global perspective on what strategies are needed to penetrate the Kenyan tea into those markets. This limited the views, findings, conclusions and recommendations to evidence from a Kenyan respondent's scenario perspective rather than the target market/ global tea markets scenario. Therefore, the results may hold only true for firms based and intending to operate within Kenya or in countries with a similar political, economic, and geographic setting rather than firm intending to penetrate global tea markets.

Nyangito and Kimura (2009) carried out a study on challenges in the tea sector. The study found that the main challenge in the Kenyan tea sub- sector is that small scale farmer's tea is mainly exported in semi-processed form to produce some of the well-known global tea brands. The research found that Kenya's tea plays a very important role in blending with other teas to improve their quality. They recommended value addition measures locally in Kenya so as to enhance competitiveness of Kenyan tea globally and increased earnings for tea industry players. However, the data for the study were collected from firms based in Kenya only and no views were corroborated from international firms to reinforce this argument. Therefore, the results may hold only true for firms based in Kenya or countries with a similar political, economic, and geographic setting.

Githii, Kimani and Kagira (2012) examined the strategies to curb challenges facing small holder tea sector in Kenya. The researchers provided some solutions to the challenges, borrowing from some supply chain management practices to culminate into competitive strategies. Various strategies to enhance competitiveness in this sector were outlined and among these strategies are: supplier and customer relationships, value addition, information technology and flexibility in internal operations/processes. However, this research is inadequate in evaluation and dissemination of the supply chain management practices and responses being employed in different tea sectors in Kenya and which ones best fit the specific sectors.

Toyin (2012) carried out a study in Nigerian manufacturing companies on the impact of supply chain management practices on the performance. He used strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing and postponement as indicators of supply chain management on performance of manufacturing firms in Nigeria. The result of the correlations between the variables of their study indicated that SCM practices are positively correlated to SCM performance. Suffice to say that the more the effort being put into implementing SCM practices the direct impact it will have on performance. The study thus showed that SCM practices definitely impacts performance. However, the lack of theory application may have limited our ability to understand SCM practices in manufacturing firms and its related variables as well as the relationships between them. It also makes the generalization of research findings from one context to another difficult.

Krishnapriya and Rupashree (2014) sought to determine supply chain integration - a competency based perspective in organizational performance. They used individual competencies, organizational competencies and inter-organizational competencies as indicators of supply chain integration competency. They concluded that by leveraging the capabilities and competencies required for higher integration, each member in the supply chain can achieve superior performance. However, the research did not outline the mechanisms on how to achieve supply chain capabilities and competencies. Moreover, the study could not fully clarify the monitoring, implementation and relationship between individual competencies, organizational competencies and inter-organizational competencies due to lack of integration systems and its implications on SCM practices. Also, the research findings cannot be validated because the research did not disclose the methodology used to arrive at the findings.

Georgise, Thoben, and Seifert (2014) carried out a research on supply chain integration in the manufacturing firms in developing country: an Ethiopian case study. Their study was based on the field works conducted on the Ethiopian manufacturing industries. These manufacturing industries were mainly producers of basic consumer products. They identified four stages of supply chain integration. The first stage represented the fragmented operations within the individual company. The characteristics of second stage were limited to integration between adjacent functions, for example, purchasing and materials control. In the third stage, the integration required the internal integration of the end to-end planning in the individual company. Finally, the last stage represented the true supply chain integration including upstream to suppliers and downstream to customers. However, In looking to the aspect of supply chain integration in manufacturing firms, their literature was skewed and limited in its focus on the capability of supply chain integration ignoring the management factor of which without its goodwill and expertise, supply chain integration would proof an uphill task to implements.

Ibrahim and Hamid (2012) carried out a study on supply chain management practices and supply chain performance effectiveness in manufacturing companies in Sudan. They found that Integration, information sharing, customer management and speed of responsiveness were the supply chain management practices that were adopted in the study. The study revealed that there is a positive relationship between supply chain management practices and performance through effectiveness. However, the study seemed to give minimal or limited supply chain integration models or theories around the various manufacturing firms' networks or any tangible literature on the associated performance which were fundamental drivers to the performance of manufacturing firms.

Wanja and Chirchir (2013) study on supply chain management practices and performance of Kenya tea development agency managed factories failed to provide the indicators (sub-variables) for each of the ten independent variables chosen for the study. This limited them from analyzing the contribution of each independent variable to the dependent variable hence failing to reflect the causal association between supply chain management practices and performance of Kenya tea development agency managed factories. The study only utilized one respondent from each factory therefore the impression is that only one respondent per factory represented the views of the whole individuals concerned with supply chain management practices in the factories. Moreover, their study was considered to have so many independent variables hence putting into question the specific independent variables contributing to the dependent variable given the fact that supply chain contexts differ from firm to firm due to various supply chain management competencies.

Mbui, Namusonge, and Mugambi (2016) study on the effect of strategic management practices on export value addition in the tea subsector industry in Kenya did not provide a suitable explanation on the link between strategic management practices and export value addition which is a subset of supply chain management practices i.e. the link between independent variables chosen for the study and the dependent variables. Moreover, they did not provide an explanation on which strategic management practices were suitable to each of the tea subsector firms chosen for the study since the strategic management contexts differ from firm to firm depending on available competency resources. This research was inadequate in evaluation and dissemination of the strategic management practices on export value addition in the tea subsector in Kenya thus creating a research gap.

The absence of a comprehensive supply chain management practices definition makes it more difficult for supply chain executives to claim authority and responsibility for the right combination of functions and processes. It also makes it more difficult to benchmark against other companies and industries on supply chain metrics, job responsibilities and other human resource issues because of the differences that exist from one firm to the next (Franken, 2014).It is worth noting that earlier studies on supply chain management practices have paid little attention to conceptualizing prominent practices that help the supply chain members to understand performance drivers. The focus is usually on internal business practices from a single company's perspective (Mclnerney, 2015). That is to say that a host of previous research studies have been employed in studying firms' boundaries, vertical integration decisions, the rationale for conducting an acquisition, the networks and other hybrid governance forms without an emphasis on the role played by supply chain management practices.

2.7 Research Gaps

This section reviewed the gaps on Effect of supply chain management practices on performance of tea subsector industry in Kenya. The literature review affirmed that much of the empirical studies undertaken in the topic under study had been undertaken both locally and outside Kenya but did not tackle key issues relating to the tea subsector industry in Kenya. Much of the literature concentrates on supply chain management practices and performance of the firms without focusing on the tea subsector in Kenya and all its players. Hence, there was definite need to focus the study in the tea sub sector industry in Kenya so as to add literature focusing on evidence from the experiences in the performance of the Kenyan tea subsector industry and possible contribution of supply chain management practices.

Sukati *et al*. (2011) study on the relationship between supply chain management practices and the competitive advantage of firm failed to diversify on their respondents and get the input of other practitioners within the manufacturing industry in Malaysia as it only used supply chain practitioners hence inviting some form of biasness in responses and findings. The lack of multiple and diverse informants from the chosen firms offers the opportunity for further research. It would be informative to survey multiple sources and informants within the participating firms. However, the data for the study was collected from firms based in Malaysia and cannot be replicated to the Kenyan context. Therefore, the results may hold only true for firms based in countries with a similar political, economic, and geographic setting. Moreover, the data collected failed to conclusively state which supply chain relationships would fit each of the firms chosen for the study given the diversity and contexts of each of the firm in implementing supply chain management practices hence instigating a research gap.

Nyamasege and Biraori (2015) study on the effect of supplier relationship on the effectiveness of supply chain management practices in Kenyan public sector: case of Ministry of Finance did not carry out an analysis of each of the independent variable and the effect it had on the dependent variable thus failing to come up with the optimal model in their study through step-wise analysis using SPSS. This led to a generalized analysis, findings, conclusions and recommendations which did not give the contribution of each of the independent variable to the dependent variable. This created an ambiguity on the findings of the research from the quality and quantity perspective thus creating a gap in the research.

Barasa, Namusonge, and Iravo (2015) research on contributions of supply chain management practices on performance of steel manufacturing companies in Kenya failed to conclusively state which supply chain management practices would fit each of the firms chosen for the study given the diversity and contexts of each of the manufacturing firm in implementing supply chain management practices. Moreover, this study was carried out in the steel manufacturing companies in Kenya which has different supply chain objectives from the tea subsector industry that emphasize different aspects of supply chain management practices hence instigating a research gap.

Namusonge, Mukulu, and Iravo (2017) study on the influence of supply chain capabilities on performance of manufacturing entities in Kenya failed to clearly articulate on whether the supply chain capabilities chosen for the study influenced financial or operational performance i.e. which capabilities influenced financial performance and which capabilities influenced operational performance. Moreover, this study was carried out in the manufacturing entities in Kenya which has different supply chain objectives from the tea subsector industry that emphasize different aspects of supply chain management practices. This failed to explain well how, when and why a relationship existed between the independent variables and what exactly determined the inter-relationships on financial and operational performance hence instigating a research gap.

Okello and Were (2014) study on the Influence of supply chain management practices on performance of the Nairobi Securities Exchange's listed, food manufacturing companies in Nairobi failed to give a concrete explanation on why they chose the food and beverage companies listed on the Nairobi Securities Exchange at the expense of the entire food and beverage industry in Kenya and thus the sample was biased towards only listed food and beverage firms hence the results may therefore not reflect the situation in the whole food and beverage industry in Kenya. This limits the potential generalization of the study results to all types of food and beverage industry in Kenya hence instigating a research gap.

Christine (2010) carried out a study on strategies used by Chai Trading Limited to promote and penetrate the Middle East markets. The research design was a case study. An in-depth understanding of the global tea markets was required. However, the study did not collect data from the global tea markets or target market which in this case was Middle East Markets to gather crucial information from global perspective on what strategies are needed to penetrate the Kenyan tea into those markets. This limited the views, findings, conclusions and recommendations to evidence from a Kenyan respondent's scenario perspective rather than the target market/ global tea markets scenario. Hence their study did not specifically address an in-depth understanding of the global markets which was required hence instigating a research gap.

Nyangito and Kimura (2009) carried out a study on challenges in the tea sector. The study found that the main challenge in the Kenyan tea sub- sector is that small scale farmer's tea is mainly exported in semi-processed form to produce some of the well-known global tea brands. However, the data for the study were collected from firms based in Kenya only and no views were corroborated from international firms to reinforce this argument hence instigating a research gap.

Githii, Kimani and Kagira (2012) examined the strategies to curb challenges facing small holder tea sector in Kenya. The researchers provided some solutions to the challenges, borrowing from some supply chain management practices to culminate into competitive strategies. Various strategies to enhance competitiveness in this sector were outlined and among these strategies are: supplier and customer relationships, value addition, information technology and flexibility in internal operations/processes. However, this research is inadequate in evaluation and dissemination of the specific supply chain management practices which can be deployed to enhance performance of small holder tea sector in Kenya hence instigating a research gap.

Toyin (2012) carried out a study in Nigerian manufacturing companies on the impact of supply chain management practices on the performance. He used strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing and postponement as indicators of supply chain management on performance of manufacturing firms in Nigeria. The result of the correlations between the variables of their study indicated that SCM practices are positively correlated to SCM performance. However, the lack of theory application to support the specific inter-relations between the various supply chain management practices may have limited our ability to understand SCM practices in manufacturing firms and its related variables as well as the relationships between them. It also makes the generalization of research findings from one context to another difficult thus creating a research gap.

Krishnapriya and Rupashree (2014) sought to determine supply chain integration - a competency-based perspective in organizational performance. They used individual competencies, organizational competencies and inter-organizational competencies as indicators of supply chain integration competency. They concluded that by leveraging the capabilities and competencies required for higher integration, each member in the supply chain can achieve superior performance. However, the research did not outline the mechanisms on how to achieve supply chain capabilities and competencies. Moreover, the study could not fully clarify the monitoring, implementation and relationship between individual competencies, organizational competencies and inter-organizational competencies due to lack of integration systems and its implications on SCM practices. Also, the research findings cannot be validated because the research did not disclose the methodology used to arrive at the findings hence creating a research gap.

Georgise, Thoben, and Seifert (2014) carried out a research on supply chain integration in the manufacturing firms in developing country: an Ethiopian case study. However, In looking to the aspect of supply chain integration in manufacturing firms, their literature was skewed and limited in its focus on the capability of supply chain integration ignoring the input of management which without its goodwill and expertise, supply chain integration would proof an uphill task to implement. The research fails to clearly articulate the role of management in enhancing supply chain integration within manufacturing firms hence instigating a research gap.

Ibrahim and Hamid (2012) study on supply chain management practices and supply chain performance effectiveness in manufacturing companies in Sudan fails to capture a full length literature on strategies to implement supply chain integration models or theories around the various manufacturing firms' networks or any tangible literature on the associated performance which were fundamental drivers to the performance of manufacturing firms. This left the research inconclusive on the best strategies to deploy if supply chain management practices was to be integrated in the organizational structure hence instigating a research gap.

Wanja and Chirchir (2013) study on supply chain management practices and performance of Kenya tea development agency managed factories failed to provide the indicators (sub-variables) for each of the ten independent variables chosen for the study thus limiting them from analyzing the contribution of each independent variable to the dependent variable hence failing to reflect the causal association between supply chain management practices and performance of Kenya tea development agency managed factories. The study only utilized one respondent from each factory therefore the impression is that only one respondent per factory represented the views of the whole individuals concerned with supply chain management practices in the factories. This created an ambiguity on the data collected hence questions on the quality and quantity of data collected thus creating a gap in the research. Moreover, their study was considered to have so many independent variables hence putting into question the specific independent variables contributing to the dependent variable given the fact that supply chain contexts differ from firm to firm due to various supply chain management competencies. Therefore given the glaring criticism of this research, there exists a research gap which need to be fixed so as to further determine the relationship between supply chain management practices and performance.

Mbui, Namusonge, and Mugambi (2016) study on the effect of strategic management practices on export value addition in the tea subsector industry in Kenya did not provide a suitable explanation on the link between strategic management practices and export value addition which is a subset of supply chain management practices i.e., the link between independent variables chosen for the study and the dependent variables. Moreover, they did not provide an explanation on which strategic management practices were suitable to each of the tea subsector firms chosen for the study since the strategic management contexts differ from firm to firm depending on available competency resources. This research was inadequate in evaluation and dissemination of the strategic management practices on export value addition in the tea subsector in Kenya thus creating a research gap.

It's important to note that these studies concentrated on the proportional contribution in overall supply chain management practices and performance. Additionally, the studies done so far have focused on different industries, which have different contexts that presented unique characteristics. Finally, there is no known study on Effect of supply chain management practices on performance of tea subsector industry in Kenya and all its players i.e. tea factories, tea packers and tea exporters. It is for this purpose that it becomes noble to establish the effect of supply chain management practices on the tea subsector industry firms in order to answer questions regarding tea production volume and income, tea pricing and value addition activities.

2.8 Summary

This chapter reviewed literature that looked at a number of areas that were deemed to be relevant to the study objectives. The following theories relevant to the study were reviewed and this included Resource Based View Theory, Porter's Value Chain Theory, Supply Chain Network Theory and Supply Chain Integration Theory. Conceptual framework was developed with the elements of supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice as independent variables, supply chain integration as moderating variable and performance of the tea subsector industry in Kenya as the dependent variable. These discussions helped in shedding some light on the supply chain management practices since supply chain management is a multidimensional concept and there is no single theory or theories that could adequately explain the concept.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlined the research design and methodology that was used to carry out the study. The chapter also dealt with the target population, type of data collected, sampling frame, sample and sampling technique, the sample size, data collection procedures, pilot test, validity and reliability of the instrument as well as the data analysis techniques and how eventually data was presented.

3.2 Research Philosophy

The research philosophy, or research paradigm, can be described as the overarching framework within which the researcher makes choices about theories and methodologies. Sekaran (2015) defines it as the way that you think about the development of knowledge. Three research philosophies dominate the business and management research field and they include the paradigms of positivism, realism and interpretivism. The research philosophy adapted for this study was based upon the research philosophical and methodological foundations of logical positivism. Nyang'au *et al.* (2017) assert that logical positivists underpin the goodness of scientific rigor in the quest for knowledge. The positivist position is derived from that of natural science and is characterized by the testing of hypotheses developed from existing theory (hence deductive or theory testing) through measurement of observable social realities.

This position presumes that theoretical models can be developed that can explain cause and effect relationships, and which lend themselves to predicting outcomes (Omar *et al*., 2017). Positivism is based upon values of reason, truth and validity and there is a focus purely on facts, gathered through direct observation and experience and measured empirically using quantitative methods – surveys and experiments - and statistical analysis (Bryman & Bell, 2015). Sasaka *et al*. (2014) relate this to the organizational context, stating that positivists assume that what truly happens in organizations can only be discovered through categorization and scientific measurement of the behavior of people and systems and that language is truly representative of the reality.

3.3 Research Design

Creswell (2014), as cited by Omar *et al*. (2017), regards research designs as plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis. This study utilized a quantitative survey research design specifically cross-sectional survey research design aimed at collecting large number of quantitative data at a point in time so as to establish the effect among key study variables namely; supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice as independent variables, supply chain integration as the moderating variable and the dependent variable performance of Kenya's tea sub sector industry.

This study adopted cross-sectional survey research design using quantitative approach since it puts emphasis on measurement and data is analyzed in a numerical form to provide brief description. Kothari and Garg (2014) notes that quantitative approach is also called scientific method and has been regarded as the traditional mode of inquiry in evaluation and research. It is further argued that this mode of inquiry has various logical and distinct steps starting from determining and highlighting the research problem to constructing appropriate inferences and conclusions to the target population. Hence, quantitative approach stresses on procedure, methodology and statistical measures to test hypotheses and make predictions.

The study used quantitative approach for the reason that it was possible to easily analyze the data collected using questionnaires from the respondents by utilizing the standard statistical tools. Similarly, quantitative approach had techniques, measures and designs that come up with numerical and quantifiable data (Sasaka *et al*., 2014). The quantitative design also depends on the principles of verifiability of prove, substantiation and confirmation utilizing the correct measurement of variables being studied. Quantitative design also assumes that science seeks to determine facts with little consideration for subjective status of the individual (Omar *et al*., 2017). Kisingu, Namusonge and Mugambi (2017) note that quantitative design is a systematic way of collecting numerical information and analyzing it using statistical procedures. Cross-sectional survey method is also an appropriate method for collecting data for exploratory studies for a well-defined population and it is very particular with the effect of two categories of variables.

Sekaran and Bougie (2011) noted that cross-sectional survey research design allowed a large number of individuals to be surveyed in a shorter time frame and at a less cost than other methods such as interviews and observations. The advantage of this survey method was that the variables were measured in real social settings as they existed at the time of study. Sasaka *et al*. (2014) assert that cross-sectional studies have been found to be more robust for effects studies as the research respondents answer the questionnaire once because of the time period the data is collected and the type of analysis. Cross-sectional studies are considered more of a snap shot or one-shot study. Cooper and Schindler (2013) note that quantitative designs facilitate greater precision in measurement and also avail a good basis for generalizing results over and above the study sample. The quantitative design similarly enhanced comparisons because the researcher was able to obtain feedback from a big number of people for comparisons. This quantitative study aimed to empirically analyze the effect of supply chain management practices on performance of Kenya's tea sub sector industry.

3.4 Target Population

Target population consists of all members of a real or hypothetical set of people, events or objects from which a researcher wishes to generalize the results of their research while accessible population consists of all the individuals who realistically could be included in the sample (Sekaran & Bougie, 2011). The target population for this study was the 254 firms in the tea subsector industry comprising of 107 tea factories, 75 tea packers and 72 tea exporters in Kenya as per the Tea Board of Kenya (2016)'s data base. Target and accessible population comprised of management and supervisory employees in the tea subsector industry in Kenya. This study therefore handpicked top management and middle management employees from the firms given the fact that they are more involved in supply chain management activities in there day to day business. Table 3.1 presents the target population.

Table 3.1: Target Population

Category	**Target Population**
Tea Factories	107
Tea Packers	75
Tea Exporters	72
Total	**254**

Source: Tea Board of Kenya (2016)

3.5 Sampling Frame

A sampling frame is the list of elements from which the sample may be drawn (Cooper & Schindler, 2013). Cooper and Schindler (2013) also call it a working population because it provides the list that can be worked with operationally. The sampling frame for this study was the list of the 254 firms in the tea subsector industry comprising of 107 tea factories, 75 tea packers and 72 tea exporters in Kenya as per the Tea Board of Kenya (2016)'s data base in Appendix III, IV and V.

3.6 Sample Size and Sampling Technique

3.6.1 Sample Size

In determining the sample size, Slovin's formula was used to calculate the sample size (at 95% confidence level and $\alpha = 0.05$) as indicated on Equation 3.1 below and the adjusted sample size was 155 firms. With a study population of 254 firms and a sample size of 155 firms, the researcher applied stratified random sampling frame by choosing 2 respondents from every firm. Table 3.2 shows the sample size of study and distribution of questionnaires to two managers in each sampled firm. With a confidence interval of 95 percent, the sample size was determined by using the Slovin's formula shown below (Omar *et al*., 2017).

$$n = \frac{N}{(1 + N(\alpha^2)} \text{...} \textbf{Equation 3.1}$$

$$n = \frac{254}{(1 + 254\ (0.005^2)} \text{...} \textbf{ Equation 3.2}$$

n = 155

Where:

n = sample size,

N = target population

α = margin of error (0.05%).

Therefore, the sample size for this study was 155 firms in the tea subsector industry comprising of 65 tea factories, 46 tea packers and 44 tea exporters in Kenya. The unit of analysis was the firm, while the 2 managers drawn from the top and middle management from each of the 155 firms sampled for the study were selected as the units of observation. In total, 310 managers drawn from top management and middle level management were selected for this study. The sample size selection technique was found sufficient in prior studies (Kitenga, 2020; Kitenga, Kilika, & Muchemi, 2020a; Kitenga, Kilika, & Muchemi, 2020a).

Table 3.2 presents the sample size for the study.

Table 3.2: Sample Size

Strata	Target Population	Calculation	Sample Size	Managers from each Sampled Firm	Total No. of Managers Sampled
Tea Factories	107	155/254*107	65	2	130
Tea Packers	75	155/254*75	46	2	92
Tea Exporters	72	155/254*72	44	2	88
Total	**254**	**254/ (1+254*0.05^2)**	**155**	**2**	**310**

3.6.2 Sampling Technique

The stratified random sampling technique was utilized to select a sample size of 155 firms comprising of 65 tea factories, 46 tea packers and 44 tea exporters from the target population of 254 comprising of 107 tea factories, 75 tea packers and 72 tea exporters in the tea subsector industry in Kenya. The stratified random sampling technique was appropriate for the study, because the target population was heterogeneous.

The uneven distribution of firms gave rise to heterogeneity which if not properly accounted would have led to biased parameter estimates. In this regard, stratified sampling enabled us to avoid biasness consequently having unbiased parameter estimates. Based on distribution of firms in the 3 segments as shown in table 3.1 above, the researcher used proportions that were calculated in the population distribution to come up with a representative sample distribution as shown in table 3.2 above. The proportions calculated were given the number of firms to be included in the sample for each segment. Thereafter simple random sampling was used to select the names of individual tea firms in which data was collected. This is shown in appendix VI, VII and VIII.

The study respondents were made up of firm managers in the ranks of CEO, General Manager, Finance Manager, Operations Manager and Supply Chain Manager. Namusonge *et al*. (2017) assert that supply chain management practices integration into the firm in order to enhance performance is the responsibility of the top management team and should be part of their agenda. The researcher therefore chose two respondents from each tea subsector firm in the rank of manager because they were knowledgeable about the supply chain management practices contribution to performance but this excluded other departmental heads on the basis that many sectional heads had performance knowledge restricted to their areas of operation only (Sasaka *et al*., 2014).

The C.E.O, General Manager and Operations Manager were included as respondents since C.E.O's were considered as the accounting officers of the firm who oversee among other functions the supply chain activities and their contribution to performance. General Managers were also considered to be accounting officers in small tea firms or specifically assigned roles of general manager supply chain and logistics hence had immense knowledge on supply chain activities and their contribution to performance. The Operations Managers were included as respondents since they were mainly charged with ensuring implementation of management decisions at operations level regarding supply chain management activities hence were considered to be rich in information on supply chain operations activities and their contribution to performance (Barasa *et al*., 2015).

The Finance Manager was included as a respondent because he or she always participated in budgetary process of the entire firm and used the supply chain planning tools and techniques such as demand forecasting and financial analysis to allocate resources to supply chain function within a firm thus having knowledge on supply chain management activities and their contribution to performance. The Supply Chain Manager was included as a respondent since he/she was involved in the day-to-day supply chain management activities of the firm which included demand forecasting, supply chain planning, supplier evaluation etc. among other functions thus having substantial knowledge on firm's supply chain activities and performance (Namusonge *et al*., 2017).

3.7 Data Collection Instruments

The study deployed both primary and secondary data collection sources as follows:

3.7.1 Primary Data

The primary research data was collected using a structured questionnaire. A structured questionnaire is one in which the questions asked are precisely decided in advance and in this case the questions were decided in advance by the researcher as items in the questionnaire were arranged in a logical sequence according to the themes being studied and items that would elicit similar responses were grouped together (Bryman & Bell, 2015). The structured questionnaire was with closed-ended questions and a customized five-part Likert scale which was used to collect data on the variables of study from the managers. Respondents were asked to indicate agreement with each item as each item had a five-point scale ranging from 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The questionnaires had been preferred because personal administration of questionnaires to individuals helped to develop close relationships with the respondents. The questionnaire also provided the clarifications sought by respondents on the spot by collecting the questionnaires soon after they were filled (Cooper & Schindler, 2013).

The questionnaire was divided into two parts. Part I comprised questions on firm/respondents information while Part II comprised questions on supply chain management practices (supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice and supply chain integration) and performance of tea subsector industry in Kenya. The questions were formulated to address all the objectives of the study.

3.7.2 Secondary Data

Information relating to the tea subsector industry performance in various tea subsector bodies websites, in annual and published financial statements in national newspapers, during annual general meetings and in-house magazines was used to provide secondary data information on performance of tea subsector industry in Kenya. Other important business disclosures in journals, manuals and the various firm's documents were used for secondary data collection. The secondary data was collected using secondary data collection sheet (appendix III). The secondary data collected was used to cross validate the primary data information collected.

3.8 Data Collection Procedures

Data was collected through administration of questionnaires with the help of the research assistants. Before embarking on data collection, the researcher trained the research assistants on the content of the questionnaire and the general research expectations. To enhance their practical skills on administration of the research instrument, the research assistants accompanied the researcher during the pilot study to get hands on experience. During the main study, the questionnaires were conveyed to the respondents through the drop and pick technique. The researcher/research assistants approached each firm, introduced himself/themselves to the relevant respondents by explaining to them the nature and purpose of the study and then left the questionnaires with the respondents for completion and picked the questionnaires later within two weeks. Before the questionnaire was given out, the researcher had to seek for authorization from the particular tea subsector firm management to collect data. The researcher also sought for further approval from National Commission for Science Technology and Innovation (NACOSTI) to administer the questionnaires.

The researcher/research assistants also observed ethical considerations in the research process. Bryman and Bell (2015) assert that in order to properly address the ethical considerations in research, it is important that the researcher ensured that the following steps were taken; the respondents were asked to voluntarily participate and additionally, had the right to withdraw at any stage if they wished so. Respondents' participation was based on informed consent. This principle of informed consent provided that the researcher should give sufficient information and assurances about taking part in the research in order to allow individuals to understand the implications of participation and to reach a fully informed, well thought and freely given decision about whether or not to do so, without the exercise of any pressure or coercion.

There was no use of offensive, discriminatory, or other unacceptable language in the formulation of the Questionnaire. Respondents were guaranteed their privacy and anonymity throughout the research study process. The researcher acknowledged the works of all other authors used in any part of this thesis by citing and referencing the various authors. The researcher maintained the highest level of objectivity during discussions and analyses throughout the research study process. A covering letter explaining the objectives of the study and assuring the respondents' confidentiality and asking them to participate in the study accompanied the questionnaire.

3.9 Pilot Study

Cooper and Schindler (2013) indicated that a pilot test was conducted to detect weakness in design and instrumentation and to provide proxy data for selection of a probability sample. Pilot testing provided an opportunity to detect and remedy a wide range of potential problems with the research instrument. By conducting a pilot testing, it ensured that appropriate questions were asked, the right data was collected, and the data collection methods worked. A pilot study was undertaken on sixteen (16) tea sub-sector firms with a total of 31 respondents involved (see appendix IX) to test the reliability and validity of the questionnaire. The rule of thumb is that 10% of the sample size should constitute the pilot test (Cooper & Schindler, 2013). The proposed pilot test was within the recommendation. The pre-tested respondents were not part of the study population since this would have brought about assessment biases and contamination of the respondents (Cooper & Schindler, 2013).

3.9.1 Validity of the Research Instrument

Validity is the degree to which results obtained for the analysis of the data actually represent the phenomena under study. It indicates how accurate the data obtained in the study represent the variables of the study (Cooper & Schinder, 2013). The validity of the questionnaire was determined using various methods, so as to ensure that what is supposed to be measured and performed is achieved with minimal deviation. The validity tests that were conducted are: Content validity, face validity and construct validity.

In content validity, the questionnaire was formulated and operationalized as per the study variables to ensure adequacy and representativeness of the items in each variable in relation to the purpose and objectives of the study. It has been suggested that content validity can also be established by asking people with experience and expertise in a field to judge whether, on the face of it, the measure seems to reflect the concept concerned (Cooper & Schindler, 2013). Hence, content validity was verified through expert opinion from supervisors and practitioners in the supply chain industry, tea subsector industry and performance appraisal experts.

In face validity, the questionnaire was subjected to expert analysis and opinions from at least two external experts who thoroughly checked the representativeness of the research instrument at face value. The experts critically examined each question against study objectives and how they were answered by the potential respondents and necessary adjustments were made. Instruments developed for other similar studies were also used for comparison purposes.

Construct validity is the degree to which, a test measure an intended hypothetical construct (Sekaran, 2015). Using a panel of experts familiar with the construct is a way in which this type of validity can be assessed; the experts can examine the items and decide what the specific item is intended to measure (Kothari & Garg, 2014). Construct validity was achieved through restricting the questions to the conceptualization of the variables and ensuring that the indicators of each variable fall within the same construct. The purpose of this check is to ensure that each measure adequately assessed the construct it is purported to assess.

Factor analysis was used to assess the validity of the questionnaire. Factor analysis is an interdependence technique under the family of multivariate analysis with the purpose to identify from a large set of variables, the salient features that can be used for multivariate analysis (Kising'u *et al*., 2017). Exploratory Factor Analysis (EFA) is applied to analyze the scale items in order to prove their discriminant validity of measurement instruments developed within a study, where the EFA is measured based on Kaiser Meyer-Olkin (KMO) measure of sampling adequacy and test of significance at 95% and the instrument is regarded as adequate when the value of KMO is between 0.5 to 1.0 (Bryman & Bell, 2015).

3.9.2 Reliability of the Research Instrument

Testing reliability of the scale is very important as it shows the extent to which a scale produces consistent results if measurements are made repeatedly. Reliability is the extent to which an instrument is predictable, accurate and dependable to yield the same results every time it is administered (Kothari & Garg, 2014). Reliability is the ability of the research instrument to give the same answer in the same circumstances from time to time. If respondents answer a questionnaire the same way on repeated situations, then the questionnaire is said to be reliable (Sasaka *et al*., 2014). Cronbach's alpha was developed by Lee Cronbach in (1951) to provide a measure of the internal consistency of a test or scale. Cronbach's alpha was used to determine the internal reliability of the questionnaire that was used in this study. Values range between 0 and 1; while 1.0 indicates perfect reliability, the value 0.70 is deemed to be the lower level of acceptability (Sekaran, 2015).

Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. Internal consistency should be determined before a test can be employed for research or examination purposes to ensure validity (Tavakol, 2011). Cronbach's alpha basic equation measure which is an extension of the Kuder Richardson formula 20 (KR-20), reliability coefficient of internal consistency was determined and given by equation 3.3 below.

$$KR-20 = \frac{(K)\,(S2-\sum S2)}{(S2)\,(K-1)} \quad \textbf{..Equation 3.3}$$

Where,

KR-20	–	Reliability coefficient of internal consistency
K	–	Number of questions used to measure the reliability
$\sum S^2$	–	Total variance of overall scores on the entire test
S^2	–	Variance of scores on each question

3.10 Data Processing and Analysis

Quantitative methods of data analysis were used to analyze the research variables. A Likert scale was adopted to provide a measure for quantitative data. The scale helped to minimize the subjectivity and make it possible to use quantitative analysis. The numbers in the scale were ordered such that they indicated the presence or absence of the characteristic to be measured (Kothari & Garg, 2014). This mix of tools was necessary because the study was of quantitative nature.

3.10.1 Data Processing

Before processing the responses, data preparation was done on the completed questionnaire by editing, coding, entering and cleaning the data. Data collected was analyzed using descriptive statistics. The descriptive statistical tools helped in describing the data and determining the respondents' degree of agreement with the various statements under each factor. Data analysis was done with the help of SPSS version 24.0.

3.10.2 Quantitative Analysis

Quantitative analysis tested the theories in the theoretical framework behind the study and proved or disapproved it. The data obtained through questionnaires was analyzed; firstly, by calculating response rate and descriptive statistics such as mean, standard deviation and frequency distributions, which according to Kothari and Garg (2014) these measures informed the point about which items had a tendency to cluster and also described the characteristics of the collected data. When the standard deviation was low, it meant that most observations clustered around the mean and when high, it would indicate considerable variations in the responses.

Secondly, the data collected on each of the independent variables under study and their effect on the performance of tea subsector industry in Kenya was analyzed using inferential statistics. For this kind of study, there was need to go further and test hypotheses. The multiple regression analysis was used to explore the relationship between supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice as the independent variable, supply chain integration as the moderating variable and the performance of tea subsector industry in Kenya as the dependent variable. Pearson's product moment correlation analysis was also used and it's a powerful technique for exploring the relationship among variables.

Correlation coefficient was used to analyze the strength of the relations between variables. Correlation coefficients was calculated to observe the strength of the association. A series of multiple regression analysis (standard and step wise) was used because they provided estimates of net effects and explanatory power. Analysis of variance (ANOVA) was used to test the significance of the model. R^2 was used in this research to measure the extent of goodness of fit of the regression model. The multiple linear regression model used to estimate the coefficient was as follows:

$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$ **……………………………….. Equation 3.4**

Where:

Y = Performance of tea subsector industry in Kenya.

β_0, β_1, β_2, β_3 and **β_4** = Regression Coefficient to be estimated

X_1 = Supplier Relationship Management Practice

X_2 = Value Chain Management Practice

X_3 = Customer Relationship Management Practice

X_4 = Logistics Management Practice

ε = Stochastic term

The moderated multiple regression model was given as:

$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_1X_1Z + \beta_2X_2Z + \beta_3X_3Z + \beta_4X_4Z + \varepsilon$ **………………. Equation 3.5**

Where:

Y – Performance of tea subsector industry in Kenya

β_0, β_1, β_2, β_3 and β_4 = Regression Coefficient to be estimated

$\mathbf{X_1}$ = Supplier Relationship Management Practice

$\mathbf{X_2}$ = Value Chain Management Practice

$\mathbf{X_3}$ = Customer Relationship Management Practice

$\mathbf{X_4}$ = Logistics Management Practice

Z **=** Supply chain integration

ε = Stochastic term

Tests on the continuous moderator variable effects were performed by computing a variable, independent variable intersection the moderating variable from the data, and subjecting it to a regression model as a predictor. Tests were carried out on the overall effect of independent variables to determine the moderating effect on them. The moderated multiple regression was used to estimate the effect of a moderator variable (supply chain integration) on the independent variables (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and the dependent variable (performance).

3.10.3 Hypotheses Testing

The study was based on the effect of supply chain management practices on the performance of tea subsector industry in Kenya. Accordingly, five relevant hypotheses were set to guide the study in the conceptual framework. All the hypotheses were tested at 95 percent confidence level (level of significance, α = 0.05). To test the stated hypotheses, the p-value was used to test the significance of each independent variable and moderating variable to the dependent variable. If p-value was less than 0.05, we accepted the stated null hypothesis that the variable was significant. This led to accepting the stated hypotheses that the independent variables (i.e., supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice as the independent variable) have a significant effect on the dependent variable the performance of tea subsector industry in Kenya. The following table outlined the relevant two-tail hypotheses tests and the respective regression models.

Table 3.3 presents the hypotheses testing.

Table 3.3: Hypotheses Testing

Hypotheses		Model	Hypotheses Testing	Decision Rule
H_01:	Supplier relationship management Practice has no significant effect on performance of tea subsector industry in Kenya.	$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$……… Model 3.4	Multiple regression analysis	H_01: $\beta_1 = 0$ H_11: $\beta_1 \neq 0$ If the $P \leq 0.05$ reject the H_01. If the $P > 0.05$ fail to reject the H_01.
H_02:	Value Chain Management Practice has no significant effect on performance of tea subsector industry in Kenya.			H_02: $\beta_2 = 0$ H_12: $\beta_2 \neq 0$ If the $P \leq 0.05$ reject the H_02. If the $P > 0.05$ fail to reject the H_02.
H_03:	Customer Relationship Management Practice has no significant effect on performance of tea subsector industry in Kenya.			H_03: $\beta_3 = 0$ H_13: $\beta_3 \neq 0$ If the $P \leq 0.05$ reject the H_03. If the $P > 0.05$ fail to reject the H_03.
H_04:	Logistics Management Practice has no significant effect on performance of tea subsector industry in Kenya.			H_04: $\beta_4 = 0$ H_14: $\beta_4 \neq 0$ If the $P \leq 0.05$ reject the H_04. If the $P > 0.05$ fail to reject the H_04.
H_05:	Supply Chain Integration has no significant effect on supply chain management practices and performance of tea subsector industry in Kenya.	$Y= \beta_0 + \beta_1X_1 + \beta_2X_2+\beta_3X_3 + \beta_4X_4+\beta_1X Z + \beta_2X_2Z+\beta_3 X_3Z + \beta_4X_4Z+\varepsilon$ **………** Model 3.5	Multiple regression analysis	If β_1 to β_4 are insignificant in model 3.5 ($P > 0.05$), but are significant in model 3.4 ($P > 0.05$), then Z is just an independent, hence fail to reject the H_05.

3.10.4 Variable Definition and Measurements

This study used a Likert-type scale for item analysis to assess the Effect of supply chain management practices on performance of tea subsector industry in Kenya. The assessment scale was five-point Likert-type Scale /interval scale on the questionnaire. Sasaka *et al*. (2014) posits that Likert scale is easy to use in respondent and stimulus-centered studies.

Table 3.4: Measurement of Variables

Variable	Definition	Indicator	Measure
Performance of tea subsector industry in Kenya	Dependent Variable	• Firm profit margins • Market share index • Operational Efficiency	Interval Scale 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Supplier Relationship Management Practice	Independent Variable	• Collaborative initiatives • Planning and forecasting initiatives • Coordination of Resource Sharing Initiatives	Ordinary Scale 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Value Chain Management Practice	Independent Variable	• Product diversification • Product innovation • Product process management	Ordinary Scale 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Customer Relationship Management Practice	Independent Variable	• Customer product value satisfaction level • Customer product design input • Customer communication channels	Ordinary Scale 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Logistics Management Practice	Independent Variable	• Transport management systems • Inventory management systems • Distribution channel network	Ordinary Scale 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Supply Chain Integration	Moderating Variable	• Individual integration competency • Internal Integration competency • External Integration competency	Ordinary Scale 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presented the research findings and discussions of the study. Drawing on the resource-based theory, this quantitative cross-sectional survey research examined the effect of supply chain management practices on performance of tea subsector industry in Kenya. Specifically, the study examined the effect of supplier relationship management practice, value chain management practice, customer relationship management practice, and logistics management practice on the performance of tea subsector industry in Kenya. The study also investigated the moderating effect of supply chain integration on the relationship between supply chain management practices and performance of tea subsector industry in Kenya.

4.2 Response Rate

In total, 310 survey questionnaires were distributed to the to the 155 firms in the sample comprising of 65 tea factories, 46 tea packers and 44 tea exporters in the tea subsector industry in Kenya. However, only 229 usable survey questionnaires were received from 115 firms comprising of 48 tea factories, 36 tea packers and 31 tea exporters in the tea subsector industry in Kenya. Therefore, out of the 155 firms in the sample, valid responses were received from 115 firms in the tea subsector industry in Kenya, with a valid response rate of 73.9%. Based on the assertions from prior studies (Kitenga, 2020; Kising'u, Namusonge, & Mugambi, 2017; Kitenga *et al.*, 2020a; Kitenga *et al.*, 2020b), the response rate was very good for data analysis and reporting.

To supplement the primary data collected, the researcher further collected secondary data. Secondary data collection sheets (appendix III) on independent, moderating, and dependent variables were prepared for administration and collection of data from the tea subsector industry firms in Kenya. Out of the 155 collection sheets prepared, 115 firms comprising of 45 tea factories, 36 tea packers and 34 tea exporters were fully completed and used for analysis. This represented a success rate of 74.1% which is high and sufficient for analysis in this study. This falls within the acceptable margins where response rate of over half (50 %) is good while a response of over 70 percent is very good (Bryman & Bell, 2015).

The high response rate was realized, because of the constant reminders of potential respondents through phone calls, emails and follow ups by research assistants. This could also be attributed to the research topic which was eye catching and the timing was proper due to the ongoing tea pricing and bonus earning debate in Kenya. Table 4.1 presents the response rate.

Table 4.1: Response Rate

	Primary Data Response Rate		
Category	**Questionnaires Distributed**	**Questionnaires Returned/Firms Respondent**	**Return Percentage (%)**
Tea Factories	(65*2)=130	96 (48 firms)	73.8
Tea Packers	(46*2)=92	71(36 firms)	77.1
Tea Exporters	(44*2)=88	62(31 firms)	70
Total	**(155*2)=310**	**229 (115 firms)**	**73.9**
	Secondary Data Success Rate		
Category	**Collection Sheets Prepared**	**Collection Sheets Completed**	**Return Percentage (%)**
Tea Factories	65	45	39.7
Tea Packers	46	36	31.0
Tea Exporters	44	34	29.3
Total	**155**	**115**	**74.1**

4.3 Pilot Results

Prior to the actual study, a pilot study was carried out to pre-test the validity and reliability of data collection tools which was the questionnaire. The pilot study allowed for pre-testing of this research instrument.

4.3.1 Validity Instrument Results

Factor analysis was used to check validity of the constructs. Factor analysis is used to find factors among observed variables to produce a small number of factors from a large number of variables which is capable of explaining the observed variance in the larger number of variables (Omar *et al*., 2017). Prior to extraction of the factors, several tests were used to assess the suitability of the respondent data for factor analysis. The tests included Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. Kaiser-Meyer-Oklin Measures of Sampling Adequacy (KMO) & Bartlett's Test of Sphericity is a measure of sampling adequacy that is recommended to check the case to variable ratio for the analysis being conducted. In most academic and business studies, KMO & Bartlett's test play an important role for accepting the sample adequacy.

While the KMO ranges from 0 to 1, the world-over accepted index is over 0.5. Also, the Bartlett's Test of Sphericity relates to the significance of the study and thereby shows the validity and suitability of the responses collected to the problem being addressed through the study. For Factor Analysis to be recommended suitable, the Bartlett's Test of Sphericity must be less than 0.05 (Omar *et al*., 2017). The study applied the KMO Measures of Sampling Adequacy and Bartlett's Test of Sphericity to test whether the relationship among the variables was significant or not as shown in Table 4.2 below. The Kaiser-Meyer-Olkin Measures of Sampling Adequacy shows the value of test statistic as 0.887, which is greater than 0.5 hence an acceptable index. While Bartlett's Test of Sphericity shows the value of test statistic as 0.000 which was less than 0.05 acceptable indexes. These result indicates a highly significant relationship among variables.

Table 4.2: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.887
Bartlett's Test of Sphericity	Approx. Chi-Square	2150.309
	Df	15
	Sig.	.000

4.3.2 Reliability Instrument Results

The study conducted analysis on the research instrument to ascertain if the instrument would bring out reliable information. The pre-test was undertaken on sixteen (16) tea sub-sector firms falling in the category of tea factories, tea packers and tea exporter’s with a total of 31 respondents involved (see appendix VII) to test the reliability and validity of the questionnaire. In each of the firm, two questionnaires were filled by either the C.E.O, General Manager, Finance Manager, Operations Manager or Supply Chain Manager who were considered to be holding executive positions in the respective firms. Sasaka *et al*. (2014) pointed out that reliability is the ability of the research instrument to give the same answer in the same circumstances from time to time. If respondents answer a questionnaire the same way on repeated situations, then the questionnaire is said to be reliable. Internal consistency of measures was tested by computing Cronbach’s Alpha coefficients and after running all the 54 items in SPSS, the reliability test results are illustrated in Table 4.3.

Table 4.3: Reliability Results

Variable	Number of Items	Cronbach’s Alpha	N	Remarks
Supplier Relationship Management Practice	9	0.899	31	Accepted
Value Chain Management Practice	9	0.861	31	Accepted
Customer Relationship Management Practice	9	0.901	31	Accepted
Logistics Management Practice	9	0.857	31	Accepted
Supply Chain Integration	9	0.901	31	Accepted
Performance	9	0.905	31	Accepted

Overall Cronbach's alpha =0.887

Bryman and Bell (2015) showed that Cronbach alpha values ranges between 0 and 1.0; while 1.0 indicates perfect reliability, the value 0.70 is deemed to be the lower level of acceptability. The reliability statistic for each of the identified factors was presented in Table 4.3 above. It is evident that Cronbach’s Alpha for each of the independent variables, moderating variable and dependent variable was well above the lower limit of acceptability of 0.70. The findings indicated that Supplier Relationship Management Practice had a coefficient of 0.899, Value Chain Management Practice had a coefficient of 0.861, Customer Relationship Management Practice had a coefficient of 0.901, Logistics Management Practice had a coefficient of 0.857, Supply chain integration had a coefficient of 0.901 and Performance had a coefficient of 0.905.

The overall Cronbach's alpha for the six categories was 0.887 which was above the cut-off of 0.70 and thus the findings of the pilot study showed that all the six scales were reliable as their reliability values exceeded the prescribed threshold of 0.70 (Bryman & Bell, 2015).The results were consistent with the recommendations of DeVellis (2012), as cited by Sasaka *et al*. (2014), who highlighted that the commonly accepted rule of thumb for explaining internal consistency was as follows: $\alpha \geq 0.9$ as excellent, $0.9 > \alpha \geq 0.8$ as good, $0.8 > \alpha \geq 0.7$ as acceptable, $0.7 > \alpha \geq 0.6$ as questionable, $0.6 > \alpha \geq 0.5$ as poor, and $0.5 > \alpha$ as unacceptable.

4.3.3 Diagnostic Test

The collected data was tested for normality using skewness and kurtosis for variables of this study in order to determine the distribution curve. It was noted that when the values of skewness and kurtosis were equal to zero, the distribution was a perfect match to a normal distribution and it was accepted that the distribution approximates that of a normal distribution when the value of skewness was within ±2.00 of their respective standard errors for significance of 95% and the value of kurtosis was within ±3.00 of their respective standard errors of significance of 95% (Bryman & Bell, 2015).The skewness and kurtosis is shown in Table 4.3.

Table 4.4: Skewness and Kurtosis

Variable	n	Skewness		Kurtosis	
	Statistic	Statistic	Std Error	Statistic	Std Error
Performance	31	.259	.167	-0.063	.320

Kolmogorov–Smirnov test is a test used to check if a dataset is from a particular distribution. It is a non-parametric test and is applicable for continuous distributions. It is used to test whether the distribution of a variable in a sample is similar to or different from the distribution of a population which is already known (Omar, Namusonge, & Sakwa, 2017). Table 4.4 shows the results of One-Sample Kolmogorov-Smirnov Test.

Table 4.5: One-Sample Kolmogorov-Smirnov Test

Non-parametric Test		Performance
N		31
Normal Parameters[a]	Mean	22.2379
	Std. Deviation	5.31869
Most Extreme Differences	Absolute	.148
	Positive	.088
	Negative	-.148
Kolmogorov-Smirnov Z		1.729
Asymp. Sig. (2-tailed)		.0.005

***Test distribution is Normal*.**

The overall verdict of One-Sample Kolmogorov-Smirnov Test using normalized Z-statistic as indicated in Table 4.4 revealed that data on study variables did not deviate significantly from normal distribution since the Asymp. Sig. (p-value) was 0.005 which was less than the one set at p>0.05. Therefore, it would be appropriate to engage other statistical tests and procedures that had normality of these variables.

Multicollinearity was determined by the level of variance inflating factor (VIF) and tolerance. Multicollinearity is associated with VIF above 5 and tolerance below 0.2. A commonly given rule of thumb is that VIF's of 10 or higher may be a reason for concern (Makori & Jagongo, 2013). The regression analyses are tested to see if there is a presence of multicollinearity in the data Variance Inflation Factor (VIF) statistics (Ruhiu *et al*., 2014). Table 4.5 showed the Tolerances for all the independent variables were all above 0.2. The Variance Inflation Factors (VIFs) were all below 5. The scores of these statistical tests were accepted, implying that there was no presence of multicollinearity in the data. The independent variables of the study were therefore accepted for further analysis as they did not exhibit multicollinearity.

Table 4.6: Multi-Collinearity Results

Variable	Collinearity Statistics Tolerance	VIF
Supplier Relationship Management Practice	.681	1.469
Value Chain Management Practice	.798	1.253
Customer Relationship Management Practice	.716	1.397
Logistics Management Practice	.843	1.186
Supply Chain Integration	.599	1.671

a. Dependent Variable: Performance

The main cause of autocorrelation is omitted variables from the model. When an important independent variable is omitted from a model, its effect on the dependent variable becomes part of the error term. Hence, if the omitted variable has a positive or negative correlation with the dependent variable, it is likely to cause error terms that are positively or negative correlated (Babatunde, Ikughur, Ogunmola, & Oguntunde, 2014). One of the assumptions of regression is that the observations are independent. If observations are made over time, it is likely that successive observations are related. If there is no autocorrelation (where subsequent observations are related), the Durbin Watson statistic should be between 1.5 and 2.5. As shown in Table 4.6, the Durbin Watson value is 1.903 which indicates that the observations under the study were independent and thus no autocorrelation.

Table 4.7: Durbin Watson Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.698[a]	.487	.480	.45576	1.903

a.Predictors: (Constant), Supply chain integration, Logistics Management Practice, Customer Relationship Management Practice, Value Chain Management Practice and Supplier Relationship Management Practice
b. Dependent Variable: Performance

4.4 Demographic Results

The background information gathered was based on managerial position held by various respondents in the tea subsector industry, level of education, manager's working experience, firm classification , firm annual turn-over and firm's industry experience.

4.4.1 Position of the Respondents

The study sought to establish the positions held by respondents in the tea sub-sector industry who participated in the research. The respondents were restricted to the CEOs, General Managers, Finance Managers, Operation Managers and Supply Chain Managers who were considered to be holding the top management positions in their respective tea sub-sector industry firms. The study results revealed that (25)10.9% of the respondents were C.E.Os, (32)14% of the respondents were General Managers, (32)14% of the respondents were Finance Managers, (59)25.7% of the respondents were Operation Managers and (81)35.4% of the respondents were Supply Chain Managers with a mean score of 2.29 and a standard deviation of 0.993. Where the CEO was not available, the General Manager or Finance Manager or Operations Manager or Supply Chain Manager was able to respond to the research questionnaire. This showed that majority of respondents that participated in the study were in the top management of the tea subsector industry and thus pertinent information was obtained for the purpose of the research study. The findings are consistent with Sasaka *et al*. (2014) who used top management in parastatals to analyze performance of CSR in state parastatals. Table 4.8 presents the position held by the respondents.

Table 4.8: Position of the Respondents

Position of Respondent	Frequency	Percentage
C.E.O	25	10.9
General Manager	32	14
Finance Manager	32	14
Operation Manager	59	25.7
Supply Chain Manager	81	35.4
Total	**229**	**100**

4.4.2 Level of Education

The study sought to establish the level of education of the respondents. The study results revealed that 8.7% of the respondents were certificate holders, 20.1% of the respondents were diploma holders, 39.7% of the respondents were degree holders and 30.2% of the respondents were master’s holders while 1.3% of the respondents were doctorate holders with a mean score of 2.95 and a standard deviation of 0.952.

This shows that majority of the respondents that participated in the study were degree holders as shown in Table 4.9. This implies that majority of firms in the tea subsector industry had their human resources who have acquired basic education from colleges and universities hence they are in a position to respond appropriately to the demand of the questionnaire. The results were consistent with the recommendations of Omar *et al*. (2017) who highlighted on the importance of ascertaining the education level of respondents before administering the research instrument.

Table 4.9: Level of Education

Level of Education	Frequency	Percentage
Certificate	20	8.7
Diploma	46	20.1
Degree	91	39.7
Masters	69	30.2
Doctorate	3	1.3
Total	**229**	**100**

4.4.3 Manager's Experience

The study sought to establish the manager's experience in the tea subsector industry. The study results showed that manager's with experience of between 1-5 years were (48) 21%, between 6-10 years were (126) 55% and above 10 years were (55) 24% with a mean score of 2.03 and a standard deviation of 0.671. This shows that majority of the manager's that participated in the study had an experience of between 6-10 years as shown in Table 4.10. Hence this explains that majority of the managers had enough experience in their respective tea subsector firms and thus were able to give a clear reflection and response in the questionnaire on the Effect of supply chain management practices on performance of tea subsector industry in Kenya. The results were consistent with the recommendations of Omar *et al*. (2017) who highlighted on the importance of ascertaining the level of experience of respondents on a particular subject matter before administering the research instrument.

Table 4.10: Manager's Experience

Manager's Experience	Frequency	Percentage
Between 1-5 Years	48	21
Between 6- 10 Years	126	55
Above 10 Years	55	24
Total	**229**	**100**

4.4.4 Firm Classification

The study sought to establish from the respondents the nature of their firm in terms of what they were dealing with under the categories of tea factory, tea exporter and tea packers. The study results revealed that 96(41.9%) of the respondents indicated that their company was a tea factory, 71(31.0%) of the respondents indicated that their company was a tea exporter while 62(27.1%) of the respondents indicated that their company was a tea packing firm with a mean score of 1.85 and a standard deviation of 0.819. This shows that majority of respondents that participated in the study were from tea factories as shown in Table 4.11.

Table 4.11: Firm Classification

Company Classification	Frequency	Percentage
Tea Factory	96	41.9
Tea Exporter	71	31.0
Tea Packer	62	27.1
Total	**229**	**100**

4.4.5 Firm's Annual Turnover

The study sought to establish the firm's annual turnover in the tea subsector industry in Kenya. The study results collected from both the primary and secondary data revealed that 19(16.5%) of the firm's in the tea subsector industry in Kenya had an annual turnover of less than 1.0 billion, 27(23.5%) of the firm's in the tea subsector industry in Kenya had an annual turnover of between 1.0 to 5.0 billion, 40(34.8%) of the firm's in the tea subsector industry in Kenya had an annual turnover of between 6.0 to 10 billion while 29(25.2%) of the firm's in the tea subsector industry in Kenya had an annual turnover of over 10 billion with a mean score of 1.29 and a standard deviation of 0.454.

This result implie that the tea sub sector industry in Kenya is dominated by an annual turnover of between 6.0 to 10 billion. This therefore implies that the tea subsector industry in Kenya is able to collect cash through sell of tea products to a tune of between 6.0 to 10 billion in a year. Barasa *et al*. (2015) recommends deployment of efficient supply chain management practices in order to ensure that products reach the targeted customers in time hence enhancing annual turnover through cash obtained from selling of inventory. Table 4.12 presents the annual turnover results.

Table 4.12: Firm's Annual Turnover

Annual Turnover	**Company Classification** Tea Factories	Tea Packers	Tea Exporters	Frequency	%
Less than 1.0 Billion	6	7	6	19	16.5
Between 1.0 to 5.0 Billion	14	9	4	27	23.5
Between 6.0 to 10 Billion	23	10	7	40	34.8
Above 10 Billion	5	10	14	29	25.2
Total	**48**	**36**	**31**	**115**	**100**

4.4.6 Industry Experience of the Firm

The study sought to establish the industry experience of the firm's in the tea subsector industry by ascertaining how long they had been in operation. The study results showed that firms with industry experience of less than 1 year were (6) 2.6%, between 1-5 years industry experience were (35) 15.3%, between 6-10 years industry experience were (80) 34.9% and above 10 years industry experience were (108) 47.2% with a mean score of 2.03 and a standard deviation of 0.671. This shows that majority of the firm's that participated in the study had an industry experience of above 10 years. Hence this explains that majority of the firms had enough industry experience in the tea subsector industry and thus were able to contribute and give a clear reflection and response in the questionnaire on the Effect of supply chain management practices on performance of tea subsector industry in Kenya. The results were consistent with the recommendations of Namusonge *et al*. (2017) who highlighted on the importance of ascertaining the level of industry experience of the firm's on a particular subject matter before administering the research instrument so as to gather information on the supply chain management practices which have been in place for the entire period of their operation. Table 4.13 presents the industry experience results.

Table 4.13: Industry Experience of the Firm

Industry Experience	Frequency	Percentage
Below 1 Year	6	2.6
Between 1-5 Years	35	15.3
Between 6- 10 Years	80	34.9
Above 10 Years	108	47.2
Total	**229**	**100**

4.5 Performance of Tea Subsector industry in Kenya

The study sought to establish the effect of supply chain management practices on performance of tea subsector industry in Kenya. Supply chain management practices in this study were supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice. Respondents were required to respond to set questions related to performance of Kenya's tea subsector industry and give their opinions. The dependent variable was operationalized by three measures namely; firm profit margins, market share index and operational efficiency. Nine constructs of the dependent variable were tested for factor analysis.

4.5.1 Sample Adequacy Results of Performance

Factor analysis was used to check validity of the dependent variable performance of tea subsector industry in Kenya constructs. Kaiser-Mayor-Oklin measures of sampling adequacy (KMO) & Bartlett's Test of Sphericity is a measure of sampling adequacy that is recommended to check the case to variable ratio for the analysis being conducted. In most academic and business studies, KMO and Bartlett's test play an important role for accepting the sample adequacy. While the KMO ranges from 0 to 1, the world-over accepted index is over 0.5 (Ali *et al*., 2016). Also, the

Bartlett’s Test of Sphericity relates to the significance of the study and thereby shows the validity and suitability of the responses collected to the problem being addressed through the study. For Factor Analysis to be recommended suitable, the Bartlett’s Test of Sphericity must be less than 0.05 (Rusuli, Tasmin, Takala, & Norazlin, 2013).

The study applied the KMO measures of sampling adequacy and Bartlett’s test of sphericity to test whether the relationship between performance of tea subsector industry in Kenya dependent variable was significant or not as shown in Table 4.14. From Table 4.14, the KMO measure of sampling adequacy results was 0.889. This indicates that factor analysis could be carried out as the KMO index was above 0.5 and between 0 and 1. The Bartlett’s test of Sphericity result was 0.000 which was within the acceptable level to test for significance and validity of the data. Rusuli *et al*. (2013) explained that Measure of Sampling Adequacy should exceed 0.5 and for Bartlett’s test of Sphericity the significant level of p-value should be at less than 0.05. Table 4.14 presents the KMO and Bartlett's Test results for performance.

Table 4.14: KMO and Bartlett's Test for Performance

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.889
Bartlett's Test of Sphericity	Approx. Chi-Square	1709.308
	df	36
	Sig.	.000

4.5.2 Performance Rotated Component Matrix Results

Varimax rotation is frequently used in factor analysis since it reduces the number of complex variables and improves interpretation (Kising’u *et al*., 2017). A confirmatory factor analysis was done for the dependent variable, Performance of tea subsector industry in Kenya. The results of this analysis are presented in Table 4.15 and eight (8) out of nine (9) factor loadings were above 0.4 and positive. Thus, this therefore indicates that only eight (8) out of nine (9) factors were retained for subsequent analysis because they met the minimum threshold values of 0.4 and above (Kising’u *et al*., 2017).

Table 4.15: Rotated Component Matrix for Performance

Code No.	Opinion Statement	Component 1.FPM	2.MSI	3.OE
G1	My firm's profit margin has improved due to enhanced supply chain management practices.	**.843**		
G2	Revenues from the operations of my firm have been increasing every year due to supply chain management practices.	**.810**		
G3	Our profit margins are informed by stronger customer loyalty which increases levels of repeat purchasing hence profits	**.809**		
G5	We regularly monitor the market share of the organization through the ordering levels of the distributors and number of branches opened both locally and internationally.		**.937**	
G6	The number of customers served by my organization has been on a steady increase every year due to sophisticated supply chain network.		**.869**	
G7	My firm has established a well-coordinated supply chain network to ensure operational efficiency in delivering customer demand.			**.872**
G8	Our company operational efficiency has been enhanced due to computerization and collaboration with major suppliers.			**.714**
G9	My firm has got the capability to reduce the lead time between order receipt and customer delivery due to enhanced supply chain management practices.			**.633**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.
KEY:FPM=Firm Profit Margins, MSI=Market Share Index, OE=Operational Efficiency

4.5.3 Factor Analysis Results for Performance

The study sought to determine the effect of supply chain management practices on performance of tea subsector industry in Kenya. Performance of tea subsector industry in Kenya was assessed by three measures namely; firm profit margins, market share index and operational efficiency. Factor analysis was done on performance of tea subsector industry in Kenya variables where constructs were subjected to a variance test through the principal component analysis test. The principal component analysis was thus used for data reduction and interpretation of large set of data. Eight out of nine constructs were tested for factor analysis after performing rotated component matrix which eliminated one item due to failure to meet the threshold of 0.4 and above (Kising'u *et al*., 2017).

Through factor analysis, the results showed that three factors extracted held the explanation on performance of tea subsector industry in Kenya with cumulative total variance of 76.544% in this construct. Factor one was the highest with 28.694% of total variance, factor two had 27.499% of total variance while factor three had 20.351% of total variance. These three factors had their Eigen values greater than 1 and had the greatest effect on performance of tea subsector industry in Kenya. Thus, the results therefore revealed that the three major factors driving performance of tea subsector industry in Kenya cumulatively accounted for 76.544% of the total variance in this construct. This meant that 76.544% of the common variance shared by the eight constructs could be accounted for by the three factors and explain about 76.544% of variance as shown in Table 4.16.

Table 4.16: Factor Results- Total Variance Explained for Performance

	Initial Eigenvalues			**Rotation Sums of Squared Loadings**		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	2.828	35.346	35.346	2.296	28.694	28.694
2	1.692	21.150	56.496	2.200	27.499	56.193
3	1.604	20.049	76.544	1.628	20.351	76.544
4	.792	9.900	86.445			
5	.388	4.851	91.296			
6	.329	4.115	95.411			
7	.268	3.355	98.765			
8	.099	1.235	100.000			

Extraction Method: Principal Component Analysis.

4.5.4 Descriptive Results of Performance

Performance of tea subsector industry in Kenya was assessed by three measures namely, firm profit margins, market share index and operational efficiency. Table 4.17 shows descriptive data presented on a scale of 1 to 5 (1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree).

Table 4.17: Descriptive Results of Performance

Performance	N	Mean	Std Deviation	Cronbach's Alpha
Firm Profit Margins	229	4.607	.20903	.909
Market Share Index	229	4.522	.20014	.902
Operational Efficiency	229	4.640	.29500	.904
Performance	**229**	**4.590**	**.23472**	**0.905**

Key: 1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree
Overall Cronbach's Alpha = 0.905

Cronbach's alpha was used to test the reliability of the proposed constructs (Ali *et al*., 2016). From the study findings, it was noted that firm profit margins had a coefficient of 0.909, market share index had a coefficient of 0.902 while operational efficiency had a coefficient of 0.904. The overall Cronbach's alpha for performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency) was 0.905. The findings showed that all the three scales of performance measures were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Bryman & Bell, 2015).

From the research study questionnaire responses, it was noted that supply chain management practices have got the possibility of enhancing firm profit margins as indicated by a mean score of 4.607 and a standard deviation of 0. 20903.This outcome of the results was cross validated with the analysis of secondary data collected from the firms regarding profit margins. These findings were consistent with Namusonge *et al*. (2017) who did a study on Influence of supply chain capabilities on performance of manufacturing entities in Kenya and strongly indicated that firm profit margins had increased as a result of increased revenues thus resulting in performance in the manufacturing entities.

From the research study questionnaire responses, it was noted that supply chain management practices have got the possibility of enhancing market share index of the firms through the number of customers accessed by the firm because of fluent supply chain networks as indicated by a mean score of 4.522 and a standard deviation of 0. 20014. This outcome of the results was cross validated with the analysis of secondary data collected from the firms regarding market share index.

These findings were consistent with Barasa *et al*. (2015) who did a study on the impact of supply chain collaboration practice on the performance of steel manufacturing companies in Kenya and asserted that market share index was key to performance.

From the research study questionnaire responses, it was noted that supply chain management practices have got the possibility of catapulting operational efficiency courtesy of a well-coordinated supply chain network to ensure delivery of customer demand as indicated by a mean score of 4.640 and a standard deviation of 0. 29500. This outcome of the results was cross validated with the analysis of secondary data collected from the firms regarding operational efficiency. These findings were consistent with Barasa *et al*. (2015) who did a study on the impact of supply chain collaboration practice on the performance of steel manufacturing companies in Kenya and asserted that operational efficiency in steel manufacturing companie's operations was key to performance.

4.6 Supply chain integration

The study sought to determine the moderating effect of supply chain integration on supply chain management practices and performance of tea subsector industry in Kenya. Supply chain management practices were the independent variables in this study and they were supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice, as the independent variables affecting performance of tea subsector industry in Kenya. Respondents were required to respond to set questions related to supply chain integration and give their opinions. The moderating variable was operationalized by three measures namely; individual integration competency, internal integration competency and external integration competency. Nine constructs of the moderating variable were tested for factor analysis.

4.6.1 Sample Adequacy Results of Supply chain integration

The study applied the KMO measures of sampling adequacy and Bartlett's test of sphericity to test whether the relationship between the moderating variable supply chain integration was significant or not as shown in Table 4.18. From Table 4.18, the

KMO measure of sampling adequacy results was 0.835. This indicates that factor analysis could be carried out as the KMO index was above 0.5 and between 0 and 1. The Bartlett's test of Sphericity result was 0.000 which was within the acceptable level to test for significance and validity of the data. Rusuli *et al*. (2013) explained that Measure of Sampling Adequacy should exceed 0.5 and for Bartlett's test of Sphericity the significant level of p-value should be at less than 0.05.

Table 4.18: KMO and Bartlett's Test for Supply chain integration

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.835
Bartlett's Test of Sphericity	Approx. Chi-Square	1476.157
	df	36
	Sig.	.000

4.6.2 Supply chain integration Data Normality Test Results

The most fundamental assumption in multivariate analysis is normality, referring to the shape of the data distribution for a variable and its correspondence to the normal distribution (Hair *et al*., 2010). There are several ways to determine normality of the data. Normality is tested to determine whether the distribution of the data approximates that of a normal distribution. This is necessary to determine the next course of testing; using parametric or non-parametric techniques. Normality was used to test for significance and construction of confidence interval estimates of the parameters. The assumption is that the variables are normally distributed. In their study, Kising'u *et al*. (2017) showed that the assumptions and application of statistical tools as well as suitability of the tests are important aspects for statistical analysis. To check for normality, the study adopted the Skewness and Kurtosis test and Auto correlation test.

4.6.3 Skewness and Kurtosis Test Results for Supply chain integration

The first test for normality was done by examining the values of skewness and kurtosis. Two important components of normality are skewness and kurtosis (Tabachnick & Fidell, 2014). Skewness examines the deviation of the data from the mean while kurtosis examines the relative peakedness of the distribution. Although theoretically, when a distribution is perfect distribution, the value of skewness and kurtosis are zero, which are rather uncommon occurrence in the social science, Kisingu *et al*. (2017) suggested that for a distribution to be considered normal, both the skewness and kurtosis of the distribution should fall between -2.00 to +2.00. However, Hair *et al*. (2010) suggested that for a distribution to be considered normal, the skewness value must be within ±2.00 standard error of skewness and within ±3.00 standard error of kurtosis. The results presented in table 4.19 shows that skewness statistics for supply chain integration was 0.257 while kurtosis was -0.066. Based on these results, it was concluded that data for this variable was normally distributed since their statistic values were between -2 and +2. Table 4.19 presents Skewness and Kurtosis results for Supply chain integration.

Table 4.19: Skewness and Kurtosis for Supply Chain Integration

Variable	n	Skewness		Kurtosis	
	Statistic	Statistic	Std Error	Statistic	Std Error
Supply chain integration	229	.257	.161	-0.066	.320

4.6.4 Durbin-Watson Test Results for Supply chain integration

Autocorrelation may be defined as the assumption that the errors of prediction are independent of one another (Tabachnick & Fidell, 2014). A high degree of correlation among residuals of the regressions' data sets may produce inefficient results. The Durbin Watson statistic test was used to measure the autocorrelation of errors over the sequence of cases, and if significant, indicates dependence of errors. Durbin-Watson statistic test ranges in value from 0 to 4 with an ideal value of 2 indicating that errors are not correlated, although values from 1.75 to 2.25 may be considered acceptable (Omar *et al*., 2017). Some authors consider Durbin-Watson value between 1.5 and 2.5 as acceptable level indicating no presence of collinearity (Makori & Jagongo, 2013). Durbin-Watson value of 1.903 indicated that the model did not suffer from autocorrelation. Table 4.20 presents the results for testing autocorrelation in terms of the Durbin-Watson statistics test for supply chain integration.

Table 4.20: Durbin-Watson Results for Supply Chain Integration

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.698[a]	.487	.480	.04090	1.903

a. Predictors: (Constant), External Integration Competency, Internal Integration Competency, Individual Integration Competency
b. Dependent Variable: Performance

4.6.5 Factor Analysis Results for Supply chain integration

The study sought to determine the moderating effect of supply chain integration on supply chain management practices and performance of tea subsector industry in Kenya. The moderating variable, supply chain integration was operationalized by three measures namely; individual integration competency, internal integration competency and external integration competency. Nine constructs of the moderating variable were tested for factor analysis. Through factor analysis, three factors were identified which had the biggest effect on supply chain integration with cumulative variance of 60.603%.

Factor one was the highest with 23.221% of total variance, factor two had 20.864% of total variance while factor three had 16.519% of total variance. These three factors had their Eigen values greater than 1 and had the greatest effect on supply chain integration. The results revealed that the three major factors driving supply chain integration cumulatively accounted for 60.603% of the total variance in this construct. This meant that 60.603% of the common variance shared by the nine constructs could be accounted for by the three factors and explain about 60.603% of variance as shown in Table 4.21.

Table 4.21: Factor Analysis Results- Total Variance for Supply Chain Integration

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	2.272	25.241	25.241	2.090	23.221	23.221
2	2.029	22.544	47.784	1.878	20.864	44.085
3	1.154	12.819	60.603	1.487	16.519	60.603
4	.912	10.138	70.742			
5	.890	9.887	80.628			
6	.725	8.058	88.687			
7	.393	4.364	93.051			
8	.337	3.745	96.795			
9	.288	3.205	100.000			

Extraction Method: Principal Component Analysis.

4.6.6 Supply chain integration Rotated Component Matrix Results

Varimax rotation is frequently used in factor analysis since it reduces the number of complex variables and improves interpretation (Kising'u *et al*., 2017). A confirmatory factor analysis was done for the moderating variable, supply chain integration. The results of this analysis are presented in Table 4.22 and all the nine factor loadings were above 0.4 and positive. Thus, this therefore indicates that all the nine factors were retained for subsequent analysis because they all met threshold values of 0.4 and above (Kising'u *et al*., 2017). Table 4.22 presents Rotated Component matrix results for Supply chain integration.

Table 4.22: Rotated Component matrix for Supply Chain Integration

Code No	Opinion Statement	Component 1.IIC	2.IINC	3.EIC
F2	Staff are trained on how to use enterprise application to communicate across the supply chain network hence ensuring efficiency	**.754**		
F1	Continuous monitoring of staff productivity in supply chain network enhance the efficiency of the supply chain.	**.557**		
F3	Our top leadership support individual development in technology and innovations so as to enhance supply chain integration.	**.557**		
F6	Our company has put mechanisms in place to integrate and connect all internal functions from raw material management through production, shipping and sales.		**.742**	
F4	Performance metrics of our company are shared across our company's departments.		**.730**	
F5	Our company uses cross functional teams in process improvement.		**.513**	
F7	Our company exchanges information with our major suppliers through information networks.			**.805**
F9	Our company shares demand forecast information with major suppliers.			**.767**
F8	We have partnered with major wholesale distributors to ensure our products reach the end-user both locally and internationally			**.580**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 4 iterations.

KEY: IIC=Individual Integration Competency, IINC=Internal Integration Competency, EIC=External Integration Competency

4.6.7 Descriptive Results of Supply chain integration

Supply chain integration was assessed by three measures namely; individual integration competency, internal integration competency and external integration competency. Table 4.23 shows descriptive data presented on a scale of 1 to 5(1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree).

Table 4.23: Descriptive Results of Supply Chain Integration

Supply chain integration	N	Mean	Std Deviation	Cronbach's Alpha
Individual Integration Competency	229	3.9781	0.64739	.901
Internal Integration Competency	229	3.5851	0.77305	.904
External Integration Competency	229	3.8923	0.79290	.899
Supply chain integration	**229**	**3.8185**	**0.73778**	**0.901**

Key: 1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree
Overall Cronbach's Alpha = 0.901

Cronbach's alpha was used to test the reliability of the proposed constructs (Ali *et al*., 2016). From the study findings, it was noted that individual integration competency had a coefficient of 0.901, internal integration competency had a coefficient of 0.904 while external integration competency had a coefficient of 0.899. The overall Cronbach's alpha for supply chain integration (individual integration competency, internal integration competency and external integration competency) was 0.901. The findings showed that all the three scales of supply chain integration measures were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Bryman & Bell, 2015).

From the research study questionnaire responses, it was noted that individual integration competency was key to continuous monitoring of staff productivity in the supply chain network hence had enhanced the efficiency of the supply chain, communication across the supply chain network was efficient due to the availability of enterprise application to staff and top leadership had supported individual development in technology and innovations hence enhancing supply chain integration as indicated by a mean score of 3.9781 and a standard deviation of 0.64739.This findings were consistent with Bandaly *et al*. (2013) who did a study on supply chain risk management -a review of operational,financial and integrated approaches and strongly indicated that supply chain integration enhanced performance since it was pivotal in supply chain risk management through the individuals intgration competency.

From the research study questionnaire responses, it was noted that internal integration competency had a pivotal role to play in supply chain integration through sharing of performance metrics of the company across company's departments, company's using cross functional teams in process improvement and company's putting mechanisms in place to integrate and connect all internal functions from raw material management through production, shipping and sales as indicated by a mean score of 3.5851 and a standard deviation of 0.77305. These findings were consistent with Ellinger *et al.* (2012) who did a study on the influence of supply chain management competency on customer satisfaction and shareholder value and asserted that internal integration competency and inter-organizational management competency was key to supply chain integration inorder to propel performance.

From the research study questionnaire responses, it was noted that external integration competency was necessary in supply chain integration through companies exchanging information with major suppliers in their networks, partnering with major wholesale distributors to ensure products reach the end-user both locally and internationally and company's share demand forecast information with major suppliers as indicated by a mean score of 3.8923 and a standard deviation of 0.79290. These findings were consistent with Ellinger *et al.* (2012) who did a study on the influence of supply chain management competency on customer satisfaction and shareholder value and asserted that internal integration management competency and external integration management competency was key to supply chain integration inorder to propel performance.

4.6.8 Supply Chain Integration Correlations Results

Pearson Bivariate correlation coefficient was used to compute the correlation between the moderating variable supply chain integration (individual integration competency, internal integration competency and external integration competency) and the dependent variable performance of tea subsector industry in Kenya (firm profit margins, market share index and operational efficiency). Sekaran (2015) asserts in his explanation that this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive correlation). The correlation coefficient was calculated to determine the strength and nature of the relationship between supply chain integration measures (individual integration competency, internal integration competency and external integration competency) and performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency). In trying to show the relationship between the moderating variable supply chain integration measures (individual integration competency, internal integration competency and external integration competency) and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency), the study used the Karl Pearson's coefficient of correlation (r). This is as shown in Table 4.24.

Findings presented in Table 4.24 indicated that there was a significant effect and positive correlation between individual integration competency and performance of tea subsector industry in Kenya linked with firm profit margins (r = 0.191, p value = 0.004), market share index (r = 0.141, p value = 0.033) and operational efficiency (r = 0.203, p value = 0.002) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01. The findings also indicated that there was a significant effect and positive correlation between internal integration competency and performance of tea subsector industry in Kenya linked with firm profit margins(r =0.332,p value =0.000), market share index(r =0.189,p value =0.000) and operational efficiency (r = 0.670, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.Finally the findings also indicated that there was a significant effect and positive correlation between external integration competency and performance of tea subsector industry in Kenya linked with firm profit margins(r =0.385,p value =0.000), market share index(r =0.229,p value =0.000) and operational efficiency (r = 0.529, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

Further, the Correlation Coefficient (r) are classified according to their strengths as follows:+1.0 (perfect positive association),+0.8 to +1.0 (very strong positive association),+0.6 to +0.8 (strong positive association),+0.4 to +0.6 (moderate positive association),+0.2 to +0.4 (weak positive association),0.0 to +0.2 (very weak positive association),0.0 to -0.2 (very weak negative association),-0.2 to -0.4 (weak negative association),-0.4 to -0.6 (moderate negative association),-0.6 to -0.8 (strong negative association),-0.8 to -1.0 (very strong negative association) and -1.0 (perfect negative association).

This meant that supply chain integration measures (individual integration competency, internal integration competency and external integration competency) had significant positive correlation effect on performance of tea subsector industry in Kenya linked with firm profit margins, market share index and operational efficiency. The results are in tandem with the findings of Barasa *et al*., (2015) who did a study on the impact of supply chain collaboration practice on the performance of steel manufacturing companies in Kenya and noted that success of steel company's depended on organizational integration management competency and inter-company integration management competency in the supply chain integration management process. Table 4.24 presents supply chain integration correlations results.

Table 4.24: Supply Chain Integration Correlations Results

		IIC	IINC	EIC	FPM	MSI	EE
Individual Integration Competency	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	229					
Internal Integration Competency	Pearson Correlation	**.079****	1				
	Sig. (2-tailed)	.000					
	N	229	229				
External Integration Competency	Pearson Correlation	**.047****	**.297****	1			
	Sig. (2-tailed)	.007	.000				
	N	229	229	229			
Firm Profit Margins	Pearson Correlation	**.191****	.**332****	**.385****	1		
	Sig. (2-tailed)	.004	.000	.000			
	N	229	229	229	229		
Market Share Index	Pearson Correlation	**.141****	**.189****	**.229****	**.043****	1	
	Sig. (2-tailed)	.003	.004	.000	.005		
	N	229	229	229	229	229	
Operational Efficiency	Pearson Correlation	**.203****	.**670****	**.529****	**.520****	**.275****	1
	Sig. (2-tailed)	.002	.000	.000	.000	. 002	
	N	229	229	229	229	229	229

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
KEY:IIC=Individual Integration Competency, IINC=Internal Integration Competency, EIC=External Integration Competency, FPM=Firm Profit Margins, MSI=Market Share Index, OE=Operational Efficiency

4.6.9 Supply chain integration Goodness-of-fit Model Results

To assess the research model, the moderating variable supply chain integration(individual integration competency, internal integration competency and external integration competency) and the dependent variable performance of tea subsector industry in Kenya(firm profit margins, market share index and operational efficiency) were subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between supply chain integration(individual integration competency, internal integration competency and external integration competency) and the dependent variable performance of tea subsector industry in Kenya(firm profit margins, market share index and operational efficiency).

The results in Table 4.25 showed that supply chain integration(individual integration competency, internal integration competency and external integration competency) had explanatory power on performance of tea subsector industry in Kenya linked to firm profit margins as it accounted for 24.6% of its variability (R Square = 0.246) hence the model was a good fit for the data. Supply chain integration (individual integration competency, internal integration competency and external integration competency) as a variable on its own implies a positive relationship with performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.25 presents Supply chain integration Model Summary on Firm Profit Margins.

Table 4.25: Supply Chain Integration Model Summary on Firm Profit Margins

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.496[a]	.246	.236	1.04514

a. Predictors: (Constant), External Integration Competency, Internal Integration Competency, Individual Integration Competency

The results in Table 4.26 showed that supply chain integration(individual integration competency, internal integration competency and external integration competency) had explanatory power on performance of tea subsector industry in Kenya linked to market share index as it accounted for 52.6% of its variability (R Square = 0.526) hence the model was a good fit for the data. Supply chain integration (individual integration competency, internal integration competency and external integration competency) as a variable on its own implies a positive relationship with performance of tea subsector industry in Kenya linked to market share index. Table 4.26 presents Supply chain integration Model Summary results on Market Share Index.

Table 4.26: Supply Chain Integration Model Summary on Market Share Index

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.725[a]	.526	.520	.81299

a. Predictors: (Constant), External Integration Competency, Internal Integration Competency, Individual Integration Competency

The results in Table 4.27 showed that supply chain integration(individual integration competency, internal integration competency and external integration competency) had explanatory power on performance of tea subsector industry in Kenya linked to operational efficiency as it accounted for 17.9% of its variability (R Square = 0.179) hence the model was a good fit for the data. Supply chain integration (individual integration competency, internal integration competency and external integration competency) as a variable on its own implies a positive relationship with performance of tea subsector industry in Kenya linked to operational efficiency. However, this is still a good model as Cooper and Schinder (2013) pointed out that as much as lower value R square 0.10-0.20 is acceptable in social science research. Table 4.27 presents Supply chain integration Model Summary results on Operational Efficiency.

Table 4.27: Supply Chain Integration Model Summary on Operational Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.423[a]	.179	.168	.79258

a. Predictors: (Constant), External Integration Competency, Internal Integration Competency, Individual Integration Competency

4.6.10 Supply Chain Integration ANOVA Results

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05. The significance of the regression model on supply chain integration (individual integration competency, internal integration competency and external integration competency) and performance of tea subsector industry in Kenya linked to firm profit margins was as per Table 4.28 with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between supply chain integration (individual integration competency, internal integration competency and external integration competency) and performance of tea subsector industry in Kenya linked to firm profit margins with a p-value of 0.000. This indicates that the regression model was statistically significant in predicting firm profit margins. Basing the confidence level at 95% the analysis indicates high reliability of the results obtained. The overall ANOVA results indicated that the model was significant at F = 28.24.420, p = 0.000. Table 4.28 presents Supply chain integration ANOVA Results on Firm Profit Margins.

Table 4.28: Supply Chain Integration ANOVA Results on Firm Profit Margins

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	80.021	3	26.674	24.420	.000[b]
	Residual	245.769	225	1.092		
	Total	325.790	228			

a. Dependent Variable: Firm Profit Margins
b. Predictors: (Constant), External Integration Competency, Internal Integration Competency, Individual Integration Competency

The significance of the regression model on supply chain integration (individual integration competency, internal integration competency and external integration competency) and performance of tea subsector industry in Kenya linked to market share index is as per Table 4.29 below with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between supply chain integration (individual integration competency, internal integration competency and external integration competency) and performance of tea subsector industry in Kenya linked to market share index with a p-value of 0.000. This indicates that the regression model is statistically significant in predicting market share index. Basing the confidence level at 95% the analysis indicates high reliability of the results obtained. The overall ANOVA results indicated that the model was significant at F = 83.182, p = 0.000. Table 4.29 presents Supply chain integration ANOVA Results on Market Share Index.

Table 4.29: Supply Chain Integration ANOVA Results on Market Share Index

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	164.938	3	54.979	83.182	.000[b]
	Residual	148.713	225	.661		
	Total	313.651	228			

a. Dependent Variable: Market Share Index
b. Predictors: (Constant), External Integration Competency, Internal Integration Competency, Individual Integration Competency

The significance of the regression model on supply chain integration (individual integration competency, internal integration competency and external integration competency) and performance of tea subsector industry in Kenya linked to operational efficiency is as per Table 4.30 below with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between supply chain integration (individual integration competency, internal integration competency and external integration competency) and performance of tea subsector industry in Kenya linked to operational efficiency with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting operational efficiency. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that the model was significant at F = 16.316, p = 0.000. Table 4.30 presents Supply chain integration ANOVA Results on Operational Efficiency.

Table 4.30: Supply Chain Integration ANOVA Results on Operational Efficiency

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.747	3	10.249	16.316	.000[b]
	Residual	141.340	225	.628		
	Total	172.087	228			

a. Dependent Variable: Operational Efficiency
b. Predictors: (Constant), External Integration Competency, Internal Integration Competency, Individual Integration Competency

4.6.11 Regression Results of Supply chain integration and Performance

To establish the effect of supply chain integration (individual integration competency, internal integration competency and external integration competency) on performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

> **H_01:** Supply chain integration (individual integration competency, internal integration competency and external integration competency) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.

Regression analysis was conducted to empirically determine whether supply chain integration (individual integration competency, internal integration competency and external integration competency) had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.31 displays the regression coefficients results of supply chain integration (individual integration competency, internal integration competency and external integration competency). Table 4.31 presents Regression Coefficients of Supply chain integration and Firm Profit.

Table 4.31: Regression of Supply chain integration and Firm Profit Margins

		Unstandardized Coefficients		**Standardized Coefficients**		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	16.550	.523		31.616	.000
	Individual Integration Competency (X_1)	.122	.020	.355	6.102	.000
	Internal Integration Competency(X_2)	.176	.037	.291	4.785	.000
	External Integration Competency(X_3)	.184	.036	.307	5.067	.000

a. Dependent Variable: Firm Profit Margins

From Table 4.31, the results indicate that individual integration competency (with β= 0.355, p value 0.000), internal integration competency (with β=0.291, p value 0.000) and external integration competency (with β= 0.307, p value 0.000) are statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins. Further, Model 1 in Table 4.31 illustrates that a 0.122 point increase in individual integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.176

point increase in internal integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins and a 0.184 point increase in external integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.31 above, the coefficient (r) or beta for individual integration competency, internal integration competency and external integration competency were (0.355), (0.291) and (0.307) respectively. This meant that supply chain integration (individual integration competency, internal integration competency and external integration competency) individually explained 35.5 percent, 29.1 percent and 30.7 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins.

The regression model is summarized by equation 4.1 below.

$Y = 16.550 + 0.122X_1 + 0.176X_2 + 0.184X_3$ **…………………………. Equation 4.1**

Where,

Y – Firm Profit Margins, X_1 – Individual Integration Competency, X_2 – Internal Integration Competency, and X_3 – External Integration Competency

It was concluded that supply chain integration (individual integration competency, internal integration competency and external integration competency) had positive significant correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. Hence, supply chain integration (individual integration competency, internal integration competency and external integration competency) had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins.

To establish the effect of supply chain integration (individual integration competency, internal integration competency and external integration competency) on performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

H_01: Supply chain integration (individual integration competency, internal integration competency and external integration competency) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

Regression analysis was conducted to empirically determine whether supply chain integration (individual integration competency, internal integration competency and external integration competency) had any significant effect on performance of tea subsector industry in Kenya linked to market share index. Table 4.32 displays the regression coefficients results of supply chain integration (individual integration competency, internal integration competency and external integration competency). Table 4.32 presents Regression Coefficients results of Supply chain integration and Market Share Index.

Table 4.32: Regression of Supply Chain Integration and Market Share Index

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	10.517	.390		26.936	.000
	Individual Integration Competency (X_1)	.186	.031	.308	6.071	.000
	Internal Integration Competency(X_2)	.274	.025	.541	11.014	.000
	External Integration Competency(X_3)	.223	.025	.453	8.994	.000

a. Dependent Variable: Market Share Index

From Table 4.32, the results indicate that individual integration competency (with β= 0.308, p value 0.000), internal integration competency (with β=0.541, p value 0.000) and external integration competency (with β= 0.453, p value 0.000) are statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index. Table 4.32 above further illustrates that a 0.186 point increase in individual integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.274 point increase in internal integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.223 point increase in external integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.32 above, the coefficient (r) or beta for individual integration competency, internal integration competency and external integration competency were (0.308), (0.541) and (0.453) respectively. This meant that supply chain integration (individual integration competency, internal integration competency and external integration competency) individually explained 30.8 percent, 54.1 percent and 45.3 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The regression model is summarized by equation 4.2 below.

$Y = 10.517 + 0.186X_1 + 0.274X_2 + 0.223X_3$ **………………………. Equation 4.2**

Where,

Y – Market Share Index, X_1 – Individual Integration Competency, X_2 – Internal Integration Competency, and X_3 – External Integration Competency

It was concluded that supply chain integration (individual integration competency, internal integration competency and external integration competency) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. Hence, supply chain integration (individual integration competency, internal integration competency and external integration competency) had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index.

To establish the effect of supply chain integration (individual integration competency, internal integration competency and external integration competency) on performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

> **$H_0 1$:** Supply chain integration (individual integration competency, internal integration competency and external integration competency) has no

significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Regression analysis was conducted to empirically determine whether supply chain integration (individual integration competency, internal integration competency and external integration competency) had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.33 displays the regression coefficients results of supply chain integration (individual integration competency, internal integration competency and external integration competency).

Table 4.33: Regression of Supply Chain Integration and Operational Efficiency

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	8.343	.381		21.917	.000
	Individual Integration Competency (X_1)	.105	.030	.234	3.507	.001
	Internal Integration Competency(X_2)	.142	.024	.380	5.883	.000
	External Integration Competency(X_3)	.060	.024	.164	2.470	.014

a. Dependent Variable: Operational Efficiency

From Table 4.33, the results indicated that individual integration competency (with β= 0.234, p value 0.001), internal integration competency (with β=0.380, p value 0.000) and external integration competency (with β= 0.164, p value 0.014) are statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.33 further illustrates that a 0.105 point increase in individual integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.142 point increase in internal integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.060 point increase in external integration competency led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.33 above, the coefficient (r) or beta for individual integration competency, internal integration competency and external integration competency were (0.234), (0.380) and (0.164) respectively. This meant that supply chain integration (individual integration competency, internal integration competency and external integration competency) individually explained 23.4 percent, 38 percent and 16.4 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The regression model is summarized by equation 4.3 below.

$Y = 10.517 + 0.186X_1 + 0.274X_2 + 0.223X_3$ **……………………… Equation 4.3**

Where,

Y – Operational Efficiency, X_1 – Individual Integration Competency,

X_2 – Internal Integration Competency, and X_3 – External Integration Competency

It was concluded that supply chain integration (individual integration competency, internal integration competency and external integration competency) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. Hence, supply chain integration (individual integration competency, internal integration competency and external integration competency) had a positive effect on performance of tea subsector industry in Kenya linked to operational efficiency.

4.7 Supplier Relationship Management Practice

The first objective of the study was to establish the effect of supplier relationship management practice on performance of tea subsector industry in Kenya. Respondents were required to respond to set questions related to supplier relationship management practice and give their opinions. This objective was operationalized by three measures namely; collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives. Nine constructs of this objective were tested for factor analysis.

4.7.1 Sample Adequacy Results of Supplier Relationship Management Practice

The study applied the KMO measures of sampling adequacy and Bartlett’s test of sphericity to test whether the relationship between supplier relationship management practice independent variable was significant or not as shown in Table 4.34. From Table 4.34, the KMO measure of sampling adequacy results was 0.898. This indicated that factor analysis could be carried out as the KMO index was above 0.5 and between 0 and 1. The Bartlett’s test of Sphericity result was 0.000 which was within the acceptable level to test for significance and validity of the data. Rusuli *et al*. (2013) explained that Measure of Sampling Adequacy should exceed 0.5 and for Bartlett’s test of Sphericity, the significant level of p-value should be less than 0.05. Table 4.34 presents KMO &Bartlett’s Test results for Supplier Relationship Management Practice.

Table 4.34: KMO &Bartlett’s Test for Supplier Relationship Management

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.898
Bartlett's Test of Sphericity	Approx. Chi-Square	1655.257
	df	36
	Sig.	.000

4.7.2 Supplier Relationship Management Practice Data Normality Test Results

The most fundamental assumption in multivariate analysis is normality, referring to the shape of the data distribution for a variable and its correspondence to the normal distribution (Hair *et al*., 2010). There are several ways to determine normality of the data. Normality was tested to determine whether the distribution of the data approximates that of a normal distribution. This was necessary to determine the next course of testing; using parametric or non-parametric techniques. Normality was used to test for significance and construction of confidence interval estimates of the parameters. The assumption was that the variables are normally distributed. In their study, Kising’u *et al*. (2017) showed that the assumptions and application of statistical tools as well as suitability of the tests were important aspects for statistical analysis. To check for normality, the study adopted the Skewness and Kurtosis test and Auto correlation test.

4.7.3 Skewness and Kurtosis Test Results for Supplier Relationship Management

The first test for normality on supplier relationship management practice was done by examining the values of skewness and kurtosis. Two important components of normality are skewness and kurtosis (Tabachnick & Fidell, 2014). Skewness examines the deviation of the data from the mean while kurtosis examines the relative peakedness of the distribution. Although theoretically, when a distribution is in perfect distribution, the value of skewness and kurtosis are zero, which are rather uncommon occurrence in the social science, Kisingu *et al*. (2017) suggested that for a distribution to be considered normal, both the skewness and kurtosis of the distribution should fall between -2.00 to +2.00. However, Hair *et al*., (2010) suggested that for a distribution to be considered normal, the skewness value must be within ±2.00 standard error of skewness and within ±3.00 standard error of kurtosis. The results presented in table 4.35 shows that skewness statistics for supplier relationship management practice was 0.257 while kurtosis was -0.009. Based on these results, it was concluded that data for this variable was normally distributed since their statistic values were between -2 and +2. Table 4.35 presents Skewness and Kurtosis results for Supplier Relationship Management Practice.

Table 4.35: Skewness and Kurtosis for Supplier Relationship Management

Variable	n	Skewness		Kurtosis	
	Statistic	Statistic	Std Error	Statistic	Std Error
Supplier Relationship Management Practice	229	.434	.161	-0.009	.320

4.7.4 Durbin-Watson Test Results for Supplier Relationship Management

Autocorrelation may be defined as the assumption that the errors of prediction are independent of one another (Tabachnick & Fidell, 2014). A high degree of correlation among residuals of the regressions' data sets may produce inefficient results. The Durbin Watson statistic test was used to measure the autocorrelation of errors in supplier relationship management practice over the sequence of cases, and if significant, indicated dependence of errors. Durbin-Watson statistic ranges in value from 0 to 4 with an ideal value of 2 indicating that errors are not correlated, although values from 1.75 to 2.25 may be considered acceptable (Omar *et al*., 2017). Some authors consider Durbin-Watson value between 1.5 and 2.5 as acceptable level indicating no presence of collinearity (Makori & Jagongo, 2013). Durbin-Watson value of 1.840 in supplier relationship management practice indicates that the model did not suffer from autocorrelation. Table 4.36 presents the results for testing autocorrelation in terms of the Durbin-Watson statistics test for supplier relationship management practice.

Table 4.36: Durbin-Watson Results for Supplier Relationship Management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.414[a]	.172	.160	.32248	1.840

a. Predictors: (Constant), Coordination of Resource Sharing Initiatives, Collaborative Initiatives, Planning and Forecasting Initiatives
b. Dependent Variable: Performance

4.7.5 Supplier Relationship Management Rotated Component Matrix

Varimax rotation is frequently used in factor analysis since it reduces the number of complex variables and improves interpretation (Kising'u *et al*., 2017). A confirmatory factor analysis was done for the independent variable, supplier relationship management practice. The results of this analysis are presented in Table 4.37 and seven (7) out of nine (9) factor loadings were above 0.4 and positive. Thus, this therefore indicates that only seven (7) out of nine (9) factors were retained for subsequent analysis because they met the minimum threshold values of 0.4 and above (Sasaka *et al*., 2017). Table 4.37 presents Rotated Component Matrix results for Supplier Relationship Management Practice.

Table 4.37: Rotated Component Matrix for Supplier Relationship Management

Code No.	Opinion Statement	Component 1.PFI	2.CI	3.CRSI
B5	There is standardized means of communication on planning and forecasting across all functions in my company and our suppliers	**.858**		
B4	My company involves our suppliers in the joint planning and forecasting process	**.742**		
B3	Supplier collaborative initiatives has enabled my company to venture into the global market.		**.837**	
B1	My company has long-term procurement relationship with it key suppliers.		**.645**	
B9	Our company shares production plan information with major suppliers.			**.905**
B8	Major suppliers share their production schedule information with our company.			**.740**
B7	Major suppliers share their production capacity information with our company.			**.678**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.
KEY:CI=Collaborative Initiatives, PFI=Planning and Forecasting Initiatives CRSI=Coordination of Resource Sharing Initiatives

4.7.6 Factor Analysis for Supplier Relationship Management Practice

The study sought to determine the effect of supplier relationship management practice on performance of tea subsector industry in Kenya. Supplier relationship management practice was operationalized by three measures namely; collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives. Nine constructs were tested for factor analysis. Factor analysis was done on supplier relationship management practice constructs where the constructs were subjected to a variance test through the principal component analysis test. The principal component analysis was thus used for data reduction and interpretation of large set of data. Seven out of nine constructs were tested for factor analysis after performing rotated component matrix (table 4.37) which eliminated two items due to failure to meet the threshold of 0.4 factor loading and above.

Through factor analysis, the results showed that three factors extracted held the explanation on supplier relationship management practice with cumulative total variance of 70.224% in this construct. Factor one was the highest with 25.424% of total variance, factor two had 22.818% of total variance while factor three had 21.982% of total variance. These three factors had their Eigen values greater than 1 and had the greatest effect on supplier relationship management practice. Thus, the results therefore revealed that the three major factors driving supplier relationship management practice cumulatively accounted for 70.224% of the total variance in this construct. This meant that 70.224% of the common variance shared by the seven constructs could be accounted for by the three factors and explained about 70.224% of variance. Table 4.38 presents Factor Analysis Results- Total Variance Explained for Supplier Relationship Management Practice.

Table 4.38: Factor Analysis for Supplier Relationship Management

	Initial Eigenvalues			**Rotation Sums of Squared Loadings**		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	2.049	29.278	29.278	1.780	25.424	25.424
2	1.863	26.617	55.895	1.597	22.818	48.242
3	1.003	14.329	70.224	1.539	21.982	70.224
4	.831	11.869	82.093			
5	.558	7.978	90.071			
6	.442	6.310	96.381			
7	.253	3.619	100.000			

Extraction Method: Principal Component Analysis.

4.7.7 Descriptive Results of Supplier Relationship Management Practice

Supplier relationship management practice was assessed by three measures namely; collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives. Table 4.39 shows descriptive data presented on a scale of 1 to 5(1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree).

Table 4.39: Descriptive Results of Supplier Relationship Management

Supplier Relationship Management Practice	N	Mean	Std Deviation	Cronbach's Alpha
Collaborative Initiatives	229	3.9651	0.92651	.895
Planning and Forecasting Initiatives	229	4.1419	0.69186	.899
Coordination of Resource Sharing Initiatives	229	4.4356	0.49195	.903
Supplier Relationship Management Practice	**229**	**4.1808**	**0.70344**	**0.899**

Key: 1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree
Overall Cronbach's Alpha = 0.899

Cronbach's alpha was used to test the reliability of the proposed constructs (Ali *et al*., 2016). From the study findings, it was noted that collaborative initiatives had a coefficient of 0.895, planning and forecasting initiatives had a coefficient of 0.899 while coordination of resource sharing initiatives had a coefficient of 0.903. The overall Cronbach's alpha for supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) was 0.899. The findings showed that all the three scales of supplier relationship management practice measures were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Bryman & Bell, 2015).

From the research study, it was noted that collaborative initiatives was key to company's long-term procurement relationship with it key suppliers and supplier collaborative initiatives had enabled tea firms to venture into the global market hence enhancing supplier relationship management as indicated by a mean score of 3.9651 and a standard deviation of 0.92651.These findings were consistent with Barasa *et al*. (2015) who did a study on the impact of supply chain collaboration practice on performance of steel manufacturing companies in Kenya and strongly indicated that supply chain collaboration enhanced performance since it was key to global expansion of steel manufacturing firms.

From the research study, it was noted that planning and forecasting initiatives had a central role to play in supplier relationship management practice through companies in the tea subsector industry involving suppliers in the joint planning and forecasting process and having a standardized means of communication on planning and forecasting across all functions involved in the tea subsector industry as indicated by a mean score of 4.1419 and a standard deviation of 0.69186. These findings were consistent with Mbui *et al*. (2016) who did a study on the effect of strategic management practices on export value addition in the tea subsector industry and asserted that planning and forecasting initiatives were key in supplier realtionship management practice inorder to propel export value addition and hence performance of the tea subsector industry in Kenya.

From the research study, it was noted that coordination of resource sharing initiatives was necessary in supplier relationship management practice through major suppliers sharing their production capacity information with tea firms, major suppliers sharing their production schedule information with tea firms and tea firms sharing production plan information with major suppliers as indicated by a mean score of 4.4356 and a standard deviation of 0.49195. These findings were consistent with Barasa *et al*. (2015) who did a study on the impact of supply chain collaboration practice on the performance of steel manufacturing companies in Kenya and strongly indicated that coordination of resource sharing initiatives enhanced performance since it was key to global expansion of steel manufacturing firms.

4.7.8 Supplier Relationship Management Practice Correlations Results

Pearson Bivariate correlation coefficient was used to compute the correlation between the independent variable supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency). Sekaran (2015) asserts that this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship).

The correlation coefficient was calculated to determine the strength and nature of the relationship between the independent variable supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency).In trying to show the relationship between the independent variable supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency), the study used the Karl Pearson's coefficient of correlation (r). This is as shown in Table 4.40.

Findings presented in Table 4.40 indicated that there was a significant positive correlation effect between collaborative initiatives, supply chain integration(r =0.178,p value =0.007), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.211,p value =0.001), market share index(r =0.295,p value =0.000) and operational efficiency (r = 0.373, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant positive correlation effect between planning and forecasting initiatives, supply chain integration(r =0.450,p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.364,p value =0.000), market share index(r =0.804,p value =0.000) and operational efficiency (r = 0.138, p value = 0.036) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

It also indicated that there was a significant correlation effect between coordination of resource sharing initiatives, supply chain integration(r =0.376, p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.670, p value =0.000) ,market share index(r =0.599, p value =0.000) and operational efficiency (r = 0.915, p value = 0.007) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

Further, the Correlation Coefficient (r) are classified according to their strengths as follows:+1.0 (perfect positive association),+0.8 to +1.0 (very strong positive association),+0.6 to +0.8 (strong positive association),+0.4 to +0.6 (moderate positive association),+0.2 to +0.4 (weak positive association),0.0 to +0.2 (very weak positive association),0.0 to -0.2 (very weak negative association),-0.2 to -0.4 (weak negative association),-0.4 to -0.6 (moderate negative association),-0.6 to -0.8 (strong negative association),-0.8 to -1.0 (very strong negative association) and -1.0 (perfect negative association).

This meant that collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives had a significant positive correlation effect on performance of tea subsector industry in Kenya linked to supply chain integration, firm profit margins, market share index and operational efficiency. The results are in tandem with the findings of Barasa *et al*. (2015) who did a study on the impact of supply chain collaboration practice on the performance of steel manufacturing companies in Kenya and noted that success of steel companies depended on collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives in the supplier relationship management process. Table 4.40 presents Supplier Relationship Management Practice Correlations Results.

Table 4.40: Supplier Relationship Management Practice Correlations Results

		CI	PFI	CRSI	SCIMP	FPM	MSI	OE
Collaborative Initiatives	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	229						
Planning and Forecasting Initiatives	Pearson Correlation	**.175****	1					
	Sig. (2-tailed)	.008						
	N	229	229					
Coordination of Resource Sharing Initiatives	Pearson Correlation	**.533****	**.748****	1				
	Sig. (2-tailed)	.001	.000					
	N	229	229	229				
Supply chain integration	Pearson Correlation	**.178****	**.450****	**.376****	1			
	Sig. (2-tailed)	.007	.000	.000				
	N	229	229	229	229			
Firm Profit Margins	Pearson Correlation	**.211****	**.364****	**.670****	**.273****	1		
	Sig. (2-tailed)	.001	.000	.000	.000			
	N	229	229	229	229	229		
Market Share Index	Pearson Correlation	**.295****	**.804****	**.599****	**.520****	**.223****	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.001		
	N	229	229	229	229	229	229	
Operational Efficiency	Pearson Correlation	**.373****	**.138****	**.915****	**.234****	**.139****	**.388****	1
	Sig. (2-tailed)	.000	.006	.007	.000	.003	.007	
	N	229	229	229	229	229	229	229

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
KEY:CI=Collaborative Initiatives, PFI = Planning and Forecasting Initiatives, CRSI = Coordination of Resource Sharing Initiatives SCIMP=Supply chain integration, FPM=Firm Profit Margins, MSI=Market Share Index, OE=Operational Efficiency

4.7.9 Supplier Relationship Management Goodness-of-fit Model Results

To assess the research model, the independent variable supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency) were subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between the independent variable supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency) (Cooper & Schinder, 2013).

The results in Table 4.41 under model one (1) showed that supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had explanatory power on performance of tea subsector industry in Kenya linked to firm profit margins as it accounted for 20.5% of its variability (R Square = 0.205) hence the model was a good fit for the data. Supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) as a variable on its own implies a positive relationship with performance of tea subsector industry in Kenya linked to firm profit margins.

On Model two (2) in Table 4.41, the explanatory power of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 34.1% of its variability (R Square = 0.341) hence the model was a good fit for the data. This implies that the moderating variable, supply chain integration had significantly increased the relationship between the independent variable supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.41 presents Supplier Relationship Management Practice Model Summary results on Firm Profit Margins.

Table 4.41: Supplier Relationship Model Summary on Firm Profit Margins

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.453[a]	.205	.194	.56289
2	.584[a]	.341	.324	.51578

a. Predictors: (Constant), Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
b. Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration,
c. Dependent Variable: Firm Profit Margins

The results in Table 4.42 under model one (1) showed that supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had explanatory power on performance of tea subsector industry in Kenya linked to market share index as it accounted for 15.6% of its variability (R Square = 0.156) hence the model was a good fit for the data. Supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) as a variable on its own implies a positive relationship with performance of tea subsector industry in Kenya linked to market share index. However, this is still a good model as Cooper and Schinder (2013) pointed out that as much as lower value R square 0.10-0.20 is acceptable in social science research.

On Model two (2) in Table 4.42, the explanatory power of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 33.9% of its variability (R Square = 0.339) hence the model was a good fit for the data. This implies that the moderating variable, supply chain integration had significantly increased the relationship between the independent variable supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index. Table 4.42 presents Supplier Relationship Management Practice Model Summary results on Market Share Index.

Table 4.42: Supplier Relationship Model Summary on Market Share Index

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.394[a]	.156	.144	.55543
2	.582[a]	.339	.321	.49469

a. Predictors: (Constant), Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
b. Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration
c. Dependent Variable: Market Share Index

The results in Table 4.43 under model one (1) showed that supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had explanatory power on performance of tea subsector industry in Kenya linked to operational efficiency as it accounted for 22.1% of its variability (R Square = 0.221) hence the model was a good fit for the data. Supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) as a variable on its own implies a positive relationship with performance of tea subsector industry in Kenya linked to operational efficiency.

On Model two (2) in Table 4.43, the explanatory power of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had a partial significant increase when the moderator variable supply chain integration was incorporated into the model as it accounted for 28.6% of its variability (R Square = 0.286) hence the model was a good fit for the data. This implies that the moderating variable, supply chain integration had partially increased the strength of the relationship between the independent variable supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.43 presents Supplier Relationship Management Practice Model Summary results on Operational Efficiency.

Table 4.43: Supplier Relationship Model Summary on Operational Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.470[a]	.221	.211	.78616
2	.534[a]	.286	.266	.75810

a. Predictors: (Constant), Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
b. Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration
c. Dependent Variable: Operational Efficiency

4.7.10 Supplier Relationship Management Practice ANOVA Results

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05.Table 4.44 under model one (1) showed the significance of the regression model on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015). The results reveal that a significant relationship exists between supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins with a p-value of 0.000. This indicates that the regression model was statistically significant in predicting firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at $F = 19.326$, $p = 0.000$.

Table 4.44 under model two (2) captures the significance of the regression model on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which is less than 0.05. This still indicated a significant relationship between supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins. The overall ANOVA results indicated that model two (2) was significant at F = 19.172, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. Table 4.44 presents Supplier Relationship Management Practice ANOVA Results on Firm Profit Margins.

Table 4.44: Supplier Relationship ANOVA Results on Firm Profit Margins

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.370	3	6.123	19.326	.000[b]
	Residual	71.289	225	.317		
	Total	89.659	228			
2	Regression	30.601	6	5.100	19.172	.000[b]
	Residual	59.058	222	.266		
	Total	89.659	228			

a. Dependent Variable: Firm Profit Margins
b. Predictors: (Constant), Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
c.Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration

Table 4.45 under model one (1) showed the significance of the regression model on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index with P-value of 0.000 which was less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 13.816, p = 0.000.

Table 4.45 under model two (2) captures the significance of the regression model on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which is less than 0.05. This still indicated a significant relationship between supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index. The overall ANOVA results indicated that model two (2) was significant at F = 18.983, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table 4.45 presents Supplier Relationship Management Practice ANOVA Results on Market Share Index.

Table 4.45: Supplier Relationship ANOVA Results on Market Share Index

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	12.787	3	4.262	13.816	.000[b]
	Residual	69.414	225	.309		
	Total	82.201	228			
2	Regression	27.873	6	4.646	18.983	.000[b]
	Residual	54.328	222	.245		
	Total	82.201	228			

a. Dependent Variable: Market Share Index
b. Predictors: (Constant), Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
c.Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration

Table 4.46 under model one (1) showed the significance of the regression model on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational efficiency with

P-value of 0.000 which was less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational efficiency with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at $F = 21.318$, $p = 0.000$.

Table 4.46 under model two (2) captured the significance of the regression model on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational. The overall ANOVA results indicated that model two (2) was significant at $F = 14.790$, $p = 0.000$.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table 4.46 presents Supplier Relationship Management Practice ANOVA Results on Operational Efficiency.

Table 4.46: Supplier Relationship ANOVA Results on Operational Efficiency

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.526	3	13.175	21.318	.000[b]
	Residual	139.059	225	.618		
	Total	178.585	228			
2	Regression	50.999	6	8.500	14.790	.000[b]
	Residual	127.586	222	.575		
	Total	178.585	228			

a. Dependent Variable: Operational Efficiency
b. Predictors: (Constant), Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
c.Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration

4.7.11 Regression Results of Supplier Relationship and Firm Profit Margins

To establish the effect of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) on performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

> **$H_0$1:** Supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.

Regression analysis was conducted to empirically determine whether supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.47 displays the regression coefficients results of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives). Table 4.47 presents Regression of Supplier Relationship and Firm Profit Margins.

Table 4.47: Regression of Supplier Relationship and Firm Profit Margins

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	15.605	.424		36.782	.000
	Collaborative Initiatives(X_1)	.143	.024	.423	6.039	.000
	Planning and Forecasting Initiatives(X_2)	.213	.031	.469	6.818	.000
	Coordination of Resource Sharing Initiatives(X_3)	.085	.026	.200	3.251	.001

a. Dependent Variable: Firm Profit Margins

From Table 4.47 , the results indicated that collaborative initiatives (with β= 0.423, p value 0.000), planning and forecasting initiatives (with β=0.469, p value 0.000) and coordination of resource sharing initiatives (with β= 0.200, p value 0.001) were statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins. Further, Model 1 in Table 4.47 showed that collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives were positively correlated with performance of tea subsector industry in Kenya linked to firm profit margins.

Table 4.47 further illustrated that a 0.143 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.213 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins and a 0.085 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.47, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives were (0.423), (0.469) and (0.200) respectively. This meant that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) individually explained 42.3 percent, 46.9 percent and 20 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The regression model is summarized by equation 4.4 below.

$Y = 15.605 + 0.143X_1 + 0.213X_2 + 0.085X_3$ **………………………… Equation 4.4**

Where,

Y – Firm Profit Margins, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives, and X_3 – Coordination of Resource Sharing Initiatives

It was concluded that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. Hence, supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on supply chain management practices (Supplier relationship management practice) and performance of tea subsector industry in Kenya linked to firm profit margins.

Moderated regression analysis was conducted to empirically determine whether supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins as shown on table 4.48.

Table 4.48 presents Moderated Regression Coefficients results of Supplier Relationship Management Practice and Firm Profit Margins.

Table 4.48: Moderated Regression of Supplier Relationship and Firm Profit

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	**Std. Error**	**Beta**		
1	(Constant)	16.669	.453		36.769	.000
	Collaborative Initiatives (X_1)	.143	.022	.423	6.487	.000
	Planning and Forecasting Initiatives(X_2)	.238	.032	.526	7.392	.000
	Coordination of Resource Sharing Initiatives(X_3)	.143	.027	.336	5.369	.000
	Collaborative Initiatives_ Supply Chain Integration(X_1Z)	.119	.045	.175	2.620	.009
	Planning and Forecasting Initiatives_ Supply Chain Integration(X_2Z)	.285	.042	.477	6.747	.000
	Coordination of Resource Sharing Initiatives _Supply Chain Integration(X_3Z)	.118	.031	.272	3.836	.000

a. Dependent Variable: Firm Profit Margins

Table 4.48 displays the regression coefficients results of the moderated supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins. From Table 4.48, the results indicated that collaborative initiatives (with β= 0.423, p value 0.000), planning and forecasting initiatives (with β=0.526, p value 0.000) coordination of resource sharing initiatives (with β= 0.336, p value 0.001), collaborative initiatives_ supply chain integration (with β= 0.175, p value 0.009), planning and forecasting initiatives_ supply chain integration (with β= 0.477, p value

0.000) and coordination of resource sharing initiatives _supply chain integration (with β= 0.272, p value 0.000) are statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins.

Further, Model 1 in Table 4.48 shows that collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, collaborative initiatives_ supply chain integration, planning and forecasting initiatives_ supply chain integration and coordination of resource sharing initiatives _ supply chain integration were positively correlated with performance of tea subsector industry in Kenya linked to firm profit margins.

Table 4.48 further illustrates that a 0.143 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.238 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.143 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.119 point increase in collaborative initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.285 point increase in planning and forecasting initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins while a 0.118 point increase in coordination of resource sharing initiatives _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.48, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, collaborative initiatives_ supply chain integration, planning and forecasting initiatives_ supply chain integration and coordination of resource sharing initiatives _supply chain integration were (0.423), (0.526) ,(0.336), (0.175), (0.477) and (0.272) respectively. This meant that the moderated supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, collaborative initiatives_ supply chain integration, planning and forecasting initiatives_ supply chain integration and coordination of resource sharing initiatives _supply chain integration) individually explained 42.3 percent, 52.6 percent,33.6 percent,17.5 percent,47.7 percent and an insignificant 27.2 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The moderated regression model is summarized by equation 4.5 below.

$Y = 16.669 + 0.143X_1 + 0.238X_2 + 0.143X_3 + 0.119X_1Z + 0.285X_2Z + 0.118X_3Z$………………………………………………………………**Equation 4.5**

Where,

Y – Firm Profit Margins, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives, X3 – Coordination of Resource Sharing Initiatives, X_1Z - collaborative initiatives_ supply chain integration, X_2Z - planning and forecasting initiatives_ supply chain integration and X_3Z - coordination of resource sharing initiatives _supply chain integration

It was concluded that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. It was further concluded that the moderating variable supply chain integration had a statistically significant positive correlation effect on supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins. Hence, upon the introduction of the moderating variable supply chain integration, supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.7.12 Regression Results of Supplier Relationship and Market Share Index

To establish the effect of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) on performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

> **$H_0$1:** Supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

Regression analysis was conducted to empirically determine whether supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had any significant effect on performance of tea subsector industry in Kenya linked to market share index. Table 4.49 below displays the regression coefficients results of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives). Table 4.49 presents Regression results of Supplier Relationship and Market Share Index.

Table 4.49: Regression of Supplier Relationship and Market Share Index

		Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	12.795	.419		30.563	.000
	Collaborative Initiatives(X_1)	.054	.023	.168	2.327	.021
	Planning and Forecasting Initiatives(X_2)	.118	.031	.272	3.836	.000
	Coordination of Resource Sharing Initiatives(X_3)	.285	.042	.477	6.747	.000

a. Dependent Variable: Market Share Index

From Table 4.49, the results indicated that collaborative initiatives (with $\beta= 0.168$, p value 0.021), planning and forecasting initiatives (with $\beta= 0.272$, p value 0.000) and coordination of resource sharing initiatives (with $\beta= 0.477$, p value 0.000) were statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index. Further, Model 1 in Table 4.49 showed that collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives were positively correlated with performance of tea subsector industry in Kenya linked to market share index.

Table 4.49 further illustrates that a 0.054 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.118 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.285 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.49, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives were (0.168), (0.272) and (0.477) respectively. This meant that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) individually explained 16.8 percent, 27.2 percent and 47.7 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The regression model was summarized by equation 4.6 below.

$Y = 8.890 + 0.150X_1 + 0.022X_2 + 0.052X_3$ **………………………… Equation 4.6**

Where,

Y – Market Share Index, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives, and X_3 – Coordination of Resource Sharing Initiatives

It was concluded that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. Hence, supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on supply chain management practices (Supplier relationship management practice) and performance of tea subsector industry in Kenya linked to market share index.

Moderated regression analysis was conducted to empirically determine whether supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to market share index as shown on table 4.50. Table 4.50 presents Moderated Regression Coefficients results of Supplier Relationship Management Practice and Market Share Index.

Table 4.50: Moderated Regression Supplier Relationship and Market Share Index

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.314	.435		28.320	.000
	Collaborative Initiatives(X_1)	.079	.021	.243	3.715	.000
	Planning and Forecasting Initiatives(X_2)	.184	.031	.423	5.939	.000
	Coordination of Resource Sharing Initiatives(X_3)	.060	.025	.149	2.372	.019
	Collaborative Initiatives _ Supply Chain Integration(X_1Z)	.152	.043	.234	3.494	.001
	Planning and Forecasting Initiatives _ Supply Chain Integration(X_2Z)	.102	.044	.159	2.330	.021
	Coordination Initiatives _Supply Chain Integration(X_3Z)	.333	.046	.462	7.227	.000

a. Dependent Variable: Market Share Index

Table 4.50 displays the regression coefficients results of the moderated supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index. From Table 4.50 above, the results indicated that collaborative initiatives (with β= 0.243, p value 0.000), planning and forecasting initiatives (with β=0.423, p value 0.000) coordination of resource sharing initiatives (with β= 0.149, p value 0.019), collaborative initiatives_ supply chain integration (with β= 0.234, p value 0.001), planning and forecasting initiatives_ supply chain integration (with β= 0.159, p value 0.021) and coordination of resource sharing initiatives _supply chain integration (with β= 0.462, p value 0.000) were statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index.

Further, Model 1 in Table 4.50 above showed that collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, collaborative initiatives_ supply chain integration, planning and forecasting initiatives_ supply chain integration and coordination of resource sharing initiatives_ supply chain integration were positively correlated with performance of tea subsector industry in Kenya linked to market share index.

Table 4.50 further illustrates that a 0.079 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.184 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.060 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.152 point increase in collaborative initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.102 point increase in planning and forecasting initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index while a 0.333 point increase in coordination of resource sharing initiatives _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.50, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, collaborative initiatives_ supply chain integration, planning and forecasting initiatives_ supply chain integration and coordination of resource sharing initiatives _supply chain integration were (0.243), (0.423) ,(0.149), (0.234), (0.159) and (0.462) respectively. This meant that the moderated supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, collaborative initiatives_ supply chain integration, planning and forecasting initiatives_ supply chain integration and coordination of resource sharing initiatives _supply chain integration) individually explained 24.3 percent, 42.3 percent,14.9 percent,23.4 percent, 15.9 percent and 46.2 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The moderated regression model is summarized by equation 4.7 below.

$Y = 12.314+0.079X_1+0.184X_2+0.060X_3+0.152X_1Z+0.020X_2Z+0.333X_3$**……..Equation 4.5**

Where,

Y – Market Share Index, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives, X3 – Coordination of Resource Sharing Initiatives, X_1Z - collaborative initiatives_ supply chain integration, X_2Z - planning and forecasting initiatives_ supply chain integration and X_3Z - coordination of resource sharing initiatives _supply chain integration

It was concluded that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. It was further concluded that the moderating variable supply chain integration had a statistically significant positive correlation effect on supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index. Hence, upon the introduction of the moderating variable supply chain integration, supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.7.13 Regression Results of Supplier Relationship and Operational Efficiency

To establish the effect of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) on performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

$H_0$1: Supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Regression analysis was conducted to empirically determine whether supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.48 below displays the regression coefficients results of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives). Table 4.51 presents Regression results of Supplier Relationship and Operational Efficiency.

Table 4.51: Regression of Supplier Relationship and Operational Efficiency

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	13.787	.593		23.268	.000
	Collaborative Initiatives(X_1)	.258	.033	.539	7.782	.000
	Planning And Forecasting Initiatives(X_2)	.102	.044	.159	2.330	.021
	Coordination of Resource Sharing Initiatives(X_3)	.078	.037	.131	2.148	.033

a. Dependent Variable: Operational Efficiency

From Table 4.51, the results indicated that collaborative initiatives (with β= 0.539, p value 0.000), planning and forecasting initiatives (with β=0.159, p value 0.021) and coordination of resource sharing initiatives (with β= 0.131, p value 0.033) were statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency. Further, Model 1 in Table 4.51 above shows that collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives were positively correlated with performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.51 further illustrates that a 0.258 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.102 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.078 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.51, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives were (0.539), (0.159) and (0.131) respectively. This meant that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) individually explained 53.9 percent, 15.9 percent and 13.1 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The regression model was summarized by equation 4.8 below.

$Y = 13.787 + 0.258X_1 + 0.102X_2 + 0.078X_3$ **………………………… Equation 4.8**

Where,

Y – Operational efficiency, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives, and X_3 – Coordination of Resource Sharing Initiatives

It was concluded that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. Hence, supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on supply chain management practices (Supplier relationship management practice) and performance of tea subsector industry in Kenya linked to operational efficiency.

Moderated regression analysis was conducted to empirically determine whether supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency as shown on table 4.52. Table 4.52 presents Moderated Regression Coefficients results of Supplier Relationship Management Practice and Operational Efficiency.

Table 4.52: Moderated Regression on Supplier and Operational Efficiency

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	14.211	.681		20.877	.000
	Collaborative Initiatives(X_1)	.218	.032	.448	6.779	.000
	Planning and Forecasting Initiatives(X_2)	.144	.046	.225	3.152	.002
	Coordination of Resource Sharing Initiatives(X_3)	.123	.038	.205	3.201	.002
	Collaborative Initiatives_ Supply Chain Integration(X_1Z)	.244	.067	.255	3.661	.000
	Planning and Forecasting Initiatives_ Supply Chain Integration(X_2Z)	.329	.062	.390	5.296	.000
	Coordination of Resource Sharing Initiatives _Supply Chain Integration(X_3Z)	.174	.071	.163	2.466	.014

a. Dependent Variable: Operational Efficiency

Table 4.53 above displays the regression coefficients results of the moderated supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational efficiency. From Table 4.52, the results indicated that collaborative initiatives (with β= 0.448, p value 0.000), planning and forecasting initiatives (with β=0.225, p value 0.002) coordination of resource sharing initiatives (with β= 0.205, p value 0.002), collaborative initiatives_ supply chain integration (with β= 0.255, p value 0.000), planning and forecasting initiatives_ supply chain integration (with β= 0.390, p value 0.000) and coordination of resource sharing initiatives _supply chain integration (with β= 0.163, p value 0.014) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.52 further illustrates that a 0.218 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.144 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.123 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.244 point increase in collaborative initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.329 point increase in planning and forecasting initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.174 point increase in coordination of resource sharing initiatives _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.52 above, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, collaborative initiatives_ supply chain integration, planning and forecasting initiatives_ supply chain integration and coordination of resource sharing initiatives _supply chain integration were (0.448), (0.225) ,(0.205), (0.255), (0.390) and (0.163) respectively. This meant that the moderated supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, collaborative initiatives_ supply chain integration, planning and forecasting initiatives_ supply chain integration and coordination of resource sharing initiatives _supply chain integration) individually explained 44.8 percent, 22.5 percent,20.5 percent,25.5 percent, 39 percent and 16.3 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The moderated regression model was summarized by equation 4.9 below.

$Y = 14.211+0.218X_1+0.144X_2+0.123X_3+0.244X_1Z+0.329X_2Z+0.174X_3Z$**……Equation 4.9**

Where,

Y – Operational Efficiency, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives, X3 – Coordination of Resource Sharing Initiatives, X_1Z - collaborative initiatives_ supply chain integration, X_2Z - planning and forecasting initiatives_ supply chain integration and X_3Z - coordination of resource sharing initiatives _supply chain integration

It was concluded that supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. It was further concluded that the moderating variable supply chain integration had a statistically significant positive correlation effect on supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational efficiency. Hence, upon the introduction of the moderating variable supply chain integration, supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.8 Value Chain Management Practice

The second objective of the study was to establish the effect of value chain management practice on performance of tea subsector industry in Kenya. Respondents were required to respond to set questions related to value chain management practice and give their opinions. This objective was operationalized by three measures namely; product diversification, product innovation and product process management. Nine constructs of this objective were tested for factor analysis.

4.8.1 Sample Adequacy Results of Value Chain Management Practice

The study applied the KMO measures of sampling adequacy and Bartlett's test of sphericity to test whether the relationship between value chain management practice independent variable was significant or not as shown in Table 4.53. From Table 4.53, the KMO measure of sampling adequacy results was 0.889. This indicated that factor analysis could be carried out as the KMO index was above 0.5 and between 0 and 1. The Bartlett's test of Sphericity result was 0.000 which was within the acceptable level to test for significance and validity of the data.Rusuli *et al*. (2013) explained that Measure of Sampling Adequacy should exceed 0.5 and for Bartlett's test of Sphericity the significant level of p-value should be less than 0.05. Table 4.53 presents KMO &Bartlett's Test for Value Chain Management Practice.

Table 4.53: KMO &Bartlett's Test for Value Chain Management Practice

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.889
Bartlett's Test of Sphericity	Approx. Chi-Square	1336.117
	df	36
	Sig.	.000

4.8.2 Value Chain Management Practice Data Normality Test Results

The most fundamental assumption in multivariate analysis is normality, referring to the shape of the data distribution for a variable and its correspondence to the normal distribution (Hair *et al*., 2010). There are several ways to determine normality of the data. Normality is tested to determine whether the distribution of the data approximates that of a normal distribution. This is necessary to determine the next course of testing; using parametric or non-parametric techniques. Normality was used to test for significance and construction of confidence interval estimates of the parameters. The assumption is that the variables are normally distributed. In their study, Kising'u *et al*. (2017) showed that the assumptions and application of statistical tools as well as suitability of the tests are important aspects for statistical analysis. To check for normality, the study adopted the Skewness and Kurtosis test and Auto correlation test.

4.8.3 Skewness and Kurtosis Test Results for value chain management practice

The first test for normality on value chain management practice was done by examining the values of skewness and kurtosis. Two important components of normality are skewness and kurtosis (Tabachnick & Fidell, 2014). Skewness examines the deviation of the data from the mean while kurtosis examines the relative peakedness of the distribution. Although theoretically, when a distribution is in perfect distribution, the value of skewness and kurtosis are zero, which are rather uncommon occurrence in the social science. Kisingu *et al*. (2017) suggested that, for a distribution to be considered normal, both the skewness and kurtosis of the distribution should fall between -2.00 to +2.00. However, Hair *et al*., (2010) suggested that for a distribution to be considered normal, the skewness value must be within ±2.00 standard error of skewness and within ±3.00 standard error of kurtosis. The results presented in Table 4.54 shows that skewness statistics for value chain management practice was 0.199 while kurtosis was -1.013. Based on these results, it was concluded that data for this variable was normally distributed since their statistic values were between -2 and +2. Table 4.54 presents Skewness and Kurtosis results for Value Chain Management Practice.

Table 4.54: Skewness and Kurtosis for Value Chain Management Practice

Variable	n	Skewness		Kurtosis	
	Statistic	Statistic	Std Error	Statistic	Std Error
Value Chain Management Practice	229	.199	.161	-1.013	.320

4.8.4 Durbin-Watson Test Results for Value Chain Management Practice

Autocorrelation may be defined as the assumption that the errors of prediction are independent of one another (Tabachnick & Fidell, 2014). A high degree of correlation among residuals of the regressions' data sets may produce inefficient results. The Durbin Watson statistic test was used to measure the autocorrelation of errors in value chain management practice over the sequence of cases, and if significant, indicates dependence of errors. Durbin-Watson statistic test ranges in value from 0 to 4 with an ideal value of 2 indicating that errors are not correlated, although values from 1.75 to 2.25 may be considered acceptable (Omar *et al*., 2017).

Some authors consider Durbin-Watson value between 1.5 and 2.5 as acceptable level indicating no presence of collinearity (Makori & Jagongo, 2013). Durbin-Watson value of 1.891 in value chain management practice indicates that the model did not suffer from autocorrelation. Table 4.55 presents the results for testing autocorrelation in terms of the Durbin-Watson statistics for value chain management practice. Table 4.55 presents Durbin-Watson Results for Value Chain Management Practice.

Table 4.55: Durbin-Watson Results for Value Chain Management Practice

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.429[a]	.184	.173	.31269	1.891

a. Predictors: (Constant), Product Process Management, Product Innovation, Product Diversification
b. Dependent Variable: Performance

4.8.5 Value Chain Management Practice Rotated Component Matrix Results

Varimax rotation is frequently used in factor analysis since it reduces the number of complex variables and improves interpretation (Kising'u *et al*., 2017). A confirmatory factor analysis was done for the independent variable, value chain management practice. The results of this analysis are presented in Table 4.56 and seven (7) out of nine (9) factor loadings were above 0.4 and positive. Thus, this therefore indicated that only seven(7) out of nine (9) items tested for factor analysis were retained for subsequent analysis because they met the minimum threshold values of 0.4 and above (Sasaka *et al*., 2017). Table 4.56 presents Rotated Component Matrix results for Value Chain Management Practice.

Table 4.56: Rotated Component Matrix for Value Chain Management Practice

Code No.	Opinion Statement	Component 1.PI	2.PD	3.PPM
C5	Our company involves major suppliers in the design stage of new products.	**.884**		
C6	My organization has the capability needed to perform research and surveys in order to come up with new product ideas	**.714**		
C1	We have different varieties of tea brands in export markets		**.829**	
C2	Our tea quality production process meets the international standards for export markets		**.815**	
C3	Product diversification has helped my company to take advantage of the evolution of markets and future growth opportunities.		**.625**	
C7	Our company uses cross functional teams in product process improvement and management.			**.698**
C8	Our company uses cross functional teams in new product improvement and processing.			**.405**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 10 iterations.

4.8.6 Factor Analysis Results for Value Chain Management Practice

The study sought to determine the effect of value chain management practice on performance of tea subsector industry in Kenya. Value chain management practice was operationalized by three measures namely; product diversification, product innovation and product process management. Nine constructs were tested for factor analysis. Factor analysis was done on value chain management practice constructs where the constructs were subjected to a variance test through the principal component analysis test. The principal component analysis was thus used for data reduction and interpretation of large set of data. Seven out of nine constructs were tested for factor analysis after performing rotated component matrix (Table 4.53) which eliminated two items due to failure to meet the threshold of 0.4 factor loading and above.

Through factor analysis, the results showed that three factors extracted held the explanation on value chain management practice with cumulative total variance of 75.322% in this construct. Factor one was the highest with 26.261% of total variance, factor two had 25.927% of total variance while factor three had 23.134% of total variance. These three factors had their Eigen values greater than 1 and had the greatest effect on value chain management practice. Thus, the results therefore revealed that the three major factors driving value chain management practice cumulatively accounted for 75.322% of the total variance in this construct. This meant that 75.322% of the common variance shared by the seven constructs could be accounted for by the three factors and explained about 75.322% of variance as shown in Table 4.57. Table 4.57 presents Factor Analysis Results- Total Variance Explained for Value Chain Management Practice.

Table 4.57: Factor Analysis Results- Value Chain Management Practice

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.400	28.008	28.008	1.313	26.261	26.261
2	1.359	27.176	55.183	1.296	25.927	52.188
3	1.007	20.138	75.322	1.157	23.134	75.322
4	.832	11.992	87.314			
5	.709	7.224	94.538			
6	.502	4.111	98.649			
7	.301	1.351	100.000			

Extraction Method: Principal Component Analysis.

4.8.7 Descriptive Results of Value Chain Management Practice

Value chain management practice was assessed by three measures namely; product diversification, product innovation and product process management. Table 4.58 shows descriptive data presented on a scale of 1 to 5(1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree).

Table 4.58: Descriptive Results of Value Chain Management Practice

Value Chain Management Practice	N	Mean	Std Deviation	Cronbach's Alpha
Product Diversification	229	4.7743	0.84315	.867
Product Innovation	229	4.7817	0.41402	.859
Product Process Management	229	4.8996	0.30124	.858
Value Chain Management Practice	**229**	**4.8185**	**0.51947**	**.861**

Key: 1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree

Overall Cronbach's Alpha = 0.861

Cronbach's alpha was used to test the reliability of the proposed constructs (Ali *et al*., 2016). From the study findings, it was noted that product diversification had a coefficient of 0.867, product innovation had a coefficient of 0.859 while product process management had a coefficient of 0.858. The overall Cronbach's alpha for value chain management practice (product diversification, product innovation and product process management) was 0.861. The findings showed that all the three scales of value chain management practice measures were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Bryman & Bell, 2015).

From the research study, it was noted that product diversification was key to having different varieties of tea brands in export markets , tea quality production process meeting the international standards for export markets and product diversification had helped companies to take advantage of the evolution of markets and future growth opportunities hence enhancing value chain management practice as indicated by a mean score of 4.7743 and a standard deviation of 0.84315.This findings were consistent with Mbui *et al*. (2016) who did a study on the effect of strategic management practices on export value addition in the tea subsector industry and strongly indicated that value addition enhanced exports of the Kenyan tea thus enabling the performance of the tea subsector industry through global expansion and firms diversificatiion.

From the research study, it was noted that product innovation had a central role to play in value chain management practice through involving major suppliers in the design stage of new products as indicated by a mean score of 4.7817 and a standard deviation of 0.41402. These findings were consistent with Mbui *et al*. (2016) who did a study on the effect of strategic management practices on export value addition in the tea subsector industry and asserted that product innovation was key in value chain management practice inorder to propel export value addition and hence performance of the tea subsector industry in Kenya.

From the research study, it was noted that product process management was necessary in value chain management practice through companies using cross functional teams in new product improvement and processing and companies helping major suppliers to improve their process to better meet customer needs as indicated by a mean score of 4.8996 and a standard deviation of 0.30124. These findings were consistent with Chege *et al*. (2017) who did a study on the influence of internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya and strongly indicated that product process management enhanced performance since it was key to quality in the production process.

4.8.8 Value Chain Management Practice Correlations Results

Pearson Bivariate correlation coefficient was used to compute the correlation between the independent variable value chain management practice measures (product diversification, product innovation and product process management),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency). Sekaran (2015) asserts that this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship).

The correlation coefficient was calculated to determine the strength and nature of the relationship between the independent variable value chain management practice measures (product diversification, product innovation and product process management), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency). In trying to show the relationship between the independent variable value chain management practice measures (product diversification, product innovation and product process management), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency), the study used the Karl Pearson's coefficient of correlation (r). This is as shown in Table 4.59.

Findings presented in Table 4.59 indicated that there was a significant positive correlation effect between product diversification, supply chain integration(r =0.561,p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.238,p value =0.000), market share index(r =0.534,p value =0.000) and operational efficiency (r = 0.529, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant positive correlation effect between product innovation, supply chain integration(r =0.290,p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.213,p value =0.000), market share index(r =0.355,p value =0.000) and operational efficiency (r = 0.575, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant positive correlation effect between product process management, supply chain integration(r =0.242,p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.310,p value =0.000), market share index(r =0.130,p value =0.000) and operational efficiency (r = 0.299, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

Further, the Correlation Coefficient (r) are classified according to their strengths as follows:+1.0 (perfect positive association),+0.8 to +1.0 (very strong positive association),+0.6 to +0.8 (strong positive association),+0.4 to +0.6 (moderate positive association),+0.2 to +0.4 (weak positive association),0.0 to +0.2 (very weak positive association),0.0 to -0.2 (very weak negative association),-0.2 to -0.4 (weak negative association),-0.4 to -0.6 (moderate negative association),-0.6 to -0.8 (strong negative association),-0.8 to -1.0 (very strong negative association) and -1.0 (perfect negative association).

This meant that there was a significant positive relationship between the independent variable value chain management practice measures (product diversification, product innovation and product process management), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in

Kenya measures (firm profit margins, market share index and operational efficiency. The results are in tandem with the findings of Mbui *et al*. (2016) who did a study on the effect of strategic management practices on export value addition in the tea subsector industry and asserted that product diversification, product innovation and product process management was key in value chain management practice inorder to propel export value addition and hence performance of the tea subsector industry in Kenya. Table 4.59 presents Value Chain Management Practice Correlations Results.

Table 4.59: Value Chain Management Practice Correlations Results

		PD	PI	PPM	SCIMP	FPM	MSI	OE
Product Diversification	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	229						
Product Innovation	Pearson Correlation	**.271****	1					
	Sig. (2-tailed)	.000						
	N	229	229					
Product Process Management	Pearson Correlation	**.208****	.140*	1				
	Sig. (2-tailed)	.002	.034					
	N	229	229	229				
Supply Chain Integration Management Practice	Pearson Correlation	**.561****	**.290****	**.242****	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	229	229	229	229			
Firm Profit Margins	Pearson Correlation	**.238****	**.213****	**.310****	**.273****	1		
	Sig. (2-tailed)	.000	.001	.000	.000			
	N	229	229	229	229	229		
Market Share Index	Pearson Correlation	**.534****	**.355****	**.130****	**.520****	**.223****	1	
	Sig. (2-tailed)	.000	.000	.009	.000	.001		
	N	229	229	229	229	229	229	
Operational Efficiency	Pearson Correlation	**.529****	**.575****	**.299****	**.342****	**.401****	**.474****	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	229	229	229	229	229	229	229

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
KEY:PD=Product Diversification, PI=Product Innovation,PPM=Product Process Management SCIMP=Supply chain integration, FPM=Firm Profit Margins, MSI=Market Share Index, EE=Operational Efficiency

4.8.9 Value Chain Management Practice Goodness-of-fit Model Results

To assess the research model, the independent variable value chain management practice measures (product diversification, product innovation and product process management), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency) were subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between the independent variable value chain management practice measures (product diversification, product innovation and product process management),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency).

The results in Table 4.60 under model one (1) showed that value chain management practice measures (product diversification, product innovation and product process management) had explanatory power on performance of tea subsector industry in Kenya linked to firm profit margins as it accounted for 25.7% of its variability (R Square = 0.257) hence the model was a good fit for the data. Value chain management practice measures (product diversification, product innovation and product process management) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to firm profit margins.

On Model two (2) in Table 4.60, the explanatory power of value chain management practice (product diversification, product innovation and product process management) increased partially when the moderator variable supply chain integration was incorporated into the model as it accounted for 30% of its variability (R Square = 0.300) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had partially increased the relationship between the independent variable value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.60 presents Value Chain Management Practice Model Summary on Firm Profit Margins.

Table 4.60: Value Chain Management Model Summary on Firm Profit Margins

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.507[a]	.257	.248	1.03688
2	.548[a]	.300	.281	1.01348

a. Predictors: (Constant), Product Process Management, Product Innovation, Product Diversification
b. Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration,
c. Dependent Variable: Firm Profit Margins

The results in Table 4.61 under model one (1) showed that value chain management practice measures (product diversification, product innovation and product process management) had explanatory power on performance of tea subsector industry in Kenya linked to market share index as it accounted for 29.2% of its variability (R Square = 0.292) hence the model was a good fit for the data. Value chain management practice measures (product diversification, product innovation and product process management) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to market share index.

On Model two (2) in Table 4.61, the explanatory power of value chain management practice measures (product diversification, product innovation and product process management) increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 55.6% of its variability (R Square = 0.556) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had significantly increased the relationship between the independent variable value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index. Table 4.61 presents Value Chain Management Practice Model Summary results on Market Share Index.

Table 4.61: Value Chain Management Model Summary on Market Share Index

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.540[a]	.292	.282	.99351
2	.745[a]	.556	.544	.79226

a. Predictors: (Constant), Product Process Management, Product Innovation, Product Diversification
b. Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration,
c. Dependent Variable: Market Share Index

The results in Table 4.62 under model one (1) showed that value chain management practice measures (product diversification, product innovation and product process management) had explanatory power on performance of tea subsector industry in Kenya linked to operational efficiency as it accounted for 40.1% of its variability (R Square = 0.401) hence the model was a good fit for the data. Value chain management practice measures (product diversification, product innovation and product process management) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to operational efficiency.

On Model two (2) in Table 4.62, the explanatory power of value chain management practice measures (product diversification, product innovation and product process management) had a partial significant increase when the moderator variable supply chain integration was incorporated into the model as it accounted for 48% of its variability (R Square = 0.480) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had partially increased the strength of the relationship between the independent variable value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.62 presents Value Chain Management Practice Model Summary results on Operational Efficiency.

Table 4.62: Value Chain Management Model Summary on Operational Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.633[a]	.401	.393	.67683
2	.693[a]	.480	.466	.63512

a. Predictors: (Constant), Product Process Management, Product Innovation, Product Diversification
b. Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration,
c. Dependent Variable: Operational Efficiency

4.8.10 Value Chain Management Practice ANOVA Results

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05.Table 4.60 below under model one (1) shows the significance of the regression model on value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship exists between value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 26.009, p = 0.000.

Table 4.63 under model two (2) captures the significance of the regression model on value chain management practice measures (product diversification, product innovation and product process management) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which is less than 0.05. This still indicated a significant relationship between value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins. The overall ANOVA results indicated that model two (2) was significant at F = 15.864, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. Table 4.63 presents Value Chain Management Practice ANOVA Results on Firm Profit Margins.

Table 4.63: Value Chain Management ANOVA Results on Firm Profit Margins

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	83.889	3	27.963	26.009	.000^b
	Residual	241.901	225	1.075		
	Total	325.790	228			
2	Regression	97.765	6	16.294	15.864	.000^b
	Residual	228.025	222	1.027		
	Total	325.790	228			

a. Dependent Variable: Firm Profit Margins
b. Predictors: (Constant), Product Process Management, Product Innovation, Product Diversification
c. Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration

Table 4.64 under model one (1) shows the significance of the regression model on value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship exists between value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicates high reliability of the results obtained. The overall ANOVA results indicates that model one (1) was significant at F = 30.920, p = 0.000.

Table 4.64 under model two (2) captures the significance of the regression model on value chain management practice measures (product diversification, product innovation and product process management) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which is less than 0.05. This still indicated a significant relationship between value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index. The overall ANOVA results indicates that model two (2) was significant at F = 46.285, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table 4.64 presents Value Chain Management Practice ANOVA Results on Market Share Index.

Table 4.64: Value Chain Management ANOVA Results on Market Share Index

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	91.560	3	30.520	30.920	.000[b]
	Residual	222.090	225	.987		
	Total	313.651	228			
2	Regression	174.308	6	29.051	46.285	.000[b]
	Residual	139.342	222	.628		
	Total	313.651	228			

a. Dependent Variable: Market Share Index
b. Predictors: (Constant), Product Process Management, Product Innovation, Product Diversification
c. Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration

Table 4.65 under model one (1) shows the significance of the regression model on value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship exists between value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 50.219, p = 0.000.

Table 4.65 under model two (2) captures the significance of the regression model on value chain management practice measures (product diversification, product innovation and product process management) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which is less than 0.05. This still indicated a significant relationship between value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency. The overall ANOVA results indicated that model two (2) was significant at F = 34.102, p = 0.000. P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table 4.65 presents Value Chain Management Practice ANOVA Results on Operational Efficiency.

Table 4.65: Value Chain Management ANOVA Results on Operational Efficiency

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	69.016	3	23.005	50.219	.000[b]
	Residual	103.072	225	.458		
	Total	172.087	228			
2	Regression	82.537	6	13.756	34.102	.000[b]
	Residual	89.551	222	.403		
	Total	172.087	228			

a. Dependent Variable: Operational Efficiency
b. Predictors: (Constant), Product Process Management, Product Innovation, Product Diversification
c. Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration

4.8.11 Regression of Value Chain Management and Firm Profit Margins

To establish the effect of value chain management practice measures (product diversification, product innovation and product process management) on performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

> **$H_0$1:** Value chain management practice (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.

Regression analysis was conducted to empirically determine whether value chain management practice (product diversification, product innovation and product process management) had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.66 displays the regression coefficients results of value chain management practice (product diversification, product innovation and product process management) on performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.66 presents Regression Coefficients results of Value Chain Management Practice and Firm Profit Margins.

Table 4.66: Regression of Value Chain Management and Firm Profit Margins

		Unstandardized Coefficients		**Standardized Coefficients**		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	6.016	1.291		4.660	.000
	Product Diversification (X_1)	.229	.036	.384	6.325	.000
	Product Innovation(X_2)	.772	.173	.267	4.462	.000
	Product Process Management(X_3)	1.400	.234	.353	5.984	.000

a**. Dependent Variable: Firm Profit Margins**

From Table 4.66, the results indicate that product diversification (with β= 0.384, p value 0.000), product innovation (with β=0.267, p value 0.000) and product process management (with β= 0.353, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.63 above further illustrates that a 0.229 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.772 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins and a 1.400 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.66, the coefficient (r) or beta for product diversification, product innovation and product process management were (0.384), (0.267) and (0.353) respectively. This meant that value chain management practice (product diversification, product innovation and product process management) individually explained 38.4 percent, 26.7 percent and 35.3 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The regression model is summarized by equation 4.10 below.

$Y = 6.016 + 0.229X_1 + 0.772X_2 + 1.400X_3$ **………………………….. Equation 4.10**

Where,

Y – Firm Profit Margins, X_1 – Product Diversification, X_2 – Product Innovation, and X_3 – Product Process Management

It was concluded that value chain management practice (product diversification, product innovation and product process management) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. Hence, value chain management practice (product diversification, product innovation and product process management) had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins.

Moderated regression analysis was conducted to empirically determine whether value chain management practice (product diversification, product innovation and product process management) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins as shown on table 4.67. Table 4.67 presents Moderated Regression Coefficients results of Value Chain Management Practice and Firm Profit Margins.

Table 4.67: Moderated Value Chain Management and Firm Profit Margins

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	32.437	15.299		2.120	.035
	Product Diversification(X_1)	.161	.082	.113	1.968	.050
	Product Innovation(X_2)	3.873	1.477	1.341	2.622	.009
	Product Process Management(X_3)	6.148	2.886	1.549	2.130	.034
	Product Diversification_ Supply Chain Integration Management(X_1Z)	.013	.002	.362	6.035	.000
	Product Innovation_ Supply Chain Integration Management(X_2Z)	.038	.019	1.047	2.027	.044
	Product Process Management_ Supply Chain Integration Management(X_3Z)	.016	.002	.441	7.540	.000

a. Dependent Variable: Firm Profit Margins

Table 4.67 displays the regression coefficients results of the moderated value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins. From Table 4.67, the results indicated that product diversification (with β= 0.113, p value 0.050), product innovation (with β=1.341, p value 0.009) product process management (with β= 1.549, p value 0.034), product diversification _ supply chain integration (with β= 0.362, p value 0.000), product innovation _ supply chain integration (with β=1.047, p value 0.044) and product process management _ supply chain integration (with β= 0.441, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins.

Table 4.67 further illustrates that a 0.161 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 3.873 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 6.148 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.013 point increase in product diversification _ supply chain integration , led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.038 point increase in product innovation _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins and a 0.016 point increase in product process management _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.67, the coefficient (r) or beta for product diversification, product innovation, product process management, product diversification_ supply chain integration, product innovation_ supply chain integration and product process management _supply chain integration were (0.113), (1.341), (1.549), (0.362), (1.047) and (0.441) respectively. This meant that the moderated value chain management practice (product diversification, product innovation and product process management, product diversification_ supply chain integration, product innovation_ supply chain integration and product process management _supply chain integration) individually explained 11.3 percent, 134.1 percent,154.9 percent,36.2 percent,104.7 percent and 44.1 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The moderated regression model is summarized by equation 4.11 below.

$Y = 32.437 + 0.161X_1 + 3.873X_2 + 6.148X_3 + 0.013X_1Z + 0.038X_2Z + 0.046X_3Z$**…..Equation 4.11**

Where,

Y – Firm Profit Margins, X_1 – Product Diversification, X_2 – Product Innovation, X3 – Product Process Management, X_1Z – Product Diversification_ supply chain integration, X_2Z – Product Innovation_ supply chain integration and X_3Z – Product Process Management _supply chain integration

It was concluded that value chain management practice (product diversification, product innovation and product process management) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins. Hence, upon the introduction of the moderating variable supply chain integration, value chain management practice (product diversification, product innovation and product process management) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.8.12 Regression Results of Value Chain Management and Market Share Index

To establish the effect of value chain management practice (product diversification, product innovation and product process management) on performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

> **$H_0$1:** Value chain management practice (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

Regression analysis was conducted to empirically determine whether value chain management practice (product diversification, product innovation and product process management) had any significant effect on performance of tea subsector industry in Kenya linked to market share index. Table 4.68 displays the regression coefficients results of value chain management practice (product diversification, product innovation and product process management). Table 4.68 presents Regression Coefficients results of Value Chain Management Practice and Market Share Index.

Table 4.68: Regression of Value Chain Management and Market Share Index

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	7.359	1.237		5.948	.000
	Product Diversification(X_1)	.207	.029	.419	7.107	.000
	Product Innovation(X_2)	.626	.168	.221	3.729	.000
	Product Process Management(X_3)	.013	.002	.362	6.035	.000

a. Dependent Variable: Market Share Index

From Table 4.68 above, the results indicate that product diversification (with β= 0.419, p value 0.000), product innovation (with β= 0.221, p value 0.000) and product process management (with β= 0.362, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index. Table 4.65 above further illustrates that a 0.207 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.626 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.013 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.68 above, the coefficient (r) or beta for product diversification, product innovation and product process management were (0.419), (0.221) and (0.362) respectively. This meant that value chain management practice (product diversification, product innovation and product process management) individually explained 41.9 percent, 22.1 percent and 36.2 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The regression model is summarized by equation 4.12 below.

$Y = 7.359 + 0.207X_1 + 0.626X_2 + 0.0221X_3$ **…………………………….. Equation 4.12**

Where,

Y – Market Share Index, X_1 – Product Diversification, X_2 – Product Innovation, and X_3 – Product Process Management

It was concluded that value chain management practice (product diversification, product innovation and product process management) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. Hence, value chain management practice (product diversification, product innovation and product process management) had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index.

Moderated regression analysis was conducted to empirically determine whether value chain management practice (product diversification, product innovation and product process management) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to market share index as shown on table 4.69. Table 4.69 presents Moderated Regression Coefficients results of Value Chain Management Practice and Market Share Index.

Table 4.69: Moderated Regression Value Chain and Market Share Index

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	13.420	2.416		5.554	.000
	Product Diversification(X_1)	.632	.080	.393	7.890	.000
	Product Innovation(X_2)	.517	.097	.310	5.309	.000
	Product Process Management(X_3)	.626	.168	.221	3.729	.000
	Product Diversification _Supply Chain Integration Management(X_1Z)	.016	.002	.457	9.284	.000
	Product Innovation _Supply Chain Integration Management(X_1Z)	.016	.002	.441	7.540	.000
	Product Process Management _ Supply Chain Integration Management(X_1Z)	.004	.002	.119	2.174	.031

a. Dependent Variable: Market Share Index

Table 4.69 displays the regression coefficients results of the moderated value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index. From Table 4.69, the results indicated that product diversification (with β= 0.393, p value 0.000), product innovation (with β=0.310, p value 0.000), product process management (with β=0.221, p value 0.000) , product diversification _supply chain integration management (with β=0.457, p value 0.000), product innovation_ supply chain integration (with β= 0.441, p value 0.000) and product process management _supply chain integration (with β= 0.119, p value 0.031) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index.

Table 4.69 further illustrates that a 0.632 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.517 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.625 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.016 point increase in product diversification_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.016 point increase in product innovation_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.004 point increase in product process management _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.69, the coefficient (r) or beta for product diversification, product innovation, product process management, product diversification_ supply chain integration, product innovation_ supply chain integration and product process management _supply chain integration were (0.393), (0.310), (0.221), (0.457), (0.441) and (0.119) respectively. This meant that the moderated value chain management practice (product diversification, product innovation, product process management, product diversification_ supply chain integration, product innovation_ supply chain integration and product process management _supply chain integration) individually explained 39.3 percent, 31 percent, 22.1 percent,45.7 percent, 44.1 percent and 11.9 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The moderated regression model is summarized by equation 4.13 below.

$Y = 13.420+0.632X_1+0.517X_2+0.095X_3+0.016X_1Z+0.016X_2Z+0.004X_3Z$**…. Equation 4.13**

Where,

Y – Market Share Index, X_1 – Product Diversification, X_2 – Product Innovation, X3 – Product Process Management, X_1Z – Product Diversification_ supply chain integration, X_2Z – Product Innovation_ supply chain integration and X_3Z – Product Process Management _supply chain integration

It was concluded that value chain management practice (product diversification, product innovation and product process management) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index. Hence, upon the introduction of the moderating variable supply chain integration, value chain management practice (product diversification, product innovation and product process management) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.8.13 Regression Value Chain Management Practice and Operational Efficiency

To establish the effect of value chain management practice (product diversification, product innovation and product process management) on performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

> **$H_0$1:** Value chain management practice (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Regression analysis was conducted to empirically determine whether value chain management practice (product diversification, product innovation and product process management) had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.70 displays the regression coefficients results of value chain management practice (product diversification, product innovation and product process management).

Table 4.70: Regression of Value Chain Management and Operational Efficiency

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.656	.843		9.084	.000
	Product Diversification(X_1)	.217	.024	.499	9.167	.000
	Product Innovation(X_1)	.592	.113	.282	5.245	.000
	Product Process Management(X_1)	.780	.153	.270	5.105	.000

a. Dependent Variable: Operational Efficiency

From Table 4.70, the results indicate that product diversification (with β= 0.499, p value 0.000), product innovation (with β=0.282, p value 0.000) and product process management (with β= 0.270, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.70 above further illustrates that a 0.217 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.592 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.780 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.70 above, the coefficient (r) or beta for product diversification, product innovation and product process management were (0.499), (0.282) and (0.270) respectively. This meant that value chain management practice (product diversification, product innovation and product process management) individually explained 49.9 percent, 28.2 percent and 27 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The regression model is summarized by equation 4.14 below.

$Y = 7.656 + 0.217X_1 + 0.592X_2 + 0.780X_3$ …………………………. Equation 4.14

Where,

Y – Operational Efficiency, X_1 – Product Diversification, X_2 – Product Innovation, and X_3 – Product Process Management

It was concluded that value chain management practice (product diversification, product innovation and product process management) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. Hence, value chain management practice (product diversification, product innovation and product process management) had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency.

Moderated regression analysis was conducted to empirically determine whether value chain management practice (product diversification, product innovation and product process management) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency as shown on table 4.71.

Table 4.71: Moderated Regression of Value Chain and Operational Efficiency

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.701	1.937		5.008	.000
	Product Diversification(X_1)	.267	.064	.224	4.148	.000
	Product Innovation(X_2)	.592	.113	.282	5.245	.000
	Product Process Management(X_3)	.216	.074	.154	2.900	.004
	Product Diversification _Supply Chain Integration Management(X_1Z)	.012	.001	.465	8.731	.000
	Product Innovation _Supply Chain Integration Management(X_2Z)	.007	.002	.244	3.856	.000
	Product Process _Supply Chain Integration Management(X_3Z)	.004	.002	.141	2.372	.019

a. Dependent Variable: Operational Efficiency

Table 4.71 displays the regression coefficients results of the moderated value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency. From Table 4.71 above, the results indicated that product diversification (with β= 0.224, p value 0.000), product innovation (with β= 0.282, p value 0.000), product process management (with β=0.154, p value 0.004) product diversification _supply chain integration (with β= 0.465, p value 0.000), product innovation_ supply chain integration (with β=0.244, p value 0.000) and product process management_ supply chain integration (with β= 0.141, p value 0.019) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.71 above further illustrates that a 0.267 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.592 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.216 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.012 point increase in product diversification_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.007 point increase in product innovation_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.004 point increase in product process management _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.71, the coefficient (r) or beta for product diversification, product innovation, product process management, product diversification_ supply chain integration, product innovation_ supply chain integration and product process management _supply chain integration were (0.224), (0.282), (0.154), (0.465), (0.244) and (0.141) respectively. This meant that the moderated value chain management practice (product diversification, product innovation, product process management, product diversification_ supply chain integration, product innovation_ supply chain integration and product process management _supply chain integration) individually explained 22.4 percent, 28.2 percent,15.4 percent,46.5 percent, 24.4 percent and 14.1 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The moderated regression model is summarized by equation 4.15 below.

$Y = 9.701+0.267X1+0.022X2+0.216X+0.012X_1Z+0.007X_2Z+0.004X_3Z$**….Equation 4.15**

Where,

Y – Operational Efficiency, X_1 – Product Diversification, X_2 – Product Innovation, X3 – Product Process Management, X_1Z – Product Diversification_ supply chain integration, X_2Z – Product Innovation_ supply chain integration and X_3Z – Product Process Management _supply chain integration

It was concluded that value chain management practice (product diversification, product innovation, product process management) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. It was further concluded that the moderating variable supply chain integration had a statistically significant positive correlation effect on value chain management practice (product diversification, product innovation, product process management) and performance of tea subsector industry in Kenya linked to operational efficiency. Hence, upon the introduction of the moderating variable supply chain integration, value chain management practice (product diversification, product innovation, product process management) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.9 Customer Relationship Management Practice

The third objective of the study was to establish the effect of customer relationship management practice on performance of tea subsector industry in Kenya. Respondents were required to respond to set questions related to customer relationship management practice and give their opinions. This objective was operationalized by three measures namely; customer product value satisfaction level, customer product design input and customer communication channels. Nine constructs of this objective were tested for factor analysis.

4.9.1 Sample Adequacy Results of Customer Relationship Management Practice

The study applied the KMO measures of sampling adequacy and Bartlett's test of sphericity to test whether the relationship between customer relationship management practice independent variable was significant or not as shown in Table 4.69 below. From Table 4.72, the KMO measure of sampling adequacy results was 0.907. This indicated that factor analysis could be carried out as the KMO index was above 0.5 and between 0 and 1. The Bartlett's test of Sphericity result was 0.000 which was within the acceptable level to test for significance and validity of the data. Rusuli *et al*. (2013) explained that Measure of Sampling Adequacy should exceed 0.5 and for Bartlett's test of Sphericity the significant level of p-value should be less than 0.05. Table 4.72 presents KMO &Bartlett's Test results for Customer Relationship Management

Table 4.72: KMO &Bartlett's Test for Customer Relationship Management

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.907
Bartlett's Test of Sphericity	Approx. Chi-Square	1530.530
	df	36
	Sig.	.000

4.9.2 Customer Relationship Management Practice Data Normality Test Results

The most fundamental assumption in multivariate analysis is normality, referring to the shape of the data distribution for a variable and its correspondence to the normal distribution (Hair *et al*., 2010). There are several ways to determine normality of the data. Normality is tested to determine whether the distribution of the data approximates that of a normal distribution. This is necessary to determine the next course of testing; using parametric or non-parametric techniques. Normality was used to test for significance and construction of confidence interval estimates of the parameters. The assumption is that the variables are normally distributed. In their study, Kising'u *et al*. (2017) showed that the assumptions and application of statistical tools as well as suitability of the tests are important aspects for statistical analysis. To check for normality, the study adopted the Skewness and Kurtosis test and Auto correlation test.

4.9.3 Skewness and Kurtosis Test Results for value chain management practice

The first test for normality on customer relationship management practice was done by examining the values of skewness and kurtosis. Two important components of normality are skewness and kurtosis (Tabachnick & Fidell, 2014). Skewness examines the deviation of the data from the mean while kurtosis examines the relative peakedness of the distribution. Although theoretically, when a distribution is in perfect distribution, the value of skewness and kurtosis are zero, which are rather uncommon occurrence in the social science, Kisingu *et al*., (2017), suggested that, for a distribution to be considered normal, both the skewness and kurtosis of the distribution should fall between -2.00 to +2.00. However, Hair *et al*., (2010) suggested that for a distribution to be considered normal, the skewness value must be within ±2.00 standard error of skewness and within ±3.00 standard error of kurtosis.

The results presented in Table 4.73shows that skewness statistics for customer relationship management practice was 0.001 while kurtosis was -1.061. Based on these results, it was concluded that data for this variable was normally distributed since their statistic values were between -2 and +2. Table 4.73 presents Skewness and Kurtosis results for Customer Relationship Management Practice.

Table 4.73: Skewness and Kurtosis for Customer Relationship Management

Variable	n	Skewness		Kurtosis	
	Statistic	**Statistic**	**Std Error**	**Statistic**	**Std Error**
Value Chain Management Practice	229	.001	.161	-1.061	.320

4.9.4 Durbin-Watson Test Results for Customer Relationship Management

Autocorrelation may be defined as the assumption that the errors of prediction are independent of one another (Tabachnick & Fidell, 2014). A high degree of correlation among residuals of the regressions' data sets may produce inefficient results. The Durbin Watson statistic test was used to measure the autocorrelation of errors in customer relationship management practice over the sequence of cases, and if significant, indicates dependence of errors. Durbin-Watson statistic ranges in value from 0 to 4 with an ideal value of 2 indicating that errors are not correlated, although values from 1.75 to 2.25 may be considered acceptable (Omar *et al*., 2017). Some authors consider Durbin-Watson value between 1.5 and 2.5 as acceptable level indicating no presence of collinearity (Makori & Jagongo, 2013). Durbin-Watson value of 2.199 in customer relationship management practice indicated that the model did not suffer from autocorrelation. Table 4.74 presented the results for testing autocorrelation in terms of the Durbin-Watson statistics test for customer relationship management practice.

Table 4.74: Durbin-Watson Results for Customer Relationship Management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.589[a]	.347	.338	.31269	2.199

a. Predictors: (Constant), Customer Communication Channels, Customer Product Design Input, Customer Product Value Satisfaction Level
b. Dependent Variable: Performance

4.9.5 Customer Relationship Management Rotated Component Matrix Results

Varimax rotation is frequently used in factor analysis since it reduces the number of complex variables and improves interpretation (Kising'u *et al.*, 2017). A confirmatory factor analysis was done for the independent variable, customer relationship management practice. The results of this analysis are presented in Table 4.75 and six (6) out of nine (9) factor loadings were above 0.4 and positive. Thus, this therefore indicated that only six (6) out of nine (9) items tested for factor analysis were retained for subsequent analysis because they met the minimum threshold values of 0.4 and above (Sasaka *et al.*, 2017). Table 4.75 presents Rotated Component Matrix results for Customer Relationship Management Practice.

Table 4.75: Rotated Component Matrix for Customer Relationship Management

Code No.	Opinion Statement	Component 1.CPVSL	2.CCC
D1	Our company follows up feedback from our major customers on product value satisfaction level	**.841**	
D3	Customer satisfaction criterion is used to evaluate the performance of our company.	**.716**	
D2	Our company's major customers share Point of Sales (POS) information with regard to customer product value satisfaction level.	**.619**	
D7	My company provides effective communication channels to our major customers.		**.634**
D8	My company has fully invested in state of art information communication system to enable information sharing between the company and customers.		**.628**
D9	There are clear customer communication channels on order fulfillment along the supply chain.		**.600**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.
KEY:CPVSL=Customer Product Value Satisfaction Level,CCC=Customer Communication Channels

4.9.6 Factor Analysis Results for Customer Relationship Management Practice

The study sought to determine the effect of customer relationship management practice on performance of tea subsector industry in Kenya. Customer relationship management practice was operationalized by three measures namely; customer product value satisfaction level, customer product design input and customer communication channel. Nine constructs were tested for factor analysis. Factor analysis was done on customer relationship management practice constructs where the constructs were subjected to a variance test through the principal component analysis test. The principal component analysis was thus used for data reduction and interpretation of large set of data. Six out of nine constructs were tested for factor analysis after performing rotated component matrix (Table 4.75 above) which eliminated three items related to customer product design input due to failure to meet the threshold of 0.4 factor loading and above.

Through factor analysis, the results showed that two factors extracted held the explanation on customer relationship management practice with cumulative total variance of 56.478% in this construct. Factor one was customer product value satisfaction level and was the highest with 31.360% of total variance, factor two was customer communication channels and had 25.118% of total variance. These two factors had their Eigen values greater than 1 and had the greatest effect on customer relationship management practice. Thus, the results therefore revealed that the two major factors driving customer relationship management practice cumulatively accounted for 56.478% of the total variance in this construct. This meant that 56.478% of the common variance shared by the six constructs could be accounted for by the two factors and explained about 56.478% of variance as shown in Table 4.76. Table 4.76 presents Factor Analysis Results- Total Variance Explained for Customer Relationship Management Practice.

Table 4.76: Factor Analysis Results for Customer Relationship Management

	Initial Eigenvalues			**Rotation Sums of Squared Loadings**		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	1.890	31.500	31.500	1.882	31.360	31.360
2	1.499	24.978	56.478	1.507	25.118	56.478
3	.987	16.454	72.932			
4	.727	12.112	85.044			
5	.545	9.082	94.126			
6	.352	5.874	100.000			

Extraction Method: Principal Component Analysis.

4.9.7 Descriptive Results of Customer Relationship Management Practice

Customer relationship management practice was assessed by two measures after factor analysis namely; customer product value satisfaction level and customer communication channels. Table 4.77 below shows descriptive data presented on a scale of 1 to 5(1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree).

Table 4.77: Descriptive Results of Customer Relationship Management Practice

Customer Relationship Management Practice	N	Mean	Std Deviation	Cronbach's Alpha
Customer Product Value Satisfaction Level	229	4.5649	0.56071	.900
Customer Communication Channel	229	3.9723	0.24202	.902
Customer Relationship Management Practice	**229**	**4.2686**	**0.40136**	**0.901**

Key: 1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree
Overall Cronbach's Alpha = 0.901

Cronbach's alpha was used to test the reliability of the proposed constructs (Ali *et al*., 2016). From the study findings, it was noted that customer product value satisfaction level had a coefficient of 0.900 and customer communication channel had a coefficient of 0.902. The overall Cronbach's alpha for customer relationship management practice (customer product value satisfaction level and customer communication channels) was 0.901. The findings showed that all the two scales of customer relationship management practice measures were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Bryman & Bell, 2015).

From the research study, it was noted that customer product value satisfaction level was key to having customers satisfied with the company products through following up on feedback from major customers on product value satisfaction level, sharing of Point of Sale(POS) information with regard to customer product value satisfaction, using customer satisfaction criterion to evaluate the performance of tea companies and tea companies using market research to solicit customers' inputs in their products design hence enhancing customer relationship management practice as indicated by a mean score of 4.5649 and a standard deviation of 0.56071.This findings were consistent with Wanja and Chirchir, (2013) who did a study on supply chain management practices and performance of Kenya Tea Development Agency managed factories and strongly indicated that customer product value satisfaction level was key to repeat purchases of the various types of tea products both locally and internationally thus enabling the performance of the tea subsector industry in Kenya.

From the research study, it was noted that customer communication channels had a central role to play in customer relationship management practice through provision of effective communication channels to major customers on tea subsector industry products and having clear customer communication channels on order fulfillment along the supply chain as indicated by a mean score of 3.9723 and a standard deviation of 0.24202. These findings were consistent with Namusonge, Mukulu and Iravo, (2017) who did a study on the influence of supply chain capabilities on performance of manufacturing entities in Kenya and strongly asserted that customer communication channels was key to customer relationship management practice inorder to keep customer abreast of new products and handle customer queries instantly thus enhancing the performance of manufacturing entities in Kenya.

4.9.8 Customer Relationship Management Practice Correlations Results

Pearson Bivariate correlation coefficient was used to compute the correlation between the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency). Sekaran (2015) asserts that this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship).

The correlation coefficient was calculated to determine the strength and nature of the relationship between the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency). In trying to show the relationship between the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency), the study used the Karl Pearson's coefficient of correlation (r). This is as shown in Table 4.78.

Findings presented in Table 4.78 indicated that there was a significant positive correlation effect between customer product value satisfaction level, supply chain integration(r =0.305,p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.246,p value =0.000), market share index(r =0.370,p value =0.000) and operational efficiency (r = 0.302, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant positive correlation effect between customer communication channels, supply chain integration(r =0.330,p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.240,p value =0.000), market share index(r =0.366,p value =0.000) and operational efficiency (r = 0.221, p value = 0.001) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

Further, the Correlation Coefficient (r) are classified according to their strengths as follows:+1.0 (perfect positive association),+0.8 to +1.0 (very strong positive association),+0.6 to +0.8 (strong positive association),+0.4 to +0.6 (moderate positive association),+0.2 to +0.4 (weak positive association),0.0 to +0.2 (very weak positive association),0.0 to -0.2 (very weak negative association),-0.2 to -0.4 (weak negative association),-0.4 to -0.6 (moderate negative association),-0.6 to -0.8 (strong negative association),-0.8 to -1.0 (very strong negative association) and -1.0 (perfect negative association).

This meant that there was a significant positive relationship between the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency). The results were in tandem with Wanja and Chirchir (2013) who did a study on supply chain management practices and performance of Kenya Tea Development Agency managed factories and strongly indicated that customer product value satisfaction level was key to repeat purchases of the various types of tea products both locally and internationally thus enabling the performance of the tea subsector industry in Kenya. Table 4.78 presents Customer Relationship Management Practice Correlations Results.

Table 4.78: Customer Relationship Management Practice Correlations Results

		CPVSL	CCC	SCIMP	FPM	MSI	OE
Customer Product Value Satisfaction Level	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	229					
Customer Communication Channels	Pearson Correlation	**.155***	1				
	Sig. (2-tailed)	.019					
	N	229	229				
Supply chain integration	Pearson Correlation	**.305****	**.330****	1			
	Sig. (2-tailed)	.000	.000				
	N	229	229	229			
Firm Profit Margins	Pearson Correlation	**.246****	**.240****	**.273****	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	229	229	229	229		
Market Share Index	Pearson Correlation	**.370****	**.366****	**.520****	**.223****	1	
	Sig. (2-tailed)	.000	.000	.000	.001		
	N	229	229	229	229	229	
Operational Efficiency	Pearson Correlation	**.302****	**.221****	**.234****	**.139****	**.388****	1
	Sig. (2-tailed)	.000	.001	.000	003	.005	
	N	229	229	229	229	229	229

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
KEY:CPVSL=Customer Product Value Satisfaction Level, CCC=Customer Communication Channels SCIMP=Supply chain integration,FPM=Firm Profit Margins, MSI=Market Share Index, EE=Operational Efficiency

4.9.9 Customer Relationship Management Goodness-of-fit Model Results

To assess the research model, the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency) were subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency).

The results in Table 4.79 under model one (1) showed that customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had explanatory power on performance of tea subsector industry in Kenya linked to firm profit margins as it accounted for 10.2% of its variability (R Square = 0.102) hence the model was a good fit for the data. Customer relationship management practice measures (customer product value satisfaction level and customer communication channels) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to firm profit margins. However, this is still a good model as Cooper and Schinder (2013) pointed out that as much as lower value R square 0.10-0.20 is acceptable in social science research.

On Model two (2) in Table 4.79, the explanatory power of Customer relationship management practice measures (customer product value satisfaction level and customer communication channels) increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 29.6% of its variability (R Square = 0.296) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had significantly increased the relationship between the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.79 presents Customer Relationship Management Practice Model Summary on Firm Profit Margins.

Table 4.79: Customer Relationship Model Summary on Firm Profit Margins

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.320[a]	.102	.094	1.13756
2	.544[a]	.296	.283	1.01214

a. Predictors: (Constant), Customer Communication Channels, Customer Product Value Satisfaction Level
b. Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration
c. Dependent Variable: Firm Profit Margins

The results in Table 4.80 under model one (1) showed that customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had explanatory power on performance of tea subsector industry in Kenya linked to market share index as it accounted for 23.4% of its variability (R Square = 0.234) hence the model was a good fit for the data. Customer relationship management practice measures (customer product value satisfaction level and customer communication channels) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to market share index.

On Model two (2) in Table 4.80, the explanatory power of customer relationship management practice measures (customer product value satisfaction level and customer communication channels) increased partially when the moderator variable supply chain integration was incorporated into the model as it accounted for 25.9% of its variability (R Square = 0.259) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had partially increased the relationship between the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index. Table 4.80 presents Customer Relationship Management Practice Model Summary on Market Share Index.

Table 4.80: Customer Relationship Model Summary on Market Share Index

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.484[a]	.234	.228	1.03087
2	.508[a]	.259	.245	1.01892

a. Predictors: (Constant), Customer Communication Channels, Customer Product Value Satisfaction Level
b. Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration
c. Dependent Variable: Market Share Index

The results in Table 4.81 under model one (1) showed that customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had explanatory power on performance of tea subsector industry in Kenya linked to operational efficiency as it accounted for 16.5% of its variability (R Square = 0.165) hence the model was a good fit for the data. Customer relationship management practice measures (customer product value satisfaction level and customer communication channels) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to operational efficiency. However, this is still a good model as Cooper and Schinder (2013) pointed out that as much as lower value R square 0.10-0.20 is acceptable in social science research.

On Model two (2) in Table 4.81, the explanatory power of customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had a partial increase when the moderator variable supply chain integration was incorporated into the model as it accounted for 18.4% of its variability (R Square = 0.184) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had partially increased the strength of the relationship between the independent variable customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.81 presents Customer Relationship Management Practice Model Summary on Operational Efficiency.

Table 4.81: Customer Relationship Model Summary on Operational Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.406[a]	.165	.158	.79731
2	.429[a]	.184	.169	.79185

a. Predictors: (Constant), Customer Communication Channels, Customer Product Value Satisfaction Level
b. Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration
c. Dependent Variable: Operational Efficiency

4.9.10 Customer Relationship Management Practice ANOVA Results

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05.Table 4.82 under model one (1) showed the significance of the regression model on customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins with P-value of 0.000 which is less than 0.05 (Bryman & Bell, 2015).

The results revealed that a significant relationship existed between customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 12.880, p = 0.000.

Table 4.82 under model two (2) captures the significance of the regression model on customer relationship management practice measures (customer product value satisfaction level and customer communication channels) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins. The overall ANOVA results indicated that model two (2) was significant at F = 23.506, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. Table 4.82 presents Customer Relationship Management Practice ANOVA Results on Firm Profit Margins.

Table 4.82: Customer Relationship ANOVA Results on Firm Profit Margins

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	33.336	2	16.668	12.880	.000[b]
	Residual	292.455	226	1.294		
	Total	325.790	228			
2	Regression	96.319	4	24.080	23.506	.000[b]
	Residual	229.472	224	1.024		
	Total	325.790	228			

a. Dependent Variable: Firm Profit Margins
b. Predictors: (Constant), Customer Communication Channels, Customer Product Value Satisfaction Level;
c. Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration

Table 4.83 under model one (1) showed the significance of the regression model on customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index with P-value of 0.000 which was less than 0.05(Bryman & Bell, 2015). The results revealed that a significant relationship existed between customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 34.573, p = 0.000.

Table 4.83 under model two (2) captures the significance of the regression model on customer relationship management practice measures (customer product value satisfaction level and customer communication channels) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index. The overall ANOVA results indicated that model two (2) was significant at F = 19.527, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table 4.83 presents Customer Relationship Management Practice ANOVA Results on Market Share Index.

Table 4.83: Customer Relationship ANOVA Results on Market Share Index

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	73.481	2	36.741	34.573	.000[b]
	Residual	240.169	226	1.063		
	Total	313.651	228			
2	Regression	81.093	4	20.273	19.527	.000[b]
	Residual	232.558	224	1.038		
	Total	313.651	228			

a. Dependent Variable: Market Share Index
b. Predictors: (Constant), Customer Communication Channels, Customer Product Value Satisfaction Level;
c. Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration

Table 4.84 under model one (1) showed the significance of the regression model on customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency with P-value of 0.000 which was less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 22.353, p = 0.000.

Table 4.84 below under model two (2) captures the significance of the regression model on customer relationship management practice measures (customer product value satisfaction level and customer communication channels) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency. The overall ANOVA results indicated that model two (2) was significant at F = 12.612, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table 4.84 presents Customer Relationship Management Practice ANOVA Results on Operational Efficiency.

Table 4.84: Customer Relationship ANOVA Results on Operational Efficiency

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	28.419	2	14.210	22.353	.000[b]
	Residual	143.668	226	.636		
	Total	172.087	228			
2	Regression	31.633	4	7.908	12.612	.000[b]
	Residual	140.455	224	.627		
	Total	172.087	228			

a. Dependent Variable: Operational Efficiency
b. Predictors: (Constant), Customer Communication Channels, Customer Product Value Satisfaction Level;
c. Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration

4.9.11 Regression of Customer Relationship and Firm Profit Margins

To establish the effect of customer relationship management practice measures (customer product value satisfaction level and customer communication channels) on performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

> **H_01:** Customer relationship management practice measures (customer product value satisfaction level and customer communication channels) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.

Regression analysis was conducted to empirically determine whether customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.85 displays the regression coefficients results of customer relationship management practice measures (customer product value satisfaction level and customer communication channels).

Table 4.85: Regression of Customer Relationship and Firm Profit Margins

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	8.107	1.122		7.227	.000
	Customer Product Value Satisfaction Level (X_1)	.152	.045	.214	3.354	.001
	Customer Communication Channels(X_2)	.341	.105	.207	3.242	.001

a. Dependent Variable: Firm Profit Margins

From Table 4.85, the results indicated that customer product value satisfaction level (with β=0.214, p value 0.001) and customer communication channels (with β=0.207, p value 0.001) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.82 above further illustrates that a 0.152 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in

Kenya linked to firm profit margins and a 0.341 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.85, the coefficient (r) or beta for customer product value satisfaction level and customer communication channels were (0.214) and (0.207) respectively. This meant that customer relationship management practice measures (customer product value satisfaction level and customer communication channels) individually explained 21.4 percent and 20.7 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The regression model is summarized by equation 4.16 below.

$Y = 8.107 + 0.152X_1 + 0.341X_2$ **……………………………….. Equation 4.16**

Where,

Y – Firm Profit Margins, X_1 – Customer Product Value Satisfaction Level, X_2 – Customer Communication Channels

It was concluded that customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. Hence, customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

H_01: Supply chain integration has no significant moderating effect on customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins.

Moderated regression analysis was conducted to empirically determine whether customer relationship management practice measures (customer product value satisfaction level and customer communication channels) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins as shown on table 4.86. Table 4.86 presents Moderated Regression Coefficients of Customer Relationship Management Practice and Firm Profit Margins.

Table 4.86: Moderated Regression Customer Relationship and Firm Profit Margins

		Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	33.111	6.728		4.922	.000
	Customer Product Value Satisfaction Level (X_1)	3.850	.519	3.002	7.414	.000
	Customer Communication Channels(X_2)	.516	.179	.313	2.880	.004
	Customer Product Value _Supply chain integration(X_1Z)	.081	.013	2.383	6.036	.000
	Customer Communication Channels _Supply chain integration(X_2Z)	.511	.095	.316	5.365	.000

a. Dependent Variable: Firm Profit Margins

Table 4.86 displays the regression coefficients results of the moderated customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins. From Table 4.86, the results indicated that customer product value satisfaction level (with β= 3.002, p value 0.000), customer communication channels (with β=0.313, p value 0.004),customer product value satisfaction level _ supply chain integration (with β= 2.383, p value

0.000) and customer communication channels _ supply chain integration (with β= 0.316, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins.

Table 4.86 further illustrates that a 3.850 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.516 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.081 point increase in customer product value satisfaction level _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins and a 0.511 point increase in customer communication channels _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.86, the coefficient (r) or beta for customer product value satisfaction level, customer communication channels, customer product value satisfaction level _ supply chain integration and customer communication channels _supply chain integration were (3.002), (0.313) ,(2.383)and (0.316) respectively. This meant that the moderated customer relationship management practice (customer product value satisfaction level, customer communication channels, customer product value satisfaction level _ supply chain integration and customer communication channels _supply chain integration) individually explained 300.2 percent, 31.3 percent, 238.3 percent and 31.6 percent, changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The moderated regression model is summarized by equation 4.17 below.

$Y = 33.111+3.850X_1 +0.516X_2+0.081X_1Z+0.002X_2Z$**……………………Equation 4.17**

Where,

Y – Firm Profit Margins, X_1 – Customer Product Value Satisfaction Level, X_2 – Customer Communication Channels, X_1Z – Customer Product Value Satisfaction

Level _ supply chain integration and X_2Z – Customer Communication Channels _ supply chain integration

It was concluded that customer relationship management practice (customer product value satisfaction level and customer communication channels) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins. Hence, upon the introduction of the moderating variable supply chain integration, customer relationship management practice (customer product value satisfaction level and customer communication channels) still had an effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.9.12 Regression Results of Customer Relationship and Market Share Index

To establish the effect of customer relationship management practice (customer product value satisfaction level and customer communication channels) on performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

> **$H_0$1:** Customer relationship management practice (customer product value satisfaction level and customer communication channels) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

Regression analysis was conducted to empirically determine whether customer relationship management practice (customer product value satisfaction level and customer communication channels) had any significant effect on performance of tea subsector industry in Kenya linked to market share index. Table 4.87 displays the regression coefficients results of customer relationship management practice (customer product value satisfaction level and customer communication channels).

Table 4.87: Regression of Customer Relationship and Market Share Index

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	5.448	1.017		5.359	.000
	Customer Product Value Satisfaction Level (X_1)	.224	.041	.321	5.443	.000
	Customer Communication Channels(X_1)	.511	.095	.316	5.365	.000

a. Dependent Variable: Market Share Index

From Table 4.87, the results indicated that customer product value satisfaction level (with β= 0.321, p value 0.000) and customer communication channels (with β= 0.316, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index. Table 4.87 further illustrates that a 0.224 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.511 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.87, the coefficient (r) or beta for customer product value satisfaction level and customer communication channels were (0.321) and (0.316) respectively. This meant that customer relationship management practice (customer product value satisfaction level and customer communication channels) individually explained 32.1 percent and 31.6 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The regression model is summarized by equation 4.18 below.

$Y = 5.448 + 0.224X_1 + 0.511X_2$ **………………... Equation 4.18**

Where,

Y – Market Share Index, X_1 – customer product value satisfaction level and X_2 – customer communication channels

It was concluded that customer relationship management practice (customer product value satisfaction level and customer communication channels) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. Hence, customer relationship management practice (customer product value satisfaction level and customer communication channels) had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

> **H_01:** Supply chain integration has no significant moderating effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index.

Moderated regression analysis was conducted to empirically determine whether customer relationship management practice (customer product value satisfaction level and customer communication channels) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to market share index as shown on table 4.88.

Table 4.88: Moderated Regression Customer Relationship and Market Share Index

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6.430	2.572		2.500	.013
	Customer Product Value Satisfaction Level (X_1)	.198	.057	.284	3.489	.001
	Customer Communication Channels(X_2)	.449	.214	.278	2.101	.037
	Customer Product Value Satisfaction Level _Supply chain integration(X_1Z)	.516	.179	.313	2.880	.004
	Customer Communication Channels _Supply chain integration(X_2Z)	.005	.002	.158	2.706	.007

a. Dependent Variable: Market Share Index

Table 4.88 displays the regression coefficients results of the moderated customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index. From Table 4.88, the results indicated that customer product value satisfaction level (with β= 0.284, p value 0.001) , customer communication channels (with β=0.278, p value 0.037), customer product value satisfaction level _supply chain integration (with β=0.313, p value 0.004) and customer communication channels _supply chain integration (with β=0.158, p value 0.007) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index.

Table 4.88 further illustrates that a 0.198 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.449 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.516 point increase in customer product value satisfaction level _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a

0.005 point increase in customer communication channels _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.88, the coefficient (r) or beta for customer product value satisfaction level, customer communication channels, customer product value satisfaction level _supply chain integration and customer communication channels _supply chain integration were (0.284), (0.278) ,(0.313) and (0.158) respectively. This meant that the moderated customer relationship management practice (customer product value satisfaction level, customer communication channels, customer product value satisfaction level _supply chain integration and customer communication channels _supply chain integration) individually explained 28.4 percent, 27.8 percent, 31.3 percent and 15.8 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The moderated regression model is summarized by equation 4.19 below.

$Y = 6.430+0.198X_1+0.449X_2+0.002X_1Z+0.005X_2Z$ **………………………..Equation 4.19**

Where,

Y – Market Share Index, X_1 – Customer Product Value Satisfaction Level, X_2 – Customer Communication Channels, X_1Z – customer product value satisfaction level _supply chain integration and X_2Z – customer communication channels _supply chain integration

It was concluded that customer relationship management practice (customer product value satisfaction level and customer communication channels) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index. Hence, upon the introduction of the moderating variable supply chain integration, customer relationship management practice (customer product value satisfaction level and customer communication channels) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.9.13 Regression Results of Customer Relationship and Operational Efficiency

To establish the effect of customer relationship management practice (customer product value satisfaction level and customer communication channels) on performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

> **$H_0$1:** Customer relationship management practice (customer product value satisfaction level and customer communication channels) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Regression analysis was conducted to empirically determine whether customer relationship management practice (customer product value satisfaction level and customer communication channels) had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.89 displays the regression coefficients results of customer relationship management practice (customer product value satisfaction level and customer communication channels).

Table 4.89: Regression of Customer Relationship and Operational Efficiency

		Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	9.563	.786		12.162	.000
	Customer Product Value Satisfaction Level (X_1)	.178	.032	.345	5.610	.000
	Customer Communication Channels(X_2)	.329	.074	.275	4.466	.000

a. Dependent Variable: Operational Efficiency

From Table 4.89, the results indicated that customer product value satisfaction level (with β= 0.345, p value 0.000) and customer communication channels (with β=0.275, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.89 further illustrates that a 0.178 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.329 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.89, the coefficient (r) or beta for customer product value satisfaction level and customer communication channels were (0.345) and (0.275) respectively. This meant that customer relationship management practice (customer product value satisfaction level and customer communication channels) individually explained 34.5 percent and 27.5 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The regression model is summarized by equation 4.20 below.

$Y = 9.563 + 0.178X_1 + 0.329X_2$ **………………………………... Equation 4.20**

Where,

Y – Operational Efficiency, X_1 – Customer Product Value Satisfaction Level and X_2 – Customer Communication Channels

It was concluded that customer relationship management practice (customer product value satisfaction level and customer communication channels) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. Hence, customer relationship management practice (customer product value satisfaction level and customer communication channels) had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency.

Moderated regression analysis was conducted to empirically determine whether customer relationship management practice (customer product value satisfaction level and customer communication channels) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency as shown on table 4.90. Table 4.90 presents results of Moderated Regression on Customer Relationship Management Practice and Operational Efficiency.

Table 4.90: Moderated Regression Customer and Operational Efficiency

		Unstandardized Coefficients		**Standardized Coefficients**		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	12.483	5.483		2.277	.024
	Customer Product Value Satisfaction Level (X_1)	.848	.329	1.642	2.580	.011
	Customer Communication Channels(X_2)	1.333	.554	1.114	2.404	.017
	Customer Product Value Satisfaction Level _ Supply chain integration(X_1Z)	.033	.016	1.307	2.049	.042
	Customer Communication Channels _Supply chain integration(X_2Z)	.329	.074	.275	4.466	.000

a. Dependent Variable: Operational Efficiency

Table 4.90 displays the regression coefficients results of the moderated customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in

Kenya linked to operational efficiency. From Table 4.90, the results indicated that customer product value satisfaction level (with β= 0.1.642, p value 0.011), customer communication channels (with β=1.114, p value 0.017) ,customer product value satisfaction level _supply chain integration (with β= 1.307, p value 0.000) and customer communication channels _supply chain integration (with β= 0.275, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.90 above further illustrates that a 0.848 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 1.333 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.033 point increase in customer product value satisfaction level _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and 0.329 point increase in customer communication channels _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency.

However, it should be noted that as shown in Table 4.90 above, the coefficient (r) or beta for customer product value satisfaction level, customer communication channels, customer product value satisfaction level _supply chain integration and customer communication channels _supply chain integration were (1.642), (1.114) ,(1.307) and (0.275) respectively. This meant that the moderated customer relationship management practice (customer product value satisfaction level, customer communication channels, customer product value satisfaction level _supply chain integration and customer communication channels _supply chain integration) individually explained 164.2 percent, 111.4 percent,130.7 percent and 27.5 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The moderated regression model was summarized by equation 4.21 below.

$Y = 12.483+0.848X_1+1.333X_2+0.033X_1Z+0.021X_2Z$……………………… **Equation 4.15**

Where,

Y – Operational Efficiency, X_1 – customer product value satisfaction level, X_2 – customer communication channels, X_1Z – customer product value satisfaction level _supply chain integration and X_2Z – customer communication channels _supply chain integration)

It was concluded that customer relationship management practice (customer product value satisfaction level and customer communication channels) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency. Hence, upon the introduction of the moderating variable supply chain integration, customer relationship management practice (customer product value satisfaction level and customer communication channels) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.10 Logistics Management Practice

The fourth objective of the study was to establish the effect of logistics management practice on performance of tea subsector industry in Kenya. Respondents were required to respond to set questions related to logistics management practice and give their opinions. This objective was operationalized by three measures namely; transport management systems, inventory management systems and distribution channel network. Nine constructs of this objective were tested for factor analysis.

4.10.1 Sample Adequacy Results of Logistics Management Practice

The study applied the KMO measures of sampling adequacy and Bartlett's test of sphericity to test whether the relationship between logistics management practice independent variable was significant or not as shown in Table 4.91. From Table 4.91, the KMO measure of sampling adequacy results was 0.903. This indicated that factor analysis could be carried out as the KMO index was above 0.5 and between 0 and 1. The Bartlett's test of Sphericity result was 0.000 which was within the acceptable level to test for significance and validity of the data.Rusuli *et al*. (2013) explained that Measure of Sampling Adequacy should exceed 0.5 and for Bartlett's test of Sphericity the significant level of p-value should be less than 0.05. Table 4.91 presents KMO &Bartlett's Test results for Logistics Management Practice.

Table 4.91: KMO &Bartlett's Test for Logistics Management Practice

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.903
Bartlett's Test of Sphericity	Approx. Chi-Square	1396.508
	df	36
	Sig.	.000

4.10.2 Logistics Management Practice Data Normality Test Results

The most fundamental assumption in multivariate analysis is normality, referring to the shape of the data distribution for a variable and its correspondence to the normal distribution (Hair *et al*., 2010). There are several ways to determine normality of the data. Normality is tested to determine whether the distribution of the data approximates that of a normal distribution. This is necessary to determine the next course of testing; using parametric or non-parametric techniques. Normality was used to test for significance and construction of confidence interval estimates of the parameters. The assumption is that the variables are normally distributed. In their study, Kising'u *et al*. (2017) showed that the assumptions and application of statistical tools as well as suitability of the tests are important aspects for statistical analysis. To check for normality, the study adopted the Skewness and Kurtosis test and Auto correlation test.

4.10.3 Skewness and Kurtosis Test Results for Logistics Management Practice

The first test for normality on logistics management practice was done by examining the values of skewness and kurtosis. Two important components of normality are skewness and kurtosis (Tabachnick & Fidell, 2014). Skewness examines the deviation of the data from the mean while kurtosis examines the relative peakedness of the distribution. Although theoretically, when a distribution is in perfect distribution, the value of skewness and kurtosis are zero, which are rather uncommon occurrence in the social science. Kisingu *et al*. (2017) suggested that, for a distribution to be considered normal, both the skewness and kurtosis of the distribution should fall between -2.00 to +2.00. However, Hair *et al*. (2010) suggested that for a distribution to be considered normal, the skewness value must be within ±2.00 standard error of skewness and within ±3.00 standard error of kurtosis. The results presented in Table 4.92 showed that skewness statistics for logistics management practice was -0.408 while kurtosis was -0.524. Based on these results, it was concluded that data for this variable was normally distributed since their statistic values were between -2 and +2. Table 4.92 presents Skewness and Kurtosis results for Logistics Management Practice.

Table 4.92: Skewness and Kurtosis for Logistics Management Practice

Variable	**n**	**Skewness**		**Kurtosis**	
	Statistic	**Statistic**	**Std Error**	**Statistic**	**Std Error**
Logistics Management Practice	229	-.408	.161	-.524	.320

4.10.4 Durbin-Watson Test Results for Logistics Management Practice

Autocorrelation may be defined as the assumption that the errors of prediction are independent of one another (Tabachnick & Fidell, 2014). A high degree of correlation among residuals of the regression data sets may produce inefficient results. The Durbin Watson statistic test was used to measure the autocorrelation of errors in logistics management practice over the sequence of cases, and if significant, indicates dependence of errors. Durbin-Watson statistic test ranges in value from 0 to 4 with an ideal value of 2 indicating that errors are not correlated, although values from 1.75 to 2.25 may be considered acceptable (Omar *et al.*, 2017). Some authors consider Durbin-Watson value between 1.5 and 2.5 as acceptable level indicating no presence of collinearity (Makori & Jagongo, 2013). Durbin-Watson value of 1.922 in logistics management practice indicates that the model did not suffer from autocorrelation. Table 4.93 presented the results for testing autocorrelation in terms of the Durbin-Watson statistics test for logistics management practice. Table 4.93 presents Durbin-Watson Results for Logistics Management Practice.

Table 4.93: Durbin-Watson Results for Logistics Management Practice

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.715[a]	.511	.505	.61269	1.922

a. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems
b. Dependent Variable: Performance

4.10.5 Logistics Management Practice Rotated Component Matrix Results

Varimax rotation is frequently used in factor analysis since it reduces the number of complex variables and improves interpretation (Kising'u *et al.*, 2017). A confirmatory factor analysis was done for the independent variable, logistics management practice. The results of this analysis are presented in Table 4.94 and seven (7) out of nine (9) factor loadings were above 0.4 and positive. Thus, this therefore indicated that only seven (7) out of nine (9) items tested for factor analysis were retained for subsequent analysis because they met the minimum threshold values of 0.4 and above (Sasaka *et al.*, 2017). Table 4.94 presents Rotated Component Matrix for Logistics Management Practice.

Table 4.94: Rotated Component Matrix for Logistics Management Practice

Code No.	Opinion Statement	Component 1.DCN	2.IMS	3.TMS
E7	The distribution network in place allows efficient lead-time thus timely distribution delivery.	**.851**		
E8	My company has got a well distributed warehousing networks across the country.	**.719**		
E9	The distribution and warehousing facilities are adequate to allow sufficient storage of inventory	**.617**		
E5	My company has developed a forecasting model that improves inventory planning and management		**.869**	
E4	My company has deployed vendor management inventory systems to ensure efficient management of inventory		**.614**	
E3	Our company shares the transport and logistics - related operating data from one department to other departments.			**.761**
E2	Third party transport service providers help the firm in faster movement of goods to the customers			**.650**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

KEY: TMS=Transport Management Systems, MS=Inventory Management Systems, DCN=Distribution Channel Network

4.10.6 Factor Analysis Results for Logistics Management Practice

The study sought to determine the effect of logistics management practice on performance of tea subsector industry in Kenya. Logistics management practice was operationalized by three measures namely; transport management systems, inventory management systems and distribution channel network. Nine constructs were tested for factor analysis. Factor analysis was done on logistics management practice constructs where the constructs were subjected to a variance test through the principal component analysis test. The principal component analysis was thus used for data reduction and interpretation of large set of data. Seven out of nine constructs were tested for factor analysis after performing rotated component matrix (Table 4.94) which eliminated two items due to failure to meet the threshold of 0.4 factor loading and above.

Through factor analysis, the results showed that three factors extracted held the explanation on logistics management practice with cumulative total variance of 62.181% in this construct. Factor one was the highest with 26.927% of total variance, factor two had 18.770 % of total variance while factor three had 16.484 % of total variance. These three factors had their Eigen values greater than 1 and had the greatest effect on logistics management practice. Thus, the results therefore revealed that the three major factors driving logistics management practice cumulatively accounted for 62.181% of the total variance in this construct. This meant that 62.181% of the common variance shared by the seven constructs could be accounted for by the three factors and explained about 62.181% of variance as shown in Table 4.95. Table 4.95 presents Factor Analysis Results- Total Variance Explained for Logistics Management Practice.

Table 4.95: Factor Analysis for Logistics Management Practice

Component	Initial Eigenvalues Total	% of Variance	Cumulative %	Rotation Sums of Squared Loadings Total	% of Variance	Cumulative %
1	1.965	28.077	28.077	1.885	26.927	26.927
2	1.335	19.070	47.147	1.314	18.770	45.697
3	1.052	15.034	62.181	1.154	16.484	62.181
4	.937	13.387	75.568			
5	.878	12.550	88.117			
6	.508	7.262	95.380			
7	.323	4.620	100.000			

Extraction Method: Principal Component Analysis.

4.10.7 Descriptive Results of Logistics Management Practice

Logistics management practice was assessed by three measures namely; transport management systems, inventory management systems and distribution channel network. Table 4.96 shows descriptive data presented on a scale of 1 to 5(1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree).

Table 4.96: Descriptive Results of Logistics Management Practice

Logistics Management Practice	N	Mean	Std Deviation	Cronbach's Alpha
Transport Management Systems	229	4.5989	0.50697	.867
Inventory Management Systems	229	4.3340	0.36691	.855
Distribution Channel Network	229	4.1244	0.36596	.850
Logistics Management Practice	**229**	**4.3524**	**0.41328**	**.857**

Key: 1-Strongly Disagree, 2-Disagreee, 3-Neither Agree, 4-Agree, 5-Strongly Agree
Overall Cronbach's Alpha = 0.857

Cronbach's alpha was used to test the reliability of the proposed constructs (Ali *et al*., 2016). From the study findings, it was noted that transport management systems had a coefficient of 0.867, inventory management systems had a coefficient of 0.855 while distribution channel network had a coefficient of 0.850. The overall Cronbach's alpha for logistics management practice (transport management systems, inventory management systems and distribution management systems) was 0.857. The findings showed that all the three scales of logistics management practice measures were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Bryman & Bell, 2015).

From the research study, it was noted that transport management systems was key to having faster movement of goods to the customers using third party transport service providers and sharing of the transport and logistics related operating data from one department to other departments had helped companies to ease the movement of tea products along the supply chain from manufacturer to consumer both locally and internationally hence enhancing logistics management practice as indicated by a mean score of 4.5989 and a standard deviation of 0.50697.This findings were consistent with Musau, Namusonge, Makokha and Ngeno (2017) who did a study on the effect of transport management on organizational performance among textile manufacturing firms in Kenya and strongly indicated that transport management systems enhanced the movement of textile products along the supply chain from manufacturer to consumer both locally and internationally hence enhancing logistics management practice thus enabling the performance of the textile manufacturing firms in Kenya.

From the research study, it was noted that inventory management systems had a central role to play in logistics management practice through deployment of vendor management inventory systems to ensure efficient management of inventory and development of a forecasting model that improves inventory planning and management as indicated by a mean score of 4.3340 and a standard deviation of 0.36691. This findings were consistent with Mwangangi, Guyo and Arasa (2016) who did a study on the influence of logistics management on performance of manufacturing firms in Kenya and concurred that inventory management systems was a key component in logistics management practice inorder to ensure storage of finished products closer to end-users hence seamless supply of manufactured goods to customers both locally and internationally as at and when they need them thus enhancing perfomance of manufacturing firms in Kenya.

From the research study, it was noted that distribution channel network was necessary in logistics management practice through the distribution network in place allowing efficient lead-time thus timely distribution delivery, having well distributed warehousing networks across the country and having distribution and warehousing facilities which are adequate to allow sufficient storage of inventory as indicated by a mean score of 4.1244 and a standard deviation of 0.36596. These findings were consistent with Mwangangi, Guyo and Arasa (2016) who did a study on the influence of logistics management on performance of manufacturing firms in Kenya and concurred that distribution channel network was a key component in logistics management practice inorder to ensure seamless supply of manufactured goods to customers both locally and internationally as at and when they need them thus enhancing perfomance of manufacturing firms in Kenya.

4.10.8 Logistics Management Practice Correlations Results

Pearson Bivariate correlation coefficient was used to compute the correlation between the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency). Sekaran (2015) asserts that this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship). The correlation coefficient was calculated to determine the strength and nature of the relationship between the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency).

In trying to show the relationship between the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency), the study used the Karl Pearson's coefficient of correlation (r). This is as shown in Table 4.97.

Findings presented in Table 4.97 indicated that there was a significant correlation effect between transport management systems, supply chain integration($r = 0.202$,p value =0.002), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.660,p value =0.000), market share index(r =0.186,p value =0.005) and operational efficiency (r = 0.273, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant correlation effect between inventory management systems, supply chain integration(r =0.580,p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.171,p value =0.009), market share index(r =0.564,p value =0.000) and operational efficiency (r = 0.219, p value = 0.001) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant correlation effect between distribution channel network, supply chain integration(r =0.561,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.238,p value =0.000), market share index(r =0.534,p value =0.000) and operational efficiency (r = 0.520, p value = 0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

Further, the Correlation Coefficient (r) are classified according to their strengths as follows:+1.0 (perfect positive association),+0.8 to +1.0 (very strong positive association),+0.6 to +0.8 (strong positive association),+0.4 to +0.6 (moderate positive association),+0.2 to +0.4 (weak positive association),0.0 to +0.2 (very weak positive association),0.0 to -0.2 (very weak negative association),-0.2 to -0.4 (weak negative association),-0.4 to -0.6 (moderate negative association),-0.6 to -0.8 (strong negative association),-0.8 to -1.0 (very strong negative association) and -1.0 (perfect negative association).

This meant that there was a significant positive relationship between the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency). The results were in tandem with the findings of Musau, Namusonge, Makokha and Ngeno (2017) who did a study on the effect of transport management on organizational performance among textile manufacturing firms in Kenya and strongly indicated that transport management systems enhanced the movement of textile products along the supply chain from manufacturer to consumer both locally and internationally hence enhancing logistics management practice thus enabling the performance of the textile manufacturing firms in Kenya. Table 4.97 presents Logistics Management Practice Correlations Results.

Table 4.97: Logistics Management Practice Correlations Results

		TMS	IMS	DCN	SCIMP	FPM	MSI	OE
Transport Management Systems	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	229						
Inventory Management Systems	Pearson Correlation	**.582****	1					
	Sig. (2-tailed)	.000						
	N	229	229					
Distribution Channel Network	Pearson Correlation	**.153***	**.297****	1				
	Sig. (2-tailed)	.021	.000					
	N	229	229	229				
Supply chain integration	Pearson Correlation	**.202****	**.580****	**.561****	1			
	Sig. (2-tailed)	.002	.000	.000				
	N	229	229	229	229			
Firm Profit Margins	Pearson Correlation	**.660****	**.171****	**.238****	**.273****	1		
	Sig. (2-tailed)	.000	.009	.000	.000			
	N	229	229	229	229	229		
Market Share Index	Pearson Correlation	**.186****	**.564****	**.534****	**.520****	**.223****	1	
	Sig. (2-tailed)	.005	.000	.000	.000	.001		
	N	229	229	229	229	229	229	
Operational Efficiency	Pearson Correlation	**.273****	**.219****	**.520****	**.234****	**.139****	**.388****	1
	Sig. (2-tailed)	.000	.001	.000	.000	.000	.001	
	N	229	229	229	229	229	229	229

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
KEY:TMS=Transport Management Systems, IMS=Inventory Management Systems, DCN=Distribution Channel Network, SCIMP=Supply chain integration, FPM=Firm Profit Margins, MSI=Market Share Index, EE=Operational Efficiency

4.10.9 Logistics Management Practice Goodness-of-fit Model Results

To assess the research model, the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency) were subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency).

The results in Table 4.98 under model one (1) showed that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had explanatory power on performance of tea subsector industry in Kenya linked to firm profit margins as it accounted for 56% of its variability (R Square = 0.560) hence the model was a good fit for the data. Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to firm profit margins.

On Model two (2) in Table 4.98, the explanatory power of logistics management practice measures (transport management systems, inventory management systems and distribution channel network) increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 69.5% of its variability (R Square = 0.695) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had significantly increased the relationship between the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.98 presents Logistics Management Practice Model Summary results on Firm Profit Margins.

Table 4.98: Logistics Management Model Summary on Firm Profit Margins

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.748[a]	.560	.554	.79819
2	.834[a]	.695	.687	.66866

a. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems
b. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration
c. Dependent Variable: Firm Profit Margins

The results in Table 4.99 under model one (1) showed that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had explanatory power on performance of tea subsector industry in Kenya linked to market share index as it accounted for 37.6% of its variability (R Square = 0.376) hence the model was a good fit for the data. Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to market share index.

On Model two (2) in Table 4.99, the explanatory power of logistics management practice measures (transport management systems, inventory management systems and distribution channel network) increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 47.4% of its variability (R Square = 0.474) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had significantly increased the relationship between the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index. Table 4.99 presents Logistics Management Practice Model Summary results on Market Share Index.

Table 4.99: Logistics Management Model Summary on Market Share Index

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613[a]	.376	.368	.93241
2	.688[a]	.474	.460	.86226

a. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems
b. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration
c. Dependent Variable: Market Share Index

The results in Table 4.100 below under model one (1) showed that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had explanatory power on performance of tea subsector industry in Kenya linked to operational efficiency as it accounted for 32.9% of its variability (R Square = 0.329) hence the model was a good fit for the data. Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) as a variable on its own implied a positive relationship with performance of tea subsector industry in Kenya linked to operational efficiency.

On Model two (2) in Table 4.100 below, the explanatory power of logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had a partial increase when the moderator variable supply chain integration was incorporated into the model as it accounted for 42.2% of its variability (R Square = 0.422) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had partially increased the strength of the relationship between the independent variable logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.100 presents Logistics Management Practice Model Summary results on Operational Efficiency.

Table 4.100: Logistics Management Model Summary on Operational Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.574[a]	.329	.320	.71627
2	.650[a]	.422	.407	.66929

a. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems
b. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration
c. Dependent Variable: Operational Efficiency

4.10.10 Logistics Management Practice ANOVA Results

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05.Table 4.101 under model one (1) showed the significance of the regression model on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins with P-value of 0.000 which was less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 95.452, p = 0.000.

Table 4.101 under model two (2) captures the significance of the regression model on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins. The overall ANOVA results indicated that model two (2) was significant at F = 84.445, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. Table 4.101 presents Logistics Management ANOVA Results on Firm Profit Margins.

Table 4.101: Logistics Management ANOVA Results on Firm Profit Margins

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	182.441	3	60.814	95.452	.000[b]
	Residual	143.350	225	.637		
	Total	325.790	228			
2	Regression	226.534	6	37.756	84.445	.000[b]
	Residual	99.257	222	.447		
	Total	325.790	228			

a. Dependent Variable: Firm Profit Margins
b. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems
c. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration

Table 4.102 under model one (1) showed the significance of the regression model on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index with P-value of 0.000 which was less than 0.05(Bryman & Bell, 2015). The results revealed that a significant relationship existed between logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 42.256, p = 0.000.

Table 4.102 under model two (2) captures the significance of the regression model on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index. The overall ANOVA results indicated that model two (2) was significant at F = 33.311, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table 4.102 presents Logistics Management Practice ANOVA Results on Market Share Index.

Table 4.102: Logistics Management ANOVA Results on Market Share Index

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	118.037	3	39.346	45.256	.000^b
	Residual	195.614	225	.869		
	Total	313.651	228			
2	Regression	148.597	6	24.766	33.311	.000^b
	Residual	165.054	222	.743		
	Total	313.651	228			

a. Dependent Variable: Market Share Index
b. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems
c. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration

Table 4.103 under model one (1) shows the significance of the regression model on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency with P-value of 0.000 which was less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 36.810, p = 0.000.

Table 4.103 below under model two (2) captures the significance of the regression model on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency. The overall ANOVA results indicated that model two (2) was significant at F = 27.027, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicates high reliability of the results obtained. Table 4.103 presents Logistics Management Practice ANOVA Results on Operational Efficiency.

Table 4.103: Logistics Management ANOVA Results on Operational Efficiency

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	56.654	3	18.885	36.810	.000[b]
	Residual	115.433	225	.513		
	Total	172.087	228			
2	Regression	72.641	6	12.107	27.027	.000[b]
	Residual	99.446	222	.448		
	Total	172.087	228			

a. Dependent Variable: Operational Efficiency
b. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems
c. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration

4.10.11 Regression Results of Logistics Management and Firm Profit Margins

To establish the effect of logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

> **$H_0$1:** Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.

Regression analysis was conducted to empirically determine whether logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.104 displays the regression coefficients results of logistics management practice measures (transport management systems, inventory management systems and distribution channel network).

Table 4.104: Regression of Logistics Management and Firm Profit Margins

		Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	9.947	.836		11.902	.000
	Transport Management Systems (X_1)	.551	.035	.701	15.514	.000
	Inventory Management Systems(X_2)	.146	.074	.090	1.977	.049
	Distribution Channel Network(X_3)	.196	.027	.328	7.191	.000

a. Dependent Variable: Firm Profit Margins

From Table 4.104, the results indicated that transport management systems (with β= 0.701, p value 0.000), inventory management systems (with β=0.090, p value 0.049) and distribution channel network (with β= 0.328, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.104 further illustrated that a 0.551 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.146 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins and a 0.196 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.104, the coefficient (r) or beta for transport management systems, inventory management systems and distribution channel network were (0.701), (0.090) and (0.328) respectively. This meant that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) individually explained 70.1 percent, 9 percent and 32.8 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The regression model is summarized by equation 4.22 below.

$Y = 9.947 + 0.551x_1 + 0.146x_2 + 0.196x_3$ **……………………………. Equation 4.22**

Where,

Y – Firm Profit Margins, X_1 – Transport Management Systems, X_2 – Inventory Management Systems, and X_3 – Distribution Channel Network

It was concluded that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. Hence, logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had an effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins.

Moderated regression analysis was conducted to empirically determine whether logistics management practice measures (transport management systems, inventory management systems and distribution channel network) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins as shown on table 4.105. Table 4.105 presents Moderated Regression Coefficients of Logistics Management Practice and Firm Profit Margins.

Table 4.105: Moderated Regression of Logistics and Firm Profit Margins

		Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	29.839	4.834		6.173	.000
	Transport Management Systems (X_1)	.558	.030	.710	18.362	.000
	Inventory Management Systems(X_2)	1.743	.392	1.296	4.446	.000
	Distribution Channel Network(X_3)	.138	.024	.274	5.806	.000
	Transport Management Systems _Supply chain integration(X_1Z)	.004	.001	.110	2.902	.004
	Inventory Management Systems _Supply chain integration(X_2Z)	.039	.010	1.132	3.897	.000
	Distribution Channel Network _Supply chain integration(X_3Z)	.004	.002	.110	2.317	.021

a. Dependent Variable: Firm Profit Margins

Table 4.105 displays the regression coefficients results of the moderated logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins. From Table 4.105, the results indicate that transport management systems (with β=0.710, p value 0.00), inventory management systems (with β=1.296, p value 0.000) distribution channel network (with β=0.274, p value 0.000), transport management systems _ supply chain integration (with β= 0.110, p value 0.004),inventory management systems _ supply chain integration (with β= 1.132, p value 0.000) and distribution channel network _ supply chain integration (with β=0.110, p value 0.021) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins.

Table 4.105 above further illustrates that a 0.558 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 1.743 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.138 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.004 point increase in transport management systems _ supply chain integration , led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.039 point increase in inventory management systems _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins and a 0.004 point increase in distribution channel network _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.105 above, the coefficient (r) or beta for transport management systems, inventory management systems, distribution channel network, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network _supply chain integration were (0.710), (1.296), (0.274), (0.110), (1.132) and (0.110) respectively. This meant that the moderated logistics management practice (transport management systems, inventory management systems, distribution channel network, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network _supply chain integration) individually explained 71 percent, 129.6 percent,27.4 percent,11 percent,113.2 percent and 11 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The moderated regression model is summarized by equation 4.23 below.

$Y = 29.839 + 0.558X_1 + 1.743X_2 + 0.138X_3 + 0.004X_1Z + 0.039X_2Z + 0.004X_3Z$ **….Equation 4.23**

Where,

Y – Firm Profit Margins, X_1 – Transport Management Systems, X_2 – Inventory Management Systems, X3 – Distribution Channel Network, X_1Z – Transport Management Systems_ supply chain integration, X_2Z – Inventory Management Systems_ supply chain integration and X_3Z – Distribution Channel Network _supply chain integration

It was concluded that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins. Hence, upon the introduction of the moderating variable supply chain integration, logistics management practice measures (transport management systems, inventory management systems and distribution channel network) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.10.12 Regression Results of Logistics Management and Market Share Index

To establish the effect of logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

> **H_01:** Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

Regression analysis was conducted to empirically determine whether logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had any significant effect on performance of tea subsector industry in Kenya linked to market share index. Table 4.106 displays the regression coefficients results of logistics management practice measures (transport management systems, inventory management systems and distribution channel network).

Table 4.106: Regression of Logistics Management and Market Share Index

		Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	4.999	.976		5.120	.000
	Transport Management Systems (X_1)	.112	.041	.146	2.711	.007
	Inventory Management Systems(X_2)	.464	.086	.291	5.379	.000
	Distribution Channel Network(X_3)	.269	.032	.459	8.441	.000

a. Dependent Variable: Market Share Index

From Table 4.106, the results indicate that transport management systems (with β= 0.146, p value 0.007), inventory management systems (with β= 0.291, p value 0.000) and distribution channel network (with β= 0.459, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index . Table 4.106 above further illustrates that a 0.112 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.464 point increase in inventory management practice led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.269 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.106, the coefficient (r) or beta for transport management systems, inventory management systems and distribution channel network were (0.146), (0.291) and (0.459) respectively. This meant that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) individually explained 14.6 percent, 29.1 percent and 45.9 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The regression model was summarized by equation 4.24 below.

$Y = 4.999 + 0.112X_1 + 0.464X_2 + 0.269X_3$**………………………….. Equation 4.24**

Where,

Y – Market Share Index, X_1 – Transport Management Systems, X_2 – Inventory Management Systems, and X_3 – Distribution Channel Network

It was concluded that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant correlation effect on performance of tea subsector industry in Kenya linked to market share index. Hence, logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had an effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index.

Moderated regression analysis was conducted to empirically determine whether logistics management practice measures (transport management systems, inventory management systems and distribution channel network) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to market share index as shown on table 4.107. Table 4.107 presents Moderated Regression Coefficients results of Logistics Management Practice and Market Share Index.

Table 4.107: Moderated Regression of Logistics and Market Share Index

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	11.239	1.275		8.812	.000
	Transport Management Systems (X_1)	.329	.069	.243	4.788	.000
	Inventory Management Systems(X_2)	.623	.137	.390	4.550	.000
	Distribution Channel Network(X_3)	.117	.030	.237	3.871	.000
	Transport Management Systems _Supply chain integration(X_1Z)	.007	.002	.190	3.751	.000
	Inventory Management Systems _Supply chain integration(X_2Z)	.004	.001	.110	2.902	.004
	Distribution Channel Network _Supply chain integration(X_3Z)	.010	.002	.276	4.467	.000

a. Dependent Variable: Market Share Index

Table 4.107 displays the regression coefficients results of the moderated logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index. From Table 4.107, the results indicate that transport management systems (with β= 0.243, p value 0.000), inventory management systems (with β=0.390, p value 0.000),distribution channel network(with β= 0.237, p value 0.000) transport management systems _supply chain integration management (with β=0.190, p value 0.000), inventory management system_ supply chain integration (with β= 0.110, p value 0.004) and distribution channel network_ supply chain integration (with β= 0.276, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index.

Table 4.107 further illustrates that a 0.329 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.623 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.117 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.007 point increase in transport management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.004 point increase in inventory management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.010 point increase in distribution channel network _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.107 above, the coefficient (r) or beta for transport management systems, inventory management systems, distribution channel network, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network _supply chain integration were (0.243), (0.390), (0.237), (0.190), (0.110) and (0.276) respectively. This meant that the moderated logistics management practice (transport management systems, inventory management systems, distribution channel network, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network _supply chain integration) individually explained 24.3 percent, 39 percent, 23.7 percent,19 percent, 11 percent and 27.6 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The moderated regression model was summarized by equation 4.25 below.

$$Y = 11.239+0.329X_1+0.623X_2+0.117X_3+0.007X_1Z+0.003X_2Z+0.010X_3Z$$

……………………………………Equation 4.25

Where,

Y – Market Share Index, X_1 – Transport Management Systems, X_2 – Inventory Management Systems, X3 – Distribution Channel Network, X_1Z – Transport Management Systems_ supply chain integration, X_2Z – Inventory Management Systems_ supply chain integration and X_3Z – Distribution Channel Network _supply chain integration

It was concluded that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index. Hence, upon the introduction of the moderating variable supply chain integration, logistics management practice measures (transport management systems, inventory management systems and distribution channel network) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.10.13 Regression Results of Logistics Management and Operational Efficiency

To establish the effect of logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

> **$H_0$1:** Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Regression analysis was conducted to empirically determine whether logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.108 displays the regression coefficients results of logistics management practice measures (transport management systems, inventory management systems and distribution channel network).

Table 4.108: Regression of Logistics Management and Operational Efficiency

		Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	6.686	.750		8.915	.000
	Transport Management Systems (X_1)	.102	.032	.179	3.210	.002
	Inventory Management Systems(X_2)	.174	.066	.147	2.630	.009
	Distribution Channel Network(X_3)	.225	.024	.519	9.204	.000

a. Dependent Variable: Operational Efficiency

From Table 4.108, the results indicated that transport management systems (with β= 0.179, p value 0.002), inventory management systems (with β=0.147, p value 0.009) and distribution channel network (with β=0.519, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.108 further illustrates that a 0.102 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.174 point increase in inventory management practice led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.225 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.108, the coefficient (r) or beta for transport management systems, inventory management systems and distribution channel network were (0.179), (0.147) and (0.519) respectively. This meant that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) individually explained 17.9 percent, 14.7 percent and 51.9 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The regression model is summarized by equation 4.26 below.

$Y = 6.686 + 0.102X_1 + 0.174X_2 + 0.225X_3$ **……………………………………. Equation 4.26**

Where,

Y – Operational Efficiency, X_1 – Transport Management Systems, X_2 – Inventory Management Systems, and X_3 – Distribution Channel Network

It was concluded that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. Hence, logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had an effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypothesis was tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency.

Moderated regression analysis was conducted to empirically determine whether logistics management practice measures (transport management systems, inventory management systems and distribution channel network) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency as shown on table 4.109. Table 4.109 presents Moderated Regression Coefficients of Logistics Management Practice and Operational Efficiency.

Table 4.109: Moderated Regression of Logistics and Operational Efficiency

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	19.963	4.236		4.712	.000
	Transport Management Systems(X_1)	.092	.030	.160	3.050	.003
	Inventory Management Systems(X_2)	1.548	.489	1.307	3.163	.002
	Distribution Channel Network(X_3)	.180	.043	.227	4.195	.000
	Transport Management Systems _Supply chain integration(X_1Z)	.003	.001	.106	1.972	.050
	Inventory Management Systems _Supply chain integration(X_2Z)	.028	.010	1.160	2.810	.005
	Distribution Channel Network _Supply chain integration(X_3Z)	.014	.002	.535	9.098	.000

a. Dependent Variable: Operational Efficiency

Table 4.109 displays the regression coefficients results of the moderated logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency. From Table 4.109, the results indicated that transport management systems (with β= 0.160, p value 0.003), inventory management systems (with β=1.307, p value 0.002), distribution channel network (with β=0.227, p value 0.000),transport management systems _supply chain integration (with β= 0.106, p value 0.050), inventory management systems_ supply chain integration (with β=1.160, p value 0.005) and distribution channel network_ supply chain integration (with β= 0.535, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.109 further illustrates that a 0.092 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 1.548 point increase in inventory management practice led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.180 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.003 point increase in transport management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.028 point increase in inventory management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.014 point increase in distribution channel network _supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.109, the coefficient (r) or beta for transport management systems, inventory management systems, distribution channel network, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel systems _supply chain integration were (0.160), (1.307) ,(0.227), (0.106), (1.160) and (0.535) respectively. This meant that the moderated logistics management practice (transport management systems, inventory management systems, distribution channel network, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel systems _supply chain integration) individually explained 16 percent, 130.7 percent,22.7 percent,10.6 percent, 116 percent and 53.5 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency.

The moderated regression model was summarized by equation 4.27 below.

$Y=19.963+0.092X1+1.548X2+0.180X_3+0.003X_1Z+0.028X2Z+0.014X_3Z$ **....Equation4.27**

Where,

Y – Operational Efficiency, X_1 – Transport Management Systems, X_2 – Inventory Management Systems, X3 – Distribution Management Systems, X_1Z – Transport Management Systems_ supply chain integration, X_2Z – Inventory Management Systems_ supply chain integration and X_3Z – Distribution Management Systems _supply chain integration

It was concluded that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency. It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency. Hence, upon the introduction of the moderating variable supply chain integration, logistics management practice measures (transport management systems, inventory management systems and distribution channel network) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypothesis ($\beta \neq 0$ and p-value<0.05).

4.11 Summary of Study Variables

The study sought to determine the moderating effect of supply chain integration on independent variable supply chain management practices(supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and dependent variable performance of tea subsector industry in Kenya (firm profit margins, market share index and operational efficiency). Supply chain management practices was assessed by four independent variables (measures of supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) while performance of tea subsector industry in Kenya was assessed by firm profit margins, market share index and operational efficiency. Correlation and regression analyses were used to determine the relationship and strength of the supply chain management practices measures on performance of tea subsector industry in Kenya to draw conclusions on this study.

4.11.1 Overall Correlations Coefficient Matrix Results

Pearson Bivariate correlation coefficient was used to compute the correlation between all the independent variables i.e. measures of supply chain management practices (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice),the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency). The independent variables in this study were operationalized by the following sub-variables: supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives), value chain management practice (product diversification, product innovation, product process management), customer relationship management practice (customer product value satisfaction level and customer communication channels) and logistics management practice (transport management systems, inventory management systems and distribution channel network).

Sekaran (2015) asserts that this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship). The correlation coefficient was calculated to determine the strength and nature of the relationship between the measures of the independent variable supply chain management practices measures; supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives), value chain management practice (product diversification, product innovation, product process management), customer relationship management practice (customer product value satisfaction level and customer communication channels) and logistics management practice (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency).

In trying to show the relationship between the independent variable supply chain management practices measures; supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives), value chain management practice (product diversification, product innovation, product process management), customer relationship management practice (customer product value satisfaction level and customer communication channels) and logistics management practice (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency), the study used the Karl Pearson's coefficient of correlation (r).

This is as shown in Table 4.110 which displays the overall correlation matrix showing the correlation analysis with varied degree of interrelationship between all the independent variables measures; supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives, and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency).The Pearson correlation coefficient was generated at 0.01 significance level (2-tailed).

Findings presented in Table 4.110 indicated that there was a significant positive correlation effect between supplier relationship management practice measures: collaboration initiatives, supply chain integration(r =0.178,p value =0.007), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.211,p value =0.001), market share index(r =0.295,p value =0.000) and operational efficiency (r = 0.373, p value = 0.000); planning and forecasting initiatives, supply chain integration(r =0.450,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.364,p value =0.000), market share index(r =0.804,p value =0.000) and operational efficiency (r = 0.138, p value = 0.036); coordination of resource sharing initiatives, supply chain integration(r =0.376,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.670,p value =0.000), market share index(r =0.599,p value =0.000) and operational efficiency (r =0.915, p value = 0.007) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant positive correlation effect between value chain management practice measures: product diversification, supply chain integration(r =0.561,p value =0.000), and performance of tea subsector industry in Kenya linked with firm profit margins (r =0.238,p value =0.000), market share index(r =0.534,p value =0.000) and operational efficiency (r = 0.520, p value = 0.000); product innovation, supply chain integration(r =0.290,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.213,p value =0.001), market share index(r =0.355,p value =0.000) and operational efficiency (r = 0.380, p value = 0.000); product process management, supply chain integration(r =0.242,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.310,p value =0.000), market share index(r =0.130,p value =0.049) and operational efficiency (r =0.127, p value = 0.050) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant positive correlation effect between customer relationship management practice measures: customer product value satisfaction level, supply chain integration(r =0.305,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.246,p value =0.000), market share index(r =0.370,p value =0.000) and operational efficiency (r =0.302, p value = 0.000); customer communication channels, supply chain integration(r =0.330,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.240,p value =0.000), market share index(r =0.366,p value =0.000) and operational efficiency (r =0.221, p value = 0.001) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant positive correlation effect between logistics management practice measures: transport management systems, supply chain integration(r =0.202,p value =0.002), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.660,p value =0.000), market share index(r =0.186,p value =0.005) and operational efficiency (r =0.273, p value = 0.000); inventory management systems, supply chain integration(r =0.580,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.171,p value =0.009), market share index(r =0.564,p value =0.000) and operational efficiency (r =0.219, p value = 0.001); distribution channel network, supply chain integration(r =0.764,p value =0.000), and performance of tea subsector industry in Kenya linked to firm profit margins (r =0.436,p value =0.000), market share index(r =0.492,p value =0.000) and operational efficiency (r =0.184, p value = 0.005) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

Further, the Correlation Coefficient (r) are classified according to their strengths as follows:+1.0 (perfect positive association),+0.8 to +1.0 (very strong positive association),+0.6 to +0.8 (strong positive association),+0.4 to +0.6 (moderate positive association),+0.2 to +0.4 (weak positive association),0.0 to +0.2 (very weak positive association),0.0 to -0.2 (very weak negative association),-0.2 to -0.4 (weak negative association),-0.4 to -0.6 (moderate negative association),-0.6 to -0.8 (strong negative association),-0.8 to -1.0 (very strong negative association) and -1.0 (perfect negative association).

This meant that there was a significant positive relationship between the independent variables; supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives, and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures (firm profit margins, market share index and operational efficiency). The results are in tandem with the findings of Musau, Namusonge, Makokha and Ngeno (2017) who did a study on the effect of transport management on organizational performance among textile manufacturing firms in Kenya and strongly indicated that transport management systems enhanced the movement of textile products along the supply chain from manufacturer to consumer both locally and internationally hence enhancing logistics management practice thus enabling the performance of the textile manufacturing firms in Kenya. Table 4.110 presents Overall Correlations Coefficient Matrix Results.

Table 4.110: Overall Correlations Coefficient Matrix Results (Primary Data)

		CI	PFI	CRSI	PD	PI	PPM	CPVSL	CCC	TMS	IMS	DCN	SCIMP	FPM	MSI	OE
Collaborative Initiatives	Pearson Correlation	1														
	Sig. (2-tailed)															
	N	229														
Planning and Forecasting Initiatives	Pearson Correlation	.175**	1													
	Sig. (2-tailed)	.008														
	N	229	229													
Coordination of Resource Sharing Initiatives	Pearson Correlation	.533**	.748**	1												
	Sig. (2-tailed)	.004	.000													
	N	229	229	229												
Product Diversification	Pearson Correlation	.208**	.533**	.452**	1											
	Sig. (2-tailed)	.002	.000	.000												
	N	229	229	229	229											
Product Innovation	Pearson Correlation	.181**	.352**	.249**	.271**	1										
	Sig. (2-tailed)	.006	.000	.007	.000											
	N	229	229	229	229	229										
Product Process Management	Pearson Correlation	.134*	.112**	.549**	.208**	.140*	1									
	Sig. (2-tailed)	.043	.009	.004	.002	.034										
	N	229	229	229	229	229	229									
Customer Product Value Satisfaction Level	Pearson Correlation	.351**	.229**	.115**	.105**	.622*	.277**	1								
	Sig. (2-tailed)	.000	.000	.005	.003	.033	.000									
	N	229	229	229	229	229	229	229								
Customer Communication Channels	Pearson Correlation	.149**	.363**	.186**	.482**	.374**	.276**	.155*	1							
	Sig. (2-tailed)	.006	.000	.005	.000	.000	.000	.019								
	N	229	229	229	229	229	229	229	229							
Transport Management Systems	Pearson Correlation	.325**	.129*	.367**	.153*	.602**	.293**	.246**	.451**	1						
	Sig. (2-tailed)	.000	.042	.000	.021	.000	.000	.000	.000							
	N	229	229	229	229	229	229	229	229	229						
Inventory Management Systems	Pearson Correlation	.480**	.526**	.126*	.297**	.617**	.211**	.222**	.485**	.582**	1					
	Sig. (2-tailed)	.000	.000	.047	.000	.000	.001	.001	.000	.000						
	N	229	229	229	229	229	229	229	229	229	229					
Distribution Channel Network	Pearson Correlation	.209**	.480**	.413**	.567**	.302**	.101*	.261**	.127*	.765**	.466**	1				
	Sig. (2-tailed)	.008	.000	.000	.000	.000	.026	.000	.045	.002	.000					
	N	229	229	229	229	229	229	229	229	229	229	229				
Supply chain integration	Pearson Correlation	.178**	.450**	.376**	.561**	.290**	.242**	.305**	.330**	.202**	.580**	.764**	1			
	Sig. (2-tailed)	.007	.000	.000	.000	.000	.000	.000	.000	.002	.000	.000				
	N	229	229	229	229	229	229	229	229	229	229	229	229			
Firm Profit Margins	Pearson Correlation	.211**	.364**	.670**	.238**	.213**	.310**	.246**	.240**	.660**	.171**	.436**	.273**	1		
	Sig. (2-tailed)	.001	.000	.000	.000	.001	.000	.000	.000	.000	.009	.000	.000			
	N	229	229	229	229	229	229	229	229	229	229	229	229	229		
Market Share Index	Pearson Correlation	.295**	.804**	.599**	.534**	.355**	.130*	.370**	.366**	.186**	.564**	.492**	.520**	.223**	1	
	Sig. (2-	.000	.000	.000	.000	.000	.049	.000	.000	.005	.000	.000	.000	.001		

	tailed)															
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	
Operational Efficiency	Pearson Correlation	**.373****	**.138***	**.915****	**.520****	**.380****	**.127***	**.302****	**.221****	**.273****	**.219****	**.184****	**.234****	**.139****	**.388****	**1**
	Sig. (2-tailed)	.000	.036	.007	.000	.000	.050	.000	.001	.000	.001	.005	.000	.008	.003	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229

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

*. Correlation is significant at the 0.05 level (2-tailed).

KEY:CI=Collaborative Initiatives=Planning and Forecasting Initiatives,CRSI=Coordination of Resource Sharing Initiatives,PD=Product Diversification, I=Product Innovation,PPM=Product Process Management,CPVSL=Customer Product Value Satisfaction Level,CCC=Customer Communication Channels, MS=Transport Management Systems, MS=Inventory Management Systems,DCN=Distribution Channel Network,SCIMP=Supply chain integration,FPM=Firm Profit Margins,MSI=Market Share Index,OE=Operational Efficiency

Secondary Data Correlations Results

Correlation analysis was also carried out to establish the relationship between the secondary data collected on supply chain management practices which were the independent variables, the moderating variable, and the dependent variable Performance of tea subsector industry in Kenya. The correlation coefficient was calculated to determine the strength and nature of the relationship between the independent variables supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice, the moderating variable supply chain integration, and the dependent variable performance of tea subsector industry in Kenya.

Findings presented in Table 4.111 indicated that there was a significant positive correlation effect between supplier relationship management practice, supply chain integration management practice (r =0.211, p value =0.001), and the performance of tea subsector industry in Kenya (r =0.295,p value =0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.The findings also indicated that there was a significant positive correlation effect between value chain management practice, supply chain integration management practice (r =0.364, p value =0.000), and performance of tea subsector industry in Kenya (r =0.804, p value =0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

The findings also indicated that there was a significant positive correlation effect between customer relationship management practice, supply chain integration management practice (r =0.670 ,p value =0.000), and performance of tea subsector industry in Kenya (r =0.599,p value =0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.The findings also indicated that there was a significant positive correlation effect between logistics management practice, supply chain integration management practice (r =0.273 ,p value =0.000), and performance of tea subsector industry in Kenya (r =0.520,p value =0.000) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01. The findings also indicated that there was a significant positive correlation effect between supply chain integration and performance of tea subsector industry in Kenya (r =0.223, p value =0.001) at 0.01 significance level (2-tailed) and this was within the threshold p-value of 0.01.

This meant that supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice, had a significant positive correlation effect on performance of tea subsector industry in Kenya. The results are in tandem with the findings of Barasa *et al*. (2015) who did a study on the impact of supply chain collaboration practice on the performance of steel manufacturing companies in Kenya and noted that success of steel companies depended on collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives in the supplier relationship management process. Table 4.111 presents secondary data Correlations Results.

Table 4.111: Secondary Data Correlations Results

		SRMP	VCMP	CRMP	LMP	SCI	FP
Supplier Relationship Management Practice	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	115					
Value Chain Management Practice	Pearson Correlation	**.175****	1				
	Sig. (2-tailed)	.008					
	N	115	115				
Customer Relationship Management Practice	Pearson Correlation	**.533****	**.748****	1			
	Sig. (2-tailed)	.001	.000				
	N	115	115	115			
Logistics Management Practice	Pearson Correlation	**.178****	**.450****	**.376****	1		
	Sig. (2-tailed)	.007	.000	.000			
	N	115	115	115	115		
Supply Chain Integration	Pearson Correlation	**.211****	**.364****	**.670****	**.273****	1	
	Sig. (2-tailed)	.001	.000	.000	.000		
	N	115	115	115	115	115	
Performance	Pearson Correlation	**.295****	**.804****	**.599****	**.520****	**.223****	1
	Sig. (2-tailed)	.000	.000	.000	.000	.001	
	N	115	115	115	115	115	115

4.11.2 Overall Goodness-of-fit Model Results

To assess the research model, the independent variables, supply chain management practice measures: supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network), the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures(firm profit margins, market share index and operational efficiency) were subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between the independent variables supply chain management practice measures, the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya measures.

The results in Table 4.112 under model one (1) showed that the independent variables supply chain management practice measures: supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had explanatory power on performance of tea subsector industry in Kenya linked to firm profit margins as it accounted for 84.2% of its variability (R Square = 0.842) hence the model was a good fit for the data. The independent variables supply chain management practice measures as variables on their own implied a positive relationship with performance of tea subsector industry in Kenya linked to firm profit margins.

On Model two (2) in Table 4.112, the explanatory power of supply chain management practice measures: supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 90.8% of its variability (R Square = 0.908) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had significantly increased the relationship between the independent variables supply chain management practice measures and performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.112 presents Overall Model Summary on Firm Profit Margins.

Table 4.112: Overall Model Summary on Firm Profit Margins

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.918[a]	.842	.834	.48690
2	.953[a]	.908	.898	.38175

a. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems, Customer Communication Channels, Customer Product Value Satisfaction Level, Product Process Management, Product Innovation, Product Diversification, Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives

b. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration, Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration, Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration, Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration,

c. Dependent Variable: Firm Profit Margins

The results in Table 4.113 under model one (1) showed that the independent variables supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had explanatory power on performance of tea subsector industry in Kenya linked to market share index as it accounted for 82.3% of its variability (R Square = 0.823) hence the model was a good fit for the data. The independent variables supply chain management practice measures as variables on their own implied a positive relationship with performance of tea subsector industry in Kenya linked to market share index.

On Model two (2) in Table 4.113, the explanatory power of the independent variables supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had a partial significant increase when the moderator variable supply chain integration was incorporated into the model as it accounted for 89.7% of its variability (R Square = 0.897) hence the model was a good fit for the data. This implies that the moderating variable, supply chain integration had partially increased the relationship between the independent variables supply chain management practice measures and performance of tea subsector industry in Kenya linked to market share index. Table 4.113 presents Overall Model Summary on Market Share Index.

Table 4.113: Overall Model Summary on Market Share Index

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.907[a]	.823	.814	.50559
2	.947[a]	.897	.886	.39605

a. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems, Customer Communication Channels, Customer Product Value Satisfaction Level, Product Process Management, Product Innovation, Product Diversification, Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
b. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration, Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration, Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration, Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration,
c. Dependent Variable: Market Share Index

The results in Table 4.114 under model one (1) showed that the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had explanatory power on performance of tea subsector industry in Kenya linked to operational efficiency as it accounted for 62.6% of its variability (R Square = 0.626) hence the model was a good fit for the data. The independent variables, supply chain management practice measures as variables on their own implied a positive relationship with performance of tea subsector industry in Kenya linked to operational efficiency.

On Model two (2) in Table 4.114, the explanatory power of the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had a significant increase when the moderator variable supply chain integration was incorporated into the model as it accounted for 82.4% of its variability (R Square = 0.824) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had significantly increased the strength of the relationship between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya linked to operational efficiency. Table 4.114 presents Overall Model Summary on Operational Efficiency.

Table 4.114 Overall Model Summary on Operational Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.791[a]	.626	.607	.54469
2	.908[a]	.824	.806	.38305

a. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems, Customer Communication Channels, Customer Product Value Satisfaction Level, Product Process Management, Product Innovation, Product Diversification, Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
b. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration, Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration, Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration, Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration,
c. Dependent Variable: Operational Efficiency

4.11.3 Overall Analysis of Variance (ANOVA) Results

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05.Table 4.115 under model one (1) showed the significance of the regression model on the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins with P-value of 0.000 which was less than 0.05(Bryman & Bell, 2015). The results revealed that a significant relationship existed between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya linked to firm profit margins with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting firm profit margins. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at $F = 105.204$, $p = 0.000$.

Table 4.115 under model two (2) captures the significance of the regression model on the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya linked to firm profit margins. The overall ANOVA results indicated that model two (2) was significant at F = 92.250, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to firm profit margins. Basing the confidence level at 95% the analysis indicates high reliability of the results obtained. Table 4.115 presents Overall Analysis of Variance (ANOVA) Results on Firm Profit Margins.

Table 4.115: Overall (ANOVA) Results on Firm Profit Margins

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	274.347	11	24.941	105.204	.000[b]
	Residual	51.444	217	.237		
	Total	325.790	228			
2	Regression	295.769	22	13.444	92.250	.000[b]
	Residual	30.021	206	.146		
	Total	325.790	228			

a. Dependent Variable: Firm Profit Margins

b. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems, Customer Communication Channels, Customer Product Value Satisfaction Level, Product Process Management, Product Innovation, Product Diversification, Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives

c. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration, Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration, Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration, Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration

Table 4.116 under model one (1) showed the significance of the regression model on the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index with P-value of 0.000 which was less than 0.05(Bryman & Bell, 2015). The results revealed that a significant relationship existed between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya linked to market share index with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at $F = 91.820$, $p = 0.000$.

Table 4.116 under model two (2) captures the significance of the regression model on the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya linked to market share index. The overall ANOVA results indicated that model two (2) was significant at F = 81.528, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to market share index. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table 4.116 presents Overall Analysis of Variance (ANOVA) Results on Market Share Index.

Table 4.116: Overall (ANOVA) Results on Market Share Index

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	258.181	11	23.471	91.820	.000[b]
	Residual	55.470	217	.256		
	Total	313.651	228			
2	Regression	281.338	22	12.788	81.528	.000[b]
	Residual	32.312	226	.157		
	Total	313.651	228			

a. Dependent Variable: Market Share Index
b. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems, Customer Communication Channels, Customer Product Value Satisfaction Level, Product Process Management, Product Innovation, Product Diversification, Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
c. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration, Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration, Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration, Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration,

Table 4.117 under model one (1) showed the significance of the regression model on the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency with P-value of 0.000 which was less than 0.05 (Bryman & Bell, 2015). The results revealed that a significant relationship existed between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya linked to operational efficiency with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 33.003, p = 0.000.

Table 4.117 under model two (2) captures the significance of the regression model on the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya linked to operational efficiency. The overall ANOVA results indicated that model two (2) was significant at F = 43.947, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya linked to operational efficiency. Basing the confidence level at 95%, the analysis indicated high reliability of the results obtained. Table

4.117 presents Overall Analysis of Variance (ANOVA) Results on Operational Efficiency.

Table 4.117: Overall (ANOVA) Results on Operational Efficiency

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	107.707	11	9.792	33.003	.000[b]
	Residual	64.380	217	.297		
	Total	172.087	228			
2	Regression	141.862	22	6.448	43.947	.000[b]
	Residual	30.226	206	.147		
	Total	172.087	228			

a. Dependent Variable: Operational Efficiency
b. Predictors: (Constant), Distribution Channel Network, Inventory Management Systems, Transport Management Systems, Customer Communication Channels, Customer Product Value Satisfaction Level, Product Process Management, Product Innovation, Product Diversification, Coordination of Resource Sharing Initiatives, Planning and Forecasting Initiatives, Collaborative Initiatives
c. Distribution Channel Network _ Supply chain integration, Inventory Management Systems _ Supply chain integration, Transport Management Systems _ Supply chain integration, Customer Communication Channels _ Supply chain integration, Customer Product Value Satisfaction Level _ Supply chain integration, Product Process Management _ Supply chain integration, Product Innovation _ Supply chain integration, Product Diversification _ Supply chain integration, Coordination of Resource Sharing Initiatives _ Supply chain integration, Planning and Forecasting Initiatives _ Supply chain integration, Collaborative Initiatives _ Supply chain integration,

4.11.4 Overall Multiple Regression Results on Firm Profit Margins

To establish the effect of the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypotheses were tested:

> **$H_0$1:** Supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.
>
> **$H_0$2:** Value chain management practice measures (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.
>
> **$H_0$3:** Customer relationship management practice measures (customer product value satisfaction level and customer communication channel) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.
>
> **$H_0$4:** Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins

Regression analysis was conducted to empirically determine whether the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.

Table 4.118 displays the regression coefficients results of the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to firm profit margins. Table 4.118 presents Overall Regression Coefficients of Supply Chain Management Practices and Firm Profit Margins.

Table 4.118: Overall Regression of Supply Chain and Firm Profit Margins

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	4.896	1.340		3.654	.000
	Collaborative Initiatives (X_1)	.170	.028	.281	5.968	.000
	Planning and Forecasting Initiatives(X_2)	.248	.029	.345	8.639	.000
	Coordination of Resource Sharing Initiatives(X_3)	.177	.063	.113	2.811	.005
	Product Diversification(X_4)	.123	.021	.239	5.848	.000
	Product Innovation (X_5)	.209	.065	.123	3.199	.002
	Product Process Management(X_6)	.413	.122	.104	3.394	.001
	Customer Product Value Satisfaction Level (X_7)	.220	.025	.310	8.959	.000
	Customer Communication Channels(X_8)	.242	.060	.147	4.050	.000
	Transport Management Systems (X_9)	.271	.040	.344	6.694	.000
	Inventory Management Systems(X_{10})	.217	.019	.431	11.511	.000
	Distribution Channel Network(X_{11})	.068	.033	.063	2.067	.040

a. Dependent Variable: Firm Profit Margins

From Table 4.118, the results indicated that the independent variables, supply chain management practice measures : supplier relationship management practice [collaborative initiatives (with β= 0.281, p value 0.000), planning and forecasting initiatives (with β=0.345, p value 0.000) and coordination of resources sharing initiatives (with β= 0.113, p value 0.005)],value chain management practice measures [product diversification (with β= 0.239, p value 0.000), product innovation (with β=0.123, p value 0.002) and product process management (with β= 0.104, p value 0.001)],customer relationship management practice measures[customer product value satisfaction level (with β= 0.310, p value 0.000) and customer communication channels (with β=0.147, p value 0.000)],and logistics management practice measures [transport management systems (with β=0.344, p value 0.000), inventory management systems (with β=0.431, p value 0.000) and distribution channel network (with β= 0.063, p value 0.040)] were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins.

Table 4.118 further illustrates that a 0.170 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.248 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.177 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.123 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.209 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.413 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.220 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.242 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.271 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.217 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins and a 0.068 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.118, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network were (0.281), (0.345), (0.113), (0.239), (0.123), (0.104), (0.310), (0.147), (0.344),(0.431) and (0.063) respectively. This meant that collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network individually explained 28.1 percent, 34.5 percent, 11.3 percent, 23.9 percent, 12.3 percent, 10.4 percent, 31.0 percent, 14.7 percent, 34.4 percent, 43.1 percent and 6.3 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The regression model was summarized by equation 4.28 below.

$Y = 4.896 + 0.170X_1 + 0.248X_2 + 0.177X_3 + 0.123X_4 + 0.209X_5 + 0.413X_6 + 0.220X_7 + 0.242X_8 + 0.271X_9 + 0.217X_{10} + 0.068X_{11}$………………………………. **Equation 4.28**

Where,

Y – Firm Profit Margins, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives,X_3 – Coordination of Resource Sharing Initiatives, X_4 –Product Diversification, X_5 – Product Innovation, X_6 – Product Process Management, X_7 – Customer Product Value Satisfaction Level, X_8 – Customer Communication Channels, X_9 – Transport Management Systems, X_{10} – Inventory Management Systems and X_{11} – Distribution Channel Network

Table 4.119: Overall Hypotheses Testing Results on Firm Profit Margins

Research Hypothesis (Null)	Measures	β	t	Sig.	Comments
$H_0$1: Supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.	Collaborative Initiatives	.281	5.968	.000	
	Planning and Forecasting Initiatives	.345	8.639	.000	
	Coordination of Resource Sharing Initiatives	.113	2.811	.005	**Rejected**
$H_0$2: Value chain management practice measures (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.	Product Diversification	.239	5.848	.000	
	Product Innovation	.123	3.199	.002	
	Product Process Management	.104	3.394	.001	**Rejected**
$H_0$3: Customer relationship management practice measures (customer product value satisfaction level and customer communication channel) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins.	Customer Product Value Satisfaction Level	.310	8.959	.000	
	Customer Communication Channels	.147	4.050	.000	**Rejected**
$H_0$4: Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to firm profit margins	Transport Management Systems	.344	6.694	.000	
	Inventory Management Systems	.431	11.511	.000	
	Distribution Channel Network	.063	2.067	.040	**Rejected**

It was concluded that supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. Hence, supply chain management practice measures : supplier relationship management practice measures had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins, the following null hypotheses were tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins.
> **$H_0$2:** Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins.

H_03: Supply chain integration has no significant moderating effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins.

H_04: Supply chain integration has no significant moderating effect on logistics management practice (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins.

Moderated regression analysis was conducted to empirically determine whether supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to firm profit margins as shown on table 4.120. Table 4.120 presents Moderated Overall Regression Coefficients of Supply Chain Management Practices and Firm Profit Margins.

Table 4.120: Moderated Overall Regression Supply Chain and Firm Profit

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	3.493	1.322		2.641	.009
Collaborative Initiatives (X_1)	.179	.033	.272	5.407	.000
Planning and Forecasting Initiatives(X_2)	.136	.044	.140	3.090	.002
Coordination of Resource Sharing Initiatives(X_3)	.339	.032	.418	10.425	.000
Product Diversification(X_4)	.300	.072	.183	4.186	.000
Product Innovation(X_5)	.140	.050	.073	2.794	.006
Product Process Management(X6)	.231	.049	.180	4.707	.000
Customer Product Value Satisfaction Level(X_7)	.138	.043	.113	3.193	.002
Customer Communication Channels(X_8)	.082	.036	.059	2.261	.025
Transport Management Systems (X_9)	.346	.037	.257	9.385	.000
Inventory Management Systems(X_{10})	.246	.031	.364	7.979	.000
Distribution Channel Network(X_{11})	.106	.022	.172	4.816	.000
Collaborative Initiatives _Supply chain integration (X_1Z)	.137	.027	.265	5.022	.000
Planning and Forecasting Initiatives _Supply chain integration(X_2Z)	.250	.024	.497	10.566	.000
Coordination of Resource sharing Initiatives _Supply chain integration(X_3Z)	.164	.027	.271	5.979	.000
Product Diversification _Supply chain integration(X_4Z)	.216	.031	.362	6.908	.000
Product Innovation _Supply chain integration(X_5Z)	.174	.030	.340	5.738	.000
Product Process Management _Supply chain integration(X_6Z)	.103	.040	.080	2.555	.011
Customer Product Value Satisfaction Level _Supply chain integration(X_7Z)	.349	.054	.285	6.490	.000
Customer Communication Channels _Supply chain integration(X_8Z)	.096	.034	.080	2.852	.005
Transport Management Systems _Supply chain integration(X_9Z)	.362	.070	.182	5.187	.000
Inventory Management Systems _Supply chain integration($X_{10}Z$)	.212	.049	.197	4.312	.000
Distribution Channel Network _Supply chain integration($X_{11}Z$)	.109	.039	.092	2.776	.006

a**. Dependent Variable: Firm Profit Margins**

Table 4.120 displays the regression coefficients results of the moderated supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins.

From Table 4.120, upon the introduction of the moderator variable supply chain integration, the results indicated that the independent variables, supply chain management practice measures : supplier relationship management practice [collaborative initiatives (with β=0.272, p value 0.000), planning and forecasting initiatives (with β=0.140, p value 0.002) and coordination of resources sharing initiatives (with β=0.418, p value 0.000)],value chain management practice measures [product diversification (with β= 0.183, p value 0.000), product innovation (with β=0.073, p value 0.006) and product process management (with β= 0.180, p value 0.000)],customer relationship management practice measures[customer product value satisfaction level (with β= 0.113, p value 0.002) and customer communication channels (with β=0.059, p value 0.025)],and logistics management practice measures [transport management systems (with β=0.257, p value 0.000), inventory management systems (with β=0.364, p value 0.000) and distribution channel network (with β= 0.172, p value 0.000)] were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins.

Further, the results indicated that moderated supplier relationship management practice measures[collaborative initiatives_ supply chain integration (with β= 0.265, p value 0.000), planning and forecasting initiatives _ supply chain integration (with β=0.497, p value 0.000) and coordination of resources sharing initiatives _ supply chain integration (with β=0.271, p value 0.000)],moderated value chain management practice measures [product diversification _ supply chain integration (with β= 0.362, p value 0.000), product innovation _ supply chain integration (with β=0.340, p value 0.000) and product process management _ supply chain integration (with β= 0.080, p value 0.011)],moderated customer relationship management practice measures[customer product value satisfaction level _ supply chain integration (with β=0.285, p value 0.000) and customer communication channels _ supply chain integration (with β=0.080, p value 0.005)],and moderated logistics management practice measures [transport management systems _ supply chain integration (with β=0.182, p value 0.000), inventory management systems _ supply chain integration (with β=0.197, p value 0.000) and distribution channel network _ supply chain integration (with β=0.092, p value 0.006)], were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to firm profit margins.

Table 4.120 above further illustrates that a 0.179 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.136 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.339 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.300 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.140 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.231 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.138 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.082 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.346 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.246 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.106 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

Further, a 0.137 point increase in collaborative initiatives _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.250 point increase in planning and forecasting initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.164 point increase in coordination of resource sharing initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.216 point increase in product diversification_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.174 point increase in product innovation_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.103 point increase in product process management_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.349 point increase in customer product value satisfaction level _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.096 point increase in customer communication channels_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.362 point increase in transport management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.212 point increase in inventory management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins, a 0.109 point increase in distribution channel network_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to firm profit margins ceteris paribus.

However, it should be noted that as shown in Table 4.120 above, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network, collaborative initiatives _ supply chain integration, planning and forecasting initiatives_ supply chain integration , coordination of resource sharing initiatives_ supply chain integration, product diversification_ supply chain integration, product innovation_ supply chain integration, product process management_ supply chain integration, customer product value satisfaction level_ supply chain integration, customer communication channels_ supply chain integration, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network_ supply chain integration were (0.272), (0.140), (0.418), (0.183), (0.073), (0.180), (0.113), (0.059), (0.257), (0.364), (0.172), (0.265), (0.497), (0.271), (0.362), (0.340), (0.080), (0.285), (0.080), (0.182), (0.197) and (0.092) respectively.

This meant that collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems, distribution channel network, collaborative initiatives _ supply chain integration, planning and forecasting initiatives_ supply chain integration , coordination of resource sharing initiatives_ supply chain integration, product diversification_ supply chain integration, product innovation_ supply chain integration, product process management_ supply chain integration, customer product value satisfaction level_ supply chain integration, customer communication channels_ supply chain integration, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network_ supply chain integration individually explained 27.2 percent, 14 percent, 41.8 percent ,18.3 percent, 7.3 percent, 18 percent, 11.3 percent, 5.9 percent, 25.7 percent, 36.4 percent, 17.2 percent, 26.5 percent, 49.7 percent, 27.1 percent, 36.2 percent, 34 percent, 8 percent, 28.5 percent, 8 percent,18.2 percent, 19.7 percent and 9.2 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The regression model was summarized by equation 4.29 below.

$Y = 3.493 + 0.179X_1 + 0.136X_2 + 0.339X_3 + 0.300X_4 + 0.140X_5 + 0.231X_6 + 0.138X_7 + 0.082X_8 + 0.346X_9 + 0.246X_{10} + 0.106X_{11} + 0.137X_1Z + 0.250X_2Z + 0.164X_3Z + 0.216X_4Z + 0.174X_5Z + 0.103X_6Z + 0.349X_7Z + 0.096X_8Z + 0.362X_9Z + 0.212X_{10}Z + 0.109X_1\ Z$ ………………………………………………………………………. **Equation 4.29**

Where,

Y – Firm Profit Margins, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives,X_3 – Coordination of Resource Sharing Initiatives, X_4 – Product Diversification, X_5 – Product Innovation, X_6 – Product Process Management, X_7 – Customer Product Value Satisfaction Level, X_8 – Customer Communication Channels, X_9 – Transport Management Systems, X_{10} – Inventory Management Systems and X_{11} – Distribution Channel Network, X_1Z – Collaborative Initiatives _ Supply chain integration, X_2 Z – Planning and Forecasting Initiatives_ Supply chain integration,X_3Z – Coordination of Resource Sharing Initiatives_ Supply chain integration, X_4Z –Product Diversification_ Supply chain integration, X_5Z – Product Innovation_ Supply chain integration, X_6Z – Product Process Management_ Supply chain integration, X_7Z – Customer Product Value Satisfaction Level_ Supply chain integration, X_8Z – Customer Communication Channels_ Supply chain integration, X_9Z – Transport Management Systems_ Supply chain integration, $X_{10}Z$ – Inventory Management Systems_ Supply chain integration and $X_{11}Z$ – Distribution Channel Network_ Supply chain integration

Table 4.121: Overall Moderated Hypotheses Testing on Firm Profit Margins

Research Hypothesis (Null)	Measurements	β	t	Sig.	Comments
$H_0$1: Supply chain integration has no significant moderating effect on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins.	Collaborative Initiatives	.272	5.407	.000	
	Planning and Forecasting Initiatives	.140	3.090	.002	
	Coordination of Resource Sharing Initiatives	.418	10.425	.000	
	Collaborative Initiatives_ _SCIMP	.265	5.022	.000	
	Planning and Forecasting Initiatives _ SCIMP	.497	10.566	.000	
	Coordination of Resource Sharing Initiatives _ SCIMP	.271	5.979	.000	**Reject**
$H_0$2: Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins.	Product Diversification	.183	4.186	.000	
	Product Innovation	.073	2.794	.006	
	Product Process Management	.180	4.707	.000	
	Product Diversification _ _SCIMP	.362	6.908	.000	
	Product Innovation _SCIMP	.340	5.738	.000	
	Product Process Management _ SCIMP	.080	2.555	.011	**Reject**
$H_0$3: Supply chain integration has no significant moderating effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins.	Customer Product Value Satisfaction Level	.113	3.193	.002	
	Customer Communication Channels	.059	2.261	.025	
	Customer Product Value Satisfaction Level _SCIMP	.285	6.490	.000	
	Customer Communication Channels _SCIMP	.080	2.852	.005	**Reject**
$H_0$4: Supply chain integration has no significant moderating effect on logistics management practice (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins	Transport Management System	.257	9.385	.000	
	Inventory Management Systems	.364	7.979	.000	
	Distribution Channel Network	.172	4.816	.000	
	Transport Management System _SCIMP	.182	5.187	.000	
	Inventory Management Systems _SCIMP	.197	4.312	.000	
	Distribution Channel Network _ SCIMP	.092	2.776	.006	**Reject**

KEY:SCI =Supply chain integration(Moderator Variable)

It was concluded that supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins. Hence, supply chain management practice measures had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on supply chain management practice measures and performance of tea subsector industry in Kenya linked to firm profit margins. Hence, upon the introduction of the moderating variable supply chain integration, supply chain management practice measures still had a positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

4.11.5 Overall Multiple Regression Results on Market Share Index

To establish the effect of the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to market share index, the following null hypotheses were tested:

$H_0$1: Supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

$H_0$2: Value chain management practice measures (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

$H_0$3: Customer relationship management practice measures (customer product value satisfaction level and customer communication channel) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

$H_0$4: Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.

Regression analysis was conducted to empirically determine whether the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had any significant effect on performance of tea subsector industry in Kenya linked to market share index.

Table 4.122 displays the regression coefficients results of the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to market share index. Table 4.122 presents Overall Regression Coefficients of Supply Chain Management Practices and Market Share Index.

Table 4.122: Overall Regression of Supply Chain and Market Share Index

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.199	.818		3.911	.000
	Collaborative Initiatives (X_1)	.360	.029	.510	12.531	.000
	Planning and Forecasting Initiatives(X_2)	.075	.024	.107	3.151	.002
	Coordination of Resource Sharing Initiatives(X_3)	.400	.125	.103	3.205	.002
	Product Diversification(X_4)	.118	.043	.089	2.708	.007
	Product Innovation(X_5)	.333	.052	.220	6.369	.000
	Product Process Management(X_6)	.103	.022	.203	4.750	.000
	Customer Product Value Satisfaction Level(X_7)	.118	.028	.184	4.289	.000
	Customer Communication Channels(X_8)	.117	.037	.100	3.136	.002
	Transport Management Systems(X_9)	.086	.032	.145	2.645	.009
	Inventory Management Systems(X_{10})	.069	.031	.090	2.253	.025
	Distribution Channel Network(X_{11})	.240	.056	.150	4.326	.000

a. Dependent Variable: Market Share Index

From Table 4.122, the results indicated that the independent variables, supply chain management practice measures : supplier relationship management practice [collaborative initiatives (with β= 0.510, p value 0.000), planning and forecasting initiatives (with β=0.107, p value 0.002) and coordination of resources sharing initiatives (with β= 0.103, p value 0.002)],value chain management practice measures [product diversification (with β= 0.089, p value 0.007), product innovation (with β=0.220, p value 0.000) and product process management (with β= 0.203, p value 0.000)],customer relationship management practice measures[customer product value satisfaction level (with β= 0.184, p value 0.000) and customer communication channels (with β=0.100, p value 0.002)],and logistics management practice measures [transport management systems (with β=0.145, p value 0.009), inventory management systems (with β=0.090, p value 0.025) and distribution channel network (with β= 0.150, p value 0.000)] were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index.

Table 4.122 further illustrated that a 0.360 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.075 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.400 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.118 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.333 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.103 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.118 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.117 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.086 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.069 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.240 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.122, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network were (0.510), (0.107), (0.103), (0.089), (0.220), (0.203), (0.184), (0.100), (0.145),(0.090) and (0.150) respectively. This meant that collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network individually explained 51 percent, 10.7 percent, 10.3 percent, 8.9 percent, 22 percent, 20.3 percent, 18.4 percent, 10 percent, 14.5 percent, 9 percent and 15 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to market share index. The regression model is summarized by equation 4.30 below.

$Y = 3.199 + 0.360X_1 + 0.075X_2 + 0.400X_3 + 0.118X_4 + 0.333X_5 + 0.103X_6 + 0.118X_7 + 0.117X_8 + 0.086X_9 + 0.069X_{10} + 0.240X_{11}$………………………………… **Equation 4.30**

Where,

Y – Market Share Index, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives, X_3 – Coordination of Resource Sharing Initiatives, X_4 –Product Diversification, X_5 – Product Innovation, X_6 – Product Process Management, X_7 – Customer Product Value Satisfaction Level, X_8 – Customer Communication Channels, X_9 – Transport Management Systems, X_{10} – Inventory Management Systems and X_{11} – Distribution Channel Network

Table 4.123: Overall Hypotheses Testing Results on Market Share Index

Research Hypothesis (Null)	Measures	β	t	Sig.	Comments
$H_0$1: Supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.	Collaborative Initiatives	.510	12.531	.000	
	Planning and Forecasting Initiatives	.107	3.151	.002	
	Coordination of Resource Sharing Initiatives	.103	3.205	.002	**Rejected**
$H_0$2: Value chain management practice measures (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.	Product Diversification	.089	2.708	.007	
	Product Innovation	.220	6.369	.000	
	Product Process Management	.203	4.750	.000	**Rejected**
$H_0$3: Customer relationship management practice measures (customer product value satisfaction level and customer communication channel) has no significant effect on performance of tea subsector industry in Kenya linked to market share index	Customer Product Value Satisfaction Level	.184	4.289	.000	
	Customer Communication Channels	.100	3.136	.002	**Rejected**
$H_0$4: Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to market share index.	Transport Management Systems	.145	2.645	.009	
	Inventory Management Systems	.090	2.253	.025	
	Distribution Channel Network	.150	4.326	.000	**Rejected**

It was concluded that supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index. Hence, supply chain management practice measures had an effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to market share index, the following null hypotheses were tested:

$H_0$1: Supply chain integration has no significant moderating effect on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index.

$H_0$2: Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index.

$H_0$3: Supply chain integration has no significant moderating effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index.

$H_0$4: Supply chain integration has no significant moderating effect on logistics management practice (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index.

Moderated regression analysis was conducted to empirically determine whether supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to market share index as shown on table 4.124. Table 4.124 presents Moderated Overall Regression Coefficients of Supply Chain Management Practices and Market Share Index.

Table 4.124: Moderated Regression of Supply Chain and Market Share Index

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	5.586	1.227		4.552	.000
	Collaborative Initiatives(X_1)	.135	.031	.210	4.412	.000
	Planning and Forecasting Initiatives(X_2)	.111	.035	.117	3.139	.002
	Coordination of Resource Sharing Initiatives(X_3)	.098	.038	.088	2.575	.011
	Product Diversification(X_4)	.344	.066	.289	5.240	.000
	Product Innovation(X_5)	.076	.022	.125	3.415	.001
	Product Process Management(X_6)	.104	.022	.205	4.611	.000
	Customer Product Value Satisfaction Level(X_7)	.085	.017	.173	4.889	.000
	Customer Communication Channels(X_8)	.418	.062	.224	6.735	.000
	Transport Management Systems(X_9)	.388	.091	.288	4.240	.000
	Inventory Management Systems(X_{10})	.422	.070	.264	6.058	.000
	Distribution Channel Network(X_{11})	.288	.040	.413	7.148	.000
	Collaborative Initiatives _ Supply chain integration(X_1Z)	.151	.047	.136	3.185	.002
	Planning and Forecasting Initiatives _ Supply chain integration (X_2Z)	.119	.041	.154	2.928	.004
	Coordination of Resource Sharing Initiatives _ Supply chain integration(X_3Z)	.129	.037	.110	3.519	.001
	Product Diversification _ Supply chain integration(X_4Z)	.629	.131	.446	4.805	.000
	Product Innovation _ Supply chain integration(X_5Z)	.198	.055	.150	3.627	.000
	Product Process Management _ Supply chain integration(X_6Z)	.226	.033	.321	6.940	.000
	Customer Product Value Satisfaction Level _ Supply chain integration(X_7Z)	.405	.100	.296	4.035	.000
	Customer Communication Channels _ Supply chain integration(X_8Z)	.097	.032	.078	3.023	.003
	Transport Management Systems _ Supply chain integration(X_9Z)	.120	.055	.103	2.206	.028
	Inventory Management Systems _ Supply chain integration($X_{10}Z$)	.300	.101	.118	2.973	.003
	Distribution Channel Network _ Supply chain integration($X_{11}Z$)	.264	.099	.078	2.665	.008

a. Dependent Variable: Market Share Index

Table 4.124 displays the regression coefficients results of the moderated supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index.

From Table 4.124, upon the introduction of the moderator variable supply chain integration, the results indicated that the independent variables, supply chain management practice measures : supplier relationship management practice [collaborative initiatives (with β= 0.210, p value 0.000), planning and forecasting initiatives (with β=0.117, p value 0.002) and coordination of resources sharing initiatives (with β=0.088, p value 0.011)],value chain management practice measures [product diversification (with β=0.289, p value 0.000), product innovation (with β=0.125, p value 0.001) and product process management (with β= 0.205, p value 0.000)],customer relationship management practice measures[customer product value satisfaction level (with β= 0.173, p value 0.000) and customer communication channels (with β=0.224, p value 0.000)],and logistics management practice measures [transport management systems (with β=0.288, p value 0.000), inventory management systems (with β=0.264, p value 0.000) and distribution channel network (with β= 0.413, p value 0.000)] were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index.

Further, the results indicated that moderated supplier relationship management practice measures[collaborative initiatives_ supply chain integration (with β=0.136, p value 0.002), planning and forecasting initiatives _ supply chain integration (with β=0.154, p value 0.004) and coordination of resources sharing initiatives _ supply chain integration (with β=0.110, p value 0.001)],moderated value chain management practice measures [product diversification _ supply chain integration (with β=0.446, p value 0.000), product innovation _ supply chain integration (with β=0.150, p value 0.000) and product process management _ supply chain integration (with β= 0.321, p value 0.000)],moderated customer relationship management practice measures[customer product value satisfaction level _ supply chain integration (with β= 0.296, p value 0.000) and customer communication channels _ supply chain integration (with β=0.078, p value 0.003)],and logistics management practice measures [transport management systems _ supply chain integration (with β=0.103, p value 0.028), inventory management systems _ supply chain integration (with β=0.118, p value 0.003) and distribution channel network _ supply chain integration (with β=0.078, p value 0.008)], were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to market share index.

Table 4.124 above further illustrates that a 0.135 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.111 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.098 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.344 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.076 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.104 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.085 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.418 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.388 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.422 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.288 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

Further, a 0.151 point increase in collaborative initiatives _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.119 point increase in planning and forecasting initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.129 point increase in coordination of resource sharing initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.629 point increase in product diversification_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.198 point increase in product innovation_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.226 point increase in product process management_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.349 point increase in customer product value satisfaction level _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.097 point increase in customer communication channels_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.120 point increase in transport management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index, a 0.300 point increase in inventory management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index and a 0.264 point increase in distribution channel network_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to market share index ceteris paribus.

However, it should be noted that as shown in Table 4.124 above, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network, collaborative initiatives _ supply chain integration, planning and forecasting initiatives_ supply chain integration , coordination of resource sharing initiatives_ supply chain integration, product diversification_ supply chain integration, product innovation_ supply chain integration, product process management_ supply chain integration, customer product value satisfaction level_ supply chain integration, customer communication channels_ supply chain integration, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network_ supply chain integration were (0.210), (0.117), (0.088), (0.289), (0.125), (0.205), (0.173), (0.224), (0.288), (0.264), (0.413), (0.136), (0.154), (0.110), (0.446), (0.150), (0.321), (0.296), (0.078), (0.103), (0.118) and (0.078) respectively.

This meant that collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems, distribution channel network, collaborative initiatives _ supply chain integration, planning and forecasting initiatives_ supply chain integration , coordination of resource sharing initiatives_ supply chain integration, product diversification_ supply chain integration, product innovation_ supply chain integration, product process management_ supply chain integration, customer product value satisfaction level_ supply chain integration, customer communication channels_ supply chain integration, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network_ supply chain integration individually explained 21 percent, 11.7 percent, 8.8 percent ,28.9 percent, 12.5 percent, 20.5 percent, 17.3 percent, 22.4 percent, 28.8 percent, 26.4 percent, 41.3 percent, 13.6 percent, 15.4 percent, 11 percent, 44.6 percent, 15 percent, 32.1 percent, 29.6 percent, 7.8 percent,10.3 percent, 11.8 percent and 7.8 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to firm profit margins. The regression model is summarized by equation 4.31 below.

$Y = 5.586 + 0.135X_1 + 0.111X_2 + 0.098X_3 + 0.344X_4 + 0.076X_5 + 0.104X_6 + 0.085X_7 + 0.418X_8 + 0.388X_9 + 0.422X_{10} + 0.288X_{11} + 0.151X_1Z + 0.119X_2Z + 0.129X_3Z + 0.629X_4Z + 0.198X_5Z + 0.226X_6Z + 0.405X_7Z + 0.097X_8Z + 0.120X_9Z + 0.300X_{10}Z + 0.264X_{11}Z$ **………………………………………………………….. Equation 4.31**

Where,

Y – Market Share Index., X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives,X_3 – Coordination of Resource Sharing Initiatives, X_4 – Product Diversification, X_5 – Product Innovation, X_6 – Product Process Management, X_7 – Customer Product Value Satisfaction Level, X_8 – Customer Communication Channels, X_9 – Transport Management Systems, X_{10} – Inventory Management Systems and X_{11} – Distribution Channel Network, X_1Z – Collaborative Initiatives _ Supply chain integration, X_2Z – Planning and Forecasting Initiatives_ Supply chain integration,X_3Z – Coordination of Resource Sharing Initiatives_ Supply chain integration, X_4Z –Product Diversification_ Supply chain integration, X_5Z – Product Innovation_ Supply chain integration, X_6Z – Product Process Management_ Supply chain integration, X_7Z – Customer Product Value Satisfaction Level_ Supply chain integration, X_8Z – Customer Communication Channels_ Supply chain integration, X_9Z – Transport Management Systems_ Supply chain integration, $X_{10}Z$ – Inventory Management Systems_ Supply chain integration and $X_{11}Z$ – Distribution Channel Network_ Supply chain integration

Table 4.125: Overall Moderated Hypotheses Results on Market Share Index

Research Hypothesis (Null)	Measurements	β	t	Sig	Comments
$H_0$1: Supply chain integration has no significant moderating effect on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to market share index.	Collaborative Initiatives	.210	4.412	.000	
	Planning and Forecasting Initiatives	.117	3.139	.002	
	Coordination of Resource Sharing Initiatives	.088	2.575	.011	
	Collaborative Initiatives_ _SCIMP	.136	3.185	.002	
	Planning and Forecasting Initiatives _ SCIMP	.154	2.928	.004	
	Coordination of Resource Sharing Initiatives _ SCIMP	.110	3.519	.001	**Reject**
$H_0$2: Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to market share index.	Product Diversification	.289	5.240	.000	
	Product Innovation	.125	3.415	.001	
	Product Process Management	.205	4.611	.000	
	Product Diversification _ _SCIMP	.446	4.805	.000	
	Product Innovation _SCIMP	.150	3.627	.000	
	Product Process Management _ SCIMP	.321	6.940	.000	**Reject**
$H_0$3: Supply chain integration has no significant moderating effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to market share index.	Customer Product Value Satisfaction Level	.173	4.889	.000	
	Customer Communication Channels	.224	6.735	.000	
	Customer Product Value Satisfaction Level _SCIMP	.296	4.035	.000	
	Customer Communication Channels _SCIMP	.078	3.023	.003	**Reject**
$H_0$4: Supply chain integration has no significant moderating effect on logistics management practice (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to market share index.	Transport Management System	.288	4.240	.000	
	Inventory Management Systems	.264	6.058	.000	
	Distribution Channel Network	.413	7.148	.000	
	Transport Management System _SCIMP	.103	2.206	.028	
	Inventory Management Systems _SCIMP	.118	2.973	.003	
	Distribution Channel Network _ SCIMP	.078	2.665	.008	**Reject**

KEY:SCIMP =Supply chain integration(Moderator Variable)

It was concluded that supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to market share index.

Hence, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network and performance of tea subsector industry in Kenya linked to market share index.

Hence, upon the introduction of the moderating variable supply chain integration, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to market share index thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

4.11.6 Overall Multiple Regression Results on Operational Efficiency

To establish the effect of the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypotheses were tested:

> **$H_0$1:** Supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

H_02: Value chain management practice measures (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

H_03: Customer relationship management practice measures (customer product value satisfaction level and customer communication channel) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

H_04: Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Regression analysis was conducted to empirically determine whether the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.126 displays the regression coefficients results of the independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.126: Overall Regression of Supply Chain and Operational Efficiency

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.526	1.329		8.674	.000
	Collaborative Initiatives(X_1)	.102	.041	.145	2.508	.013
	Planning and Forecasting Initiatives(X_2)	.103	.040	.125	2.571	.011
	Coordination of Resource Sharing Initiatives(X_3)	.171	.080	.194	2.138	.034
	Product Diversification(X_4)	.082	.024	.183	3.403	.001
	Product Innovation(X_5)	.180	.020	.480	9.042	.000
	Product Process Management(X_6)	.039	.020	.107	1.985	.048
	Customer Product Value Satisfaction Level(X_7)	.189	.055	.159	3.408	.001
	Customer Communication Channels(X_8)	.165	.051	.320	3.268	.001
	Transport Management Systems(X_9)	.169	.026	.453	6.625	.000
	Inventory Management Systems(X_{10})	.252	.083	.174	3.045	.003
	Distribution Channel Network(X_{11})	.576	.104	.275	5.538	.000

a. Dependent Variable: Operational Efficiency

From Table 4.126, the results indicated that the independent variables, supply chain management practice measures : supplier relationship management practice [collaborative initiatives (with β= 0.145, p value 0.013), planning and forecasting initiatives (with β=0.125, p value 0.011) and coordination of resources sharing initiatives (with β= 0.194, p value 0.034)],value chain management practice measures [product diversification (with β= 0.183, p value 0.001), product innovation (with β=0.480, p value 0.000) and product process management (with β= 0.107, p value 0.048)],customer relationship management practice measures[customer product value satisfaction level (with β= 0.159, p value 0.001) and customer communication channels (with β=0.320, p value 0.001)],and logistics management practice measures [transport management systems (with β=0.453, p value 0.000), inventory management systems (with β=0.174, p value 0.003) and distribution channel network (with β= 0.275, p value 0.000)] were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.126 further illustrated that a 0.102 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.103 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.171 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.082 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.180 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.039 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational, a 0.189 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.165 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.169 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.252 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.576 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.126, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network were (0.145), (0.125), (0.194), (0.183), (0.480), (0.107), (0.159), (0.320), (0.453),(0.174) and (0.275) respectively. This meant that collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network individually explained 14.5 percent, 12.5 percent, 19.4 percent, 18.3 percent, 48 percent, 10.7 percent, 15.9 percent, 32 percent, 45.3 percent, 17.4 percent and 27.5 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The regression model was summarized by equation 4.32 below.

$Y = 11.526 + 0.102X_1 + 0.103X_2 +0.171X_3 +0.082X_4 + 0.180X_5 + 0.039X_6 +0.189X_7 + 0.165X_8 + 0.169X_9 +0.252X_{10} + 0.576X_{11}$**…………..…………….. Equation 4.32**

Where,

Y – Operational Efficiency, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives,X_3 – Coordination of Resource Sharing Initiatives, X_4 – Product Diversification, X_5 – Product Innovation, X_6 – Product Process Management, X_7 – Customer Product Value Satisfaction Level, X_8 – Customer Communication Channels, X_9 – Transport Management Systems, X_{10} – Inventory Management Systems and X_{11} – Distribution Channel Network

Table 4.127: Overall Hypotheses Testing Results on Operational Efficiency

Research Hypotheses (Null)	Measures	β	t	Sig	Comments
$H_0$1: Supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.	Collaborative Initiatives	.145	2.508	.013	
	Planning and Forecasting Initiatives	.125	2.571	.011	
	Coordination of Resource Sharing Initiatives	.194	2.138	.034	**Rejected**
$H_0$2: Value chain management practice measures (product diversification, product innovation and product process management) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.	Product Diversification	.183	3.403	.001	
	Product Innovation	.480	9.042	.000	
	Product Process Management	.107	1.985	.048	**Rejected**
$H_0$3: Customer relationship management practice measures (customer product value satisfaction level and customer communication channel) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.	Customer Product Value Satisfaction Level	.159	3.408	.001	
	Customer Communication Channels	.320	3.268	.001	**Rejected**
$H_0$4: Logistics management practice measures (transport management systems, inventory management systems and distribution channel network) has no significant effect on performance of tea subsector industry in Kenya linked to operational efficiency.	Transport Management Systems	.453	6.625	.000	
	Inventory Management Systems	.174	3.045	.003	
	Distribution Channel Network	.275	5.538	.000	**Rejected**

It was concluded that supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Hence, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on independent variables, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) on performance of tea subsector industry in Kenya linked to operational efficiency, the following null hypotheses were tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational efficiency.

$H_0$2: Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency.

$H_0$3: Supply chain integration has no significant moderating effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency.

$H_0$4: Supply chain integration has no significant moderating effect on logistics management practice (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency.

Moderated regression analysis was conducted to empirically determine whether supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya linked to operational efficiency as shown on table 4.128. Table 4.128 presents Moderated Overall Regression Coefficients of Supply Chain Management Practices and Operational Efficiency.

Table 4.128: Moderated Regression Supply Chain and Operational Efficiency

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	8.701	1.268		6.861	.000
Collaborative Initiatives(X_1)	.112	.035	.135	3.203	.002
Planning and Forecasting Initiatives(X_2)	.204	.058	.231	3.529	.001
Coordination of Resource Sharing Initiatives(X_3)	.061	.021	.136	2.946	.004
Product Diversification(X_4)	.059	.019	.157	3.093	.002
Product Innovation(X_5)	.287	.038	.555	7.485	.000
Product Process Management(X_6)	.252	.031	.677	8.052	.000
Customer Product Value Satisfaction Level(X_7)	.140	.064	.097	2.183	.030
Customer Communication Channels(X_8)	.311	.108	.148	2.881	.004
Transport Management Systems(X9)	.247	.051	.278	4.836	.000
Inventory Management Systems(X_{10})	.233	.065	.275	3.572	.000
Distribution Channel Network(X_{11})	.261	.044	.265	5.988	.000
Collaborative Initiatives _ Supply chain integration(X_1Z)	.187	.061	.216	3.089	.002
Planning and Forecasting Initiatives _ Supply chain integration(X2Z)	.140	.048	.178	2.912	.004
Coordination of Resource Sharing Initiatives _ Supply chain integration(X_3Z)	.083	.031	.105	2.701	.007
Product Diversification _ Supply chain integration(X_4Z)	.234	.032	.409	7.241	.000
Product Innovation _ Supply chain integration(X_5Z)	.123	.032	.135	3.819	.000
Product Process Management _ Supply chain integration(X_6Z)	.104	.045	.118	2.318	.021
Customer Product Value Satisfaction Level _ Supply chain integration(X_7Z)	.196	.046	.226	4.305	.000
Customer Communication Channels _ Supply chain integration(X_8Z)	.179	.051	.267	3.491	.001
Transport Management Systems _ Supply chain integration(X_9Z)	.271	.089	.143	3.033	.003
Inventory Management Systems _ Supply chain integration($X_{10}Z$)	.435	.107	.151	4.064	.000
Distribution Channel Network _ Supply chain integration ($X_{11}Z$)	.209	.099	.084	2.105	.037

a**. Dependent Variable: Operational Efficiency**

Table 4.128 displays the regression coefficients results of the moderated supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency.

From Table 4.128, upon the introduction of the moderator variable supply chain integration, the results indicated that the independent variables, supply chain management practice measures : supplier relationship management practice [collaborative initiatives (with β= 0.135, p value 0.002), planning and forecasting initiatives (with β=0.231, p value 0.001) and coordination of resources sharing initiatives (with β=0.136, p value 0.004)],value chain management practice measures [product diversification (with β=0.157, p value 0.002), product innovation (with β=0.555, p value 0.000) and product process management (with β=0.677, p value 0.000)],customer relationship management practice measures[customer product value satisfaction level (with β= -0.097, p value 0.030) and customer communication channels (with β=0.148, p value 0.004)],and logistics management practice measures [transport management systems (with β=0.278, p value 0.000), inventory management systems (with β=0.275, p value 0.000) and distribution channel network (with β= 0.265, p value 0.000)] were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency.

Further, the results indicated that moderated supplier relationship management practice measures[collaborative initiatives_ supply chain integration (with β=0.216, p value 0.002), planning and forecasting initiatives _ supply chain integration (with β=0.178, p value 0.004) and coordination of resources sharing initiatives _ supply chain integration (with β=0.105, p value 0.007)],moderated value chain management practice measures [product diversification _ supply chain integration (with β=0.409, p value 0.000), product innovation _ supply chain integration (with β=0.135, p value 0.000) and product process management _ supply chain integration (with β= 0.118, p value 0.021)],customer relationship management practice measures[customer product value satisfaction level _ supply chain integration (with β= 0.226, p value 0.000) and customer communication channels _ supply chain integration (with β=0.267, p value 0.001)],and logistics management practice measures [transport management systems _ supply chain integration (with β=0.143, p value 0.003), inventory management systems _ supply chain integration (with β=0.151, p value 0.000) and distribution channel network _ supply chain integration (with β=0.084, p value 0.037)], were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya linked to operational efficiency.

Table 4.128 above further illustrates that a 0.112 point increase in collaborative initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.204 point increase in planning and forecasting initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.061 point increase in coordination of resource sharing initiatives led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.059 point increase in product diversification led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.287 point increase in product innovation led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.252 point increase in product process management led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.140 point increase in customer product value satisfaction level led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.311 point increase in customer communication channels led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.247 point increase in transport management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.233 point increase in inventory management systems led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.261 point increase in distribution channel network led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

Further, a 0.187 point increase in collaborative initiatives _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.140 point increase in planning and forecasting initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.083 point increase in coordination of resource sharing initiatives_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.234 point increase in product diversification_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.123 point increase in product innovation_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.104 point increase in product process management_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.196 point increase in customer product value satisfaction level _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.179 point increase in customer communication channels_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.271 point increase in transport management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency, a 0.435 point increase in inventory management systems_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency and a 0.209 point increase in distribution channel network_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya linked to operational efficiency ceteris paribus.

However, it should be noted that as shown in Table 4.128, the coefficient (r) or beta for collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems and distribution channel network, collaborative initiatives _ supply chain integration, planning and forecasting initiatives_ supply chain integration , coordination of resource sharing initiatives_ supply chain integration, product diversification_ supply chain integration, product innovation_ supply chain integration, product process management_ supply chain integration, customer product value satisfaction level_ supply chain integration, customer communication channels_ supply chain integration, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network_ supply chain integration were (0.135), (0.231), (0.136), (0.157), (0.555), (0.677), (0.097), (0.148), (0.278), (0.275), (0.265), (0.216), (0.178), (0.105), (0.409), (0.135), (0.118), (0.226), (0.267), (0.143), (0.151) and (0.084) respectively.

This meant that collaborative initiatives, planning and forecasting initiatives, coordination of resource sharing initiatives, product diversification, product innovation, product process management, customer product value satisfaction level, customer communication channels, transport management systems, inventory management systems, distribution channel network, collaborative initiatives _ supply chain integration, planning and forecasting initiatives_ supply chain integration , coordination of resource sharing initiatives_ supply chain integration, product diversification_ supply chain integration, product innovation_ supply chain integration, product process management_ supply chain integration, customer product value satisfaction level_ supply chain integration, customer communication channels_ supply chain integration, transport management systems_ supply chain integration, inventory management systems_ supply chain integration and distribution channel network_ supply chain integration individually explained 13.5 percent, 23.1 percent, 13.6 percent ,15.7 percent, 55.5 percent, 67.7 percent, 9.7 percent, 14.8 percent, 27.8 percent, 27.5 percent, 26.5 percent, 21.6 percent, 17.8 percent, 10.5 percent, 40.9 percent, 13.5 percent, 11.8 percent, 22.6 percent, 26.7

percent,14.3 percent, 15.1 percent and 8.4 percent changes or variations respectively in performance of tea subsector industry in Kenya linked to operational efficiency. The regression model is summarized by equation 4.33 below.

$Y = 8.701 + 0.112X_1 + 0.204X_2 + 0.061X_3 + 0.059X_4 + 0.287X_5 + 0.252X_6 + 0.140X_7 + 0.311X_8 + 0.247X_9 + 0.233X_{10} + 0.261X_{11} + 0.187X_1Z + 0.140X_2Z + 0.083X_3Z + 0.234X_4Z + 0.123X_5Z + 0.104X_6Z + 0.196X_7Z + 0.179X_8Z + 0.271X_9Z + 0.435X_{10}Z + 0.209X_{11}Z$ **………………………………………………………….. Equation 4.33**

Where,

Y – Operational Efficiency, X_1 – Collaborative Initiatives, X_2 – Planning and Forecasting Initiatives, X_3 – Coordination of Resource Sharing Initiatives, X_4 – Product Diversification, X_5 – Product Innovation, X_6 – Product Process Management, X_7 – Customer Product Value Satisfaction Level, X_8 – Customer Communication Channels, X_9 – Transport Management Systems, X_{10} – Inventory Management Systems and X_{11} – Distribution Channel Network, X_1Z – Collaborative Initiatives _ Supply chain integration, X_2Z – Planning and Forecasting Initiatives_ Supply chain integration, X_3Z – Coordination of Resource Sharing Initiatives_ Supply chain integration, X_4Z –Product Diversification_ Supply chain integration, X_5Z – Product Innovation_ Supply chain integration, X_6Z – Product Process Management_ Supply chain integration, X_7Z – Customer Product Value Satisfaction Level_ Supply chain integration, X_8Z – Customer Communication Channels_ Supply chain integration, X_9Z – Transport Management Systems_ Supply chain integration, $X_{10}Z$ – Inventory Management Systems_ Supply chain integration and $X_{11}Z$ – Distribution Channel Network_ Supply chain integration

Table 4.129: Overall Moderated Hypotheses Results on Operational Efficiency

Research Hypothesis (Null)	Measurements	β	t	Sig	Comments
$H_0$1: Supply chain integration has no significant moderating effect on supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to operational efficiency.	Collaborative Initiatives	.135	3.203	.002	
	Planning and Forecasting Initiatives	.231	3.529	.001	
	Coordination of Resource Sharing Initiatives	.136	2.946	.004	
	Collaborative Initiatives_ _SCIMP	.216	3.089	.002	
	Planning and Forecasting Initiatives _ SCIMP	.178	2.912	.004	
	Coordination of Resource Sharing Initiatives _ SCIMP	.105	2.701	.007	**Reject**
$H_0$2: Supply chain integration has no significant moderating effect on value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to operational efficiency.	Product Diversification	.157	3.093	.002	
	Product Innovation	.555	7.485	.000	
	Product Process Management	.677	8.052	.000	
	Product Diversification _ _SCIMP	.409	7.241	.000	
	Product Innovation _SCIMP	.135	3.819	.000	**Reject**
	Product Process Management _ SCIMP	.118	2.318	.021	
$H_0$3: Supply chain integration has no significant moderating effect on customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to operational efficiency.	Customer Product Value Satisfaction Level	.097	2.183	.030	
	Customer Communication Channels	.148	2.881	.004	
	Customer Product Value Satisfaction Level _SCIMP	.226	4.305	.000	
	Customer Communication Channels _SCIMP	.267	3.491	.001	**Reject**
$H_0$4: Supply chain integration has no significant moderating effect on logistics management practice (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency.	Transport Management System	.278	4.836	.000	
	Inventory Management Systems	.275	3.572	.000	
	Distribution Channel Network	.265	5.988	.000	
	Transport Management System _SCIMP	.143	3.033	.003	
	Inventory Management Systems _SCIMP	.151	4.064	.000	
	Distribution Channel Network _ SCIMP	.084	2.105	.037	**Reject**

KEY:SCIMP =Supply chain integration(Moderator Variable)

It was concluded that supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had significant positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency.

Hence, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to operational efficiency.

Hence, upon the introduction of the moderating variable supply chain integration, supply chain management practice measures : supplier relationship management practice measures(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice measures(product diversification, product innovation and product process management),customer relationship management practice measures(customer product value satisfaction level and customer communication channels) and logistics management practice measures (transport management systems, inventory management systems and distribution channel network) still had a positive correlation effect on performance of tea subsector industry in Kenya linked to operational efficiency thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

4.12 Aggregate of Study Variables

The study sought to determine the moderating effect of supply chain integration on independent variable supply chain management practices(supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and dependent variable performance of tea subsector industry in Kenya (firm profit margins, market share index and operational efficiency). Supply chain management practices was assessed by four independent variables (measures of supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) while performance of tea subsector industry in Kenya was assessed by firm profit margins, market share index and operational efficiency. Correlation and regression analyses were used to determine the relationship and strength of the supply chain management practices measures on performance of tea subsector industry in Kenya to draw conclusions on this study.

4.12.1 Aggregate Goodness-of-fit Model Results

To assess the research model, the independent variables, supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice, the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya were subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between the independent variables supply chain management practices, the moderating variable supply chain integration and the dependent variable performance of tea subsector industry in Kenya.

The results in Table 4.130 under model one (1) in primary data showed that the independent variables supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice had explanatory power on performance of tea subsector industry in Kenya as it accounted for 50.3% of its variability (R Square = 0.503) hence the model was a good fit for the data. The independent variables supply chain management practices as variables on their own implied a positive relationship with performance of tea subsector industry in Kenya.

On Model two (2) in primary data, Table 4.130, the explanatory power of supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 60.4% of its variability (R Square = 0.604) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had significantly increased the relationship between the independent variables supply chain management practices and performance of tea subsector industry in Kenya.

The results in Table 4.130 under model one (3) in secondary data showed that the independent variables supply chain management practice measures: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice had explanatory power on performance of tea subsector in Kenya as it accounted for 84.2% of its variability (R Square = 0.842) hence the model was a good fit for the data. The independent variables supply chain management practices measures as variables on their own implied a positive relationship with the performance of tea subsector industry in Kenya.

On Model four (4) in the secondary data, Table 4.140, the explanatory power of supply chain management practice measures: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice increased significantly when the moderator variable supply chain integration was incorporated into the model as it accounted for 90.8% of its variability (R Square = 0.908) hence the model was a good fit for the data. This implied that the moderating variable, supply chain integration had significantly increased the relationship between the independent variables supply chain management practice measures and performance of tea subsector industry in Kenya. Table 4.140 presents Secondary Data Goodness-of-fit Model Results. Table 4.130 present Aggregate Goodness-of-fit Model Results.

Table 4.130: Aggregate Goodness-of-fit Model Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
			Primary Data	
1	.709[a]	.503	.494	1.02658
2	.777[a]	.604	.590	.92460
			Secondary Data	
3	.918[a]	.842	.834	.48690
4	.953[a]	.908	.898	.38175

a. Predictors: (Constant), Logistics Management Practice, Customer Relationship Management Practice, Value Chain Management Practice, Supplier Relationship Management Practice

b. Logistics Management Practice _ Supply chain integration, Customer Relationship Management Practice _ Supply chain integration, Value Chain Management Practice _ Supply chain integration, Supplier Relationship Management Practice _ Supply chain integration

c. Dependent Variable: Performance of Kenya's Tea Sub-Sector Industry

4.12.2 Aggregate Analysis of Variance (ANOVA) Results

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05.Table 4.131 under model one (1) in primary data showed the significance of the regression model on the independent variables, supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice and performance of tea subsector industry in Kenya with P-value of 0.000 which was less than 0.05(Bryman & Bell, 2015). The results revealed that a significant relationship existed between the independent variables, supply chain management practices and performance of tea subsector industry in Kenya with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at $F = 56.678$, $p = 0.000$.

Table 4.131 under model two (2) in primary data captures the significance of the regression model on the independent variables, supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice upon the introduction of the moderating variable, supply chain integration with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between the independent variables, supply chain management practices and performance of tea subsector industry in Kenya. The overall ANOVA results indicated that model two (2) was significant at $F = 41.952$, $p = 0.000$.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya. Basing the confidence level at 95% the analysis indicates high reliability of the results obtained.

The secondary data results in Table 4.131 under model three (3) showed the significance of the regression model on the independent variables, supply chain management practice, value chain management practice, customer relationship management practice, logistics management practice and performance of tea subsector industry in Kenya with P-value of 0.000 which was less than 0.05(Bryman & Bell, 2015). The results revealed that a significant relationship existed between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya with a p-value of 0.000. This indicated that the regression model was statistically significant in predicting Performance of tea subsector industry in Kenya. Basing the confidence level at 95% the analysis indicated high reliability of the results obtained. The overall ANOVA results indicated that model one (1) was significant at F = 105.204, p = 0.000.

Table 4.131 under model four (4) in secondary data captures the significance of the regression model on the independent variables, supply chain management practice measures: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice upon the introduction of the moderating variable, supply chain integration management practice with P-value of 0.000 which was less than 0.05. This still indicated a significant relationship between the independent variables, supply chain management practice measures and performance of tea subsector industry in Kenya. The overall ANOVA results indicated that model two (2) was significant at F = 92.250, p = 0.000.P-values for both models were less than 0.05, thus indicating that the regression model was statistically significant in predicting performance of tea subsector industry in Kenya. Basing the confidence level at 95% the analysis indicates high reliability of the results obtained. Table 4.131 presents Aggregate Analysis of Variance (ANOVA) Results.

Table 4.131: Aggregate Analysis of Variance (ANOVA) Results

Model		Sum of Squares	df	Mean Square	F	Sig.
Primary Data						
1	Regression	238.922	4	59.730	56.678	.000b
	Residual	236.065	224	1.054		
	Total	474.987	228			
2	Regression	286.913	8	35.864	41.952	.000b
	Residual	188.074	220	.855		
	Total	474.987	228			
Secondary Data						
3	Regression	274.347	6	24.941	105.204	.000b
	Residual	51.444	108	.237		
	Total	325.790	114			
4	Regression	295.769	12	13.444	92.250	.000b
	Residual	30.021	102	.146		
	Total	325.790	114			

a. Dependent Variable: Performance of Kenya's Tea Sub-Sector Industry
b. Predictors: (Constant), Logistics Management Practice, Customer Relationship Management Practice, Value Chain Management Practice, Supplier Relationship Management Practice
c. Logistics Management Practice _ Supply chain integration, Customer Relationship Management Practice _ Supply chain integration, Value Chain Management Practice _ Supply chain integration, Supplier Relationship Management Practice_ Supply chain integration

4.12.3 Aggregate Multiple Regression Results

To establish the effect of the independent variables, supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice on performance of tea subsector industry in Kenya, the following null hypotheses were tested:

> **$H_0$1:** Supplier relationship management practice has no significant effect on performance of tea subsector industry in Kenya.
>
> **$H_0$2:** Value chain management practice has no significant effect on performance of tea subsector industry in Kenya.
>
> **$H_0$3:** Customer relationship management practice has no significant effect on performance of Kenya's tea subsector.

H_04: Logistics management practice has no significant effect on performance of tea subsector industry in Kenya.

Regression analysis was conducted to empirically determine whether the independent variables, supply chain management practice: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice had any significant effect on performance of Kenya's tea subsector. Table 4.132 displays the regression coefficients results of the independent variables, supply chain management practice: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice on performance of tea subsector industry in Kenya.

From Table 4.132, the results in model 1 indicated that the independent variables in primary data, supply chain management practices: supplier relationship management practice (with β= 0.198, p value 0.000),value chain management practice (with β= 0.201, p value 0.000), customer relationship management practice (with β= 0.152, p value 0.005) and logistics management practice (with β=0.505, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya.

Table 4.132 further illustrated that a 0.089 point increase in supplier relationship management practice led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.267 point increase in value chain management practice led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.132 point increase in customer relationship management practice led to a 1 point increase in performance of tea subsector industry in Kenya and a 0.356 point increase in logistics management practice led to a 1 point increase in performance of tea subsector industry in Kenya ceteris paribus.

However, it should be noted that as shown in Table 4.132, the coefficient (r) or beta for supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice were

(0.198), (0.201), (0.152), and (0.505) respectively. This meant that supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice individually explained 19.8 percent, 20.1 percent, 15.2 percent, and 50.5 percent changes or variations respectively in performance of tea subsector industry in Kenya. The regression model for primary data was summarized by equation 4.34 below.

$Y = 7.579 + 0.089X_1 + 0.267X_2 +0.132X_3 +0.356X_4$ **………..…….. Equation 4.34**

Where,

Y – Performance, X_1 – Supplier Relationship Management Practice, X_2 – Value Chain Management Practice,X_3 – Customer Relationship Management Practice, X_4 – Logistics Management Practice

Table 4.132 under model 2 displays the secondary data regression coefficients results of the independent variables, supply chain management practice measures: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice on performance of tea subsector industry in Kenya. The regression equation established that taking all factors into account (performance as a result of supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) constant at zero performance was 4.896. The findings presented also shows that taking all other independent variables at zero, a unit increase in supplier relationship management practice will lead to a 0.170 increase in the scores of performance; a unit increase in value chain management practice will lead to a 0.248 increase in performance; a unit increase in customer relationship management practice will lead to a 0.177 increase in the scores of performance; a unit increase in logistics management practice will lead to a 0.123 increase in the score of performance. This therefore implies that all the four variables of supply chain management practices have a positive relationship with value chain management practice contributing most to the dependent variable. Further, from table 1.142 we can see that the predictor variables of performance as a result of supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice have got variable coefficients statistically significant since their p-values are less than the common alpha level of 0.05. The regression equation for secondary data was:

$Y = 4.896 + 0.170\mathbf{X_1} + 0.248\mathbf{X_2} + 0.177\mathbf{X_3} + 0.123\mathbf{X_4}$

Where;

Y = the dependent variable (Performance), X_1 = Supplier Relationship Management Practice,X_2 = Value Chain Management Practice,X_3 = Customer Relationship Management Practice,X_4= Logistics Management Practice

Table 4.132 presents Aggregate Multiple Regression Results.

Table 4.132: Aggregate Regression of Supply Chain Practices and Performance

		Primary Data Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	7.579	2.890		2.623	.009
	Supplier Relationship Management Practice(X_1)	.089	.022	.198	4.050	.000
	Value Chain Management Practice(X_2)	.267	.069	.201	3.852	.000
	Customer Relationship Management Practice(X_3)	.132	.046	.152	2.868	.005
	Logistics Management Practice(X_4)	.356	.036	.505	9.873	.000
		Secondary Data				
2	(Constant)	4.896	1.340		3.654	.000
	Supplier Relationship Management Practice (X_1)	.170	.028	.281	5.968	.000
	Value Chain Management Practice (X_2)	.248	.029	.345	8.639	.000
	Customer Relationship Management Practice (X_3)	.177	.063	.113	2.811	.005
	Logistics Management Practice (X_4)	.123	.021	.239	5.848	.000

a. Dependent Variable: Performance

Table 4.133: Aggregate Hypotheses Testing Results

Research Hypothesis (Null)	β	t	Sig	Comments
Primary Data				
H0 1: Supplier relationship management practice has no significant effect on performance of tea subsector industry in Kenya.	.198	4.050	.000	**Rejected**
H0 2: Value chain management practice has no significant effect on performance of tea subsector industry in Kenya.	.201	3.852	.000	**Rejected**
H0 3: Customer relationship management practice has no significant effect on performance of tea subsector industry in Kenya.	.152	2.868	.005	**Rejected**
H0 4: Logistics management practice has no significant effect on performance of tea subsector industry in Kenya.	.505	9.873	.000	**Rejected**
Secondary Data				
H0 1: Supplier relationship management practice has no significant effect on performance of tea subsector industry in Kenya.	.281	5.968	.000	**Rejected**
H0 2: Value chain management practice has no significant effect on performance of tea subsector industry in Kenya.	.345	8.639	.000	**Rejected**
H0 3: Customer relationship management practice has no significant effect on performance of tea subsector industry in Kenya.	.113	2.811	.005	**Rejected**
H0 4: Logistics management practice has no significant effect on performance of tea subsector industry in Kenya.	.239	5.848	.000	**Rejected**

It was concluded that supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice had significant positive correlation effect on performance of Kenya's tea subsector. Hence, supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice had a positive correlation effect on performance of tea subsector industry in Kenya ($\beta \neq 0$ and p-value<0.05).

To establish the moderation effect of supply chain integration on independent variables, supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice on performance of tea subsector industry in Kenya, the following null hypotheses were tested:

> **$H_0$1:** Supply chain integration has no significant moderating effect on supplier relationship management practice and performance of tea subsector industry in Kenya.
>
> **$H_0$2:** Supply chain integration has no significant moderating effect on value chain management practice and performance of tea subsector industry in Kenya.
>
> **$H_0$3:** Supply chain integration has no significant moderating effect on customer relationship management practice and performance of tea subsector industry in Kenya.
>
> **$H_0$4:** Supply chain integration has no significant moderating effect on logistics management practice and performance of tea subsector industry in Kenya.

Moderated regression analysis was conducted to empirically determine whether supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice moderated with supply chain integration had any significant effect on performance of tea subsector industry in Kenya as shown on table 4.133. Table 4.134 presents Aggregate Moderated Regression Coefficients results of Supply Chain Management Practices and Performance.

Table 4.134: Aggregate Moderated Regression of Supply Chain Management Practices and Performance

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
	Primary Data					
1	(Constant)	10.482	2.736		3.831	.000
	Supplier Relationship Management Practice (X_1)	.088	.021	.196	4.139	.000
	Value Chain Management Practice(X_2)	.262	.064	.198	4.088	.000
	Customer Relationship Management Practice(X_3)	.098	.044	.112	2.223	.027
	Logistics Management Practice(X_4)	.346	.037	.492	9.270	.000
	Supplier Relationship Management Practice_ Supply chain integration(X_1Z)	.479	.098	.240	4.905	.000
	Value Chain Management Practice _ Supply chain integration(X_2Z)	.497	.169	.153	2.935	.004
	Customer Relationship Management Practice _ Supply chain integration(X_3Z)	.428	.136	.141	3.156	.002
	Logistics Management Practice _ Supply chain integration(X_4Z)	.170	.078	.097	2.192	.029
	Secondary Data					
2	(Constant)	3.493	1.322		2.641	.009
	Supplier Relationship Management Practice (X_1)	.179	.033	.272	5.407	.000
	Value Chain Management Practice (X_2)	.339	.032	.418	10.425	.000
	Customer Relationship Management Practice (X_3)	.140	.050	.073	2.794	.006
	Logistics Management Practice (X_4)	.138	.043	.113	3.193	.002
	Supplier Relationship Management Practice__Supply Chain Integration (X_1Z)	.137	.027	.265	5.022	.000
	Value Chain Management Practice _Supply Chain Integration (X_2Z)	.164	.027	.271	5.979	.000
	Customer Relationship Management Practice _Supply Chain Integration (X_3Z)	.216	.031	.362	6.908	.000
	Logistics Management Practice _Supply Chain Integration (X_4Z)	.174	.030	.340	5.738	.000

a. Dependent Variable: Performance

Table 4.134 under model 1 primary data displays the regression coefficients results of the moderated supply chain management practices: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice and performance of tea subsector industry in Kenya. From Table 4.134, upon the introduction of the moderator variable supply chain integration, the results indicated that the independent variables, supply chain management practices: supplier relationship management practice (with β= 0.196, p value 0.000),value chain management practice (with β=0.198, p value 0.000),customer relationship management practice(with β= 0.112, p value 0.027) and logistics management practice (with β=0.492, p value 0.000) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya.

Further, the results indicated that moderated supplier relationship management practice (with β=0.240, p value 0.000), moderated value chain management practice (with β=0.153, p value 0.004), moderated customer relationship management practice (with β= 0.141, p value 0.002) and moderated logistics management practice (with β=0.097, p value 0.029) were positively correlated and statistically significant in explaining performance of tea subsector industry in Kenya.

Table 4.134 further illustrates that a 0.088 point increase in supplier relationship management practice led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.262 point increase in value chain management practice led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.098 point increase in customer relationship management practice led to a 1 point increase in performance of tea subsector industry in Kenya and a 0.346 point increase in logistics management practice led to a 1 point increase in performance of tea subsector industry in Kenya ceteris paribus.

Further, a 0.479 point increase in supplier relationship management practice _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.497 point increase in value chain management practice_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.428 point increase in customer relationship management practice _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.170 point increase in logistics management practice_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya ceteris paribus.

However, it should be noted that as shown in Table 4.134, the coefficient (r) or beta for supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice, supplier relationship management practice _ supply chain integration, value chain management practice_ supply chain integration, customer relationship management practice_ supply chain integration and logistics management practice_ supply chain integration were (0.196), (0.198), (0.112), (0.492), (0.240), (0.153), (0.141), and (0.097) respectively.

This meant that supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice, supplier relationship management practice _ supply chain integration, value chain management practice_ supply chain integration, customer relationship management practice_ supply chain integration and logistics management practice_ supply chain integration individually explained 19.6 percent, 19.8 percent, 11.2 percent ,49.2 percent, 24 percent, 15.3 percent, 14.1 percent and 9.7 percent changes or variations respectively in performance of tea subsector industry in Kenya. The regression model is summarized by equation 4.35 below.

$Y = 10.482 + 0.088X_1 + 0.262X_2 + 0.098X_3 + 0.346X_4 + 0.479X_1Z + 0.497X_2Z + 0.428X_3Z + 0.170X_4Z$………………………………………….. **Equation 4.35**

Where,

Y – Performance, X_1 – Supplier Relationship Management Practice, X_2 – Value Chain Management Practice, X_3 – Customer Relationship Management Practice, X_4 – Logistics Management Practice, X_1Z – Supplier Relationship Management Practice _ Supply chain integration, X_2Z – Value Chain Management Practice_ Supply chain integration, X_3Z – Customer Relationship Management Practice_ Supply chain integration, X_4Z – Logistics Management Practice_ Supply chain integration

Table 4.134 under model 2 displays secondary data regression coefficients results of the moderated supply chain management practice measures: supplier relationship management practice, value chain management practice, customer relationship management practice, logistics management practice and performance of tea subsector industry in Kenya.

Table 4.134 illustrates that a 0.179 point increase in supplier relationship management practice led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.339 point increase in value chain management practice led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.140 point increase in customer relationship management practice led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.138 point increase in logistics management practice led to a 1 point increase in performance of tea subsector industry in Kenya.

Further, a 0.137 point increase in supplier relationship management practice _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.164 point increase in value chain management practices_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.216 point increase in customer relationship management practice _ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya, a 0.174 point increase in logistics management practice_ supply chain integration led to a 1 point increase in performance of tea subsector industry in Kenya ceteris paribus. The predictor variables of performance in table 4.143 as a result of moderated supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice have got variable coefficients statistically significant since their p-values are less than the common alpha level of 0.05.

The moderated regression equation was:

$Y = 3.493 + 0.179X_1 + 0.339X_2 + 0.140X_3 + 0.138X_4 + 0.137X_1Z + 0.164X_2Z + 0.216X_3Z + 0.174X_4Z$ **………………………………………………. Equation 4.29**

Where,

Y – Performance, X_1 – Supplier Relationship Management Practice, X_2 – Value Chain Management Practice,X_3 – Customer Relationship Management Practice, X_4 – Logistics Management Practice,X_1Z – Supplier Relationship Management Practice _ Supply Chain Integration, X_2 Z – Value Chain Management Practice _ Supply Chain Integration,X_3Z – Customer Relationship Management Practice _ Supply Chain Integration, X_4Z – Logistics Management Practice _ Supply Chain Integration,

Table 4.135: Aggregate Moderated Hypotheses Testing Results

Research Hypothesis (Null)	Measurements	β	t	Sig	Comments
Primary Data					
$H_0$1: Supply chain integration has no significant moderating effect on supplier relationship management practice and performance of tea subsector industry in Kenya	X_1	.196	4.139	.000	**Reject**
	X_1Z	.240	4.905	.000	
$H_0$2: Supply chain integration has no significant moderating effect on value chain management practice and performance of tea subsector industry in Kenya.	X_2	.198	4.088	.000	**Reject**
	X_2Z	.153	2.935	.004	
$H_0$3: Supply chain integration has no significant moderating effect on customer relationship management practice and performance of tea subsector industry in Kenya.	X_3	.112	2.223	.027	**Reject**
	X_3Z	.141	3.156	.002	
$H_0$4: Supply chain integration has no significant moderating effect on logistics management practice and performance of tea subsector industry in Kenya.	X_4	.492	9.270	.000	**Reject**
	X_4Z	.097	2.192	.029	
Secondary Data					
$H_0$1: Supply chain integration has no significant moderating effect on supplier relationship management practice and performance of tea subsector industry in Kenya	X_1	.272	5.407	.000	**Reject**
	X_1Z	.265	5.022	.000	
$H_0$2: Supply chain integration has no significant moderating effect on value chain management practice and performance of tea subsector industry in Kenya.	X_2	.418	10.425	.000	**Reject**
	X_2Z	.271	5.979	.000	
$H_0$3: Supply chain integration has no significant moderating effect on customer relationship management practice and performance of tea subsector industry in Kenya.	X_3	.073	2.794	.006	**Reject**
	X_3Z	.362	6.908	.000	
$H_0$4: Supply chain integration has no significant moderating effect on logistics management practice and performance of tea subsector industry in Kenya.	X_4	.113	3.193	.002	**Reject**
	X_4Z	.362	6.908	.000	

KEY: SCIMP =Supply chain integration (Moderator Variable); X1=Normal Variable; X1Z=Moderated Variable

It was concluded that supply chain management practice: supplier relationship management practice, value chain management practice, customer relationship management practice logistics management practice had significant positive correlation effect on performance of tea subsector industry in Kenya. Hence, supply chain management practice: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice had a positive correlation effect on performance of tea subsector industry in Kenya thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

It was further concluded that the moderating variable supply chain integration had a statistically significant positive effect on supply chain management practice: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice and performance of tea subsector industry in Kenya. Hence, upon the introduction of the moderating variable supply chain integration, supply chain management practice measures: supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice still had a positive correlation effect on performance of tea subsector industry in Kenya thus rejecting the null hypotheses ($\beta \neq 0$ and p-value<0.05).

4.12.4 Discussion on Research Findings

With regard to primary data, supplier relationship management practice had a significant positive correlation effect on performance of tea subsector industry in Kenya ($\beta = 0.198$; $t = 4.050$; $p < 0.000$). Value chain management practice had a significant positive correlation effect on performance of tea subsector industry in Kenya ($\beta = 0.201$; $t = 3.852$; $p < 0.000$). Customer Relationship Management practice had a significant positive correlation effect on performance of tea subsector industry in Kenya ($\beta = 0.152$; $t = 2.868$; $p < 0.005$). Logistics management practice had a significant positive correlation effect on performance of tea subsector industry in Kenya ($\beta = 0.505$; $t = 9.873$; $p < 0.000$). Supply chain integration had a significant moderating effect on supply chain management practices and performance of tea subsector industry in Kenya ($\beta = 0.141$; $t = 3.156$; $p < 0.002$).

With regard to secondary data, supplier relationship management practice had a significant positive correlation effect on performance of tea subsector industry in Kenya ($\beta = 0.281$; $t = 5.968$; $p < 0.000$). Value chain management practice had a significant positive correlation effect on performance of tea subsector industry in Kenya ($\beta = 0.345$; $t = 8.639$; $p < 0.000$). Customer Relationship Management practice had a significant positive correlation effect on performance of tea subsector industry in Kenya ($\beta = 0.113$; $t = 2.811$; $p < 0.005$). Logistics management practice had a significant positive correlation effect on performance of tea subsector industry in Kenya ($\beta = 0.239$; $t = 5.848$; $p < 0.000$). Supply chain integration had a significant moderating effect on supply chain management practices and performance of tea subsector industry in Kenya ($\beta = 0.340$; $t = 5.738$; $p < 0.002$).Table 4.136 presents the summary of the research findings.

Table 4.136: Discussion on Research Findings

Primary Data						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	7.579	2.890		2.623	.009
	Supplier Relationship Management Practice(X_1)	.089	.022	.198	4.050	.000
	Value Chain Management Practice(X_2)	.267	.069	.201	3.852	.000
	Customer Relationship Management Practice(X_3)	.132	.046	.152	2.868	.005
	Logistics Management Practice(X_4)	.356	.036	.505	9.873	.000
2	Supply Chain Management Practices _Supply chain integration (X_Z)	.428	.136	.141	3.156	.002
Secondary Data						
3	(Constant)	4.896	1.340		3.654	.000
	Supplier Relationship Management Practice (X_1)	.170	.028	.281	5.968	.000
	Value Chain Management Practice (X_2)	.248	.029	.345	8.639	.000
	Customer Relationship Management Practice (X_3)	.177	.063	.113	2.811	.005
	Logistics Management Practice (X_4)	.123	.021	.239	5.848	.000
4	Supply Chain Management Practices _Supply chain integration (X_Z)	.216	.031	.340	5.738	.000

a. Dependent Variable: Performance

4.12.5 Aggregate Summary of Research Hypotheses Results

1) The first research hypothesis, **$H_0$1**: Supplier relationship management practice has no significant effect on performance of tea subsector industry in

Kenya ($\beta = 0.198$; $t = 4.050$; $p < 0.000$) for primary data, ($\beta = 0.281$; $t = 5.968$; $p < 0.000$) for secondary data, was rejected and conclusion made that there was a significant effect of supplier relationship management practice on performance of tea subsector industry in Kenya. This is consistent with Mugambi, Mukulu, and Karanja (2011) who did a study on the role of supply chain relationships in the growth of small firms in Kenya. The purpose of the study was to understand the role played by supply chain relationships among small enterprise firms in Kenya. They used customer relationships, internal enterprise systems and sound policies as indicators of supply chain relationships. Purposive sampling method was used to select 200 small enterprises localized in Nairobi and its environs for the purpose of the study. Their results indicated that supply chain relationships have a significant positive correlation and that they positively influence the growth of small firms in Kenya. They recommended that policy makers should pay attention to supply chain relationships dimensions so as to propel growth of small enterprise firms in Kenya.

2) The second research hypothesis, **$H_0$2**: Value chain management practice has no significant effect on performance of tea subsector industry in Kenya ($\beta = 0.201$; $t = 3.852$; $p < 0.000$)for primary data, ($\beta = 0.345$; $t = 8.639$; $p < 0.000$)for secondary data, was rejected and conclusion made that there was a significant positive correlation effect of value chain management practice on performance of tea subsector industry in Kenya. This is consistent with Chege, Ngugi, and Ngugi (2017) who sought to establish the influence of internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya. They used supplier relationship management practices, process management practices, customer relationship management practices and information technology support practices as indicators of internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya. Their study adopted a cross-sectional and descriptive survey research designs whereby the target population was 499 large scale manufacturing companies operating in Nairobi where 80% of their members are based. A proportionate sample size

of 200 firms was selected using stratified random sampling technique. The results showed that there was significant positive relationship between internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya. They recommended that the government should come up with policies that emphasis best practices of internal business value chain practices on the supply chain performance of large manufacturing firms in Kenya.

3) The third research hypothesis, **H_03**: Customer Relationship Management practice has no significant effect on performance of tea subsector industry in Kenya ($\beta = 0.152$; $t = 2.868$; $p < 0.005$) for primary data, ($\beta = 0.113$; $t = 2.811$; $p < 0.005$) for secondary data,was rejected and conclusion made that there was a significant effect of customer relationship management practice on performance of tea subsector industry in Kenya. This is consistent with Tim, Timothy, and David (2012) whose objective was to examine the impact of customer relationship management (CRM) on performance using a hierarchical construct model. They tested their hypotheses on a cross-sectional sample of business-to-consumer firms based in Australia. Their results revealed a positive and significant path between a superior CRM capability and performance.

   Additionally, they observed that the impact of IT infrastructure on superior CRM capability is indirect and fully mediated by human analytics and business architecture. They also found that CRM initiatives jointly emphasizing customer intimacy and cost reduction outperform those taking a less balanced approach. They recommended that whereas there is a temptation for managers to be normative about the pursuit of competitive advantage and direct attention and resources toward particular CRM capabilities, technical, human and business capabilities this approach would seem to be flawed, since in isolation these capabilities are insufficient to generate competitive superiority. Each capability is nested within an intricate organizational system of interrelated and interdependent resources. An over-emphasis on customer intimacy to the exclusion of operational efficiency and analytic orientations actually diminish performance.

4) The fourth research hypothesis, **$H_0$4**: Logistics management practice has no significant effect on performance of tea subsector industry in Kenya (β = 0.505; t = 9.873; p < 0.000) for primary data, (β = 0.239; t = 5.848; p < 0.000) for secondary data,was rejected and conclusion made that there was a significant effect of logistics management practice on performance of tea subsector industry in Kenya. This is consistent with Mwangangi, Guyo, and Arasa (2016) who sought to establish the influence of logistics management on performance of manufacturing firms in Kenya. They used transport management, inventory management, and order processing management, information flow management and logistics information systems as indicators of logistics management on performance of manufacturing firms in Kenya.

   Their study adopted both descriptive and explanatory research designs whereby the target population was 1,604 manufacturing firms that are classified into various segments and located across the country. A proportionate sample size of 320 firms was selected using stratified sampling technique. The study established that all the five logistics management dimensions significantly influenced performance. Their study provided evidence that transport management, inventory management, order process management and information flow management are significantly and positively influenced by the performance of manufacturing firms in Kenya. This implied that an increase in performance of manufacturing firm was likely through embracing transport management practices within logistics management. The study recommended that managers in manufacturing firms in Kenya should incorporate transport management, inventory management, order process management and information flow management in their operations processes such as procurement of raw materials and distribution of products in order to increase overall cost efficiency, enhanced market share, and reduced lead time thereby impacting positively on their performance.

5) The fifth research hypothesis, **$H_0$5**: Supply chain integration has no significant moderating effect on supply chain management practices and performance of tea subsector industry in Kenya (β = 0.141; t = 3.156; p < 0.002) for primary data, (β = 0.340; t = 5.738; p < 0.002) for secondary data,

was rejected and conclusion made that there was a significant moderating effect of supply chain integration on supply chain management practices and performance of tea subsector industry in Kenya. This is consistent with Krishnapriya and Rupashree (2014) who sought to determine supply chain integration - a competency-based perspective in organizational performance. They used individual competencies, organizational competencies and inter-organizational competencies as indicators of supply chain integration competency. They concluded that by leveraging the capabilities required for higher integration, each member in the supply chain can achieve superior performance. Collaborating Operations Management with HRM can help Supply Chain partners in developing resilient inter firm relationships and creating knowledge sharing routines. Furthermore, it is becoming imperative to strategically build competencies internally as well as externally to ensure sustainable performance at all levels.

Table 4.137: Aggregate Summary of Research Hypotheses Testing Results

Research Hypotheses (Null Hypotheses)	β	t	Sig	Comments
Aggregate Summary of Primary Data Results Hypotheses				
H_01: Supplier relationship management practice has no significant effect on performance of tea subsector industry in Kenya.	.198	4.050	.000	**Reject H_01**
H_02: Value chain management practice has no significant effect on performance of tea subsector industry in Kenya.	.201	3.852	.000	**Reject H_02**
H_03: Customer Relationship Management practice has no significant effect on performance of tea subsector industry in Kenya.	.152	2.868	.005	**Reject H_03**
H_04: Logistics management practice has no significant effect on performance of tea subsector industry in Kenya.	.505	9.873	.000	**Reject H_04**
H_05: Supply chain integration has no significant moderating effect on supply chain management practices and performance of tea subsector industry in Kenya.	.141	3.156	.002	**Reject H_05**
Aggregate Summary of Secondary Data Results Hypotheses				
H_01: Supplier relationship management practice has no significant effect on performance of tea subsector industry in Kenya.	.281	5.968	.000	**Reject H_01**
H_02: Value chain management practice has no significant effect on performance of tea subsector industry in Kenya.	.345	8.639	.000	**Reject H_02**
H_03: Customer Relationship Management practice has no significant effect on performance of tea subsector industry in Kenya.	.113	2.811	.005	**Reject H_03**
H_04: Logistics management practice has no significant effect on performance of tea subsector industry in Kenya.	.239	5.848	.000	**Reject H_04**
H_05: Supply chain integration has no significant moderating effect on supply chain management practices and performance of tea subsector industry in Kenya.	.340	5.738	.000	**Reject H_05**

4.13 Conclusions on Secondary Data Results

Secondary data was analyzed in order to cross-validate the results of primary data. While primary data focused on original evidence through data collection from tea subsector firms in Kenya using a questionnaire, secondary data focused on drawing conclusions based upon analyzing existing records from tea subsector industry in Kenya using the data collection sheets. The results of secondary data analysis were in tandem with the results of primary data analysis. Regression analysis was carried out on the secondary data and the null hypotheses tested. All the null hypotheses were rejected, and hence alternative hypotheses accepted.

This indicated that supply chain management practices indicators which were supplier relationship management practice, customer relationship management practice, value chain management practice, logistics management practice as the independent variables, supply chain integration as the moderating variable had a statistically significant and positive effect in performance of tea subsector industry in Kenya. The results of the secondary data analysis were in tandem with the results of the primary data analysis findings that supply chain management practices have a positive and significant effect on performance of tea subsector industry in Kenya. Hence, the secondary data was able to cross-validate and support the findings of the primary data analysis results.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the research findings and provides conclusions and recommendations of the research study based on the general and specific objectives of the study. The conclusions are drawn from the data analyzed in chapter four and the findings thereof, while recommendations for action and suggestion for future research have been based on the conclusions made. These conclusions and the recommendations presented are categorized based on the objectives of the study which sought to assess the Effect of supply chain management practices on performance of tea subsector industry in Kenya.

5.2 Summary of the Findings

The general objective of this study was to assess the Effect of supply chain management practices on performance of tea subsector industry in Kenya. In particular, the specific objectives of the study were; to establish the effect of supplier relationship management practice on performance of tea subsector industry in Kenya, to determine the effect of value chain management practice on performance of tea subsector industry in Kenya, to assess the effect of customer relationship management practice on performance of tea subsector industry in Kenya, to evaluate the effect of logistics management practice on performance of tea subsector industry in Kenya and to determine the moderating effect of supply chain integration on supply chain management practices and performance of tea subsector industry in Kenya.

The study collected, analyzed and presented data in chapter four with specific attention given to the objectives of the study and the research questionnaire responses which were used as units of analysis. Theoretical and empirical literature were used to compare the results of the study with previous research studies by other authors in topics related to research study. The study targeted all entities in the tea subsector industry in Kenya which comprised of 107 tea factories, 75 tea packers and 72 tea exporters. The study therefore had a target population of 254 tea subsector industry firms which were used to derive a sample size of 155 firms using Slovin's formula. The study chose 2 respondents in the rank of top management and middle level management employees from every firm sampled of 155 firms to make a sample of 310 respondents. A pilot study was conducted on 16 firms to test reliability of the research instrument using a sample of 31 respondents, selected randomly from the firms. In line with the findings presented and discussed in the previous chapter, the study derived the following findings.

5.2.1 Effect of Supplier Relationship Management Practices on Performance

The first objective of the study sought to establish the effect of supplier relationship management practice on performance of tea subsector industry in Kenya. The indicators of supplier relationship management practice were collaboration initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives while measures of performance of tea subsector industry in Kenya were firm profit margins, market share index and operational efficiency. Both descriptive and inferential statistical methods were used to arrive at the results.

From the research findings, collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives had a statistically significant effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Findings on correlation and regression analysis indicated that there was a statistically significant and strong positive correlation effect between measures of supplier relationship management practice (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Generally the supplier relationship management practice indicators (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) were found to be statistically significant in explaining the effect of supplier relationship management practice on performance of tea subsector industry in Kenya.

5.2.2 Effect of Value Chain Management Practice on Performance

The second objective of the study sought to determine the effect of value chain management practice on performance of tea subsector industry in Kenya. The indicators of value chain management practice were product diversification, product innovation and product process management while measures of performance of tea subsector industry in Kenya were firm profit margins, market share index and operational efficiency. Both descriptive and inferential statistical methods were used to arrive at the results.

From the research findings, product diversification, product innovation and product process management had a statistically significant effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Findings on correlation and regression analysis indicated that there was a statistically significant and strong positive correlation effect between measures of value chain management practice (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Generally the value chain management practice indicators (product diversification, product innovation and product process management) were found to be statistically significant in explaining the effect of value chain management practice on performance of tea subsector industry in Kenya.

5.2.3 Effect of Customer Relationship Management Practice on Performance

The third objective of the study sought to assess the effect of customer relationship management practice on performance of tea subsector industry in Kenya. The indicators of customer relationship management practice were customer product value satisfaction level and customer communication channels while measures of performance of tea subsector industry in Kenya were firm profit margins, market share index and operational efficiency. Both descriptive and inferential statistical methods were used to arrive at the results.

From the research findings, customer product value satisfaction level and customer communication channels had a statistically significant effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Findings on correlation and regression analysis indicated that there was a statistically significant and strong positive correlation effect between measures of customer relationship management practice (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Generally the customer relationship management practice indicators (customer product value satisfaction level and customer communication channels) were found to be statistically significant in explaining the effect of customer relationship management practice on performance of tea subsector industry in Kenya.

5.2.4 Effect of Logistics Management Practice on Performance

The fourth objective of the study sought to evaluate the effect of logistics management practice on performance of tea subsector industry in Kenya. The indicators of logistics management practice were transport management systems, inventory management systems and distribution channel network while measures of performance of tea subsector industry in Kenya were firm profit margins, market share index and operational efficiency. Both descriptive and inferential statistical methods were used to arrive at the results.

From the research findings, transport management systems, inventory management systems and distribution channel network had a statistically significant effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Findings on correlation and regression analysis indicated that there was a statistically significant and strong positive correlation effect between measures of logistics management practice (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Generally the logistics management practice indicators (transport management systems, inventory management systems and distribution channel network) were found to be statistically significant in explaining the effect of logistics management practice on performance of tea subsector industry in Kenya.

5.2.5 Effect of Supply chain integration on Performance

The fifth objective of the study sought to determine the moderating effect of supply chain integration on supply chain management practices (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya. Both descriptive and inferential statistical methods were used to arrive at the results. From the research findings, the moderated regression analysis showed that there was a statistically significant moderation effect of supply chain integration on supply chain management practices (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya.

Findings on correlation and regression analysis indicated that there was a statistically significant and strong positive correlation effect between the moderating variable supply chain integration, supply chain management practices measures(supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. Generally, supply chain integration as a moderating variable was found to be statistically significant in explaining the Effect of supply chain management practices on performance of tea subsector industry in Kenya.

5.3 Conclusions

From the research summary findings, the study made the following conclusions as shown below based on the research study objectives;

5.3.1 Supplier Relationship Management Practice and Performance

It can be concluded that supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had a statistically significant and positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. This was attributed to firms in the tea subsector industry deploying collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives in order to enhance supplier relationship management and overall performance of tea subsector industry in Kenya.

5.3.2 Value Chain Management Practice and Performance

It can be concluded that value chain management practice measures (product diversification, product innovation and product process management) had a statistically significant and positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. This was attributed to firms in the tea subsector industry deploying product diversification, product innovation and product process management in order to enhance value chain management and overall performance of tea subsector industry in Kenya.

5.3.3 Customer Relationship Management Practice and Performance

It can be concluded that customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had a statistically significant and positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. This was attributed to firms in the tea subsector industry deploying strategies to deal with customer product value satisfaction level and customer communication channels in order to enhance customer relationship management and overall performance of tea subsector industry in Kenya.

5.3.4 Logistics Management Practice and Performance

It can be concluded that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had a statistically significant and positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. This was attributed to firms in the tea subsector industry deploying strategies to deal with transport management systems, inventory management systems and distribution channel network in order to enhance logistics management and overall performance of tea subsector industry in Kenya.

5.3.5 Supply chain integration and Performance

It can be concluded that supply chain integration had a statistically significant and positive correlation effect on all supply chain management practice measures (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between the moderating variable, supply chain integration, all the independent variables(supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency.

The research study concluded that there was a statistically significant relationship between the moderating variable, supply chain integration, all the independent variables (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency.

5.4 Management Recommendations

The study recommends the following:

5.4.1 Supplier Relationship Management Practice and Performance

It was concluded that supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) had a statistically significant and positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between supplier relationship management practice measures (collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. This was attributed to firms in the tea subsector industry deploying collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives in order to enhance supplier relationship management and overall performance of tea subsector industry in Kenya.

Therefore, it can be recommended that managers should be able to enhance their supplier relationship management practices through ensuring high supply chain collaboration at all levels between suppliers and customers that will contribute significantly to their competitive advantage and improved performance of the tea subsector industry. The tea subsector firms should create extensive coordination with suppliers in joint planning and forecasting, involving them in product development process and having clear policy on managing the supplier relationships. The study further recommends that tea subsector firms should put in place policies that emphasize best supplier relationship management practices. This includes involving suppliers in deciding the best way to resolve a conflict, training key suppliers on the needs of the organization, involving suppliers at all stages during new product development, supplier development programs, network meetings with suppliers, measurement of supplier performance and communication of the results to them and enhancing capabilities to enhance data and communication flow hence aiding the performance of the tea subsector industry in Kenya.

5.4.2 Value Chain Management Practice and Performance

It was concluded that value chain management practice measures (product diversification, product innovation and product process management) had a statistically significant and positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between value chain management practice measures (product diversification, product innovation and product process management) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. This was attributed to firms in the tea subsector industry deploying product diversification, product innovation and product process management in order to enhance value chain management and overall performance of tea subsector industry in Kenya.

The study therefore recommends that the Kenyan tea sub sector industry needs to embrace product diversification and increase their product range to other tea types like green teas, orthodox teas white teas thus increasing its tea product lines and therefore compete favorably in the international markets and further increase its tea revenues. Further regarding process management, the study recommends such practices as cross functional teams in decisions regarding processes, documentation that identifies cost drivers in processes, enhancing data flow through the manufacturing process within the firm, adherence to production schedules, quality assurance as opposed to inspection at the end of the process and improvement of visibility between manufacturing operations and customer orders. The study further recommends the tea subsector industry management to invest in innovation hubs so as to come up with various innovations on enhanced tea quality thus improving performance of tea subsector industry in Kenya.

5.4.3 Customer Relationship Management Practice and Performance

It was concluded that customer relationship management practice measures (customer product value satisfaction level and customer communication channels) had a statistically significant and positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between customer relationship management practice measures (customer product value satisfaction level and customer communication channels) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. This was attributed to firms in the tea subsector industry deploying strategies to deal with customer product value satisfaction level and customer communication channels in order to enhance customer relationship management and overall performance of tea subsector industry in Kenya.

Thus the study therefore recommends that the tea subsector industry firms in Kenya should embrace customer relationship management practices that will foster performance of tea subsector industry in Kenya. Such practices should include ways to measure customer product value satisfaction level and customer communication channels so as to get feedback necessary for product design input and quality improvement. The study also recommends that the management of the tea subsector industry in Kenya should adopt customer relationship management for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction. It should be noted that committed relationships are the most sustainable advantage to tea firms because of their inherent barriers to competition.

5.4.4 Logistics Management Practice and Performance

It was concluded that logistics management practice measures (transport management systems, inventory management systems and distribution channel network) had a statistically significant and positive correlation effect on performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between logistics management practice measures (transport management systems, inventory management systems and distribution channel network) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. This was attributed to firms in the tea subsector industry deploying strategies to deal with transport management systems, inventory management systems and distribution channel network in order to enhance logistics management and overall performance of tea subsector industry in Kenya.

The study therefore recommends the inclusion of inventory management systems in the strategic plans of the tea subsector industry firms in Kenya. The study also recommends that managers in the tea subsector industry firms in Kenya should incorporate transport management systems and distribution channel network within the performance strategies of their firms so as to ensure smooth and efficient flow of tea products across the supply chain network and hence eventually to the final consumer both locally and internationally. This will significantly improve the performance of tea subsector industry in Kenya thus increasing firm profit margins, market share index and operational efficiency.

5.4.5 Supply chain integration and Performance

It was concluded that supply chain integration had a statistically significant and positive correlation effect on all supply chain management practice measures (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The regression and correlation results revealed a statistically significant positive linear relationship effect between the moderating variable, supply chain integration, all the independent variables (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency.

The research study concluded that there was a statistically significant relationship between the moderating variable, supply chain integration, all the independent variables (supplier relationship management practice, value chain management practice, customer relationship management practice and logistics management practice) and performance of tea subsector industry in Kenya linked to firm profit margins, market share index and operational efficiency. The study recommends the tea subsector industry to enhance supply chain integration by having individual's competency, internal integration competency and external integration competency enhanced through training and benchmarking on firms with sophisticated supply chain networks both locally and internationally such as Toyota, Coca Cola etc. so as to ensure performance of tea subsector industry in Kenya.

5.5 Policy Recommendations

Supply chain management practices have emerged as sustainable competitive advantage strategies for major firms especially those in the goods and products industry. This study would assist the tea subsector industry management and policy makers to deploy best supply chain management practices that can guarantee best returns in terms of firm profit margins, market share index and operational efficiency. This will to a great extent lead to growth of the tea subsector industry both locally and internationally thus making sure that stakeholders in the tea subsector industry such as farmers, brokers, packers, exporters etc. reap the benefits of supply chain management practices and performance of tea subsector industry in Kenya.

5.6 Areas for Further Research

This research provides empirical evidence on Effect of supply chain management practices on performance of tea subsector industry in Kenya. This research, however, concentrated on only four aspects of supply chain management practices namely; supplier relationship management practice(collaborative initiatives, planning and forecasting initiatives and coordination of resource sharing initiatives),value chain management practice(product diversification, product innovation and product process management),customer relationship management practice(customer product value satisfaction level and customer communication channels), and logistics management practice(transport management systems, inventory management systems and distribution channel network).

There are other aspects of supply chain management practices which can only be explored through further research such as information sharing, warehousing management, order processing etc. so as to determine their effect on performance of tea subsector industry in Kenya. This study focused only on supply chain management practices in Kenya, more research should also be carried out on this topic in a different country so as to compare the findings in this research especially to extend the research on perspectives of supply chain management related practices and to cover more geographical locations to other countries especially in Africa.

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APPENDICES

Appendix I: Letter of Introduction

JKUAT Mombasa Campus
P.O. Box 81310-80103
Mombasa.
2nd March, 2018
Email: amatuga88@gmail.com
Dear Sir/Madam,

PERMISSION TO COLLECT DATA- EFFECT OF SUPPLY CHAIN MANAGEMENT PRACTICES ON PERFORMANCE OF TEA SUBSECTOR INDUSTRY IN KENYA

I am a post graduate student at the Jomo Kenyatta University of Agriculture and Technology, Mombasa Campus, studying Doctorate of Supply Chain Management (PhD) degree.

In partial fulfillment of the requirement for the stated degree, I am conducting a study entitled "**Effect of supply chain management practices on performance of tea subsector industry in Kenya".** You have been selected for this study and would greatly appreciate if you can complete the attached questionnaire. Your willingness to participate in this survey is highly appreciated and your honest response in answering the questions would be greatly appreciated. All information obtained will be treated with the utmost confidentiality and shall be used purely for academic purposes. Findings of the study shall be made available upon your request.

Yours faithfully,

Amon Matuga

Cell no: 0727917907

Appendix II: Questionnaire

Please fill this questionnaire openly and honestly. Confidentiality will be strictly adhered to, and there will be no mention of your personal name. Please provide the following information as required.

SECTION A: DEMOGRAPHICS

A1: Please indicate your position in the tea subsector industry

	Job Title	**(Please Tick the Appropriate box)**
1	C.E.O	
2	General Manager	
3	Finance Manager	
4	Operations Manager	
5	Supply Chain Manager	

A2: Please indicate your education level.

	Education Level	**(Please Tick the Appropriate box)**
1	Certificate	
2	Diploma	
3	Degree	
4	Masters	
5	Doctorate	

A3: Please indicate your managerial experience in the tea subsector industry?

	Managerial Experience	**(Please Tick the Appropriate box)**
1	Between 1-5 Years	
2	Between 6-10 Years	
3	Above 10 Years	

A4 Please indicate your company classification in the tea sub-sector industry

	Classification	**(Please Tick the Appropriate box)**
1	Tea Factory	
2	Tea Exporter	
3	Tea packer	

A5 Please indicate your firm's annual turnover.

	Firm's Annual Turnover	**(Please Tick the Appropriate box)**
1	Less than1.0 Billion	
2	Between 1.0 to 5.0 Billion	
3	Between 6.0 to 10 Billion	
4	Above 10 Billion	

A6 Please indicate the firm's industry experience.

	Firm's Industry Experience	**(Please Tick the Appropriate box)**
1	Below 1 Year	
2	Between 1-5 Years	
3	Between 6-10 Years	
4	Above 10 Years	

SECTION B: SUPPLIER RELATIONSHIP MANAGEMENT PRACTICE (SRMP)

The extent to which supplier relationship management affects the performance of tea subsector industry in Kenya.	**Strongly Disagree (1)**	**Disagree**	**Neither Agree**	**Agree**	**Strongly Agree**
<u>Collaborative Initiatives (CI)</u> **B1.** My company has long-term procurement relationship with it key suppliers.					
B2. Our company has a well established strategic partnership with major suppliers					
B3. Supplier collaborative initiatives has enabled my company to venture into the global market.					
<u>Planning and Forecasting Initiatives (PFI)</u> **B4.** My company involves our suppliers in the joint planning and forecasting process					
B5. There is standardized means of communication on planning and forecasting across all functions in my company and our suppliers					
B6. Our company shares inventory level information with major suppliers for planning purposes in replenishing.					
<u>Coordination of Resource Sharing Initiatives (CRSI)</u>					

B7. Major suppliers share their production capacity information with our company.					
B8. Major suppliers share their production schedule information with our company.					
B9. Our company shares production plan information with major suppliers.					

SECTION C: VALUE CHAIN MANAGEMENT PRACTICE (VCMP)

The extent to which value chain management practice affects the performance of tea subsector industry in Kenya.	Strongly Disagree (1)	Disagree	Neither Agree	Agree	Strongly Agree
Product Diversification(PD) **C1.** We have different varieties of tea brands in export markets					
C2. Our tea quality production process meets the international standards for export markets					
C3.Product diversification has helped my company to take advantage of the evolution of markets and future growth opportunities.					
Product Innovation(PI) **C4.** My organization has introduced new different types of tea qualities for export markets					
C5. Our company involves major suppliers in the design stage of new products.					
C6. My organization has the capability needed to perform research and surveys in order to come up with new product ideas					
Product Process Management(PPM) **C7.** Our company uses cross functional teams in product process improvement and management.					
C8. Our company uses cross functional teams in new product improvement and processing.					
C9. Our company helps major suppliers to improve their process to better meet our needs.					

SECTION D: CUSTOMER RELATIONSHIP MANAGEMENT PRACTICE (CRMP)

The extent to which customer relationship management practice affects the performance of tea subsector industry in Kenya.	Strongly Disagree (1)	Disagree (2)	Neither Agree (3)	Agree (4)	Strongly Agree (5)
Customer Product Value Satisfaction Level(CPVSL) **D1.** Our company follows up feedback from our major customers on product value satisfaction level					
D2. Our company's major customers share Point of Sales (POS) information with regard to customer product value satisfaction level.					
D3. Customer satisfaction criterion is used to evaluate the performance of our company.					
Customer Product Design Input (CPDI) **D4.** My company uses market research to solicit customers' inputs in our products design.					
D5. My company has developed feedback mechanisms from customers on product design.					
D6. Customer product design inputs are vetted by quality assurance departments before implementing any decisions.					
Customer Communication Channels (CCC) **D7**.My company provides effective communication channels to our major customers.					
D8. My company has fully invested in state of art information communication system to enable information sharing between the company and customers.					
D9.There are clear customer communication channels on order fulfillment along the supply chain.					

SECTION E: LOGISTICS MANAGEMENT PRACTICE (LMP)

The extent to which logistics management practice affects the performance of tea subsector industry in Kenya.	Strongly Disagree (1)	Disagree (2)	Neither Agree (3)	Agree (4)	Strongly Agree (5)
Transport Management Systems(TMS) **E1.** My company has developed an efficient transport					

management network system.					
E2. Third party transport service providers help the firm in faster movement of goods to the customers					
E3. Our company shares the transport and logistics - related operating data from one department to other departments.					
Inventory Management Systems(IMS) **E4.** My company has deployed vendor management inventory systems to ensure efficient management of inventory					
E5. My company has developed a forecasting model that improves inventory planning and management					
E6. Our company shares the level of inventory from one department to other departments.					
Distribution Channel Network(DCN) **E7.** The distribution network in place allows efficient lead-time thus timely distribution delivery.					
E8. My company has got a well distributed warehousing networks across the country.					
E9. The distribution and warehousing facilities are adequate to allow sufficient storage of inventory					

SECTION F: SUPPLY CHAIN INTEGRATION (SCIMP)

The extent to which supply chain integration affects the performance of tea subsector industry in Kenya.	**Strongly Disagree (1)**	**Disagree (2)**	**Neither Agree (3)**	**Agree (4)**	**Strongly Agree (5)**
Individual Integration Competency (IIC) **F1.** Continuous monitoring of staff productivity in supply chain network enhance the efficiency of the supply chain.					
F2. Staff are trained on how to use enterprise application to communicate across the supply chain network hence ensuring efficiency					
F3. Our top leadership support individual development in technology and innovations so as to enhance supply chain integration.					
Internal Integration Competency(IINC) **F4.** Performance metrics of our company are shared across our company's departments.					
F5. Our company uses cross functional teams in process improvement.					
F6.Our company has put mechanisms in place to integrate and connect all internal functions from raw material management through production, shipping and sales.					

External Integration Competency(EIC) **F7.**Our company exchanges information with our major suppliers through information networks.					
F8. We have partnered with major wholesale distributors to ensure our products reach the end-user both locally and internationally					
F9. Our company shares demand forecast information with major suppliers.					

SECTION G: PERFORMANCE

The extent to which supply chain management practices affects the performance of tea subsector industry in Kenya.	**Strongly Disagree (1)**	**Disagree (2)**	**Neither Agree (3)**	**Agree (4)**	**Strongly Agree (5)**
Firm Profit Margins **G1**. My firm's profit margin has improved due to enhanced supply chain management practices.					
G2. Revenues from the operations of my firm have been increasing every year due to supply chain management practices.					
G3. Our profit margins are informed by stronger customer loyalty which increases levels of repeat purchasing hence profits					
Market Share Index **G4.** Our firm has acquired a greater market share as a result of a well-coordinated supply chain management network.					
G5. We regularly monitor the market share of the organization through the ordering levels of the distributors and number of branches opened both locally and internationally.					
G6.The number of customers served by my organization has been on a steady increase every year due to sophisticated supply chain network.					
Operational Efficiency **G7**. My firm has established a well-coordinated supply chain network to ensure operational efficiency in delivering customer demand.					
G8. Our company operational efficiency has been enhanced due to computerization and collaboration with major suppliers.					
G9. My firm has got the capability to reduce the lead time between order receipt and customer delivery due to enhanced supply chain management practices.					

THANK YOU

Appendix III: Secondary Data Collection Sheet

Firm's Annual Turnover	2015	2016	2017	2018	2019
Less than1.0 Billion					
Between 1.0 to 5.0 Billion					
Between 6.0 to 10 Billion					
Above 10 Billion					
Less than1.0 Billion					
Between 1.0 to 5.0 Billion					
Variables Indicators					
Profit margins					
Market share index					
Operational efficiency (expenses/total revenue)					
Sales for the period					
Number of registered suppliers					
Demand forecast for the period					
Number of products produced by the firm					
New products innovated by the firm					
Customer product value satisfaction index					
Number of new customers over the period					
Inventories in the firm					
Number of registered distributors					
Number of warehouses (owned/outsourced)					
Number of registered transporters					
Number of supply chain specialist in a firm					
Number of collaborations over the period					

Appendix IV: List of Tea Factories

1) Arroket Factory - Sotik Tea Company Ltd
2) Chagaik Factory - UTK Ltd
3) Changana Factory - JFK Ltd
4) Changoi Tea Factory - WTK Ltd
5) Chebut Tea Factory Co. Ltd
6) Chelal Tea
7) Chemomi Factory - EPK Ltd
8) Chinga Tea Factory Co. Ltd
9) Chomogonday Factory - JFK Ltd
10) Eastern Produce Kenya Ltd
11) Eberege Tea Factory Co. Ltd
12) Gacharage Tea Factory Co. Ltd
13) Gachege Tea Factory Co. Ltd
14) Gathuthi Tea Factory Co. Ltd
15) Gatitu Tea Factory
16) Gatunguru Tea Factory Co. Ltd
17) Gianchore Tea Factory Co. Ltd
18) Githambo Tea Factory Co. Ltd
19) Githongo Tea Factory Co. Ltd
20) Gitugi Tea Factory Co. Ltd
21) Igembe Tea Factory Co. Ltd
22) Ikumbi Tea Factory Co. Ltd
23) Imenti Tea Factory Co. Ltd
24) Iriaini Tea Factory Co. Ltd
25) Itumbe Tea Factory Co. Ltd
26) James Finlay (Kenya) Ltd
27) Jamji Factory - UTK Ltd
28) Kagwe Tea Factory Co. Ltd
29) Kaimosi Tea Company Ltd - WTK Ltd
30) Kaisugu Tea Factory Co. Ltd
31) Kambaa Tea Factory Co. Ltd
32) Kangaita Tea Factory Co. Ltd
33) Kanyenyaini Tea Factory Co. Ltd
34) Kapchebet Tea Factory Ltd
35) Kapcheluch Tea Factory Ltd
36) Kapchorua Tea Company Ltd - WTK Ltd
37) Kapkatet Tea Factory Co. Ltd
38) Kapkoros Tea Factory Co. Ltd
39) Kapsara Tea Factory Co. Ltd
40) Kapset Tea Factory Co. Ltd
41) Kapsumbeiwa Factory - EPK Ltd
42) Kaptumo Tea Factory Co. Ltd
55) Kionyo Tea Factory Co. Ltd
56) Kipkebe Factory/ Kipkebe Ltd
57) Kipkoimet - EPK Ltd
58) Kiptagich Tea Estate Ltd
59) Kiru Tea Factory Co. Ltd
60) Kitumbe Factory - JFK Ltd
61) Kobel Tea
62) Koros Factory - JFK Ltd
63) Kuri Tea Factory Co. Ltd
64) Kymulot Factory - JFK Ltd
65) Litein Tea Factory Co. Ltd
66) Mabroukie Factory - UTK Ltd
67) Makomboki Tea Factory Co. Ltd
68) Mara Mara Instant - JFK Ltd
69) Maramba Tea Factory Ltd
70) Mataara Tea Factory Co. Ltd
71) Mettarora Factory - Sotik Highlands Tea Estate Ltd
72) Michimikuru Tea Factory Co. Ltd
73) Mogogosiek Tea Factory Co. Ltd
74) Momul Tea Factory Co. Ltd
75) Mudete Tea Factory Co. Ltd
76) Mungania Tea Factory Co. Ltd
77) Mununga Tea Factory Co. Ltd
78) Nandi Tea Estates - Nandi Hills
79) Ndima Tea Factory Co. Ltd
80) Nduti Tea Factory Co. Ltd
81) Ngere Tea Factory Co. Ltd
82) Ngorongo Tea Factory Co. Ltd
83) Njunu Tea Factory Co. Ltd
84) Nyamache Tea Factory Co. Ltd
85) Nyankoba Tea Factory Co. Ltd
86) Nyansiongo Tea Factory Co. Ltd
87) Nyayo Tea Zones Development. Corporation
88) Ogembo Tea Factory Co. Ltd
89) Ragati Tea Factory Co. Ltd
90) Rianyamwamu Tea
91) Rorok Tea Factory Co. Ltd
92) Rukuriri Tea Factory Co. Ltd
93) Sanganyi Tea Factory Co. Ltd
94) Saosa Factory - JFK Ltd
95) Savani Factory - EPK Ltd
96) Siret Tea Company Ltd
97) Tagabi Factory - UTK Ltd

43) Karirana Estates Ltd 44) Kathangariri Tea Factory Co. Ltd 45) Kebirigo Tea Factory Co. Ltd 46) Kepchomo Factory - EPK Ltd 47) Kericho Factory - UTK Ltd 48) Kiamokama Tea Factory Co. Ltd 49) Kibwari Ltd 50) Kiegoi Tea Factory Co. Ltd 51) Kimari Factory - UTK Ltd 52) Kimugu Factory - UTK Ltd 53) Kimunye Tea Factory Co. Ltd 54) Kinoro Tea Factory Co. Ltd	98) Tegat Tea Factory Co. Ltd 99) Theta Tea Factory Co. Ltd 100) Thumaita Tea Factory Co.Ltd 101) Tinderet Tea Estate (1989) Ltd 102) Tirgaga Tea Factory Co. Ltd 103) Tombe Tea Factory Co. Ltd 104) Toror Tea Factory Co. Ltd 105) Unilever Tea Kenya Ltd 106) Weru Tea Factory Co. Ltd 107) Williamson Tea Kenya Ltd

Source: Tea Board of Kenya (2019)

Appendix V: List of Tea Packers in Kenya

1 Africa Tea & Coffee Company 2 AlibhaiRamji (Msa) Ltd 3 Al Noor Feisal & Co. Ltd 4 Aspire Ventures 5 Auropack Industries Ltd 6 Bonti Enterprises 7 Bryson Express Ltd 8 Casids Services Ltd 9 Chai Trading Co. Ltd 10 Chamu Supplies 11 Changana (James Finlay) 12 Crestwood Logistics Ltd 13 Crystal Face Tea Traders 14 Danphill Holdings (K) Ltd 15 Discover Kenya Tea Ltd 16 Erigen Enterprises 17 Farmers Merchants Services 18 Gladhome Food Products Ltd 19 Gokal Beverages (EPZ) Ltd 20 Gold Crown Beverages (K) Ltd 21 Gold Crown Foods (EPZ) Ltd 22 Hayamba Tea Packers 23 Higher Tea Traders 24 Home Comforts 25 Image Crops & Commodities 26 Kapchebet Tea Factory 27 Karirana Estate Ltd 28 Kentea Emporium 29 Kent Tea Retailers 30 Kenya Nut Co. Ltd 31 Kenya Tea Packers Ltd 32 Kericho Crops & Commodities 33 Kericho Top Cup Tea Traders 34 Kingspride Tea Packers 35 Kiptagich Tea Estates Ltd 36 Kiremanditi General Merchants 37 Kirindo Traders Ltd 38 Kisun Tea Packers 39 Kumail Enterprises	40 Ladha Tea Enterprises 41 London Tea Packers 42 Majani Bora Packers 43 Matamu Holding Limited 44 Mau Tea Multi-Purpose Co-op Society Ltd 45 Mbaraki Port Warehouses Ltd 46 Melvin Marsh International Ltd 47 Mikuyu Investments 48 Neem Tea Packers 49 Nestle Kenya Ltd. 50 Ngorongo Tea Packers Ltd 51 Oasis Limited 52 One Touch Ltd 53 Pema Africa Holdings Ltd 54 Pen Pen Enterprises 55 Pen- pen Enterprises 56 Pinky Investments 57 Purid Enterprises 58 Safari Commodities Ltd 59 Sambagi General Traders 60 Saosa Instant Tea(James Finlay) 61 Sari Majani Co. Ltd 62 Sasini (K) 63 Simary Investment Co. Ltd 64 Sondhi Trading Ltd 65 Sotik Highlands - Arroket Factory 66 Sotik Highlands – Mettarora Factory 67 Summer Liner Co. Ltd 68 Sylodam International Limited 69 Taifa Quality Tea 70 Tanjal Tea Ltd 71 Tea land Tea Blenders Ltd 72 Timuka Tea Packers 73 Top Cup Kenya Limited 74 Tower Bridge Tea Co. Ltd 75 Tropical Crops & Commodities Ltd

Source: Tea Board of Kenya (2019)

Appendix VI: List of Tea Exporters in Kenya

1 Lipton ltd	37 Unilever Tea (K) ltd
2 Global tea & commodities Kenya ltd.	38 Trust tea traders ltd
3James Finlay (msa) ltd	39 Riotana trading limited
4 Lab international Kenya ltd	40 Mombasa tea traders ltd
5 Van rees b.v	41 Lutex limited
6 Cofftea agencies ltd	42 Aimco enterprises
7 Chai trading company ltd	43 Al-itihad(1998) limited
8Mombasa coffee ltd	44 Suwad enterprise limited
9 Juja Coffee Exporters ltd	45Swift commodities limited
10 M j. Clarke Ltd	46 Afribridge trade exporters ltd
11 Devchand Keshavji (K) ltd	47 Chamu supplies
12 Abbas Traders ltd	48 Trade circles ltd
13 Stansand (A) ltd	49 Tanjal tea company
14 Ranfer Teas Kenya ltd	50Ken Elbagara tea exporters
15 AlibhaiRamji (MSA) d	51KenteaGirinlin
16 Africa tea & coffee co. Ltd	52 Diamond tea exporters ltd
17 Al Emir limited	53 Top cup limited
18ShakabExport&Import co. Ltd	54 Janish Tea Ltd.
19 Lindop& company (Kenya) ltd	55 Crown Tea ltd
20 Imperial teas (K) limited	56 Rauf coffee & tea expo
21 Lula trading company	57 Altea trading
22 New star ventures	58 Mombasa packers ltd
23 Gokal beverages (EPZ) limited	59 Dover court tea
24Sardia international co. Ltd	60 Kipkebe ltd
25 Pwani hauliers	61 Chacha
26 Oriental tea expo ltd	62 Kigless
27 Summer liner co. Ltd	63 Afam
28 Kirindo tea packers	64 North
29 Maymun enterprises	65 Mount Kenya ltd
30 Sasini limited	66 Ristam tea limited
31 Black dew limited	67 Bico ltd
32 Gokal Trading Kenya ltd	68 Lexim
33 Jawai Tea limited	69 Ketex
34 Apt commodities limited	70 Sodhi
35 Tea rose ltd	71 Al tawakul
36 Gacal merchants ltd	72 Dieger

Source; Tea Board of Kenya (2019)

Appendix VII: Tea Factories that Participated in the Study

1) Changana Factory - JFK Ltd 2) Changoi Tea Factory - WTK Ltd 3) Chebut Tea Factory Co. Ltd 4) Chomogonday Factory - JFK Ltd 5) Eastern Produce Kenya Ltd 6) Eberege Tea Factory Co. Ltd 7) Gacharage Tea Factory Co. Ltd 8) Gachege Tea Factory Co. Ltd 9) Gathuthi Tea Factory Co. Ltd 10) Gatitu Tea Factory 11) Ikumbi Tea Factory Co. Ltd 12) Imenti Tea Factory Co. Ltd 13) Iriaini Tea Factory Co. Ltd 14) Itumbe Tea Factory Co. Ltd 15) James Finlay (Kenya) Ltd 16) Jamji Factory - UTK Ltd 17) Kagwe Tea Factory Co. Ltd 18) Kaimosi Tea Company Ltd - WTK Ltd 19) Kaisugu Tea Factory Co. Ltd 20) Kambaa Tea Factory Co. Ltd 21) Kangaita Tea Factory Co. Ltd 22) Kanyenyaini Tea Factory Co. Ltd 23) Kapchebet Tea Factory Ltd 24) Kapcheluch Tea Factory Ltd 25) Kapkatet Tea Factory Co. Ltd 26) Kapkoros Tea Factory Co. Ltd 27) Kapsara Tea Factory Co. Ltd 28) Kapset Tea Factory Co. Ltd 29) Kapsumbeiwa Factory - EPK Ltd 30) Kepchomo Factory - EPK Ltd 31) Kericho Factory - UTK Ltd 32) Kiamokama Tea Factory Co. Ltd 33) Kibwari Ltd	34) Kitumbe Factory - JFK Ltd 35) Kobel Tea 36) Koros Factory - JFK Ltd 37) Litein Tea Factory Co. Ltd 38) Mabroukie Factory - UTK Ltd 39) Makomboki Tea Factory Co. Ltd 40) Mara Mara Instant - JFK Ltd 41) Maramba Tea Factory Ltd 42) Mataara Tea Factory Co. Ltd 43) Momul Tea Factory Co. Ltd 44) Mudete Tea Factory Co. Ltd 45) Mungania Tea Factory Co. Ltd 46) Mununga Tea Factory Co. Ltd 47) Nandi Tea Estates - Nandi Hills 48) Ndima Tea Factory Co. Ltd 49) Nduti Tea Factory Co. Ltd 50) Ngere Tea Factory Co. Ltd 51) Rorok Tea Factory Co. Ltd 52) Rukuriri Tea Factory Co. Ltd 53) Sanganyi Tea Factory Co. Ltd 54) Saosa Factory - JFK Ltd 55) Savani Factory - EPK Ltd 56) Siret Tea Company Ltd 57) Tagabi Factory - UTK Ltd 58) Tegat Tea Factory Co. Ltd 59) Theta Tea Factory Co. Ltd 60) Thumaita Tea Factory Co.Ltd 61) Tombe Tea Factory Co. Ltd 62) Toror Tea Factory Co. Ltd 63) Unilever Tea Kenya Ltd 64) Weru Tea Factory Co. Ltd 65) Williamson Tea Kenya Ltd

Appendix VIII: Tea Packers that Participated in the Study

1 Africa Tea & Coffee Company	24 Ladha Tea Enterprises
2 Aspire Ventures	25 Matamu Holding Limited
3 Auropack Industries Ltd	26 Mau Tea Multi-Purpose Co-op Society Ltd
4 Casids Services Ltd	27 Mbaraki Port Warehouses Ltd
5 Chai Trading Co. Ltd	28 Melvin Marsh International Ltd
6 Chamu Supplies	29 Mikuyu Investments
7 Changana (James Finlay)	30 Neem Tea Packers
8 Crestwood Logistics Ltd	31 Pema Africa Holdings Ltd
9 Crystal Face Tea Traders	32 Pen Pen Enterprises
10 Danphill Holdings (K) Ltd	33 Safari Commodities Ltd
11 Discover Kenya Tea Ltd	34 Sambagi General Traders
12 Erigen Enterprises	35 Saosa Instant Tea(James Finlay)
13 Gold Crown Beverages (K) Ltd	36 Sari Majani Co. Ltd
14 Home Comforts	37 Sotik Highlands – Mettarora Factory
15 Image Crops & Commodities	38 Summer Liner Co. Ltd
16 Kapchebet Tea Factory	39 Sylodam International Limited
17 Karirana Estate Ltd	40 Taifa Quality Tea
18 Kentea Emporium	41 Tanjal Tea Ltd
19 Kent Tea Retailers	42 Tea land Tea Blenders Ltd
20 Kenya Nut Co. Ltd	43 Tropical Crops & Commodities Ltd
21 Kenya Tea Packers Ltd	44 Trust Tea Traders
22 Kericho Crops & Commodities	

23 Kericho Top Cup Tea Traders	45 Tru Tea Dealers 46 Western Tea Enterprises

Appendix IX: Tea Exporters that Participated in the Study

1 Lipton ltd	23 Unilever Tea (K) ltd
2 Global tea & commodities Kenya ltd.	24 Trust tea traders ltd
3James Finlay (msa) ltd	25 Riotana trading limited
4 Lab international Kenya ltd	26 Mombasa tea traders ltd
5 Van rees b.v	27 Lutex limited
6 Cofftea agencies ltd	28 Aimco enterprises
7 Chai trading company ltd	29 Al-itihad(1998) limited
8Mombasa coffee ltd	30 Suwad enterprise limited
9 Juja Coffee Exporters ltd	31Swift commodities limited
10 Stansand (A) ltd	32 Afribridge trade exporters ltd
11 Ranfer Teas Kenya ltd	33 Chamu supplies
12 AlibhaiRamji (MSA) d	34KenteaGirinlin
13 Africa tea & coffee co. Ltd	35 Diamond tea exporters ltd
14 Al Emir limited	36 Top cup limited
15ShakabExport&Import co. Ltd	37 Chacha
16 Lindop& company (Kenya) ltd	38 Kigless
17 Imperial teas (K) limited	39 Afam
18 Lula trading company	40 North
19 New star ventures	41 Mount Kenya ltd
20 Gokal beverages (EPZ) limited	42 Ristam tea limited
21Sardia international co. Ltd	43 Bico ltd
22 Pwani hauliers	44 Lexim

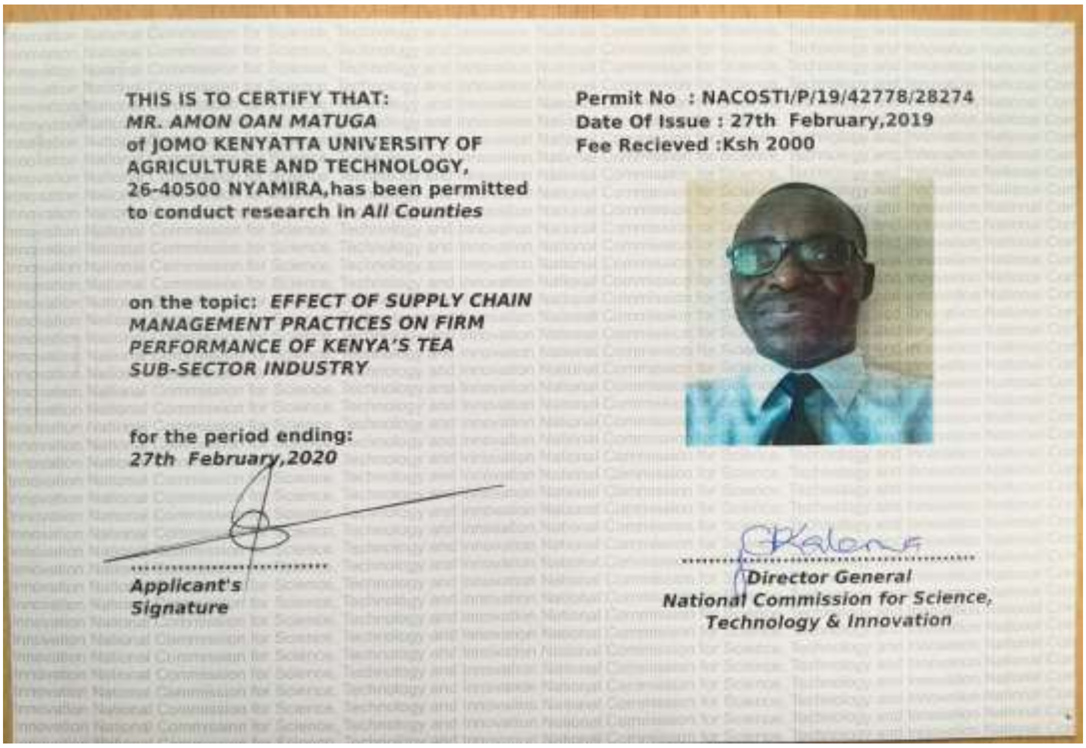
Appendix X: Tea Firms that Participated in the Pilot Study

Tea Factories
1. Chagaik Factory - UTK Ltd
2. Gianchore Tea Factory Co. Ltd
3. Kionyo Tea Factory Co. Ltd
4. Nyankoba Tea Factory Co. Ltd
5. Ogembo Tea Factory Co. Ltd
6. Kebirigo Tea Factory Co. Ltd

Tea Packers
1. Bryson Express Ltd
2. Gladhome Food Products Ltd
3.Hayamba Tea Packers
4.Ngorongo Tea Packers Ltd
5.Simary Investment Co. Ltd

Tea Exporters
1.Devchand Keshavji (K) ltd
2. Tanjal tea company
3.Janish Tea Ltd
4.Mombasa packers ltd
5.Dover court tea

Appendix XI: Research Permit from NACOSTI



THIS IS TO CERTIFY THAT:
MR. AMON OAN MATUGA
of JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, 26-40500 NYAMIRA, has been permitted to conduct research in *All Counties*

on the topic: ***EFFECT OF SUPPLY CHAIN MANAGEMENT PRACTICES ON FIRM PERFORMANCE OF KENYA'S TEA SUB-SECTOR INDUSTRY***

for the period ending:
27th February,2020

Permit No : NACOSTI/P/19/42778/28274
Date Of Issue : 27th February,2019
Fee Recieved :Ksh 2000

....
Applicant's Signature

....
Director General
National Commission for Science, Technology & Innovation