INFLUENCE OF SUPPLY CHAIN COLLABORATION ON PERFORMANCE OF DAIRY PROCESSING FIRMS IN KENYA

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Influence of Supply Chain Collaboration on Performance of Dairy Processing Firms 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

Special dedication to my loving husband Mr. Amos Rotich, our beloved children; Mercy, Kennedy, Timothy and Jeremy for their love and total support. I also dedicate to my parents Mr. and Mrs. Samuel Bett and father in-law Mr. Paul Sitienel for their prayers, encouragement and continued support throughout my studies. Wholeheartedly, I dedicate to my late mother inlaw who passed on 1st April, 2019 while I was in my final stage of the this study. Rest in peace my mother in love. You are the best family I could wish for.

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LIST OF ACRONYMS AND ABBREVIATIONS

AI	Artificial Insemination
CBE	Collection and Bulking Enterprises
CNT	Collaborative Network Theory
Com	Component
CSC	Computer Science Corporation
CSCMP	Council of Supply Chain Management Professionals
Cum	Cumulative
DB	Dairy Board
Deci	Decision
DS	Decision synchronization
FAO	Food Agricultural Organization of the United Nations
FL	Factor Loadings
GDP	Gross Domestic Product
IA	Incentive Alignment
Ince	Incentive
Infor	Supply chain information sharing
KCC	Kenya Cooperative Creameries Limited
KDB	Kenya Dairy Board
KMDP	Kenya Market-led Dairy Program
KMO	Kaiser-Meyer-Olkin
LB	lower Bound
Max	Maximum
Min	Minimum
Per	Performance
RBV	Resource Based View
Stat	Statistic

SC	Supply Chain
SCC	Supply Chain Collaboration
SCM	Supply Chain Management
SCMR	Supply Chain Management Review
SDP	Smallholder Dairy Project
SE	Std. Error
SET	Social Exchange Theory
SNV	Kenya Netherlands Development Organization
Std Dev	Std. Deviation
Team	Teamwork
TCE	Transaction Cost Economics
Tole	Tolerance
UB	Upper Bound
UHT	Ultra High Temperature
Var	Variance
Vet	Veterinary
V.P	Vice President

DEFINITION OF TERMS

Baraza: Refers to public assemblies or meetings that are usually held outdoors by state officials a range in size from huge rallies of several 100 women and men to smaller gatherings of 100 or 50 individuals seated on the grass in a countryside (Angelique, 1995).

Customers: Are persons who buy or consumes products of KCC (Government of Kenya, 2016

Dairy: Comprissed the individual or firms that involved in milk production, transportation, processing (packaging & storage) and delivery of milk products to final consumer through addition of maximum value at lowest possible cost (Muhammad, Akhter& Ullah, 2014).

Decision synchronisation: Joint decision making in planning and operational contexts (Simatupang & Sridharan, 2005)

Incentive alignment: Supply chain incentive alignment is co-developing systems to evaluate and publicize each other's performance, share costs for example loss on order changes, share benefits in form of saving on reduced inventory costs. (Simatupang & Sridharan, 2005)

Influence: The act or power of producing an effect without apparent exertion of force or direct exercise of command (Oteki, 2018).

Supply chain: Network of all the individuals, organizations, resources, activities and technology involved in the creation and sale of a product, from the delivery of source materials from the supplier to the manufacturer, through to its eventual delivery to the end user (Oteki, 2018).

Supply chain information sharing: Information sharing refers to the extent to which information is exchanged among members across the supply chain (Lee & Whang, 2004).

Kibbutz: A kibbutz is a cooperative Israeli farming community. The original philosophy of kibbutzim was somewhat utopian, a belief in the creation of a perfect, equal society, and based in socialist ideals of shared ownership and a communal lifestyle. The word comes from the Modern Hebrew qibbus, "a gathering."For the study are collective specialized farmers using high tech technology and cut most form of cooperative rural settlement in Israel. *https://public.oed.com/blog/philippine-english-in-the-september-2018-update/*

Milk: Thenormal, clean and fresh secretions, without any addition or subtraction, extracted from the udder of a healthy dairy cow and free from colostrum (Government of Kenya, 2016)

Milk Collection Center: Any place, premises or establishment where raw milk is received, collected, handled, stored or cooled and prepared for further transportation (Government of Kenya, 2016)

Milk product: Any product in which milk is an ingredients and includes any dairy foods made by modifying milk products, milk and milk products which have been aseptically processed and packaged or those which has been packaged and the processed by sterilization in a resort but not include dietary products or infant formula (Government of Kenya, 2016)

Milk Processing Plant: Any place, premises or establishment where milk or milk products are collected, handled, stored processed, packaged or prepared for distribution (Government of Kenya, 2016)

Milk transporter: A person who transports milk and milk products from a firm, a milk collection point, a milk collection center, a chilled raw milk storage tank to or from a milk processing plant, receiving station or transfer station or retail milk shop (Government of Kenya, 2016)

Performance: According to Chen and Paulraj (2004), a firm's performance can be measured in terms of financial performance and operational performance. Performance can be also measured by cost, quality, delivery and flexibility (Krause *et al.,* 2007).

In the study, milk processing firm performance was measured bymarket share, client satisfaction financial and competitive advantage

Suppliers: A supplier is a dairy farmer who supplies fresh milk to dairy processing firms (Government of Kenya, 2016)

Supply Chain Collaboration: Supplychaincollaboration is defined as a long-term relationship whereparticipants generallycooperate,shareinformation, and work together to plan and even modifytheirbusiness practices to improvejoint performance (Whipple et al., 2010). Supply chain collaboration is where two or more autonomous firms work jointly to plan and execute supply chain operations and the underlying objective being delivery of substantial benefits and advantages to the involved supply chain partners.

Supply Chain management:"SCM encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers.

In essence, supply chain management integrates supply and demand management within and across companies." (CSCMP, 2010)

Teamwork: Are collection of individuals, who highly communicate, directing their energies towards a known defined goal, which is achieved   through their joint complementary efforts, for the benefit of all   (Simatupang   & Sridharan 2005).

ABSTRACT

The purpose of the study was to analyze the influence of supply chain collaboration on performance of dairy processing firms in kenya.Specific objectives were:To determine the influence of Supply chain information sharing on performance of dairy processing firms in kenya, examine the influence of supply chain decision synchronization on performance of dairy processing firms in kenya, investigate the influence of supply chain incentive alignment on performance of dairy processing firms in kenya,assess the influence ofsupply chain teamwork on performance of dairy processing firms in kenya and evaluate theinfluencemediating of policies and regulations on the relationship between supply chain collaboration and performance of dairy processing firms in kenya.Milk processing firm performance was measured by market share, client satisfaction, profitability and competitive advantage.The study was guided by the following theories: Supply Chain Network Theory, Transaction Cost Economics Theory, Collaborative Network Theory and Strategy-Structure Theory. The target population comprised dairy farmers who supply fresh milk to Kenya Cooperative Creameries Limited and customers of processed milk products buying at Nakumatt retail supermarket. The study adopted a mixed research design which covered qualitativeand quantitative research.Qualitative research design applied to qualitative data in analysis of interviewed and quantitative research design was applied on quantitative data on the questionnaires.The study targeted 10,488 fresh milk suppliers and 13,906 customers of processed milk products.The sample size was 384 suppliers and 384 customers. Stratified sampling was used to select the suppliers of fresh milk and customers of the processed milk. The survey was carried out in top ten milk supplies of dairy processing firms . The study adopted Mugenda's formula to calculate the sample size. Structured questionnaire was used to collectprimary data while secondary data was obtain from published sources such books, journals and research done by other scholars. Data was analyzed with SPSS version 20. The research instrument was tested for reliability using Cronbach alpha. Data was analyzed using descriptive and inferential statistics. The correlation analysis was used to determine the strength and directions of association between two variables while Multiple Regression was used to determine whether a group of independent variables together predict a given dependent variable. Regression model summary with respect to supplier R=.634 (without mediator), R=.642 (with mediator). With respect to customer R=.627 (without mediator), R= .639 (with mediator). The coefficient of determination or measure of amount of variability ($R^{2)}$) with respect to supplier R^2=.402(without mediator) and R^2=.413 (with mediator); with respect to customer R^2=.393 (without mediator) and R^2=.399 (with mediator). All study variables had a positive and significant correlation with performance of dairy processing firms . The study recommends that dairy processing firms should exploit supply chain information sharing, incentive alignment, teamworkand mediation dairy boardpolicies and regulations as it proved to be crucial in the performanceof the dairy processing firms.The study also recommends realignment of dairy processingfirms policies with other collaborative partners as is driving force behind performance.

CHAPTER ONE

INTRODUCTION

1.1 Backgroundof the Study

Dairy industry worldwide has been changing due to more concerns over sustainability, consumer demands and greater efficiency requirements. Dairy sector continuously strive for efficiency due to the price and volume competition in various countries. Demand of milk has been dramatically increasing in the world, therefore the dairy sector should continuously look for innovative methodologies and solutions to address such trends and improve performance through certain mechanisms. Collaborationbetween supply chain partners is very critical in addressing the challenges inhibitingperformance of dairy processing firms(Muhammad, Akhter& Ullah, 2014).Privatization and restructuring of farms, processors, input suppliers and retailing companies has caused disruption in the exchange relationships in the dairy supply chain i.e long payment delays or nonpayment of delivered dairy products. Supply Chain Collaboration consists of members that have specific objectives and each partner has unique characteristics. Moreover, supply chain partners influence on the decision making or supply chain activities of others. Generally stronger members can get more benefits from the supply chain in respect of profit gains from lower cost and enhanced innovative capacity leading to clients satisfaction. Further to this to this membership there is increased value leading to competitive advantage. The Kenyan dairy industry is dominated by three major dairy processors: New KCC, Brookside and SpinKnit.These three dairy processors have countrywide coverage interms of milk collection, sales and distribution.These processors also have the capacity to producea wide range of dairy products.However the NewKCC is the only process or with milk powdering capabilities and is a public entity supported by the government of kenya.The rest of the dairy industry is made up of medium or small-scale processors, with limited product range and milk collection and distribution networks (KDB,2018).

Recently supply chain has been defined from operation management point of view.

According to that view, performance is based on resources categories such as (finance, human, organization, innovation, technology, finance and production) and performance produced in the categories of controls as (pricing, inventory operation, and information, channel or distribution structure). In this way these kinds of performance categories have produced power positions of dominated and dominant, interdependent and independent in the structure of supply chain (Muhammad, Akhter& Ullah, 2014). The present study performance was measured by market share, client satisfaction, profitability and competitive advantage. In order for the industry to strive to remain competitive through supply chain collaboration, an understanding of the complexity and dynamism of performance of dairy processing firms has potential to provide the platform upon which the success or failure of this important industry could be judged. Challenges faced by the dairy firms in Kenya could be addressed if managers of firms were made aware of influence of supply chain collaboration onperformance of dairy processing firms in kenya and how they could impact on overall performance of these firms. This study has focused on analysis of dairy processing firms in developing countries specifically in Kenya and analysed the influence of supply chain information sharing, supply chain decision sychronisation, supply chain incentive alignment and supply chain teamwork.

1.1.1   Global perspective of Supply chain Collaboration and Performance

A study done in Pakistan by Al.Doori (2019) on the Impact of Supply Chain Collaboration on Performance in Automotive Industry notedthat "to compete globally, it is essential to include all members and performance should be measured on supply chain level". Firms with better supply chain partners can be efficient and effective. Thus, for better understanding, it is essential to understand all members of supply chain that has either indirect or direct effects of performance.Another study in Italy by León-Bravo et al (2017) on collaboration for sustainability in the food supply chain positthat "improving sustainability in the food industry requires engagement of actors worldwide, in order to cope with the challenges of consumer expectations, limited resources and international policies and regulations".Cao and Zhang (2010) in a study entitled "a firm's perspective of supply chain collaborative advantage" in United States of America (USA) have stated

that results of the structural analysis indicate that supply chain collaborative advantage indeed has a bottom-line influence on firm performance.

Pakistan dairy sector plays a very significant role in the development of national economy and its value of contributions is more than wheat and cotton sectors combined. Pakistan livestock sector contributed 55.4% to the agricultural value added within the chain and about 11.9% to the gross domestic product (GDP) during fiscal year 2012-13. Milk production contributes in the livelihood, nutrition, and food security in that country (Muhammad, Akhter& Ullah, 2014). Another study by Simatupang and Sridharan (2005) highlighted the effects of decision synchronisation through a firm survey in New Zealand. Their findings suggested that decision synchronisation has a significant impact on collaboration level and operational performance (fulfilment, inventory and responsiveness). Another similar study was conducted with US manufacturing firms by Cao et al., (2010); the findings suggested that decision synchronisation had a positive impact on collaboration, the same as in New Zealand. Firms need to identify the need of supply chain collaborations as empirical evidence has shown the impacts on the performance.Forum discussion paperdone by Banomyong (2018) noted many researchers studied supply chain collaboration and its benefits since the early 2000s (Zacharia, Nix &Lusch 2011; Lehoux,Amours &Langevin 2014). Firms that embrace supply chain collaboration can improve their firms performance in form of clients satisfaction, increased market share, gain more revenue and competitive advantage while at the same time enhance the overall performance of firms.

In the UK, it was found that hotels collaborated with the local suppliers. Such collaborative activities include building long-term commitment, providing training and technical support. Collaborating with supply chain partners was found to enable the delivery of the required quality and quantity of products (Font et al., 2008). In Australia a study done by March and Wilkinson (2009) found that a hotel had successfully collaborated with both travel agencies and tour operators by sharing their marketing information. The study forecast on fresh dairy supply chain and the mediation of policies and regulation on the relationship between variables.As firms seek to remain competitive

in today's marketplace, they often look externally for assistance in meeting customer expectations. One way this can be achieved is through supply chain collaboration.

Worldwide companies have successfully benefited from collaboration (Cooke, 2011) and many others have struggled or even failed to do so (Benavides & de Eskinazis, 2012). Facing uncertain environments, firms have strived to achieve greater supply chain collaboration to leverage the resources and knowledge of their suppliers and customers. For instance, Hewlett-Packard (HP), while collaborating with one of its major resellers achieved improvement in fill rate, increase in inventory turnover and sales. Similarly, Walmart attained mutual benefits of collaborative planning, forecasting and replenishment by collaborating with Warner-Lambert (Parks, 2001). Collaborative practices in Supply Chain Management (SCM) have established itself as successful and sustainable business operations (Attaran &Attaran, 2007).Studies have shown that collaboration offers promise for improved supply chain performance in several core areas, including increased sales, improved forecasts, more accurate and timely information, reduced costs, reduced inventory, and improved customer service (Angulo, Nachtman & Waller, 2004). Many collaboration dynamics have been identified as being important in improving supply chain performance. Collaboration may share large investments, pool risks, and share resources, reasoning growth and return on investments. Collaboration is the driving force behind effective supply chain management and, as such, it can be considered as a core capability. However the scenario can be changed depending on the policies, regulations and mandates of relevant institutions. Collaborative supply chain initiatives continue to be developed and gain prominence based on closer inter-enterprise relationships and enhanced information exchange, improved quality of decision-making, reduce demand uncertainty and ultimately improve the performance of firms. Collaborative relationships helped firms to share information and have joint planning resources. Despite promising results from collaborative initiatives, the implementation in general has been a challenge to Dairy Processing Firms because policies and regulations are unpredictable.Fawcett, Magnan and McCarter (2008) stated that collaboration's goal is to have parties work cooperatively to devise and implement better approaches to solving

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problems and delivering valuable clients expectations. They argued that collaboration goes beyond managing transactions for efficiency to managing relationships for creativity and continuous improvement. These collaborative relationships are long-term endeavors where partners know the capabilities and needs of each other and actively seek to develop or improve practices. While the above instance illustrates the positives of supply chain collaboration from cost reduction to operational process enhancements, not all such partnerships are beneficial.

In USA the fruits of performance of tourism companies through proper information exchange have helped in increasing efficiency and effectiveness of procurement and supply of operations in terms of good supplier-customer relationship (Manuj & Mentzer, 2016). An efficient information exchange in tourism companies help in improving business operations especially the supply chain activities which occupy around 80% of the company operations. However, the dairy processing firms in Kenya have been facing many challenges especially in the supply chain information sharing. It is against this background that the currect study sought to examine influence of supply chain information sharing on performance of dairy processing firms in Kenya.Sabath and Fontanella (2002) discussed the unfulfilled promise of supply chain collaboration citing an overreliance on technology, treating every client/partner the same, and a lack of trust as barriers to successful collaborative results. Rick Jackson, Executive V.P. at Mast Logistics and immediate past chair of the Council of Supply Chain Management Professionals (CSCMP) Board of Directors, discussed collaboration in his opening remarks at the 2013 CSCMP Global Conference. He noted that companies today espouse the values of collaboration, but are often not organized for it. Compensation and incentive structures do not encourage collaboration. Further, performance objectives and key metrics are too often functionally based (Esper *et al.,* 2010). Scholars have said, " if companies want to derive the benefits of collaboration, they have to be prepared for the work that goes into collaborating". Maintaining long-term strategic coordination between partners, poor internal communication prior to collaboration, and the speed with which to expect benefits have all lead to collaborative failures (Daugherty *et al.,* 2006).

Additionally, desired collaborative benefits may actually prevent supply chain collaboration from occurring. For instance some firms view one party's collaborative as a redistribution of expenses to other members in the supply chain. Managing the flow of goods, information, and money from one part of the supply chain to the other requires a smooth interplay between and among the stakeholders of the supply chain. Efficiency and effectiveness of coordination of supply chain activities are needed to meet the clients' requirements on time and accurately. Supply chain collaboration involves not only external integration (suppliers-firm-customers) but also internal integration of the different departments inside the firm such as purchasing, production, marketing, information systems, and logistics (CSCMP, 2011).Anbanandam, Banwet and Shankar (2011) similarly identified the following variables to constitute a collaboration index: top management commitment, Supply chain information sharing, trust among supply chain partners, long-term relationship, risk and reward sharing. The practices showed the responsibilities that parties need to embrace for a partnership to work and to have an impact on performance. Supply chain collaboration, however, is not developed overnight. It is a long-term relationship wherein the partners are committed to achieve a common goal. However the uncertainty of another partner like Suppliers' delivery time going wrong remains a big challenge and the study analyzed the influence of supply chain decision sychronization on performance of Dairy Processing Firms .

1.1.2   Regional perspective of Supply Chain Collaboration and Performance

Regionally, study done in Ethiopia by Lemma, Singh and Kaur (2015) noted that "more developed and well-organized supply chain coordination is ideal for consistent success and profitability". They reteirated that even if objectives and interests of different supply chain members are varied, coordination among them becomes undeniably crucial to determine the supply chain performance as a whole. This means that in order to achieve performance of dairy processing firms, strategic adoption of such new concept as Supply Chain Coordination whose emergence immensely enabled formation of successful relationships across the supply chain.Dairy farming in East and southern Africa, for example Kenya and Zimbabwe, started in the beginning of the century on medium to large

scale farms using imported cattle. Keeping dairy cattle on specialized farms requires knowledgeable and skilled management. Private commercial farmers in Africa (Kenya, Zambia and Zimbabwe) have proved that it is possible to achieve high milk production levels but this has not always been true of parastatals. In general, private large-scale dairy farming is limited to a few areas in sub-Saharan Africa and is not expanding. The common experience is one of lack of capital and recurrent funds, including foreign exchange, and insufficient freedom to set producer prices and to settle labour problems. The major problems of most collection systems in Africa include the small volumes supplied per producer, the pronounced seasonality of supplies, dispersed and relatively low-income retail markets, high ambient temperatures, poorly developed transportation systems and heavy seasonal rainfall. The main limiting factor for all systems is the time it takes for the milk to reach the consumer or the processing unit(Kinyenje, 2013).The current study seeks to establish the effects of decisions sychronised on performance of milk processing firms.

In Africa, many developing countries are yet to adopt the information exchange between supplier-customer relationship,although the ones that have adopted the system are facing challenges of information exchange between supplier-customer and also supplier-firm which is acting as a barrier to performance of the business operations (Holmberg, 2010).Countries like Ghana and South Africa have adopted proper information exchange in tour companies. This has helped the companies to manage the supply operations properly hence increasing productivity of the companies and also making the tour industry to be profitable (Chopra & Meindl, 2014).Areport by KDB (2014) showed that East Africa Dairy Development Project (EADD) is a regional diary industry development program implemented by Heifer International and a consortium of partners funded by the Bill & Melinda Gates Foundation. The vision of success for the EADD is that the lives of 179,000 families or approximately one million people are transformed by doubling household dairy income through integrated intervention in dairy production, market access and knowledge application. These are key partners in the dairy value chain since they determine the market price of milk. The main buyers identified in the study include individual buyers, hotels and milk bars, milk hawkers, small milk traders

who purchase between 1000-5000litres and large scale registered milk traders who purchase over 10, 000litres from processors. The main processors as mentioned earlier are New KCC, Brookside and Spin-Knit. A few farmers' co-operatives (Lari Limuru and Githunguri) are now active players in the formal processing sector. New KCC is one of the leading buyer of milk and its presence in the region plays a major milk price stabilisation role. In addition there are key service providers such as input suppliers, agrovet shops, Artificial Insemination service provider's, milk transporters and equipment suppliers (KDB, 2014).

Ibrahim and Hamid (2012) conducted a study among manufacturing firms in Sudan ostensibly to examine how management practices used among their supply chains affected the performance of these supply chains. The authors sought to build on the understanding that effectiveness in supply chain performance has potential to impact suppliers and manufacturers both directly and indirectly. The study revealed that buyer-supplier management, information sharing, and speed of responsiveness were critical practices for the effectiveness of supply chain performance among manufacturing firms in Sudan. The present study seeks to establish the effects of supply chain information sharing and supply chain incentive alignment on performance of dairy processing firmrs in kenya. The nature of products and demand in the market poss a challenge in the dairy sector. The Performance of dairy processing will be determined by all supply chain partners in the current study.

1.1.3   National perspective of Supply Chain Collaboration and Performance

The national perspective reveals the effect of other effective strategies on performance of the firms. A study done by Mathae et al (2018) entitled "Effect of bullwhip on performance of milk processing firms in kenya noted that in order to successfully compete in the global market and networked economies, companies find that they must rely on effective supply chains as a result of this concept of organizational performance. Theabove study was done on effective strategies to address the mutual benefits of Supply Chain Collaboration and sustained business operations. This current study was done on influence of supply chain collaboration on performance of dairy processing firms.No organization in any sector, can avoid the increasing demand for supply chain collaboration. Today almost all organizations are in the process of adopting the strategy. Hence the importance of the current study.

Dairy farming in East and southern Africa started in the beginning ofthecenturyonmedium tolargescalefarmsusing imported cattle. Keeping dairy cattle on specialized farms requires knowledgeable and skilled management. Private commercial farmers inAfrica (Kenya,Zambiaand, Zimbabwe) have proved that it is possible to achieve high milk production levels but this has not always been true of parastatals. Ingeneral,privatelarge-scale dairy farming is limited to a few areas in sub-Saharan Africa and is not expanding. Also lack of capital and recurrentfunds, including foreignexchange,and insufficient freedom to set producer prices and to settle labour problems. The major problems of most collection systems in Africa include the small volumes supplied per producer, the pronounced seasonality of supplies, dispersed and relatively low-incomeretail markets, high ambienttemperatures, poorlydeveloped transportation systemsand heavyseasonal rainfall.The main limiting factor for all dairy supply chain is the time I ttakes for the milk to reach the consumer or the processing unit (Kinyenje, 2013).

1.1.4 Kenya Dairy Board and Milk Processing Firms in Kenya

Kenya has a robust dairy sector estimatedat 4% of the country's GDP. The sector has recorded an increase in dairy produce especially milk which is delivered to dairy processing firms(KNBS, 2016). The sector has a complex value chain with diverse actors that include farmers, traders vendors, collection centers, distributors, processors and retailers. These also include a ploriferation of inputs, products and services (Radermaker et al., 2016). Dairy processing firms as actors in the sector include few large processing firms and a high number of small and medium processing firms. The dairy sector in Kenya is a well-known example of successful smallholder dairy development. The establishment of large-scale dairy farms during the colonial period led to the creation of a structure of services, for example, Kenya Cooperative Creameries (KCC), research institutes, milk recording schemes, herd books andKenya Farmers Association shops. Despite all these developments, it is estimated that 56% of Kenya's population live below the poverty line (Republic of Kenya, 2014). KCC is the largest business entity in the dairy industry in East Africa. The company is involved in food industry, processing and marketing milk products and processes 450,000 litres of milk a day during the high season, and controls 37 percent of the market share. The milk is sourced from approximately 120,000 suppliers. Seven percent of these suppliers are commercial farmers and the rest (93%) are small scale producers (Wambugu, Karimi & Opiyo 2011). The dairy subsector is dynamic and occupies an important place in the agricultural economy of Kenya as milk consumption levels in the country are among the highest in the developing world which aids in contributing to an estimated 14% of agricultural Gross Domestic Product (GDP) and approximately 4% of overall Kenya's national GDP (KDB, 2014). Also significant is the fact that Kenya is the second largest dairy producer and consumer in Sub- Saharan Africa and is relatively self-reliant where it is dominated by very dairy industries and a high number of smaller and medium processors leading to very stiff competition (Dairy Report, 2016).

Kenya has about 27 licensed milk processors. Four of them are the KCC milk processors. The industry's growth and competitiveness are constrained by seasonality in milk

production, milk quality issues, a severe lack of knowledge and skills, sub-standard service provision and input supply, as well as high fragmentation of the supply chain and lack of inclusive business models. If these issues can be effectively addressed it will boost further commercialization and growth of the sector. This will lead to creation of wealth, employment across the value chain and food security (KDB, 2012).The Milk Processing Industry in Kenya has evolved over time and the collaboration of its supply chain is increasingly becoming a challenge. One of the reasons for slow growth of the concept of SCC is failure to broaden the vision of supply chain beyond the firm's internal value chain. The study investigated influence of supply chain collaboration on performance of dairy processing firms . This study will enable the managers of the dairy processing firms to devise ways of improving performance. However the performance of the dairy processing firmshas faced challenges of ensuring that all products in the firm's local dairy case are fresh, safe and produced in the most efficient and environmentally-friendly way. The dairy supply chai includes activities and processes from production, processing, trading and consumption (Ngigi, 2004). Opportunities exist in production of high quality powdered milk, cheese and butter; provision of affordable small-scale processing and packaging technologies that tap the milk that currently goes to the market or to waste. Milk processing also produces high value milk products such as Fresh milk; Long Life milk e.g. UHT and other processed products.

1.2 Statement of the Problem

The aspirations of Second Medium Term Plan (MTP) (2013-2017) of Vision 2030 and the Jubilee Manifesto touchedon the dairy industry. Currently, the dairy sub-sector is experiencing one of the highest growth rates, estimated at 3 to 4 % annually and contributing 40% of the agricultural GDP and 4% of the national GDP. The dairy subsector is dynamic and occupies an important place in the agricultural economy of Kenya as milk consumption levels in the country are among the highest in the developing world which aids in contributing to an estimated 14% of agricultural Gross Domestic Product (GDP) and approximately 4% of overall Kenya's national GDP (KDB, 2014).However, the dairy industry's growth and competitiveness are constrained by

seasonality in milk production, milk quality, lack of knowledge and skills, sub-standard service provision and input supply as well as high fragmentation of the supply chain and lack of inclusive business models (KDB, 2012).Despitethisrecognition, challengesassociatedwithsupply chain collaboration continuetoinhibitperformance ofdairy processing firms.TheKenyandairysectorhasexperiencedasignificantshiftin policy environmentbothlocally,regionally andeveninternationally.Thesepolicies have had varying impacts on the supply chain in the dairy industry over time. The Ministry of Livestock Development has dairy policy draft for strategy towards the development of a self- sustaining dairy industry. The policy aimed at guiding the dairy industry towards liberalization and market economy. The policy intended to hand over commercial services to farmers and the private sector while the Government provides policy and regulatory framework for the industry. The policy did not, however, solve the problems of the dairy industry mainly because there was no policy implementation programme and no adequate funding was provided to implement the programmes (Dairy Draft Policy, 2018). As a consequence of increased globalisation, the competition among companies is growing and ways have to be found to ensure successful performance of the dairy processing firms in kenya. Moreover, the search for mutual understanding of benefits and performance for all the supply chain partners is still a challenge for both academicians (Fawcett *et al.,* 2012) and practitioners (Grocery Manufacturers Association, 2008).Supply chain management literature has sought to identify empirical evidence of the role ofsupply chain collaboration firms' performance (Zacharia,Nix, &Lusch 2011). It is against this background that the study seeks to establish the influence of Supply Chain Collaboration on performance of Dairy Processing Firms in kenya and whether regulatory and policies mediate the relationship. Collaboration of supply chain partners will enhance cooperation of members participating along the supply chainhence improve the overall performance of the firm.

Kenya has about 27 licensed milk processors. Four of them are the KCCmilk processors. The industry's growth and competitiveness are constrained by seasonality in milk production, milk quality issues, a severe lack of knowledge and skills, sub-standard service provision and input supply, as well as high fragmentation of the supply chain and

lack of inclusive business models. Despite many successes (Hofman & Aronow, 2012), supply chain collaboration failures have also been reported . Reasons for failures include the lack of effective communication, lack of capital and investment and planning gaps between supply chain partners (Fyall and Garrod, 2005). The general research problem will be "Does the current supply chain collaboration influence the performance of Dairy Processing Firms ?" Also, "Could the answer to performance of dairy processing firms lie in supply chain collaboration?" Also establish if supply chain collaboration would resulton performance when mediated by policies and regulations.This studyanalyzed influence of SCC on performance of dairy processing firms and when the relationship is mediated by policies and regulations of the goverment.

1.3 Research Objectives

1.3.1 General Objective

The general objective of the study was to analyze the influence of supply chain collaboration on performance of dairy processing firms in Kenya.

1.3.2 Specific Objectives

The study was guided by the following specific research objectives:

1. To determine the influence of supply chain information sharing on performance of dairy processing firms in Kenya.

2. To examine the influence of supply chain decision synchronization on performance of dairy processing firms in Kenya.

3. To investigate the influence of supply chain incentive alignment on performance of dairy processing firms in Kenya.

4. To assess the influence of supply chain teamworkon performance of dairy processing firms in Kenya.

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5.To evaluate the influence of mediation of policies and regulations on the relationship between supply chain collaboration and performance of dairy processing firms in Kenya.

1.4 Research Questions

1. Does supply chain information sharing have significant effect on performance of dairy processing firms in Kenya?

2. Does supply supply chain decision synchronization have significant effect on performance of dairy processing firms in Kenya?

3. Does supply chain incentive alignment have significant effect on Performance of dairy processing firms in Kenya?

4. Does supply chain teamworkhave significant effect on performance of dairy processing firms in Kenya?

5. Do policies and regulations have significantmediating effect on relationship between supply chain collaboration and performance of dairy processing firms in Kenya?

1.5 Hypotheses of the Study

1. $H0_1$ Supply chain information sharing does not have a significant effect on performance of dairy processing firms in Kenya.

2. $H0_2$ Supply chain decision synchronization does not have a significant effect on performance of dairy processing firms in Kenya.

3. $H0_3$ Supply chain incentive alignment does not have a significant effect on Performance of dairy processing firms in Kenya.

4. H0$_4$ Supply chain teamwork does not have a significant effect on performance of dairy processing firms in Kenya.

5. H0$_5$ Policies and regulations does not have a significant mediating influence on relationship between supply chain collaboration and performance of dairy processing firms in Kenya.

1.6 Significance of the Study

The findings of the study are therefore expected to create value addition to the following stakeholders:

1.6.1 Government and Policy Makers

The study is in line with the aspirations of Second Medium Term Plan (MTP) (2013-2017) of Vision 2030 and the Jubilee Manifesto. Currently, the dairy sub-sector is experiencing one of the highest growth rates, estimated at 3 to 4 % annually and contributing 40% of the agricultural GDP and 4% of the national GDP. The Ministry of Livestock Development has drafted a dairy policy for strategy towards the development of a self-sustaining dairy industry. The policy is aimed at guiding the dairy industry towards liberalization and market economy. The policy did not, however, solve the problems of the dairy industry mainly because there was no policy implementation programme and no adequate funding provided to implement the programmes (Dairy Draft Policy, 2018). According to the KDB, over 30 milk processors and 67 mini dairies with a total processing capacity of about 3.75 million liters per day have been licensed to package and process milk in the country.In 2018, approximately 46% of this capacity was utilized, where raw milk intake by the small, medium and large-scale processors stood at 636 million liters (11.35% of total annual production).

1.6.2 Dairy Processing Firms

Analyzing influence of supply chain collaboration on performance of dairy processing

firms delivers practical value to dairy processing firm managers by seeking methods to increase supply chain collaboration success, identifying what factors lead to, or are generated from, successful collaboration and determining firm performance benefits of supply chain collaboration.This will enable the dairy sector meet country's development goals aspired in the Vision 2030. High performance of dairy processing firms is a requirement to realization of Kenya's Vision 2030. The dairy industry will be reformed to respond to its challenges. The contributions made by the dairy and apparel sector towards Kenya's endeavor to meet its desired middle income status and the challenges facing the industry as a whole informed the need to conduct this study. A lot of research related to the field of supply chain has been conducted by various scholars.However, it still remains unclear how the supply chain collaboration on dairy industry can be harnessed to manage complexity and change and to be more trend responsive.This study therefore intends to provide information that can inform exploitation of the dairy supply chain for seamless operations and driving profitability

1.6.3 The Community

The entire communities within Trans Nzoia and its environs will reap the benefits from the study findings. In the process of enhancing thes upply chain collaboration the firm create savenues of generating morefunds which will be utilized to finance and expand other viable projects. Additionally ultimate consumers of dairy products stands better chances of acquiring milk products which meet stheird emand expectations due to improved quality, products availability because they are conveniently delivered and products which are competitive compared with other milk products.

1.6.4 Grant Agencies

Local and international granting foundations provide funding resources to government or non-governmental projects in partner developing nations as they tend to design and implement their academic strategies. This study enables them to understand the entire supply chain collaboration in order to make appropriate strategic decisions pertaining funding.

1.6.5 Academic Field

To the academicians and other scholars, this study will shed more light in the field of Performance of dairy processing firms by using it as a point of reference. The study findings will benefitthe academic community by contributing to the increased body of literature relevant to firms' performance in the Kenyan perspective. Notably the study recommendations provides more insight for continuing theoretical and empirical research investigations in the field related to supply chain collaboration hence resolving of emerging issues and practical improvement on firms' performance.

1.7 Scope of the Study

The study analyzed the influence of supply chain collaboration on performance of dairy processing firms in Kenya.The key study variables were:Supply chain information sharing, decision synchronization, incentive alignment, supply chain team work and mediation of policies and regulations. Selected dairy suppliers and customers buying dairy products at Nakumatt retail supermarket responded to the survey questions. Supply chain practitioners of the dairy processing firm werealso interviewed. The most important dairy suppliers were individual farmers, Moi's Bridge dairy and small holder farmers. This study was conducted in Moi's Bridge,Koitogos, Naitiri, Taito, Mbuthia, Ndalu, Dairy farm of Charanganyi, North highlands Dairy,Meevoot Society and chepkoilel Collection and Bulking Enterprises (CBEs)being suppliers of dairy milk toKCC in Trans-Nzoia County (Appendix VI). Dairy Processing Firm factory is situated at Kitale west District,

along Maziwa road in Trans-Nzoia County. It produces dried skimmed milk Powder, butter and Ghee. Kitale factory has an average daily intake of 31776 kg. The study covered five constituencies in TransNzoia County. The county is located within the tropics experiencing hot and wet climate which is conducive for both cereal and dairy farming.

1.8 Limitations of the Study

The study was limited to the dairy farmers and customers of dairy processing firms. The scope was limited to: dependent variables focused on performance of Dairy Processing Firms. However, the independent variables were limited to: Influence of Supply chain information sharing, decision synchronization, incentive alignment, team work and influence of mediation of policies and regulations. In reality there are other factors which determine the performance of dairy processing firms. The generalizability of the current findings may be limited because this present study was conducted only in dairy processing firms in Trans-Nzoia County. This was solved by extensive empirical review of current research and justification and scope of the study. Confidentiality policy of the organization played a key role in limiting most of the respondents from answering some of the questionnaires since they regarded the process to be against the organization confidentiality policy which might expose confidential matters of an organization. They were not ready to share important documentation because of suspicionnormally associated with any kind of a researchstudy.This was solved by assuring the respondenofut most confidentiality and disclosing the academic purpose and intention ofthe study. To overcome the limitations, the researcher officially requested authority to collect data and explained the reasons for undertaking research. It was also articulated by assuring the respondents that information provided will be used for academic purposes and treated with utmost confidentialty. Data collection relied mainly on the questionnaire and interviews, administering questionnaires to respondents to fill them themselves was limiting since some of the respondents may have given responses that were not well thought out before answering. The researcher therefore recruited and trained research assistants who were required to make a follow up on areas that respondents had difficulties understanding. Moreover, the highnon-responserate associated with

questionnaire is known to interfere with the external validity.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed concepts of previous studies on related fields, acknowledging the contributions made by other scholars. The review helped in identifying the gap and provided the way forward. Theoretical framework as well as conceptual framework was illustrated, Review of variables and empirical review was done and there afther critique of relevant literature and summary of the research gaps established in the study. The literature provided useful source of informationon influence of Supply Chain Collaboration on Performance of Dairy Processing Firms .

2.2 Theoretical Framework

A theoretical framework refers to how theresearch is guided, its assumptions and under pinnings and provides a structure of ideas on which the research is based (Saunders, Lewis & Thornhill, 2019).A theoretical framework specifies the key variables influencing the performance of Dairy Processing Firms , what variables to measure and the rationale for relationships between variables.The study utilized the following theories:, Supply ChainNetworkTheory(SCNT),Transaction Cost Economics Theory (TCE), Collaborative Network Theory (CNT)and Relational Exchange Theory (RET). The theories explained the Influence of supply chain collaboration on performance of dairy proccessing firms in Kenya.

2.2.1 Supply ChainNetworkTheory

The supply chain network theory is founded on therational self-interest paradigm advanced by Sociologist James Colemanin 1988 and noted by (Musau, 2018). The assumption by proponents of the theory was that people form dyadic and group ties austensibly to maximize their own individual preferences and desires.Supply Chain

Collaboration can be viewed in there alm of supply chain networks which Zuo and Kajikawa(2017)refer to as the new analytic paradigmin the management of the supply chain. Zuo, Kajikawa and Mori (2016) argue that supply networks theory enables firms to maintain existing partners active,while at the same time identifying other potential cooperation partners. Hearnshaw and Wilson (2013) posit that supply chain scan be modelledasa network by a set of "nodes" representing autonomous business units as firms capable of exercisings overeign choices, and as sets of "connections" that link these firms together for the purposes of creating products or services. The linkages between firms represent exchange relationships and the underlying contract if present.The critical collaboration aspects were supply chain information sharing, decision sychronisation, incentive alignment and supply chain teamwork. Network theory is descriptive in nature and has primarily been applied in Supply chain management to map activities, actors and resources in a supply chain. The focus has been on developing long-term, trust-based relationships between the supplychain members.There is a positive relationship between collaboration and performance (Breuer, Siestrup,Haasis&Wildebrand,2013).Cloud computing can facilitate not only inter-organisational collaborationin business processes, butallow cross enterprise information sharing and collaborative work to enable people from different locations and enterprises to share a single workflow (Balina, Baumgarte & Salma, 2017). Therefore effective supply chain information sharing among partners is key in determining performance of dairy processing firms.Vinodh *etal.*,(2014) contend that network theory provides the idea lenvironment for nurturing relationships that encourage trustful exchange making continuity in relationships possible. Choice of the network theory for this study was therefore based on the premise that supply chain collaboratoim influence performance needed b y d a i r y p r o c e s s i n g f i r m s to be examined via policies and regulations aspects that play partin improvement of relationships and by consequence,organizational performance (Chaplin & O'Rourke, 2014).For this study the supply chain network theory implies that those firms that adopt supply chain information sharing are able to gain from the growth of effective communication and technologies which enable real-time information sharing between buyers, suppliers and online order processing systems which supports the building of

closer links with customers, suppliers and third-party vendors such as logistics service providers. The firm will be able to reach out to other partners willing to collaborate and in the long run the market share and client satisfaction will be to the benefit of dairy processing firms.Supply Chain Network Theory also implies that dairy processing firm adopting the theory will be able to build relationships and make effort to link these firms together for the purposes of creating products or services.Moreover, there will be joint decisions, planning and resolutions for mutual benefits.

2.2.2 Transaction Cost Economics Theory

Transaction Cost Economics is a theory that offers an alternative approach to the traditional mainstream economics through a lens of "choice" (Williamson, 2002). This alternative approach is to view the nature of the firm and its boundaries via the lens of "contract" (Williamson, 2008). In a collaborative relationship, it has been found that asset specificity and environmental uncertainty positively affect an intention for a long term orientation between supply chain partners (Benavides, Luis &Versa de, 2012). The underlying Assumption of the theory is that there is a transaction cost in any supply chain interaction (Grover& Manoj, 2003). This is because of the assumptions of bounded rationality and opportunistic behaviour (Williamson, 2008). The study established the mediating effect dairy board through their policies, regulations and standards on performance of dairy processing firms . It also established whether quality control measures are understood by milk suppliers and its effect to the performance of dairy processing firms . Based on the classical economics theory, it is assumed that humans have perfect rationality of their behaviors. Therefore, bounded rationality is viewed as a source of transaction costs because all factors cannot be considered in the decision making process (Barros, 2010). It is expected that suppliers may deliver inferior goods if they know that their clients cannot detect the difference (Wuyts & Geyskens, 2005; Morgan *et al.,* 2007). This opportunistic behavior leads to the cost of monitoring the outsourced production processes and the quality of delivered products (Vieira *et al.,* 2011). Although the firm may not discover any opportunistic behaviour of its suppliers, quality checking is still necessary as long as the expectation of opportunistic behavior still exists.The theory

contributed much to the study as it was established thata dairy processing firm has a department for detecting quality aspects and if influences performance of the firm.

TCE has been applied to understand the behaviour in supply chain collaboration (Wilding & Humphries, 2006) and its impacts on supply chain relationships and performance (Cao &Qingyu, 2011; Nyaga&Judith, 2011). Hence TCE is considered to fit with the nature of supply chain management research. It has been shown that lower transaction costs favour outsourcing and higher transaction costs favour in-house operations (Williamson, 2008). As an alternative for firmor market governance, collaboration arises as one of the hybrid governance forms which can reduce transaction costs of factors such as opportunism and monitoring activities or external uncertainty (Kinra & Kotzab, 2008). The concept of TCE has been widely used to explain the existence and boundary of the firm as well as other forms of economic governance (Williamson, 2005*b*). Moreover, seldom has the antecedents of such transaction costs in supply chain collaborations been studied (Williamson, 2010).

Studies have established that, not only does internal factors affect the collaboration but the policies laid down by regulatory bodies seem to have an effect on performance of firms.Transaction costs caused by partners' opportunism behavior have been cited to reduce the performance of the firms (Morgan *et al.,* 2007). For this study the TCE theory implies that dairy processing firms that adopt supply chain decision sychronization are able to gain competive advantage compared to others. Different transaction options have different costs and risks that will determine performance of the dairy processing firm. Whether the transactions costs are lower or higher it will influence the sourcing decisions of the dairy processing firms. TCE theory makes contributions on understanding of the influence of SCC on performance of dairy processing firms . It suggests that reducing complexity in transactions for example by seeking efficient governance structures and clarifying capability roles e.g. reducing the incompleteness of contracts will enhance the the overall performance of the firm.

2.2.3 Collaborative Network Theory

The key determinants of performance of firms does not only include the effectiveness of the cooperation between the firm and its partners but also with the partners' partners. Collaborative Network Theory (CNT) is used as the foundation of the reciprocal effect in inter-firm relationships. Hence, the interactions between firms and other players in the tiers of the supply chain become more vital (Hakansson &David, 2002). An effective relationship among supply chain partners can help facilitate a combination of the resources owned by the firms. Resource combination results in better outcomes than those achieved by a single firm acting alone (Halldórsson*et al.,* 2007). CNT argues that the value of the resources can be expanded by its combination with other resources, then building effective inter-firm relationships within the network or supply chain can be more important than resource possessions *per se.* Therefore, the efforts of the firms in terms of creating successful relationships with their supply chain partners are important (Halldórsson *et al.,* 2007). The significant contribution of CNT to the determination of the inter-firm relationships is the role played by supply chain partners who yield to trust via supply chain collaboration such as formal communication as well as mutual adoption of integrated management and culture hence the competive advantage of the firm.By establishing Supply chain information sharing and collaborative communication, firms build the relationships with their supply chain partners through the social exchange process to improve their performance. In CNT, a network is believed to be in a state of dynamic momentum, rather than a point of optimal equilibrium (Halldórsson*et al.,* 2007). Hence collaboration between firms and their supply chain partners aims to govern such dynamics, which includes both exchange process e.g., information, products (goods and services) and social exchange and adaptation process.In supply chain management, CNT has been applied to map the supply chain in terms of activities, actors and the flow of resources. The main focus of CNT is to develop long-term relationships based on building mutual trust between supply chain partners (Fayezi, Andrew & Ambika,2012). The study establishedthat the role the regulatory board and other institutions play in influencing the relationship between supply chain partners and the performance of dairy processing firms

. The regulatory board preference influenced the performance of the firm from the supplies of fresh dairy milk, dairy milk coolers or collection sheds, dairy processing firms and the distributions of the processed dairy milk to clients in diffent retail outlets.

2.2.4Relational Exchange Theory

Relational exchange theory was presented by Morgan and Hunt in 1994,noted by Dyer and Singh (1998) austensibly to model drivers of long term customer-bank relationship to explain interpersonal exchange of benefits and costs.The theory explains competitive advantage and superior performance by focusing on dyads and networks of companies as units of analysis. The theory proposes that the greater the partners' investment in inter-firm knowledge sharing routines and relation-specific assets, the greater the potential will be for relational rents.Consequently, when firms adopt standard norms for specific systems, then they create relational norms as partners allowing for the application of the relational exchange theory. Gachengo and Kyalo (2015) posit that relationism builds economically viable relationships that result in financial performance. Moreover, relationism provides an atmosphere that promotes communication of innovation in technology (Xiaojun et al., 2015), which by extension allows for the integration of a diversity of information systems. According to Blackhurst, Dunn and Craighead (2011) relational competencies such as defined communication networks, developed supplier relationship management programs and monitoring systems are positively related to supply chain resilience. In the present study, the relational view was on the basis of understanding effects ofsupply chain collaboration on performance of dairy processing firms in kenya.Relational theory was particularly deemed relevant for the present study due to the fact that it is well suited in adoption of information technology as well as information systems such as those used in supply chains. Moreover, Inter-organizational informational systemand supply chain informational infrastructure can disseminate real time demand and supply information throughout the supply chain thus improving performance of dairy processing firms. Also important is the collaborative planning, forecasting and replenishment (CPFR) systems, vendor-managed inventory (VMI), efficient consumer response (ECR) and quick response. The adoption of supply chain

information systems in any organization significantly influences its organizational performance. (Moharana et al., 2014). The relative advantage in essence is that it improves communication between stakeholders, improves information exchange and generally improves the supply chain performance. However, the use of information systems in any industry requires some innovativeness.

2.3 Conceptual Framework

Conceptual framework refers to a visual or written relationship between various variables often derived from one or more theories and traces the in put-process-out put paradigm of the study (Saunders, Lewis & Thornhill2019). According to Imenda (2014), a conceptual framework is an end result of bringing together a number of related concepts to explain or to predict a given event or give a broader understanding of the phenomenon of interest or simply of a research problem.Dr. Kivunja (2018) said that Conceptual framework is the logical conceptualization of your entire research project. Logical conceptualization meant that a conceptual framework is a metacognitive, reflective and operational element of the entire research.A conceptual framework is the total, logical orientation and associations of anything and everything that forms the underlying thinking, structures, plans and practices and implementation of your entire research project. It comprises thoughts on identification of the research topic, the problem investigated, the questions asked, the literature reviewed, the theories applied, the methodology used, the methods, procedures and instruments, the data analysis and interpretation of findings, recommendations and conclusions made. It is an illustrated representation of an idea or body knowledge based on individual understanding of the relationships between the variables.

Fugure 2.1 presents conceptual framework of the current study:

Independent Variables

Supply chain information sharing • Formalization • Integration • Order tracking	**Dependent Variable**
Supply Chain Decision Synchronization • Joint decision • Joint planning • Joint resolution	**Performance of dairy processing firms** • Market share • Client satisfaction • Profitability • Competitive advantage
Supply Chain Incentive Alignment • Retail price • Order charges • Reduced inventorycosts.	
Supply Chain Teamwork • Relationship • Effort • Trust	**Mediating Variable** Policies and Regulations

Figure 2.1: Conceptual Framework

2.4 Review of Variables

The pertinent concepts included in this study formed the conceptual framework and showed the relationship of the dependent variable (performance of dairy processing firms in kenya) and independent variables (Supply Chain Collaboration) and mediated by policies and Regulations. The study adopted a conceptual framework to describe the relationship between variables. Based on there view of literature regarding the influence of supply chain collaboration on performance of dairy processing firms , sets of variables were distinguished to explain the variation on performance of dairy processing firms . The first set of variables was the independent variables.An independent variable is a variable that is expected to influence the dependent variable in some way (Zikmund *et al.,* 2013). Independent variables are those that probably cause, influence or affect outcomes and are also called manipulated or predictor variable (Creswell, 2014) as they are manipulated by the researcher to cause an effect on the dependent variable.

Supply chain collaboration is defined as a long-term relationship where participants generally cooperate, share information, and work together to plan and even modify their business practices to improve joint performance (Whipple et al., 2010). Supply chain collaboration has been argued to enhance firm performance (Simatupang andSridharan,2005). By working with supply chain partners, firms are expected to multiply the outcomes of the effort from working alone (Wilding,2006). Such outcomes include a better level of responsiveness and servicel evel improvements from their supply chain collabortive programmes (Holweg etal.,2005). The concept of Supply Chain Collaboration is considered as a regime for governing organizations. It is believed that collaboration in supply chains could yield tremendous benefits (Piboonrungroj, 2012).Cao and Zhang posit there are several forms of collaborations in supply chains e.g., Supply chain information sharing, supply chain incentive alignment,supply chain decision synchronization and supply chain teamwork. Moreover, firms could achieve better performance, such as reducing cost and improving efficiency by working collaboratively with their key partners (Piboonrungroj, 2012). Piboonrungroj (2012) points firms working with supply chain partners multiply the outcomes of the effort

compared to working alone. Firms expect a better level of responsiveness and service level improvements to result from their supply chain collaborative programmes. Many studies have found that a higher level of supply chain collaboration can improve the performance of firms (Nyaga et al., 2010).

Scholars suggest that coordinating supply chain activities, such as procurement, auction, replenishment, payment, product change and collaborative product design, result in cost-effective, speedy, reliable, and less error-prone supply chain operations (Lee & Whang, 2004). Specifically, operational coordination enables firms to streamline and automate their operational activities across the supply chain (Lee & Whang, 2004). It facilitates the design and manufacture, as well as quick and reliable delivery of products/services when and where needed (Sanders, 2008). Furthermore, operational coordination allows firms to share the rights to decide on how to reengineer business processes and routines across organizational boundaries. The reapportionment of decision roles, rights and responsibilities enhances the understanding of management decisions and the sharing of risks and resources. Furthermore, the supply chain becomes more responsive to market changes, enabling supply chain members to jointly explore markets and develop products/services (Lau, Yam & Tang, 2010; Sanders, 2008).Fawcett, Magnan and McCarter, (2008) emphasized the importance of a nurturing organizational culture to achieve high collaboration. Hadaya and Cassivi (2007) however, observed that while a strong relationship is necessary for collaboration to exist, joint decision-making activities in fact strengthens even more an existing partnership. Supply chain collaboration, however, is not developed overnight. Chen *et al.,* (2004) reiterated that SCC is a long-term relationship wherein the partners are committed to achieve a common goal. To enable partners to engage in joint decision making and problem solving and to share information with each other, a trustworthy relationship needs to be established.The independent variable weresupply chain information sharing, supply chain decision synchronization, supply chain incentive alignment and supply chain teamwork.

The first independent variable for the study was supply chain information sharing. Samadi and Kassou (2016) ascertained that supply chain information systems have an indirect

effect on the performance of supply chains in manufacturing firms through systems such as Enterprise Resource Planning, Supply Chain Management Systems and Manufacturing Execution Systems. Connectivity and integration of ICT systems are also associated with supply chain performance and by extension, with overall organizational performance (Mulwa, 2015). There is a relationship between information systems and Supply chain information sharing because the systems in place dictate the degree of Supply chain information sharing, however the above studies were done in other firms not directly related to the dairy industry processing firms. De Carmago and Charbel (2017) contend that service information relating to customer service records and technical information on equipment and data bases is brought together in a central data base from which field service teams easily access information required to do their work efficiently. They are therefore harnessed with the right platforms for doing their work. On the basis of such evidence the study conceptualize Supply chain information sharing could equally have direct influence on performance of dairy processing firms. Availability and accessibility of updated dairy industry information is crucial for proper planning, management and forecasting various issues in the industry. At the moment, KDB and other stakeholders such as i-cow are piloting electronic-dairy (e-dairy) platforms for information gathering, analysis and dissemination to dairy stakeholders. However; adoption of these technologies has been limited due to lack of awareness, in addition to inadequate ICT infrastructure and skills.In order to establish such a mechanism for the entire dairy industry, the Government will facilitate implementation of e-dairy platforms to improve information sharing among stakeholders. A strong linkage between universities, research institutions, financial institutions, dairy farmer associations, and extension agents will be created to promote dairy production in Kenya. In addition, the Government will set up a National Dairy Information Center at KDB that will be equipped with a databank facility to collection, and disseminate up-to-date information to dairy stakeholders(G.O.K, 2013)

The second independent variable was supply chain decision synchronization. This can be defined as Joint decision making in planning and operational context (Simatupang & Sridharan, 2005). According to Ataseven and Nair, (2017) Supply chain information sharing, joint decision making and Supply chain teamworkare the major dimensions of SCM approaches. By reviewed literature, it can be concluded that joint decision making among other measures are the most important approaches. Additionally these approaches have also been empirically verified by scholars in different industries. According to Flynn et al. (2010), one of the measurementsScaleforsupply chaincollaboration was Decision synchronization. This was measured in terms of jointly plannning on promotional events, jointly developing demand forecasts and jointly working out solutions. This was specified by Piboonrungroj (2012) in his Phd thesis entitlted "Supply Chain Collaboration: Impacts and Mediation". On the basis of such evidence, the researcher conceptualized that Supply chain decision synchronization could equally have a direct effect on performance of dairy processing firms and when mediated by policies and regulations. Although not much exists in relation to the dairy industry, it was prudent to conceptualize direct influence of supply chain decision synchronization on performance of dairy processing firms with mediation of policies and regulations.

The third independent variable of interest was supply chain incentive alignment. Appropriate alignment of the incentives for the supply chain partners build mutual trust and develop commitment among the two parties (Simatu- pang and Sridharan, 2005). An appropriate supply chain incentive alignment in the supply chains is expected to build trust and commitment between collaborating firms. Moreover, this will also improve intention of both partners to increase their performance to earn fair rewards. Furthermore, strong relationships in the supply chain will also be a source of competitive advantage. The scholars in their conceptual model had five independent variables specified as mutual objectives, integrated policies, appropriate performance measure, supply chain information sharing and incentive alignment. The other set of dependent variable was collaboration. The current study conceptual model had four independent variablesand one of them is supply chain incentive alignment. The dependent variable was performance of

dairy processing firms . It was therefore necessary to visualize Supply chain Supply chain incentive alignment as having the potential to influence performance of the firm directly and when mediated by policies and regulations. Literature by Simatupang and Sridharan, (2005) noted that supply chain incentive alignment is co-developing systems to evaluate and publicize each other's performance, share costs for example loss on order changes and share benefits in form of saving on reduced inventory costs. It was therefore prudent to visualize supply chain incentive alignment as having the potential influence on performance of dairy processing firms and when with mediated by policies and regulations.The fourth independent variable was supply chain teamwork. Literature by Nyaga et al (2010) noted Joint activities has having a joint team by conducting joint planning to anticipate and resolve operational problems and making joint decisions about ways to improve overall cost efficiency. One of the core values regulating board according to strategic plan 2017-2022 is Teamwork. It was therefore prudent to conceptualize similar influence of supply chain teamwork on performance of dairy processing firms.

The second set of variable involved the dependent variable. Dependent variable is the variable measured, predicted, or otherwise monitored; expected by the researcher to be affected by a manipulation of the independent variable (Cooper &Schindler, 2008).The performance of dairy processing firms was measured by the market share, client satisfaction, profitability and competitive advantage. Literature showed that measures such as profitability, quality and quantity (Shepherd & Günter, 2012); time, cost, flexibility and quality (Arif-Uz-Zaman & Ahsan, 2014); financial, internal processes, innovation and improvement, and customers (Golrizgashti, 2014); and operations, economic, social and environment (Zailani et al., 2012) are key indicators of organizational performance. For this study, performance of dairy processing firms. Other scholars have said that performance is measured by profitability, reliability, responsiveness, flexibility, cost and asset management efficiency in line with suggestions by Ganga and Carpinetti (2011 as cited in Leończuk, 2016). Literature also showed that performance of firmswas measured in several ways supported by Chen and Paulraj (2004b) who said "a firm's performance can be measured in terms of financial

performance and operational performance". Firm performance can be also viewed as service effectiveness and cost effectiveness (Richey et al., 2010); cost, quality, delivery and flexibility (Krause et al., 2007). The study conceptualized performance of dairy processing firms with respect to Market share, client satisfaction, profitability and competitive advantage.Competitive advantage remains a key focus among organizations yearning to enhance their performance relative to their competitors. Studies point to the desire to understand how to sustain competitive advantage among completing organizations. Collaboration between supply chain partner's i.e. dairy farmers, Milk shed coolers; transporters of dairy milk, supply chain practitioners, distributors and the clients lead to exploitation of the resources and in the long run improve the overall performance. Sustainable Supply Chain Management demands collaboration and it is a requirement to improve in market share and profitability.In the present study, the factors affecting resource utilization included supply chain collaboration aspects and if proper utilized it will lead to competitive advantage of dairy processing firms.Positive effects on operational performance, operational coordination improves business performance. Specifically, operational coordination streamlines and automates complex activities of the supply chain (Lee & Whang, 2004; Lau, Yam & Tang, 2010). Further more, operational coordination enables the well-coordinated movement of inventories across the supply chain, which shortens lead time and reduces the bullwhip effect thereby increasing cash flow to improve business performance supported by (Lee & Whang, 2004; Sanders, 2008). Moreover, operational coordination promotes resources, knowledge, and risk sharing across the supply chain. It also reduces development and time-related costs to redesign business processes and improve profit margins in product development (Lau, Yam & Tang).

The third set of variable was mediating variable in form of Policies and Regulations Mediating variables typically emerge in multiple regression analysis, where the influenceof some independent variable (predictor) on the dependent variable (criterion) is not direct, but mediated through the third variable (Milin&Hadzˇicˊ, 2011). According to The Dairy Industry (Regulatory Permits and Levy) Regulations (2020), Regulations shall

apply to all matters relating to issuance of regulatory permit and imposition of regulatory levy to dairy business operators. The Kenya Dairy Board was established under the Dairy Industry Act ; (Cap.336). The objects of Regulations are to provide for; defining the manner and scope of issuing the Dairy regulatory permit, mechanisms for ensuring quality and safety of marketed dairy produce, means for generation of resources to finance the enforcement of the Act and its regulation and enabling environment for sustainable investment in the dairy industry. Extensive review of existing literature on dairy board policies and regulations showed the mandate of the board, the policies in place and the underlying regulations. KDB strategic plan (2017-2022) articulates the shared vision, mission and values and successful implementation of Strategic Plan is determined by the commitment of all stakeholders hence the board provided appropriate governance and policy direction. The management team coordinates the implementation process and involvement of all staff is key to the success of the plan. Implementation responsibilities of this strategy will, therefore, be cascaded to all levels in order to allow for maximum participation of all the relevant stakeholders. Moreover one of the mandates of the board is to develop policies, regulations and strategies to facilitate the growth of the dairy industry (KDB, 2020). On the basis of such evidence policies and regulationswere therefore conceptualizedas mediatingvariables in the current study.

2.4.1 Supply Chain Information Sharing and Performance of Dairy Processing Firms

Supply Chain Information sharing refers to the extent to which information is exchanged among members across the supply chain (Kulp, Lee & Ofek, 2004b; Lee & Whang, 2004). It reflects the degree of information transparency and direct, real-time information availability. In other words, supply chain information sharing involves sharing critical and proprietary information among supply chain partners, whereas operational coordination involves how firms jointly derive knowledge from the shared information and change business processes as needed. For instance, empirical evidence shows that sharing information in the supply chain helps firms derive competitive advantage in various ways, such as increasing sensitivity to marke ttrends and customer demands, reducing total cycle

time and the cost of inventories and acquiring innovative ideas for products/services (Kulp*etal.*,2004b;Lau*etal.*,2010; Lee & Whang,2004). Inaddition, Sanders(2008) proposes that operational coordination result in cost-effective,speedy, reliable and a less error prone supply chain operation,which helps firms respond to market uncertainties in arapid and precise manner.

Information shared among supply chain partners and clients in real-time and/or in person tend to improve business operations in terms of speed, agility, control, and client response by focusing on communications, relationships and knowledge (Manthou et al.,2004). However, critical supply chain information sharing can happen only if there is confidence among supply chain partners. He noted that product and information flow among SC partners allows them to work together to develop joint business plans. It can be carried out as a formal practice that involves periodic meetings or can be done informally as needed.Supply chain information sharing is also seen as the willingness to make strategic and tactical data such as inventory levels, forecasts, sales promotion, strategies, and marketing strategies available to firms forming supply chain nodes (Cao & Zhang, 2013).

The ability to see from one side of the channel to last is crucial, information is assumed as blood for supply chaincollaboration. Supply chain information sharing may also include logistics on formalization, integration and order tracking and performance of firms measures like addressing customer, quality, time, market changes and design or uncertainty (Singh, 2013). Supply chain information sharing has been investigated in multiple industries and regions and revealed that it has a major contribution to enhancing operational performance (Abdallah, Obeidat& Aqqad, 2014; Effendi, 2015). Supply chain information sharing positive affects performance in many ways like enhanced service levels, customer responsiveness, decreased costs, and reduced levels of complexity (Flynn, Huo & Zhao, 2010).Huo, Zhao and Zhou, (2014) studiedsupply chain information sharing with suppliers, customers and internal in Chinese manufacturing and revealed that all have a positive effect on operational performance and internal information sharing also has a positive relationship with external.The lack of information transparency in terms of communication within the chain, lack of knowledge concerning true consumer demand

and delay in information transfer result in information asymmetry which is a situation where different parties have different states of information about product demand and the chain operations (Borut et al., 2014).According to Williamson (2010), an understanding of transaction costs is central to the study of trust in organizations. According to this theory, transaction costs are nil when there is perfect information. However in buyer-seller relationships, perfect information is usually not available. Parties usually incur transaction costs like search and information costs, bargaining costs, and enforcement costs. One important aspect of Supply chain information sharing as it relates to collaboration is the delineation of the kind of knowledge, explicit or tacit, that results from the exchange of information. Collaborative arrangements involve knowledge transfer that is both explicit (e.g. transactional) and tacit, which resides in "social interactions" (Lang, 2004). Strong relationships increase the likelihood that firms will exchange critical information as required to collaboratively plan and implement supply chain strategies. In order for this sharing of critical information to occur, a high degree of trust must exist among the collaborating partners.

Namusonge's, Mukulu and Kirima (2015) in their thesis entitled "Supply chain information sharing, Cooperative Behaviour and Hotel Performance" posits that the starting point of supply chain collaboration is supply chain information sharing. They conceptualized information sharing as the act of capturing and disseminating timely and relevant information for decision makers to plan and control supply chain operations. Supply chain information sharing provides visibility and helps in better decision making. Various information content aspects are involved in the relationships between buyers and sellers. Information can be communicated between the parties by electronic means, such as: Electronic Data Interchange (EDI), Efficient Consumer Response (ECR), Vendor Managed Inventory (VMI), or by personal communication channels, such as: electronic mail (email) or phone (Chopra and Meindl, 2003). Technical and commercial information exchange help in creating a collaboration environment, such as product development and production plans between buying and selling companies (IMP Group, 2012). IMP Group supports that information exchange formalization is important. The degree of formality

depends on the businesses characteristics and size affects the interaction process nature and relationship as a whole. Leeand Whang (2004) contend, "the capability for all supply chain partners to have access to share information on a timely basis is therefore key to improving supply chain performance".Therefore, supply chain information sharing is critical fo roperational and business performance. Specifically,Supply chain information sharing facilitates product delivery,market exploration and $product$/services promotion (Devaraj, Krajewski & Wei,2007).

In the current market,this process is more salientdue to the open,real-time, and rich content features of online information.With the availability of real-time and rich content information, firms can sense and respond to market uncertainties rapidly and extensively (Lee&Whang, 2004). For example,through sharing information in the supply chain, a firm can quickly detect the problems related to customer demands, especially when customers want to receive information directed to ward their special needs and interest at any time and place. Such information will help the firm pro actively prepare for responding to such demand changes, which is critical forits operational performance. Supply chain information sharing reduces demand uncertainty and the phenomenon of increasing variability of demand in a supply chain. In general,effective Supply chain information sharing enhances mutual understanding, which reduces miscommunication and prevents unnecessary mistakes, thereby decreasing transaction costs across the supply chain (Frohlich, 2002; Lee & Whang, 2004). Increased information transparency allows firms to choose suppliers with lower prices, enabling them to produce and deliver products or services at lowercost (Chen, Paulraj & Lado, 2004). This process, inturn, createsa positive effect on firms'business performance. Supply chain information sharing helps firms increase profits by reducing the cost of inventorie and enhancing capital and cash flow utilization,thereby improving firm'sperformance.Shared information and trust among partners are required for effective supply chain collaboration and successful supply chain integration. Collaborations between partners in Supply chain information sharing facilitate Supply chain decision synchronization between these partners contributing towards achieving significant firms' performance (Simatupang, Tongar &Sridharan,

2005). Firms are therefore expected to cooperate on a long-term basis with firms where information is more available. Partners that allow each other information access are able to review their transactions, especially possible redundancies, thus reducing the transaction costs. SCC is very important for success of the global business optimization, and it is only achieved if supply chain members share their information unambiguously.

2.4.2 Supply Chain Decision Synchronization and Performance of Dairy Processing Firms

Decision synchronisation is Joint decision making in planning and operational context (Simatupang & Sridharan, 2005). Joint Decision Making is defined as the "process by which supply chain partners coordinate activities in supply chain planning and operations for optimizing the supply chain benefits (Cao & Zhang, 2013).It includes plans, combines information, resolves problems and develops rules and regulation and procedures. An effective strategic coalition and worthy relationship with customers and suppliers are required and it should consist of trust, loyalty and positive relationship (Basu et al., 2017). The aim of decision synchronisation is to align partners and to synchronize decisions on order placement, inventory replenishment and order delivery. Every partner has its own objectives and goals and sometimes very hard to come on mutual points that may cause uncertainty (Kauppi et al., 2016); to reduce this uncertainty decision synchronisation has become an important strategy for today business.Furthermore, it has also empirically verified that Joint Decision Making has a positive effect on operational performance (Effendi,2015). The decisions facing contemporary business managers increasingly require consideration of influences originating both internally and externally to the organization and beyond even first tier suppliers and customers.Supply chain decision synchronisation is the driver of collaboration. Collaboration does not mean joint decision-making but it is important that decisions taken by supply chain members are synchronized in order to enable a supply chain to respond quickly to any changes or disruption. Responsiveness is a key output of decision synchronisation and enables supply chains to be more resilient because of the enhanced response speed. SCM involves supply chain collaboration, which in turn is founded on long-term and trustworthy relationships (Ou *et*

al., 2010). When stakeholders in the supply chain such as the customers, suppliers and the firm (whether manufacturing or service) collaborate, they are able to make joint decisions and share benefits and costs from these decisions (Simatupang & Sridharan, 2005). The study established decision synchronisation in terms of joint decision, joint planning and joint resolutions in the dairy processing firms.

Becker T., *et al.,* (2014) on his thesis entitled "Synchronization Measures in Job Shop Manufacturing Environments"*,* said Synchronization is quantifiable, observable phenomenon in logistics systems and in contrast to qualitative approaches. These qualitative approaches under the term "synchronization" are mainly prevalent in supply chain management and primarily include advice for managerial activities in the fields of communication, collaboration, Supply chain information sharing, and supply chain strategy. The aim of Supply chain decision synchronization is to align partners and to synchronize decisions on order placement, inventory replenishment and order delivery. Meanwhile, every partner has its own objectives and goals, so it is sometimes very hard to come on mutual points that may cause uncertainty. To reduce this uncertainty, supply chain decision synchronization has become an important strategy for firms today. Operational coordination is the extent to which firms exchange decision rights, knowledge, and resources across the supply chain to streamline supply chain activities (Lee and Whang, 2004). It reflects the extent to which a firm coordinates and collaborates with channel partners to meet customer demands and seek opportunities to automatically execute tasks (Sanders, 2008). Joint planning activities are very important in achieving collaboration as these define the inter-organizational processes between the collaborating parties (Simatupang & Sridharan, 2005). Trust and transparency are important in joint decision making since it involves an exchange of information as well as sharing of resources and processes (Biehl & Johnston, 2006; Potocan, 2009). Firms realize they need each other to make collaborations work, or even survive in the competitive marketplace. Interdependence refers to more than just accessing and utilizing partner capabilities; rather organizations make joint decisions or look for synergistic capabilities impossible to generate alone (Zacharia, Nix & Lusch, 2011). When firms realize they need each other

to be successful, operations can be enhanced and specific outcomes will be achieved. The study established how decision synchronisation influences the performance of dairy processing firms in kenya.

2.4.3Supply Chain Incentive Alignment and Performance of Dairy Processing Firms

Slone et al., (2007) described incentive reward in the supply chain. The purpose of incentives is to encourage and reward supply chain members who support overall supply chain objectives. However collaboration requires more than just benefit sharing among supply chain partners. Supply chain incentive alignment has been categorized into three different types. The first type is reward as motivation to reach assigned targets. The second is pay for performance. The last is fair sharing of benefit and cost. Supply chain incentive alignment can be defined as "The degree to which supply chain members share costs, risks and benefits" Supply chain incentive alignment can also be referred to as mutually sharing risks and rewards. This sharing is a vital element for collaboration in long-term relationships. They reiterated thatsupply chain incentive alignment significantly impacts a supply chain's operational performance and supported by (Simatupang and Sridharan, 2005).

An appropriate supply chain incentive alignment in the supply chains is expected to build trust and commitment between collaborating firms. Moreover, this will also improve intention of both partners to increase their performance to earn fair rewards. Furthermore, strong relationships in the supply chain will also be a source of competitive advantage (Simatupang & Sridharan, 2005).A large empirical literature examines the role of executive compensation in alleviating agency conflicts between top managers and shareholders. Much of the empirical research on team-based contract design focuses on implications of the distribution of pay levels across top executives. The consequences of pay-level patterns across top executives for firm performance have been examined using tournament theory (Kale, Reis & Venkateswaran, 2009), social comparison theory (Henderson and Fredrickson, 2001). Recent theory suggests that firms incorporate

synergistic interrelationships among executives into optimal incentive design (Edmans, Goldstein & Zhu, 2013). The study will establish supply chain incentive alignment process of sharing costs, risks, and benefits among supply chain partners in the dairy processing firms.While pay-level patterns are clearly important, a large literature also posits a critical role for Pay Performance Sensitivities in aligning managerial incentives. To an extent empirical literature on pay performance sensitivities primarily focuses on the design of CEO incentives, motivated by a large agency theory literature that views contract design from the perspective of a single agent in isolation. While this single agent perspective has provided the basis for many important insights into optimal executive incentive design, it largely ignores the possibility that boards also view executives as a team and incorporate synergistic interrelationships among executives into optimal incentive design.

There is constant demand for superior service, increased value and competitive price. This brings ever greater pressure for efficiency gains and performance improvement. Every business entity strives to meet the needs of clients and to achieve this it requires an optimization of entire supply chain. Collaboration in supply chain has been conceptualized in various ways by researchers, as it can range from very shallow transactional focused to highly integrated close relations (Goffin, Lemke & Szwejczewski, 2006); from collaborative communication to supplier development. The core message of SCM is that companies in a supply chain will create a collaborative atmosphere which will lead to more integrated supply chains where independent companies together act as one single entity. Actions and strategic decisions in the supply chain when managed by demand from end customers finally have a crucial impact on how successful the supply chain members will be. A supply chain works well if its firm's incentives are aligned i.e. if the risks, costs and rewards of doing business are distributed fairly across the network. If incentives aren't in line the dairy processing firm will not optimize the supply chains' performance, therefore the whole supply chain partners are supposed to be interlinked. Selviaridis and Spring (2018) posit an effective supply chain strategy aligns a firm's performance priorities and objectives, and those of its suppliers, with the requirements of clients. This view of alignment is arguably the defining concept of supply chain

management: they noted that if firms in a supply chain are aligned in achieving the end customer's requirements, then this benefits the supply chain as a whole, as it can improve performance and hence competitive advantage of the organisation. Alignment is achieved through inter-organisational relationships, which are governed by a combination of formal contracts and relational norms (e.g. trust). These underpin more specific alignment practices, including information sharing, increasing levels of integration and collaboration and the design of compatible performance measures. To achieve the latter, firms must define and jointly prioritise objectives to reflect supply chain performance requirements. They must also align their own incentive systems with objectives, by designing payment mechanisms for their suppliers that reward success or penalise failure (i.e., pay-for-performance), and enable sharing of related gains and risks. Such mechanisms are embodied in contracts, which have typically been seen as safeguarding tools that protect against opportunism; increasingly however, contracts are also seen as enablers of inter-firm coordination and alignment (Schepker et al., 2014). Firms in the supply chain may simply not know how to achievethe ideal outcomes of the perfectly aligned supply chain,orthey may not want to because of their diverging priorities and interests. Dairy processing firms should try to align incentives with their key players. Supply chain incentive alignment is key to performance of firms.

Dairy processing firms in Kenya have had little reward to their owners and employees interms of output and revenue. The few studies done in the industry underscore full potential of the dairy processing firms in Kenya; hence the need to research further on the industry and explore all the conceptual constructs in the current study.

2.4.4 Supply Chain Teamwork and Performance of Dairy Processing Firms

A team is no longer a group of people working in the same area, using the same equipment, dealing with the same clients within the same location. Nowdays a team is compised of people from different organisations, located around the globe with a high degree of interdependace geared toward the accomplishment of mutual goals. Supply chain teamworkapproach goes beyond individual accomplishments (Waweru,

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2018).Supply chain teamworkis a joint action regarded as akey contributor to performance as it provides the means through which team players are able to integrate a multitude of expertise required for successful completion of a project (Mendelson, 2008). Supply chain teamworkis not only applied in manufacturing, but also in management and service oriented activities. The team players in this study included producers (Dairy farmers), transporters of fresh dairy milk, the stakeholders of cooler sheds, the milk processing firms, the supermarkets and chain stores and customers of dairy milk products.Teamleaders need to ensure that they align the strengths of individuals with effective Supply chain team work and a focus on meaningful results.A team is a collection of individuals, who highly communicate, directing their energies towards a known defined goal, which is achieved through their joint complementary efforts, for the benefit of all. Nobody is perfect but a team can be. According to Omid and Mehdi (2016),Supply chain teamworkis critical in the attainment of project objectives in that the responsibility of implementing various activities rests with project team members. In this study every team member be it dairy milk suppliers, dairy farmers, milk collectors or coolers, milk transporters, processing firms and retailers who are in touch of clientsnot only work to ensure tasks are completed but also ensure that they do not let down collaborative spirit as it has significant effect on the performance of dairy processing firms .Cohon and Bailey (2017) showed that 85% of large organisations especially those with large number of employees have embraced teamwork. Commitment of each team member towards a common purpose in a team is very crucial. Also studies have shown that employees learn best from tasks that are carried out in a social manner (Waweru, 2018).

According to Kerznerand Saladis (2013), there are challenges that can impede team spirit, these include; poor communication channels, low motivation to workers, unclear targets and poor project control. According to Waweru (2018), Supply chain team work support employee exchange of ideas; sharing of work experiences; networking; information dissemination and sharing; partnership among employees; closeness between employees and managers; working on joint tasks and sharing of ideas have positive impact on supply chain team performance. The impacts of such collaborative activities on inter-firm trust,

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found in the case studies, concur with the findings in the literature (Min *et al.,* 2005). Joint activities could give rise to inter-partner trust in the supply chain. Firms that make dedicated investment in systems, equipment and human resources can build and maintain higher levels of inter-firm trust. Commitment builds inter-firm trust embedded in the relationship provides a foundation for the collaborating firms to make a commitment to their supply chain partners. In supply chain relationships, Supply chain teamworkbetween supply chain partners is hardly established without trust.A supply chain network is composed of independent actors who attempt to achieve individual objectives. It is often that the decisions taken by an actor affect the performance of other participants in the network (Moldoveanu & Baum, 2011). These typical interactions among independent firms require coordination and alignment of their decision making processes. Participating members who combine their heterogeneous competencies seek to create collaborative advantages which benefit all members in the long run (Kotzab *et al.,* 2011). Entering into a collaborative relationship is often radical and can lead to a leadership with different directions and capabilities. The companies that establish themselves as dominant players in a supply chain network will often have strong influences on others to streamline supply chain operations that can deliver excellent customer service levels. They also have flexibility to standardize value added processes with lower costs and higher responsiveness. Testimonies from previous studies have shown the success of collaboration among Dell, Zara, Hewlett-Packard, Procter and Gamble, and Walmart in creating a superior performance.

2.4.5 Dairy Board Policies and Regulations

Eeconomic Recovery Strategy of 2003–2007 identified the agricultural sector as key pillar to reviving economic growth in Kenya. This led to the articulation of the sector-wide Strategy for Revitalizing Agriculture (SRA, 2004-2014). Agricultural Sector Development Strategy (ASDS 2008-2020) was developed in 2008 and vision of Agricultural Sector Development Strategy 2008-2020 was to make Kenya a food-secure and prosperous nation. The mission was to encourage innovative and commercially oriented agriculture.SRA envisaged evolution of a globally and regionally competitive

agricultural sector through producers accessing quality inputs and services. However, quality inputs and services can only be attained if stakeholders play their roles effectively. SRA envisages government role as being limited to making policy. It emphasizes separation of policy-making, regulation, commercial functions and service delivery. These principles have major implications for the roles and functions of institutions in various stages of the dairy industry development and value chain. In addition, the National Livestock Policy (NLP 2008) provides an overarching policy framework for the entire livestock sector, including the dairy industry. The new policy articulates and applies these principles to different segments of the dairy industry.The focus of this policy is to create the necessary framework, institutions and appropriate relationships for an efficient dairy industry. The anticipated growth can only be achieved if proper marketing channel are established and they are properly managed. Processing of long shelf life dairy products provide an opportunity for marketing the surplus milk, therefore; there is need to promote exportation of dairy milk and milk products in the region and even beyond(G.O.K, 2013).

The new policy also articulated Dairy Research issuesin place to solve the problem of Underutilization of the existing dairy research capacity. The policy constraints were: Poor prioritization of research agenda, Inadequate funding for dairy research, Lack of comprehensive approach to disseminating available research findings andlack of research focus on areas of the dairy industry. Moreover, research has rarely been client based. However the proposed policy intervention were: The government to facilitate the strengthening of research- extension-client linkage, feedback mechanisms and institutionalize dairy research priority setting mechanisms; Restore and strengthen dairy research to address issues of responsiveness and efficient technology development and transfer. Prioritized research areas will include dairy product development, milk packaging and dairy standards; Accelerate the formation of a Kenya Livestock Research Institute; Increase budgetary allocation for livestock research; Enhance commercialization of research products, including contracts and royalties for sustainability; Expand and diversify sources of dairy research funds. The KDB has been instrumental in promotion, co-ordination, lobbying, trade negotiations, formulation of dairy policy, regulatory and

inspectorate services for the dairy sector, research and development of private enterprise. The activities coordinated by KDB have improved producer price of milk, lowered consumer price and increased milk intake by the processors. However, there is need for a clear separation of regulatory and developmental roles of KDB for the benefit of the industry (G.O.K, 2013).Milk packaging is a critical component in milk marketing and quality control, however; the conventional milk packaging materials are costly resulting in high and unaffordable prices of packaged milk. As a result, there is a tendency to package milk in non-food grade materials that are unhygienic and environmentally unfriendly. Moreover, there has been a shift from packaged milk to unpackaged milk in response to demands of low priced milk by the low-income groups. This has prompted health and safety concerns that need to be addressed. To support and promote local milk processing, the dairy cooperatives and private sector operators will continue to benefit from tax rebates on new investments. This will includes review of recently introduced value added tax on inputs (VAT Bill 2013) in addition to zero rating of milk processing inputs. To address the milk packaging problem, priority areas of emphasis will be on promotion of the development and adoption of cost effective milk packaging that is of acceptable standards. Health and milk safety issues will be addressed through value chain approach in addition to mainstreaming environmental issues. The government will also explore ways and means of encouraging local initiatives and use of locally available materials in milk packaging mainly through industrial research. Apart from developing innovative ways of reducing processing costs, dairy processors must actively involve producers in the collection of milk from the rural areas. In addition, producer prices based on differences in quantities and quality of milk delivered by a given client (e.g. quantity premiums) will be encouraged. Such quantity premiums will encourage large groups or co-operative societies' participation in dairy marketing in addition to improved breeding practices.

While the Government has been able to ensure proper hygiene and quality control and assurance for milk products in large-scale marketing enterprises, such assurance for dairy products handled through informal marketing channels has been elusive. Milk testing and

quality control systems are critical components for the successful development of a competitive dairy value chain. The high cost of milk testing equipment, lack of proper skills on the use of this equipment, in adequate pre- harvest and post-harvest quality management systems and institutional inefficiencies are also major hindrance to total quality control and assurance in the dairy value chain. Consequently, priority measures will be introduced to ensure that dairy producers, processors and manufacturers have put in place quality control and assurance systems that conform to international standards. Such measures will include animal feed and input quality control, provision of incentives for milk testing equipment procurement and installation, stakeholder sensitisation on the importance of safe use of antibiotics and other veterinary drugs, milk testing training and strict enforcement of quality standards. Moreover, the relevant institutions will be supported with the appropriate legal framework to enforce quality management along the dairy value chain (G.O.K, 2013). Dairy farmers' dependence on rain fed dairy production often leads to milk surpluses during the wet seasons and severe shortages during dry seasons. This leads to the wide variations in domestic milk supply over the years. This phenomenon demands serious attention so that the country can stabilise the supply of milk both for domestic and export market. In this regard, processors will be encouraged to offer premium prices during dry seasons. The priority areas include promoting processing of long-life milk products. Other areas are ensuring that dairy products are stocked in the national food strategic reserves.

2.4.6 Performance of Dairy Processing Firms in Kenya

Performance measure is an indicator that establishes how well an organization accomplishes its goals; it may include market orientation, customer satisfaction, financial performan etc. Performance has been measured in numerous methods like firm performance, operational performance and financial performance. However, it has been established that competition is no more among organizations but among supply chains. Thus, to compete globally, it is essential to include all members and performance should be measured on supply chain level. An organization with better supply chain can keep the business smooth, efficient and effective (Basu, et al, 2017). In order to achieve efficiency

and effectiveness managers must establish a complete supply chain approaches. There are various approaches that positively affect the performance, the most effective if considered is supply chain collaboration. In the 1950's, organization performance was defined as the extent to which organizations, viewed as a social framework, fulfilled their objectives since its evaluation was focused on people, work and organizational structure (Jack et al, 2008). Later in the 1960's and 1970's, performance was described as an organization's ability to exploit its environment for acquiring and using limited resources since organizations began to explore new ways to evaluate their performance and therefore greater emphasis was employed into mass production so that manufacturers could minimize their costs. Performance of the firm can be measured in several ways. According to Chen and Paulraj (2004), a firm's performance can be measured in terms of financial performance and operational performance. Firm performance can be also viewed as service effectiveness and cost effectiveness (Richey *et al.,* 2010). A comprehensive review revealed that for the good performance measure all the members should be considered. Performance measure should consider both financial and non-financial items, all the levels of supply chain must be considered and all process of supply chain should be included. In Dairy Processing Firms , the performance was measured by market share (non-financial)client satisfaction, and profitability (financial) and competive advantage.Jones and Oliver (2006) posit that organizations in all sectors have a common need to manage their business needs efficiently and effectively in line with their stated business objectives. Effectiveness is measured by the extent to which stakeholders or customers¨ requirements are met over time; while efficiency is measured in terms of how economically the organization's resources are utilized in providing a given level of stakeholder/customer satisfaction. The key aspects of performance of Dairy Processing Firms include market share, profitability and client satisfaction and existed constant demand for this aspects. This brings ever greater pressure for milk processing firm's performance and every firm strives to meet the needs of customer and to achieve this it requires collaboration of the entire supply chain.The dairy subsector is dynamic and occupies an important place in the agricultural economy of Kenya as milk consumption levels in the country are among the highest in the developing world which aids in contributing to an estimated 14% of

agricultural Gross Domestic Product (GDP) and approximately 4% of overall Kenya's national GDP (KDB, 2014). Also significant is the fact that Kenya is the second largest dairy producer and consumer in Sub- Sahara Africa and is relatively self-reliant where it is dominated by various dairy industries and a high number of smaller and medium processors leading to very stiff competition (Dairy Report, 2016). Milk production has grown at an average of 5.3% increasing from 3.2 billion litres in 2003 to 5.2 billion litres in 2013 while volumes of value added and process sed milk has grown by an average 7% per annum increasing from 197 million litres in 2003 to 523 million litres in 2013 (USAID, 2010).

Before independence, dairy was largely a preserve of large scale white settler farmers and was export oriented. To ensure smooth development in the dairy industry, the Kenya Dairy Board was established through an Act of Parliament in 1958, under the Dairy Industry Act Cap 336 of the laws of Kenya with the overall objective of regulating the industry. After independence, government policy focused mainly on including indigenous Kenyan smallholders in production and marketing with highly subsidized interventions by the government which has made small holder dairy farmers dominate the industry at production level (Dairy Report, 2011). The liberalization of the marketing of milk in Kenya in 1992, saw the entrance of a number of private milk processors and marketers including the advent growth of the informal sector (Ngigi 2004). Other milk marketing channels include co-operative societies and farmers' group, informal traders, distributors and retailers while consumers are the major players who have an important influence on how the other players perform. Liberalization has since brought a lot of dynamism of the dairy market and institutions where there is stiff competition in the milk processing sector and therefore there is need to continually measure organizational performance so as to effectively and efficiently operate in the market (Waema, 2013).The Kenya dairy farming sub-sector is one of the most vibrant in East Africa and it has the highest milk per capita availability and consumption (Ngigi, 2004).Kenyans including people from Mirangine and Mauche are amongst the highest milk consumers in the developing world, consuming an estimated 145 litres per person per year, more than five times milk consumption in

other East African countries. The good market prices resulted from the liberalization of the dairy sector (Ngigi, 2004).

According to the report by Setpro Consult Ltd entitled "Kenya Market-led Dairy Program, an inventory study of milk processors in kenya" , the Kenya's dairy industry is private sector driven and is the largest agricultural sub-sector which contributes 4% to GDP (KDB, 2012). The sector is dynamic with high growth figures of marketed milk and investments by dairy societies and processors mainly in the cold chain, production of long life milk and milk powder. About 80% of Kenya's total milk production per capita is 5 billion litres is produced on small scale farms. In the broader context of food security, KMDP acknowledges the need for more efficient and competitive (dairy) value chains, to assure enhanced access for consumers with lower income to safe and affordable milk products. However, it poses huge challenges to the industry in terms of cost of production, collection and cooling, seasonal fluctuations in supply, and the quality of raw milk. There is however a fast growing number of medium-scale farmers/investors who invest in modern and commercial dairy production. Currently the sector provides food, income and employment for approx. 1.8 million people across the dairy value chain: farmers, transporters, traders and vendors, employees of dairy societies, milk processors, input suppliers and service providers, retailers and distributors. In terms of nutrition and food security, almost all Kenyans consume milk on a daily basis with an average per capita milk consumption of 115 litres per year (KDB, 2012).

A report by the Food and Agriculture Organisation (FAO) entitled "Dairy Development in Kenya" (2012), cited that there are approximately 252 dairy cooperatives in Kenya. One of the core functions of cooperatives in Kenya include marketing of members' produce and over 76% of dairy produce is marketed through cooperatives, and facilitating production through training, input supply, provision of financial services and milk collection and bulking. The Kenyan dairy industry has grown tremendously since its liberalization which has led to a rapid growth of the informal milk trade that mainly consists of small scale operators dealing in marketing of raw milk. At that time, there was an emergence of institutional arrangements in milk collection, processing and marketing,

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which included hawkers, brokers, self-help groups, neighbors and business establishments like hotels (Karanja, 2003). The informal markets controls an estimated 70 percent of the total milk marketed in Kenya (Government of Kenya, 2016).

Until the 1990s, the Kenya Creameries Corporation processed all the milk in Kenya, but its monopoly slowly decreased between 1993 and 1996 (Olok-Asobasi & Sserunjogi, 2001). Many private processors have joined the dairy business since 1992, and have increased greatly since 1999. According to the industry statistics by the Kenya Dairy Board (2012), there were an estimated 30 processors, 64 mini dairies, 78 cottage and 1138 milk bars. Investigating the influence of SCC on performance of Dairy Processing Firms in kenya delivers practical value to managers by seeking methods to increase supply chain collaboration success, identifying mediating effect of the regulatory play on milk processing firm. Kenya is one of the largest producers of milk in Africa. According to e-dairy project (2011) large-scale dairy farming accounts for 20 per cent of national milk production and small scale farming 80 per cent. There is need for collaboration between supply chain partners in order to eliminate inefficiencies and lower production and processing costs, while simultaneously increasing milk quality from farm to consumer to meet acceptable domestic and international standards that hinder business performance both locally and in the regional market. In Kenya, SNV is implementing the Kenya Market-led Dairy Programme (KMDP) that seeks to work with industry stakeholders and value chain players towards the development of a vibrant dairy sub-sector, with beneficiaries across the value chain. KMDP is a 4.5 year programme funded by the Embassy of the Kingdom of the Netherlands and is implemented by SNV in collaboration with stakeholders in the industry. The study noted that the sector faces a number of challenges which this study tried to establish.

In 2012, milk consumption in Kenya was about 4 billion liters. The consumption is estimated to rise by 3 to 4% annually driven by increases in population, urbanization and income. It is anticipated that by the year 2018, the consumption will rise to 4.7 billion litres. Currently, it is estimated that the annual per capita milk consumption is 120 litres. This is below the recommended annual per capita milk consumption is 220 litres (FAO),

therefore; milk consumption should be promoted in Kenya. Kenya produces about 5.2 billion litres of milk annually. Milk production is projected to grow by 4.5 to 5 % annually for the next ten years and it is envisaged to increase to about 12 billion litres by the year 2030. This is a clear indication of the dairy production potential in Kenya (G.O.K,2013)

2.5 Critique of Existing Literature

From empirical studies and theories the measures of SCC and performance of the firm varied and it will be difficult to utilizing one theory because they have been found to work better when matched. TCE theory frequently discussed in relation to supply chain collaboration, transaction costs are generally considered as a mediator of supply chain collaboration, but they are rarely included in empirical studies explicitly. Apart from TCE there are other alternative theories which can be used to conceptualize supply chain relationship such as principal agency theory, Social Exchange Theory (SET) and Resource Dependency Theory (RDT).

There is constant demand for superior service, increased value and competitive price. This brings ever greater pressure for efficiency gains and performance improvement. Collaboration in supply chain has been conceptualized in various ways by researchers, as it can range from very shallow transactional focused to highly integrated close relations (Goffin, Lemke & Szwejczewski, 2006); from collaborative communication to supplier development (Oh &Rhee, 2008) or from inward facing to outward facing (Frohlich & Westbrook, 2001).

2.6 Research Gaps

Studies examining the effects of supply chain collaboration on a firm's performance have shown inconsistent results (Ha *et al.,* 2011).In Kenya and specifically Tranz-Nzoia County; little has been done to address the challenges facing milk processing firms while embracing supply chain collaboration. While scholarly research has been done in the area, recent articles have called for more research, highlighting the importance of supply chain

collaboration to the business community (Daugherty, 2011). Against this background dairy processing firms canenhance their performance through supply chain collaboration.However, earlier study on SCC has paid little attention to conceptualizing prominent collaborative practices that help the chain members to understand performance drivers. Little has been done on influence of supply chain collaboration on performance of milk processing firm in Kenya. This is a serious omission considering that the dairy industry contributes substantial amount to the economy of the country. Supply chain collaboration when understood better on how it affects the milk processing firms performance would guide in decision making based on well documented and informed evidence. This study seeks to shade more light on the need of dairy processing firms and other milk processing firms embracing supply chain collaboration to enhance their performance.

While scholarly research has been done in the area, recent articles have called for more research, highlighting the importance of supply chain collaboration to the business community (Daugherty, 2011). In addition, the research studies on the collaboration in the context of supply chain are still sparse. Little has been done on the influence of supply chain collaboration on performance of dairy processing firmsin kenya. This is a serious omission considering that the dairy industry contributes substantial amount to the economy of the country and therefore, worth investigating. Supply chain collaboration when understood better on how it influences the milk performance of dairy processing firmswill guide in decision making based on well documented and informed evidence. The current study seeks to shade more light on the need of dairy processing firms and other dairy processing firms embracing supply chain collaboration. A recent survey conducted by Supply Chain Management Review and Computer Science Corporation (SCMR and CSC, 2004) observes that collaboration is cited as the single most pressing issue; but how to achieve it is not well understood. Studies examining the effects of SCC on performance of dairy processing firms have also shown inconsistent results (Ha *et al.,* 2011).

2.7 Summary

This chapter has reviewed literature on influence of supply chain collaboration performance of Dairy Processing Firms in general. The first section inliteraturewastheoretical framework specifically, Resource Based View theory, Transactions Economic, Collaborative Network Theory and Strategy-Structure Theory theory. They were all linked to study variables. The Conception framework was visualized and illustrated to show the relationship of variables.

Review of variables was done starting with independent variable, then mediating variable and finally dependent variable. Independent variable wereSupply chain information sharing, Decision Synchronization, Supply chain Supply chain incentive alignment and teamwork. The mediating variable was dairy board policies and regulations. Finally category was the dependent variable which was performance of of Dairy Processing Firms. For all literate reviewed, there was linkage to expound on the relationships. Empirical works was done and the researcher linked other scholars works with the current study. Critique of existing was done on the theories in order to make informed discussion. From the literature reviewed, it is evident that most of the research was done in other countries and little has been in Kenya. Moreover, research on the influence of supply chain collaboration on performance of Dairy Processing Firms has little documentary evidence globally.

The study reviewed general literature regarding the key concepts of supply chain collaboration and performance of dairy processing firms as well as empirical literature specific variables were supply chain information sharing,supply chain decision sychronisation, supply chain incentive alignment and supply chain teamwork. More so on mediatin variable in terms of policies and regulation mediating effects on the relationship betwee supply chain collaboration and performance of dairy processing firms. The review clearly outlined that the noted supply chain collaboration are crucial on performance of dairy processing firms in kenya. The review however revealed that the dairy processing firmshad little empirical evidence in kenya. Moreover, the review revealed that the

descriptive research design dominates in most studies. The present study therefore sought to fill the gap left by by using the mixed methods approach.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlighted the methodology used to undertake research. The following subtopics were highlighted: research design, target population, sampling frame, sampling and sampling technique, data collection instruments and procedure, pilot-testing, and data analysis and presentation,

3.2 Research Design

Research design is a plan outlining collection, measurement analysis that effectively and efficiently enables research operations to be done with ease (Kothari & Gard, 2014). The study adopted a mixed research design which covered qualitative (descriptive) and quantitative research design in this regard qualitative research design applied to qualitative data in analysis of interviewed data however quantitative research design was applied on quantitative data on the questionnaires. Combining qualitative and quantitative methods help to cross validate results of a paticular method (Batenburg, 2007). The inclusion of qualitative methods in this study is to aid some processes and provide depth to the research. The approach helped the researcher answer questions that were not answered using qualitative or quantitative methods alone. It provided a more complete picture by noting trends and generalisations as well as in-depth knowledge of participants' perspectives.Moteover, mixed method research design was chosen because the research hypotheses are best answered by both qualitative and quantitative data. This study collected primary data by use of questionnaires and interviews were done to compare results of the questionnaire information. Results from qualitative research method were used to enhance, elaborate or clarify results from quantitative research method. Questions of frequency may best be explored by quantitative methods, and perception and opinion by qualitative. The questions dealt with both of these, and hence mixed methods were

preferred. This "mixing" or blending of data provides a stronger understanding of the problem or question than either by itself. The mixed research design that consist both qualitative and quantitative approaches allows researcher to collect information from the people on their habits, opinions, attitudes and any other educational or social issues. Creswell (2013) showed that both forms of data provide different types of information. Each type of data collection has both limitations and strengths that can be combined to develop a stronger understanding of the research problem or questions (and, as well, overcome the limitations of each).

Qualitative data was collected from supply chain practitioners who provided information on influence of Supply chain collaboration on performance of firm. The practitioners are key informants on Supply Chain Collaboration of the firm. The researcher explored in depth information on the area of interest. A semi structured interview method was used to collect the data. The questions were relevant to the study and questions were mainly open ended. The study also utilized correlational design where it indicated how one variable factor or attributes varies in relationship to another (Mugenda,2008). Basically was to ascertain the relationship among the variables.

3.3Target Population

Table 3.1shows the study target population for the current study. The target population represents all casesof people or organizations which possess certain characteristics; it is the large rgroup from which a sample is taken (Mugenda, 2008). A population can be defined as including all people or items with the characteristic that a researcher wishes to understand. The target population for the study was the dairy processing firms operating in Transnzoia county. This target comprised of fresh milk suppliers to KCC processing plant and customers of buying processed milk products of KCC at Nakumatt supermarket. The study targeted 10,488 dairy farmers supplying to KCC and 13,906 customers buying processed milk products. According to KCC Food Policy (2016), 80.3 percent of milk intake is supplied by large and small groups while 25 percent supplied directly by individual farmers. The largest and most important suppliers are individual farmers, and

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small holder farmers. Nakumatt retailers' monthly sales records of (2016) showed that the products bought vary in quantity. This is a replica of the buying trends of processed milk products. The study used customer's frequency data for the most preferred KCC products: KCC Fresh UHT milk TCA, Gold Crown Milk Whole TFA, Fresh milk TFA and Mala.

Table 3.1: Target Population

Category	Target population
Suppliers	10,488
Customers	13,906

3.4 Sampling Frame

Table 3.2 and 3.3 shows suppliers and customers' distribution of sample across target Population. According to Orodho (2005) a sampling frame is a list of all those within population who can be sampled. The sample frame comprised of farmers supplying milk to of Dairy Processing Firms factories and customers of processed milk products buying at Nakumatt supermarket. Stratified random sampling was used to select farmers and customers who participated in the study. Stratified random sampling is a modification of simple random in which you divide the population in to two or more relevant and significant strata based on one or a number of attributes (Saunders, Lewis & Thornhill, 2019). The proportional distribution of suppliers and customers in the population was retained in the sample. The following is a distribution of samples across the target population. The choice of the cases was because of their contributions to the firms' daily intake and the customers' frequency visits to by the varied fresh milk products.

Table 3.2: Suppliers Distribution of Sample across Target Population

Suppliers	Target population	Percentage	Distribution
Large , Medium and small scale groups	3457	33	127
Large scale, small individual farmers	7031	67	257
Total	10,488	100	384

Table 3.3: Customers Distribution of Sample across target population

Item Description	Customers Quantity	Percentage	Distribution
Fresh UHT Milk	2010	14	54
Gold Crown Milk Whole	2200	16	61
Fresh Milk TFA	4654	34	131
Mala	5042	36	138
Total	13,906	100	384

3.5 Sample size and Sampling Technique

The following formula was adopted from (Mugenda, 2008) to determine the sample size:

$$N \; = \; \frac{Z2 \; pq}{d^2}$$

Where:

N = the desired sample size if the target population is greater than 10,000

Z = the standard normal deviate at the required confidence level.

p = the proportion in the target population estimated to have characteristics (assume 50% if unknown)

q = 1-p.

d = the level of statistical significance set or *Alpha*

There is no estimate available of the proportion in the target population assumed to have the characteristics of interest; the 50% was used as recommended by Fisher *et al.,*

Therefore with the proportion of the target population being .50, then the z- statistics is 1.96. Consequently, the sample size was;

$$n = \frac{(1.96)^2(0.50)(1 - 0.50)}{(0.05)^2} = 384$$

3.6 Data CollectionsMethods

For this study, questionnaire was the main tool used to collect data. The use of questionnaires was preferred as it ensured confidentiality is upheld, save on time, and easy to administer (Mugenda, 2008). The questionnaire as a tool of data collection is ideal because the researcher will be able to collect information from a large sample. It also gives a greater feeling of anonymity hence encouraging open responses to sensitive questions and free from biasness and so accurate and valid data can be gathered. The questionnaire was structured using the Likert format with the five-point response scale. In this Likert scale type of questionnaire, the respondents were given five choices. Respondents were asked to give an indication of processing firm performance levels in connection with SCC employing a five-point Likert rating scale from "strongly agree" to "strongly disagree" with "Neutral" as the midpoint (Appendix I and II).

The researcher interviewed supply chain participants on individual basis to gather more in-depth information (Appendix III). Participants were; Field Service Officer, Regional Sales Manager, Quality Assurance Officer, and Factory Manager. Interviews provided a robust opportunity to learn more about influence of supply chain collaboration on performance of of Dairy Processing Firmsalong with providing the opportunity to explore what makes collaboration necessary and more successful. A number of data quality issues identified in relation to the use of semi-structured relate to reliability, forms of bias and validity and generalizability/external validity.

3.7 Data Collection Procedure

Data Collection Procedure was followed when administering the research instrument. The questionnaires were administered on „drop and pick later" method. Follow up and reminders were done through telephone calls and visits. This facilitated replication and testing the findings to evaluate reliability. The questionnaire was group-administered in the milk collection centres and customers were requested to fill when they visited the supermarket and buy processed milk products. The questionnaire introduced why the researcher wants the respondents to complete the survey and had instructions on how to respond to the questionnaire. A structured interview followed with open ended questions being asked and follow up determined based on the provided answers. Qualitative interview elicited information about SCC. One to one face to face interview was preferred to collect data. The questions elaborated on how to enhance dairy processing firms performancein all study variables.

3.7.1 Field Observation

It is argued that all social research is a form of participant observation, because it is not possible to study the social world without being a part of it (Cohen *et al,* 2002). It is also assumed that human-as-instrument is the way to answer the complexity of a problem, and this is to be achieved by 'indwelling' within these complexities. They asserted that such beliefs enable the researcher to understand the context of incidents, to be open-ended and

inductive, to see things that might otherwise be unconsciously missed, to discover areas that participants might not feel free to talk about in interview situations, and to move beyond perception-based data. Observation has been a consistent part throughout the whole research period.

From the beginning of the data collection process the study looked for information and incidents that could improve the understanding of issues related to the cases. This was more evident as the study visited the supplier's collection centers to get an insight into their practice. The day-to-day activities were observed during the specified days and notes recorded into a research diary. Many incidences were observed that indicated how the of Dairy Processing Firmsapproached and dealt with their suppliers and customers. Customers we observed when they enter supermarket to establish the priority of milk products

3.7.2 Interview Method

Qualitative interview elicited information about influence of SCC on performance of of Dairy Processing Firms. One to one face to face interview was recommended to explore in depth on the area you are interested (Saunders, Lewis & Thornhill, 2019). The researchers interviewed participants on an individual basis to gather more in-depth information (Appendix 2). The questions covered the effect of Supply chain information sharing, decision synchronization, incentive alignment, Supply chain teamworkand mediating effect of relationship between supply chain collaboration and performance of dairy processing firms. For purposes of completeness of information gathered, the researcher conducted face to face interviews with supply chain practitioners.

3.8 PilotStudy

According to Orodho (2005) a pilot test is necessary for testing the reliability of data collection instruments. Pilot study is thus conducted to test the weakness in design and instrumentation to provide proxy data for selection of sample. Reliability refers to the

consistency of a measure. A testis considered reliable if the same result is arrived at repeatedly (Kothari, 2008). The preliminary analysis using a pilot test data was undertaken to ensure that the data collected enabled the investigative questions to be answered (Saunders, Lewis & Thornhill, 2019).

Prior to using the questionnaire to collect data, it was pilot tested. The purpose of the pilot test was to refine the questionnaire so that respondents had no problem in answering the questions and there was no problem in recording the data. This enabled the researcher to obtain some assessment of the questions' validity and the likely reliability of the data that was collected. Initially the researcher asked an expert to comment on the representativeness and sustainability of the study questions as well as allowing suggestions to be made on the structure of the questionnaire, this helped establish content validity and enable the researcher to make necessary prior to pilot testing with a group as similar as possible to the final population in the sample. The researcher pilot tested to 20 respondents who were not part of the sample. After that the researcher checked for completed pilot questionnaire to ensure that respondents hadn't problems understanding and answering questions and followed all instructions correctly. Their responses provided an idea of reliability and suitability of the questions.

3.8.1 Validity of the Research Instrument

Validity is the degree to which research instrument serves the purpose for which it was constructed; it is the degree to which results obtained from the analysis of the data actually represents the phenomena under study (Mutai, 2000). 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.

Content validity refers to the extend to which the items on the test are fairly representative of the entire domain the test seeks to measure. 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. Further,

content validity was verified through expert opinion from supervisors and practitioners. The researcher examined what other researchers have coped with the research problem for a similar secondary data set in a similar context. Other researchers have found measures suitable then the researcher was more certain that they will be suitable for the research questions and objectives as supported by (Saunders, Lewis & Thornhill, 2019).

Construct validity is the degree to which, a test measurean intended hypothetical construct (Mugenda, 2008). 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, 2008). Construct validity was achieved through restricting th equestions to the conceptualization of the variables and ensuring that the indicators of each variable will 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. Experts undertaking the study (research assistants) were trained on the administration of the instruments and to enhance construct validity, adequate definitions of measures were given by operationalization of each objective and also provision of its measuring scale.Consequently, to achieve a good level of instrument validity, a five-point Likert scale questionnaire survey was revised after the pilot study. The initial pool of generated items-by researcher, validated by supervisorswere revised. The objective of this revision was to ensure that each construct was properly and accurately addressed. The respondents were requested to provide feedback regarding the clarity of the questions as well as the organisation, logic, and length of the questionnaire. This helped to refine the instrument. Based on their feedback, redundant and ambiguous items were modified, eliminated, and new items were added wherever necessary.

3.8.2 Reliabilityof the Research Instrument

Reliability is the extent to which measurements taken with a particular instrument are repeatable (Hair *et al.,* 2010). In order to test reliability of the instrument to be used in the study, the test re-test was used. Test re-test estimates of reliability will be obtained by correlating data collected with those from the same questionnaire collected under as near

equivalent conditions as possible (Saunders, Lewis & Thornhill, 2019). To successfully evaluate internal consistency and reliability among items within two constructs, independent runs was done for each of the five constructs using Cronbach's alpha to test reliability of the questionnaire. The draft questionnaire was pilot tested. According Orodho, Abobo and Osero(2014) the reliability of an instrument is the measure of the degree to which a research instrument yields consistent results or data after repeated trials. In order to test the reliability of the instrument, the Cronbach alpha test which is a measure of internal consistency will be used in which closely related sets of items are taken as a group. The formula for Cronbach alpha is:$\alpha = \frac{K\bar{r}}{(1+(K-1)\bar{r})}$

$$\text{Where } K = \text{ numbers of indicators or number of items}$$

$$\bar{r} = \text{mean inter} - \text{indicator correlation.}$$

The value one gets for α usually indicates the percentage of the reliable variance. For instance, if one gets a value of 0.7, it means that 70% of the variance in the scores is reliable variance, which means that 30% is error variance (Tavakol and Derrick, 2011; Cronbach, 1951).

3.9 Data Analysisand Presentation

Data analysis involves examining, categorizing, tabulating, testing or otherwise recombining quatitative and qualitative evidence in order to address the population of the study.Data Analysis involves actions and methods performed on data that help describe facts, detect patterns, develop explanations and test hypotheses. It is the process of systematically applying statistical and logical techniques to describe, illustrate and evaluate data. Data processing in research is a set of methods that are used to input, retrieve, verify, store, organize, analyse or interpret a set of data.To confirm if econometric assumptions that relate to the OLS regression were fulfilled,the study conducted diagnostic tests for each of the OLS regression models.Non-graphical tests for homoskedasicity, multicollinearity, narmality and autocorrelation waere comstructed by

the study.Robust Standard Errors Technique was used to solve the problem of heteroskedasticity that was found presenting the OLS regression models.After the estimation of the OLS regression models for both direct effect and mediating effect,their results were presented in form of tables to enhance efficiency interpretation.The results derived from the te estimated OLS regression models were used to test the research hypothesis of the study.To evaluate the strength of the relationship between the study variables,the researcher tested hypothesis for both the direct and moderated OLS regression models.

3.9.1 Quantitative Data Analysis

Quantitative Data was coded, organized to bring the meaning.Analysis of data was done by the us of both descriptive and inferential statistics.The study used descriptive statistics analysis to analyse the data so as to meet the objective of establishing the influence of SCC on the performance of milk processing firms.Regression analysis was used to meet the the objective of determining the relationship between SCC practices and performance of milk processing firm.The study applied Statistical Package of Social Scientists (SPPSS) version 20 to process and analyse the data.Data screening as well as cleaning was done for the missing values and outliers.Some assumptions of the naormality that include linearity,homoscedasticity,autocorrection and multicollinearity were also tested.In determing the benefits of SCC on performance of Dairy Processing Firms,factor analysis was applied. Qualitative views opinions were discussed simultaneously comparing the results from quantitative data. This formed the basis for cross checking and comparing the two sets of data and drawing conclusions of the study. Quantitative data was analyzed using descriptive and inferential statistical. In addition, a multiple regression models on the influence of supply chain collaboration versus performance of dairy processing firmswas applied to examine the relationship between the variables. Inferential data was done using Pearson Correlation Coefficient and regression analysis through enter method. The model performance of of dairy processing firmsas the dependent variable and the independent variables were supply chain information sharing, decision synchronization, incentive alignment, and teamwork. Mediating variablewas policies and regulations. Prior

to measuring the respondents' response on influence of supply chain collaboration on performance of Dairy Processing Firms, the research conducted a measure of reliability and factor analysis. The response on the influence of supply chain collaboration on performance of of Dairy Processing Firms was measured by computing the indices based on the responses derived from the Likert- scaled questions. Since percentages are the most widely used descriptive analysis (Creswell, 2007). SPSS has a descriptive statistics feature that assists in variable response comparison and gives a clear indication of the response frequencies. Afterward the study gave a comprehensive summary of the estimated regression results in tables for easy interpretation of the findings.According to Topal (2014), a multiple regression model has one dependent and more independent variables. The following multiple regression models was used to establish the relationship:

Regression models:

$$Y = \beta0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon \text{ ....(i)Without a mediator}$$

$$Y = \beta0 + \beta_1X_1.Z + \beta_2X_2.Z + \beta_3X_3.Z + \beta_4X_4.Z + \varepsilon.............. \text{ (ii)With a mediator}$$

Equation ii shows the effect of mediatorZ which is policies and regulations

Where:

Y=   Performanceof   Dairy   Processing   Firms   (valueof dependentvariable),

$\beta0$, β_1, β_2, β_3, β_4, are regression coefficients to be estimated.

Y = Performance of of Dairy Processing Firms

X_1 = Supply chain information sharing

X_2 = Decision Synchronisation

X_3 = Incentive alignment

X_4 = Teamwork

Z = Dairy board Policies and Regulations as the mediating variable

ε= Error term

3.9.2 Variable Definition and Measurement

Variables are the characteristics or events that are observable and assume a range of values during the research.Dependent variable is the outcome variable that is measued in each subject,which may be affected by alteration of the independent varaibel (operationing) variable.The operational definition of a variable is the specific way in which the study measure it. Same conceptual might be measured differently by another study. One factor that determined the choice of statistical tests which was used to analyse the data was the level of measurement of the dependent varaible. The level of measurement of the dependent variable is one factor that determined the choice of statistical tests that were used to analyze the data. To operationalize the research variables, the study first determined the indicators/parameters of each independent variable and then employed ordinal/Likert scale to measure the independent variables. Based on theories and models in the literature review, the scale comprised an ordinal scale of 1-5. There were four independent variables, mediating variable and dependent variable.

Table 3.4: Variable Definition and Measurement

Variable set	variable	Indicators	Measurements
Independent	Supply chain information sharing	Formalization	Ordinal scale: Questionnaire was used based on five point likert scale
		Integration	
		Order Tracking	
	Decision Synchronization	Joint decision	Ordinal scale: Questionnaire was used based on five point likert scale
		Joint planning	
		Joint resolution	
	Incentive Alignment	Retail price	Ordinal scale: Questionnaire was used based on five point likert scale
		Order changes	
		Reduced inventory costs	
	Teamwork	Relationship	Ordinal scale: Questionnaire was used based on five point likert scale
		Effort	
		Trust	
Mediating	Dairy Board	Policies	Ordinal scale: Questionnaire was used based on five point likert scale
		Regulations	
Dependent	Y = Performance of Dairy Processing Firms	Market share	Ordinal scale: Questionnaire was used based on five point likert scale
		Client satisfaction	
		Profitability	
		Competitive advantage	

3.10 Diagnostic Tests

Breiman (2001) argues that it is important to assess the goodness-of-fit of data models, in particular not only using omnibus tests but tests designed for a certain direction of the

alternative. These diagnostic checks do not have to be seen as pure significance procedures but also as an explorative tool to extract information about the structure of the data, especially in connection with residual plots or other diagnostic plots.

Diagnostic tests help to verify the data nature as well as aiding to specify the model that is applicable to the study.This help in ensuring that the regression results are not biased,are consistent and also efficient.The study embarked on the model estimation,diagnostic tests of importance were cariied out.Assumptions that relate to the ordinary Least Square (OLS) panel regression model were checked by the use of diagnostic tests.Linearity, heteroskedasticity, autocorrection, multicollinearity and normality were tests related to testing for violation of panel error assumptions. One of the set procedure available for regression analysis is the regression diagnostic (Oteki, 2018).To ensure that ordinary least square provide reliable estimates of the parameters, assumptions of linear regression models (OLS) were validated. Therefore through testing linearity, heteroscedasticity, autocorrelation, multicollinearity and finally normality,these assumptions were evaluated.

3.10.1 Testing for Linearity

There must be a linear relationship between the outcome variable and the independent variables. Prior to performing linear regression analysis, researcher tested the data for linearity to find out whether data that was sampled from a population that relates the variables of interest was in a linear fashion. Based on the ANOVA, value sig. deviation from linearity of p-value greater than 0.05 it can be concluded that there is a linear relationship between the dependent and in independent variables.

3.10.2 Testing for Heteroscedasticity

Heteroskedasticityrefers toregressiondisturbances whosevariances arenotconstant acrossobservations (Meme,2017).The crucial assumption of classical linear regression model is that the volatility that has occurred in the model should be uniform in nature (homoscedasticity). If the assumption is not satisfied by the model, then one would have

to consider the model to have been exposed to heteroscedasticity problem. Based on the Glejser's test for heteroscedasticity,output sig. coefficients greater than 0.05, it can be concluded that there is no heterscedasticity problem.

3.10.3 Testing for Autocorrelation

Time-series data often displays autocorrelation or serial correlation of the disturbances across periods. Serial correlation is problematic to linear panel datamodels because its presence renders the standard errors biased as well as making theestimated regression coefficients consistent but inefficient .Therefore,to detect the presence of autocorrelation, the study opted for the Durbin-Watson Test. The Durbin-Watson statistic is a test of First Order Autocorrelation between the error and its immediate previous value. The test aids todetermine whether the errors in different observations are correlated with each other. The null hypothesis in Durbin-Watson test is that there is no serial correlation.

Another key assumption in regression model is that the error terms are independent of each other. This study presents a simple test to determine whether there is autocorrelation (serial correlation), i.e. where there is a (linear) correlation between the error term for one observation and the next. When auto-correlation is present, it is suspected that t values for regression parameter's estimates are unduly large making corresponding p-values unduly small. In other words, in presence of auto-correlation, regression parameter's estimates may wrongly be interpreted as significant. Durblin- Watson statistic should be between 1.5 and 2.5 and if the rule is true then the data is not auto correlated (Oteki, 2018)

3.10.4 Testing for Multicolinearity

Further to the reliability tests a multi-co linearity test was done to ensure that the accepted independent variables did not exhibit co linearity amongst themselves. A situation in which there is a high degree of association between independent variables is said to be a problem of multi-co linearity which results into large standard errors of the coefficients associated with the affected variables. According to Mugenda (2008), multi-co linearity

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can occur in multiple regression models in which some of the independent variables are significantly correlated among themselves. In a regression model that best fits the data, independent variables correlate highly with dependent variables but correlate, at most, minimally with each other. Multi-co linearity is associated with VIF above 5 and tolerance below 0.2. VIF statistic above 5 is an indicator of multicollinearity and should be removed from regression models(SPSS, Version 20).

3.10.5 Testing for Normality

Anassumption of the OLSregression model that impacts the validity of all tests is tha tresiduals behavenormal (Oteki,2018).This study used the Shapiro Wilktest,a non-graphical test for normality, so as to determine whether residuals behaved normally. The Kolgomorov-Smirnov test is a non-parametric test that can be used to test the underlying distribution of a given random variable. This was used to test whether the dependent variable and independent variables followed a normal distribution. If the P- values are less than 0.05 at 95% confidence, the study will conclude that the dependent variable and independent variables follow a normal distributed and hence fitting a linear model to the data was justified. An assumption of the OLS regression model that impacts the validity of all tests is that residuals behave normal. This study used the Shapiro Wilk test, a non-graphical test for normality, so as to determine whether residuals behaved normally. If the p-value was found greater than 0.05 (p>0.05), the study would fail to reject the null (at 95%) and thereafter conclude that the residuals were normally distributed (Meme, 2017).

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The chapter presents the findings in terms of response rate, pilot results, reliability statistics, demographic composition of the study sample, factor analysis, descriptive analysis of independent and dependent variables, inferential analysis of the relationships and discussions thereof. Quantitative analysis of suppliers and customer results were consecutively presented.

4.2 Response Rate

Table 4.5 shows the response rate of respondents. Orodho (2005) defines response rate as the extent to which the final data sets includes all sample members and is calculated as the number of respondents with whom interviews are completed and divided by the total number of respondents in the entire sample including non-respondents. The researcher distributed a total of 384 questionnaires to suppliers. Out of the 384 questionnaires, 342 from were filled correctly, returned and gave a response rate 89 percent. However for customers, only 314 were correctly filled, returned and gave a response rate of 82 percent. The response rate was sufficient to make generalizations. (Mugenda, 2008) reiterated that a response rate of 50% is adequate for analysis; a rate of 60% is good and a response rate of 70% and over is excellent. The response rate for the study was considered excellent for further analysis. The remaining percentage comprised of non-response questionnaire because they were not available and others were unwilling to participate in the study. Others were also discarded by researcher because of incomplete answers.

Table 4.1: Response Rate

Respondents	Questionnaires Distributed	Questionnaires Received	% Response
Suppliers	384	342	89
Customers	384	314	82

4.2.1 Suppliers Response Rate

Table 6shows the suppliers' response rate of respondents. A sample of 384 suppliers from category large, medium and small scale groups and large scale, small individual farmers were selected to participate in the study. Questionnaire was distributed respectively to them and the actual response and percentages were described. The results revealed that majority of the actual respondents were from large, small individual farmers with 70 percent while from large, medium and small scale farmers were only 30 percent. Empirical studies by GOK (2003) showed that about 80 per cent of the milk consumed in the domestic market is produced by small-scaleproducer. The interview response from supply chain practitioners of the firm confirmed that the individual farmers delivering milk to the firm had created a good relationship, trusted and delivers individually to the firm. They also freely share information when they were requested.

Table4.2: Suppliers Response Rate

Suppliers	Sampled Respondents	Actual Respondents	Percentage Response
Large , Medium and small scale groups	127	103	30
Large scale, small individual farmers	257	239	70
Total	384	342	100

4.2.2 Customers Response Rate

Table 4.7shows customers' response rate. The results showed four groups of customers buying different brands. It reveals that customers who buy mala and Fresh Milk TFA had highest representation 37 and 36 percent. Gold Crown Milk Whole constituted 19 percent and UHT 8 percent. The report of KCC (2016) showed high demand of fresh milk followed by mala. Supermarket list of priority of processed products of Y = Performance of of Dairy Processing Firms was also used for the study. The highly demanded four in priority was used for the study.

Table 4.3: Customers Response Rate

Item Description	Sampled Respondents	Actual Response	Percentage
Fresh UHT Milk	54	26	8.0
Gold Crown Milk Whole	61	61	19
Fresh Milk TFA	131	113	36
Mala	138	114	37
Total	384	314	100

4.3 Pilot Results

4.3.1 Suppliers Pilot Results

Table 4.8 shows the output from pilot analysis.The data was collected, examined for completeness, coded and analyzed for reliability. Thetable shows the reliability of statements measuring each individual variable. Twenty questionnaires were distributed to milk suppliers within Trans-Nzoia. The researcher coded the questionnaire and carried out reliability analys is using Cronbach Alpha.Reliability is the extent to which a measurement of an instrument or procedure yields the same result on repeated trials (Malhotra, 2004). The reliability statistics for objective two (Decision synchronisation) and three (incentive alignment) were slightly lower compared with other objectives. The value of items in all variables were the same or nine items for all objectives, As a standard of reliability, values of coefficient alpha above 0.70 are acceptable, those above 0.80 to represent good reliability and those above 0.90 to represent excellent,(Hair et al, 2010). The results showed that all the variables met the threshold minimum alpha.

Table4.4: Suppliers Pilot Results

Reliability statistics	No. ofitems	Cronbach's Alpha
Supply chain information sharing	9	0.865
Decision Synchronization	9	0.784
Incentive Alignment	9	0.701
Teamwork	9	0.947
Dairy Board	9	0.841

4.3.2 Customers Pilot Results

Table 4.9 shows the outputfrom pilot analysis. The table shows the reliability of statements measuringe achindividual variable.Twenty questionnaires were distributed to customers buying milk products in the supermarket.All questionnaires were filled and later collected. The researcher coded the questionnaire and carried out reliability analysis using Cronbach Alpha.The results showed that all the variables met the threshold minimum alpha.

Table 4.5: Customer Pilot Results

Reliability statistics	No. of items	Cronbach's Alpha
Supply chain information sharing	9	0.901
Decision Synchronization	8	0.711
Incentive Alignment	7	0.844
Teamwork	9	0.954
Dairy Board	9	0.899

4.4 Reliability Statistics

4.4.1 Reliability Statistics of Suppliers

Table 4.10 shows reliability statistics of suppliers of Dairy Processing Firms. Cronbach's Alpha test on reliability showed score of performance of Dairy Processing Firms (10 items), Supply chain information sharing (9 items), Supply chain decision synchronization (9 items), Supply chain Supply chain incentive alignment (9 items), Supply chain teamwork(9 items) and Dairy Board (9 items) were tested. Cronbach's Alpha test on reliability showed score on items was above the minimum limit of 0.7- 0.8 as recommended by Field (2013). This indicates internal consistency and reliability of the scales. He said, "If you are using a factor analyses to validate the questionnaire, it is useful to check the reliability of your scale". It just means that a scale should consistently reflect the construct it is measuring.

Table 4.6: Reliability Statistics of Supplier

Variables	Number of Items	Cronbach's Alpha
Performance of dairy processing firms	10	0.851
Supply chain Information sharing	9	0.826
Suipply Chain Decision synchronization	9	0.747
Supply Chain Incentive Alignment	9	0.702
Supply Chain Teamwork	9	0.898
Dairy Board Policies and Regulations	9	0.851

4.4.2 Reliability Statistics of Customer

Table 4.11shows Reliability Statistics of Customerof Dairy Processing Firms. Cronbach's Alpha test on reliability showed score of performance of Dairy Processing Firms (10 items), Supply chain information sharing (9 items), Supply chain decision synchronization (8 items), Supply chain Supply chain incentive alignment (7 items), Supply chain teamwork(9 items) and Dairy Board (9 items) were tested. Cronbach's Alpha test on reliability showed score on items was above the minimum limit of 0.7- 0.8 as recommended by Field(2013). This indicates internal consistency and reliability of the scales. He said, "If you are using a factor analyses to validate the questionnaire, it is useful to check the reliability of your scale". It just means that a scale should consistently reflect the construct it is measuring.

Table4.7: Customer Reliability Statistics

Variables	Number of Items	Cronbach's Alpha
Performance of Dairy Processing Firms	10	0.828
Supply chain information sharing	9	0.820
Supply Chain Decision Synchronization	8	0.824
Supply Chain Incentive Alignment	7	0.868
Supply Chain Teamwork	9	0.807
Dairy Board Policies and Regulations	9	0.904

4.5 Firm Demographic

In this section the research focused on suppliers and customers gender factor, supplier and brand category, years of milk supply and frequency of buying.

4.5.1 Suppliers Gender Factor

Table 4.12 shows the frequencies of supplier's participation by gender. The results revealed that the male comprised 57.6 percent and female comprised 42.4 percent. From the findings it showed that slightly male respondents were higher than female. This shows gender parity on participation as more male participated on the study. This is supported by KCC report monthly milk intake records where men are slightly more than female. Empirical studies by Katothya (2017) on Gender assessment of dairy value chains showed gaps regarding gender equality issues related to benefits and constraints along the dairy value chain, value chain governance and scalability of dairy development. The report showed gender parity in dairy value chain.

Table4.8: Suppliers Gender

	Gender	Frequency	Valid Percent
	Male	197	57.6
Valid	Female	145	42.4
	Total	342	100.0

4.5.2 Customers Gender Factor

Table 4.13 shows the frequencies of customer's participation by gender. The results revealed that the male comprised 63.1 percent and female comprised 36.9 percent. From the findings it showed that male respondents were higher than female. The results revealed most of the customers were male. The results revealed that men who are customers of Dairy Processing Firms products were willing to participate than female.

Table4.9: Customers Respondents by Gender

	Gender	Frequency	Valid Percent
Valid	Male	198	63.1
	Female	116	36.9
	Total	314	100.0

4.5.3 Supplier Category

Table 4.14 shows the farmer/supplier category. The study described two groups of farmer category and results revealed that large scale, small individual farmers had highest representation 77.5 percent and there however a small parentage of large medium and small groups and comprised 21.8 percent of the respondents. The farmer category findings agreed with the Committee Paper Number: TCP/KCC/14/05a Third Quarter report of Kitale milk processing plant. This was also supported by Committee Paper No:

TCP/KCC/14/05a 3[rd]quarter report. The report showedlarge, medium and smallgroups' form 25.1 percent and Large Scale, Small individual farmers' form 74.9 percent. Empirical studies conducted by Mwakida in (2009) indicate that small scale farmers contribute 80 percent of the total milk produced and 70 percent of the marketed milk in the country. Empirical evidence isin agreement with the study results. Also empirical evidence from Wambugu, Kirimi and Opiyo(2011) showed Seven percent of suppliers were commercial farmers and the rest 93 percent are small scale producers which are almost in agreement with the results.

Table4.5: Supplier Category

Category		Frequency	Valid Percent
Valid	Large, Medium and small Groups	86	25.1
	Large scale, Small individual farmers	256	74.9
	Total	342	100.0

4.5.4 Brand Category

Results from table 4.15shows the brand of milk products. The results showed four common brand bought by customers. It reveals that customers who buy mala comprised 41.1 percent, Fresh Milk had highest representation 33.8percent, Gold Crown 19.7 percent and UHT 5.4 percent. The report of KCC (2016) showed high demand of fresh milk followed by mala. The documented evidence is almost in agreement with the study results as the demand of products differs with a small percent.

Table 4.11: Brand Category

Category		Frequency	Valid Percent
	Fresh UHT	17	5.4
Valid	Gold Crown	62	19.7
	Fresh Milk	106	33.8
	Mala	129	41.1
	Total	314	100.0

4.5.5 Years Supplied Milk

Results from table 4.16 below presents the years the suppliers had supplied milk to the firm. The suppliers who had supplied milk more than five years comprised of 59 percent, 1 to five years 30.7 percent, and less than one year 10.2 percent. From the results it showed that majority of respondents 59.1 percent had supplied more than 5 years. The study clearly shows suppliers loyalty to the firm. The results revealed that the firm has customers which remained a challenge to maintain because possibly can be tempted to supply their milk to other marketing channel.

Table 4.12: Years Supplied Milk

	Years	Frequency	Valid Percent
Valid	Less than one	35	10.2
	1 to Five	105	30.7
	More than Five	202	59.1
	Total	342	100.0

4.5.6 Frequency of buying

Table 4.17 presents the frequency of customers on buying the products of KCC. The customers who always buy milk comprised of 79.6 percent, rarely 19.1 percent, and for

the first time 1.3 percent. From the results it showed that majority of respondents 79.6 percent always buy the products. This clearly shows products that are of client satisfaction.

Table 4.13: Customers on Buying Products

	Buying	Frequency	Valid Percent
	Always	250	79.6
Valid	Rarely	60	19.1
	First time	4	1.3
	Total	314	100.0

4.6 Total Variance Explained on Supply Chain Information Sharing

4.6.1 Supplier Total Variance Explained on Supply Chain Information Sharing

The results from factor analysis on table 4.18 shows extractionof three components with Eigen values greater than one and represented 69.335 percent of variance in Supply chain information sharing. The "% of variance" column shows how much of the total variability (in all of the variables together) can be accounted for by each of the factors. The relative importance of three factors is equalized for this data. This means that IS can be explained by first three components. Factor 1 account for 42 percent of the variability in all variables, factor 2 accounted for 15percent and factor 3 accounted for 12 percent.

Table 4.6: Supplier Total Variance Explained on Supply Chain Information Sharing

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	3.792	42.138	42.138	3.792	42.138	42.138	2.554	28.375	28.375
2	1.353	15.029	57.167	1.353	15.029	57.167	1.955	21.727	50.102
3	1.095	12.168	69.335	1.095	12.168	69.335	1.731	19.233	69.335
4	.731	8.117	77.452						
5	.655	7.273	84.724						
6	.487	5.408	90.132						
7	.378	4.198	94.330						
8	.307	3.415	97.745						
9	.203	2.255	100.000						

Extraction Method: Principal Component Analysis.

4.6.2 Customer Total Variance Explained on Supply ChainInformation Sharing

With regard to customer, the results from factor analysis in table 4.19 shows three components with Eigen values greater than one (1) were extracted, which represented 67.155 percent of Supply chain information sharing of Dairy Processing Firms. This means that Performance of Dairy Processing Firms can be explained by first three components. Factor 1 accounted for 41percent of the variability in all variables, factor 2 accounted for 13percent and factor three accounted for 11 percent.

Table 4.7: Customer Total Variance Explained on Supply Chain Information sharing

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum%	Total	% of Var	Cum %
1	3.743	41.587	41.587	3.743	41.587	41.587	2.121	23.562	23.562
2	1.256	13.954	55.541	1.256	13.954	55.541	2.096	23.290	46.851
3	1.045	11.614	67.155	1.045	11.614	67.155	1.827	20.303	67.155
4	.732	8.137	75.291						
5	.635	7.058	82.350						
6	.510	5.668	88.018						
7	.495	5.505	93.523						
8	.336	3.736	97.259						
9	.247	2.741	100.000						

Extraction Method: Principal Component Analysis.

4.7 Rotated Component Matrix on Supply chain information sharing

4.7.1 Supplier Rotated Component Matrixon Supply Chain Information Sharing

The rotated component matrix in table 4.20 shows factor loadings (FL) of Supply chain information sharing "Four items on the first factor include; Effective Information technology, Information on product development shared, Farmers Know early on price changes, Firm communicates about demand, had strong FL between 0.645 to 0.874. This therefore shows that IS can be explained by "capability factors". The factors loading on the second factor included: Three items on the second factor include: Information about supply disruptions shared, Farmers informed on changes of delivery, Exchange visits to share information had strong FL (0.525 to 0.609). This can be explained by "delivery factors" The factors loading on the third factor included: Farmers know early on price

changes, Information about market conditions shared, Information on Inventory shared had strong FL (0.427 to 0.852). This can be explained by "market factors".

Table 4.16: Supplier Rotated Component Matrix on Supply Chain information Sharing

Statements	Component		
	1	2	3
The firm communicates to dairy farmers about its demand	.645	.525	
Effective Information technology is used to communicate	.876	.185	
Dairy farmers are informed on any change of delivery schedules	.148	.722	.128
Dairy farmers to know early enough on price changes	.702	.113	.427
There is exchange visits to share information	.321	.609	.269
Information on Inventory levels are shared with dairy farmers	.175	.269	.800
Information about product developments is always shared	.836		.251
Information about milk supply disruptions is always communicated		.806	.159
Information about market conditions shared is always shared	.137	.128	.852

Extraction Method: Principal Component Analysis.

 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

4.7.2 Customer Rotated Component Matrix on Supply ChainInformation Sharing

Table 4.21 Shows Rotated Component Matrix on Supply chain information sharing. With regards to customer, factor loadings of Supply chain information sharing, "Five items on the first factor includeCustomers know about price changes,   effective technology, Customers informed on products, Customers informed about benefits and Company aware customer complaints had FL between 0.364 to 0.800. This therefore shows that Supply chain information sharing can be explained by "Customers know about price

changes". The factors loading on the second factor included: Customers informed on products, Customers know about varied products, Milk products conveniently delivered, Company aware customer complaints had FL 0.364 to 0.774. This can be explained by "Customers know about varied products" The factors loading on the third factor included:Customers understand the products and Customers know where to buy had strong FL between 0.756 and 0.894. This can be explained by "Customers know where to buy".

Table 4.17: Customer Rotated Component Matrix on Supply ChainInformation Sharing

Statements	Component		
	1	2	3
Customers informed on products introduced	.643	.364	.104
and effective information technology as a mode of comm.	.706	.231	.155
Milk products are conveniently delivered to customers	.170	.774	.222
Customers get to know early enough about price changes	.800		
The company is aware about customer complaints and respond	.329	.754	
Customers are informed of the varied milk products	.116	.822	.181
Customers are informed on the benefits of products	.617	.111	.453
Customers know where to buy the firm's products	.136	.165	.878
Customers understand very well the products of dairy processing firms	.138	.138	.856

Extraction Method: Principal Component Analysis.

 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

4.8 KMO and Bartlett's Test on Supply Chain Information Sharing

4.8.1 Supplier KMO and Bartlett's Test on Supply ChainInformation Sharing

Table 4.22 presents the results of Kaiser Meyer-Olkin (KMO) Measure of Sampling Adequacy. Values between .7 and .8 are good and for these data the value is 0.719, which falls in to range of good: so we should be confident that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.18: Supplier KMO and Bartlett's Test on Supply ChainInformation Sharing

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.719
	Approx. Chi-Square	1173.322
Bartlett's Test of Sphericity	Df	36
	Sig.	.000

4.8.2 Customer KMO and Bartlett's Test on Supply Chain Information Sharing

With regards to customer, table 4.23 presentsthe value is 0.745, which falls in to range of good: so we should be confident that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.19: Customer KMO and Bartlett's Test on Supply Chain Information Sharing

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.745
	Approx. Chi-Square	939.355
Bartlett's Test of Sphericity	Df	36
	Sig.	.000

4.9 Total Variance Explained on Supply Chain Decision Synchronization

4.9.1Supplier Total Variance Explained on Supply Chain Decision Synchronization

The results in table 4.24shows three components with Eigen values greater than one were extracted, which represented 70.466 percent of variance in DS. The relative importance of three factors is equalized for this data. This means that DS can be explained by first three components. Factor 1 account for 36 percent of the variability in all variables, factor 2 accounted for 20 percent and factor 3 accounted for 13 percent.

Table 4.20: Supplier Total Variance Explained on Supply Chain Decision Synchronization

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum%
1	3.275	36.389	36.389	3.275	36.389	36.389	2.601	28.899	28.899
2	1.814	20.159	56.548	1.814	20.159	56.548	2.144	23.825	52.724
3	1.253	13.917	70.466	1.253	13.917	70.466	1.597	17.742	70.466
4	.819	9.101	79.567						
5	.636	7.066	86.633						
6	.431	4.790	91.422						
7	.414	4.600	96.022						
8	.196	2.177	98.200						
9	.162	1.800	100.000						

Extraction Method: Principal Component Analysis.

4.9.2 Customer Total Variance Explained on Supply Chain Decision Synchronization

The findings on table 4.25 shows the customer total variance explained, two components with Eigen values greater than one extracted represented 62.860 percent of Decision Synchronization. This means that Supply chain decision synchronization can be explained by first three components. Factor 1 accounted for 45 percent of the variability in all variables and factor 2 accounted for 17 percent.

Table 4.21: Customer Total Variance Explained on Supply Chain Decision Synchronization

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum%	Total	% of Var	Cum %
1	3.650	45.623	45.623	3.650	45.623	45.623	2.578	32.222	32.222
2	1.379	17.237	62.860	1.379	17.237	62.860	2.451	30.637	62.860
3	.970	12.123	74.983						
4	.541	6.762	81.745						
5	.520	6.505	88.250						
6	.400	5.001	93.251						
7	.291	3.635	96.886						
8	.249	3.114	100.000						

Extraction Method: Principal Component Analysis.

4.10 Rotated Component Matrix on Supply Chain Decision Synchronization

4.10.1 Supplier Rotated Component Matrix on Supply Chain Decision Synchronization

The rotated component matrix in table 4.26 shows factor loadings (FL) of Decision Synchronization. Five items loaded highly in the first factor. The items included: Extension services to increase quality, Extension services to increase production Quality control understood, Inventory levels are understood and Tenders to transporters done as required. The items can be can be explained by; "services are understood" because we can see that all variables are highly correlated with the first factor. The second factor can be explained by "delivery factors" because the items loading highly measure delivery related factors are highly correlated. The third factor can be explained by "demand for milk" because the items loading highly measure market related factors.

Table 4.22: Supplier Rotated Component Matrix on Supply Chain Decision Synchronization

Statements	Component		
	1	2	3
Fixing of milk prices done are done as required	.117	.827	-.141
Weights disparities between farmers and Dairy Processing Firms are well resolved	-.313	.765	
Quality control measures are understood by dairy farmers	.657		.333
Extension services are offered to increase production of milk	.830	-.107	
Extension services are offered to increase quality of milk	.841	.140	
Demand for early milk deliveries is understood by dairy farmers	.248		.759
Dairy farmers receive record of their daily deliveries			.900
Tenders offered to transporters, coolers are done as required	.603	.641	.239
Product inventory levels are understood by dairy farmers	.486	.653	.141

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

4.10.2 Customer Rotated Component Matrix on Supply Chain Decision Synchronization

Table 4.27 Shows Rotated Component Matrix on Supply chain decision synchronization .The rotated component matrix shows factor loadings (FL) of Supply chain decision synchronization "Five items on the first factor include; Promotions according to demands, Products offer solutions to customers, Products timely introduced, Promotions done rightly in retail store, Promotions offered to increase demand, Quality of products understood had strong FL between 0.579 to 0.853. This therefore shows that Supply

chain decision synchronization can be explained by "Promotions according to demands". The factors loading on the second factor included: Products timely introduced, Promotions done rightly in retail store, Promotions offered to increase demand, Price variations understood, Products prices reasonable, Quality of products understood had FL (0.462 to 0.888). This can be explained by "Price variations understood"

Table 4.23: Customer Rotated Component Matrix on Supply Chain Decision Synchronization

Statements	Component	
	1	2
Dairy Processing Firms product prices are reasonable and understood	.143	.874
Price variations between Dairy Processing Firms products and others are understood		.888
Quality of products are understood by customers	.439	.493
Promotions services are offered to increase demand	.418	.404
Promotions services are done according to customers' demands	.815	-.142
Dairy Processing Firms products offer solution to customers	.806	.149
Firm's products are timely introduced	.687	.463
Promotions of products are done rightfully in the retail store	.636	.484

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

4.11 KMO and Bartlett's Test on Chain Supply Decision Synchronization

4.11.1 Supplier KMO and Bartlett's Test on Supply Chain Decision Synchronization

Table 4.28 shows the results of KMO and Bartlett's Test on Decision Synchronization. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. Values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Field, 2013), for these data the value is 0.627, which falls in to range of mediocre: so we should be certain that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.8: Supplier KMO and Bartlett's Test on Supply Chain Decision Synchronization

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.627
	Approx. Chi-Square	1287.368
Bartlett's Test of Sphericity	Df	36
	Sig.	.000

4.11.2 Customer KMO and Bartlett's Test on Supply Chain Decision Synchronization

With regards to customer, the results on table 4.29 shows 0.785, which falls in to range of good: so we should be confident that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.25: Customer KMO and Bartlett's Test on Supply Chain Decision Synchronization

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.785
Bartlett's Test of Sphericity	Approx. Chi-Square	997.583
	Df	28
	Sig.	.000

4.12 Total Variance Explained on Supply Chain Incentive Alignment

4.12.1 Suppliers Total Variance Explained on Supply Chain Incentive Alignment

Table 4.30 shows Suppliers Total Variance Explained on Incentive Alignment.The results showed three components with Eigen values greater than one were extracted, which represented 67.450 percent of variance in IA. The relative importance of three factors is equalized for this data. This means that IA can be explained by first three components. Factor 1 account for 30 percent of the variability in all variables, factor 2 accounted for 23percentand factor 3 accounted for 12 percent.

Table 4.26: Suppliers Total Variance Explained on Supply Chain Incentive Alignment

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	2.783	30.921	30.921	2.783	30.921	30.921	2.675	29.725	29.725
2	2.154	23.937	54.858	2.154	23.937	54.858	2.231	24.788	54.513
3	1.133	12.591	67.450	1.133	12.591	67.450	1.164	12.937	67.450
4	.903	10.036	77.485						
5	.774	8.603	86.088						
6	.411	4.570	90.658						
7	.318	3.530	94.187						
8	.269	2.984	97.171						
9	.255	2.829	100.000						

Extraction Method: Principal Component Analysis.

4.12.2 Customer Total Variance Explained on Supply Chain Incentive Alignment

With regards to customerthe results on table 4.31 shows factor analysis on Incentive Alignment. It indicated that all components with Eigen values greater than one (1) were extracted and was represented 100 % of Incentive Alignment. The results were not possible to be rotated.

Table 4.27: Customer Total Variance Explained on Supply Chain Incentive Alignment

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %
1	3.920	55.997	55.997	3.920	55.997	55.997
2	.871	12.449	68.445			
3	.781	11.155	79.600			
4	.529	7.555	87.155			
5	.345	4.935	92.090			
6	.314	4.491	96.581			
7	.239	3.419	100.000			

Extraction Method: Principal Component Analysis.

4.13 Supplier Rotated Component Matrix on Supply Chain Incentive Alignment

Table 4.32 shows Supplier Rotated Component Matrix on Incentive Alignment.The results showed "Five items on the first factor include; AI/Vet availed, AI/Vet at subsidized prices, Milk products at subsidized prices, Shared savings on milk reduced prices, Payment done promptly had strong FL (0.591 to 0.826). This therefore shows that IA can be explained by "services availed". The factors loading on the second factor included: Three items on the second factor include: Cooler plants for mutual benefit, Transport align for mutual benefit; Link farmers to financial services had strong FL (0.743 to 0.863). This can be explained by "linkages for mutual benefit" The factor loading on the third factor was:Sales demands are extended to farmers had strong FL (0.805). This can be explained by "demands extended to farmers".

Table 4.28: Supplier Rotated Component Matrix on Supply Chain Incentive Alignment

Statements	Component		
	1	2	3
Increased sales demand are extended to dairy farmers	.185	.118	.805
milk products are provided to farmers at a subsidized prices	.721	-.405	
AI/Vet programs are availed when required by the dairy farmers	.826	.138	.154
AI/Vet programs are provided to farmers at subsidized price	.777	-.114	.307
The firm link farmers to dairy farmers to financial services		.743	
Payment for milk produce is done promptly	.591	.287	-.517
The establishment of the cooler plants is for mutual benefit		.865	
Savings as a result of reduced production costs are shared	.682	.233	
Transport services are aligned for mutual benefit	.149	.764	.345

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

4.14 KMO and Bartlett's Test on Supply Chain Incentive Alignment

4.14.1 Supplier KMO and Bartlett's Test on Chain Incentive Alignment

Table 4.33 shows the results Supplier KMO and Bartlett's Test on Incentive Alignment. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. Values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Field, 2013) and for these data the value is 0.642, which falls in to range of mediocre: so we should be certain that factor analysis

is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.29: Supplier KMO and Bartlett's Test on Supply Chain Incentive Alignment

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.642
Bartlett's Test of Sphericity	Approx. Chi-Square	1065.340
	Df	36
	Sig.	.000

4.14.2 Customer KMO and Bartlett's Test on Supply Chain Incentive Alignment

Table 4.34 shows Customer KMO and Bartlett's Test on Incentive Alignment. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. Values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Field, 2013) and for these data the value is 0.834, which falls in to range of great: so we should be confident that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.30: Customer KMO and Bartlett's Test on Supply Chain Incentive Alignment

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.834
	Approx. Chi-Square	1024.329
Bartlett's Test of Sphericity	Df	21
	Sig.	.000

4.15 Total Variance Explained on Supply Chain Teamwork

4.15.1 Supplier Total Variance Explained on Supply Chain Teamwork

The results in table 4.35shows Supplier Total Variance Explained on Teamwork. The results show two componentsextractedand represented 67.684percent of variance. The relative importance of two factors is equalized for this data. This means that T can be explained by first three components. Factor 1 account for 56 percent of the variability in all variables and factor 2 accounted for 11percent of the variability.

Table 4.9:Supplier Total Variance Explained on Supply Chain Teamwork

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum%	Total	% of Var	Cum %
1	5.079	56.438	56.438	5.079	56.438	56.438	3.687	40.963	40.963
2	1.012	11.246	67.684	1.012	11.246	67.684	2.405	26.721	67.684
3	.807	8.970	76.654						
4	.641	7.124	83.778						
5	.560	6.217	89.994						
6	.327	3.638	93.633						
7	.279	3.098	96.731						
8	.175	1.948	98.680						
9	.119	1.320	100.000						

Extraction Method: Principal Component Analysis.

4.15.2 Customer Total Variance Explained on Supply Chain Teamwork

Table 4.36 shows Customer Total Variance Explained on Teamwork.With regard to customer three components were extracted and represented 66.093percent of Teamwork. This means that Supply chain teamworkcan be explained by first three components. Factor 1 accounted for 40 percent of the variability in all variables and factor 2 accounted for 13 percent and factor 3 accounted for 12percent of the variability.

Table 4.32: Customer Total Variance Explained on Supply Chain Teamwork

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum%	Total	% of Var	Cum %
1	3.623	40.258	40.258	3.623	40.258	40.258	2.296	25.513	25.513
2	1.215	13.503	53.762	1.215	13.503	53.762	2.049	22.770	48.283
3	1.110	12.331	66.093	1.110	12.331	66.093	1.603	17.810	66.093
4	.872	9.684	75.777						
5	.699	7.771	83.548						
6	.569	6.326	89.874						
7	.409	4.545	94.419						
8	.326	3.618	98.037						
9	.177	1.963	100.000						

Extraction Method: Principal Component Analysis.

4.16 Rotated Component Matrix on Supply Chain Teamwork

4.16.1 Supplier Rotated Component Matrix on Supply Chain Teamwork

Table 4.37showsSupplier Rotated Component Matrix on Teamwork. The results showed eight items on the first factor. This include Cordial relationships, Firm enhances coordination, there are joint efforts, Spirit of being togetherness, Firm committed improving services, Firm committed to the growth of the industry, mutual trust, all parties along the chain plan, Mutual trust, had strong FL between 0.400 to 0.850. This therefore shows that IS can be explained by "Cordial relationships". The factors loading on the second factor included: Three seven items on the second factor include: There are joint efforts; Spirit of being togetherness, Firm committed improving services, Firm committed to the growth of the industry, Supply alliances, all parties along the chain

plan, mutual trust; had strong FL (0.328 to 0.949). This can be explained by "All parties plan" Shows Rotated Component Matrix on Performance of teamwork.

Table 4.10: Supplier Rotated Component Matrix on Supply Chain Teamwork

Statements	Component	
	1	2
The firm committed to the growth of the industry	.459	.379
The firm committed to improving services to milk suppliers	.712	.350
There is joint efforts to increase milk production	.749	.328
The firm enhances coordination through teamwork	.829	.299
All parties along the chain plan together	.400	.755
There is cordial relationship between the firm and milk suppliers	.850	
There is supply alliances with all the parties within the chain	.100	.949
There is mutual trust between the firm and milk suppliers	.522	.592
There is spirit of togetherness between the firm and milk suppliers	.745	.343

Extraction Method: Principal Component Analysis.

 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

4.16.2 Customer Rotated Component Matrix on Supply Chain Teamwork

Table 4.38presentsCustomer Rotated Component Matrix on Teamwork. "Four items on the first factor Loadings (FL) include; Products high in quality Firm committed improving quality, Firm committed to needs of customers, Firm enhances cooperation and Cordial relationship had strong FL (0.632 to 0.805). This shows that Supply chain teamworkcan be explained by "Firm committed in improving quality". The factors on the secondfactor included: coordinated promotion, firm has measures, Joint efforts to increase market share and all parties along the chain promote had FL (0.326 to 0.896). This can be explained by "Coordinated promotions" The factors on the third factor included:Cordial relationship,

Supply alliances with all parties, Joint efforts to increase market share and All parties along the chain promote had FL (0.451 to 0.881) and can be explained by "Supply alliances with all parties".

Table 4.11: Customer Rotated Component Matrix on Supply Chain Teamwork

Statements	Component		
	1	2	3
The firm is committed to needs of customers	.742		.238
The firm is committed to improving quality of their products	.805	.326	-.104
There is joint efforts to increase the market share	.188	.429	.528
Firm enhances cooperation to deliver required products	.711	.302	
All the parties along the chain promote the products	.273	.456	.497
There is cordial relationship between the firm and customers	.632		.451
There is supply alliances with all parties within the chain			.881
The firm has measures to ensure customers trust their products	.286	.804	.123
Through coordinated promotion the customers are informed and retained		.896	.105

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

4.17 KMO and Bartlett's Test on Supply Chain Teamwork

4.17.1 Supplier KMO and Bartlett's Test on Supply Chain Teamwork

Table 4.39shows Supplier KMO and Bartlett's Test on Teamwork. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. Values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Field, 2013), for these data the value is 0.774, which falls in

to range of good: so we should be confident that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.35:Supplier KMO and Bartlett's Test on Supply Chain Teamwork

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.774
Bartlett's Test of Sphericity	Approx. Chi-Square	1977.954
	Df	36
	Sig.	.000

4.17.2 Customer KMO and Bartlett's Test on Supply Chain Teamwork

Table 4.40 shows Customer KMO and Bartlett's Test on Teamwork. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. Values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Field, 2013), for these data the value is 0.628, which falls in to range of mediocre: so we should be certain that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.36: Customer KMO and Bartlett's Test on Supply Chain Teamwork

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.628
Bartlett's Test of Sphericity	Approx. Chi-Square	995.847
	Df	36
	Sig.	.000

4.18 Total Variance Explained on Dairy Board

4.18.1 Supplier Total Variance Explained on Dairy Board Policies and Regulations

The results in table 4.41presentSupplier Total Variance Explained on Dairy Board. Two components were extracted and represented 64.788 percent of variance in Dairy Board. The relative importance of three factors was equalized for this data. Dairy Boardwas explained by first two components. Factor 1 account for 46 percent of the variability in all variables and factor 2 accounted for 18percent of the variability.

Table 4.37: Supplier Total Variance Explained on Dairy Board Policies and Regulations

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	4.207	46.750	46.750	4.207	46.750	46.750	3.533	39.260	39.260
2	1.623	18.039	64.788	1.623	18.039	64.788	2.298	25.528	64.788
3	.871	9.678	74.467						
4	.701	7.783	82.250						
5	.513	5.700	87.950						
6	.463	5.139	93.089						
7	.285	3.168	96.257						
8	.207	2.295	98.552						
9	.130	1.448	100.000						

Extraction Method: Principal Component Analysis.

4.18.2 Customer Total Variance Explained on Dairy Board Policies and

Regulations

Table 4.42 shows Customer Total Variance Explained on Dairy Board.With regards to customer, all components with Eigen values greater than one (1) were extracted, which represented 100percent of Dairy Board. This means that Dairy Board can be explained by all components. The results then were not possible to be rotated.

Table 4.38: Customer Total Variance Explained on Dairy Board Policies and Regulations

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.116	56.840	56.840	5.116	56.840	56.840
2	.872	9.693	66.533			
3	.697	7.742	74.275			
4	.622	6.912	81.187			
5	.474	5.264	86.451			
6	.431	4.784	91.235			
7	.287	3.194	94.429			
8	.276	3.063	97.492			
9	.226	2.508	100.000			

Extraction Method: Principal Component Analysis.

4.19 Rotated Component Matrix on Dairy Board Policies and Regulations

4.19.1Supplier Rotated Component Matrix on Dairy Board Policies and Regulations

Table 4.43presentsSupplier Rotated Component Matrix on Dairy Board. Seven items on the first factor include:The dairy board Act influences the growth of industry, The dairy

board organs improve the services of milk suppliers, The dairy board delivers its mandate to increase milk production, The dairy board guidelines enhances teamwork, The dairy board policies are in line to chain parties performance, DB Regulates, The dairy board regulates the prices of dairy produce, had strong FL between 0.645 to 0.874. This therefore shows that IS can be explained by "capability factors". The factors loading on the second factor included: The dairy board improves the quality of milk produce, there is mutual trust between dairy board and milk suppliers, the dairy board work in association with other participants had strong FL (0.324 to 0.938). This can be explained by "Dairy Board work in association with others".

Table 4.12: Supplier Rotated Component Matrix on Dairy board Policies and Regulations

Statements	Component	
	1	2
The dairy board Act influences the growth of industry	.816	
The dairy board organs improve the services of milk suppliers	.691	.324
The dairy board delivers its mandate to increase milk production	.818	.143
The dairy board guidelines enhances teamwork	.709	.412
The dairy board policies are in line to chain parties performance	.401	.691
The dairy board regulates the prices of dairy produce	.754	
The dairy board improves the quality of milk produce	.661	.249
There is mutual trust between dairy board and milk suppliers	.208	.762
The dairy board work in association with other participants		.938

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

4.20 KMO and Bartlett's Test

4.20.1 Supplier KMO and Bartlett's Test

Table 4.44presentsSupplier KMO and Bartlett's Test. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. Values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Field, 2013), for these data the value is 0.695, which falls in to range of mediocre: so we should be certain that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.40: Supplier KMO and Bartlett's Test on Dairy Board Policies and Regulations

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.695
	Approx. Chi-Square	1645.739
Bartlett's Test of Sphericity	Df	36
	Sig.	.000

4.20.2 Customer KMO and Bartlett's Test on Dairy Board Policies and Regulations

The functionality of factor analysis was measured using Kaiser-Meyer-Olkin. Table 4.45 shows the results of KMO Measure of Sampling Adequacy. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. Values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Field, 2013), for these data the value is 0.893, which falls in to range of great: so we should be confident that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.41: Customer KMO and Bartlett's Test on Dairy Board

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.893
	Approx. Chi-Square	1531.502
Bartlett's Test of Sphericity	Df	36
	Sig.	.000

4.21 Total Variance Explained on Performance of Dairy Processing Firms

4.21.1 Supplier Total Variance Explained on Performance of Dairy Processing Firms

Results from table 4.46 presents supplier total variance explained on performance of Dairy Processing Firms .Factor analyses attempts to cluster items or characteristics that seem to collate highly with each other in defining a particular construct (Mugenda, 2008). Factor analyses are a powerful procedure used to validate hypothetical constructs. The results from factor analysis on Performance of Dairy Processing Firms shows that three components with Eigen values greater than one (1) were extracted, which represented 72.333percent of variance in Performance of Dairy Processing Firms . This means that Performance of Dairy Processing Firms can be explained by first three components. The "% of variance" column shows how much of the total variability (in all of the variables together) can be accounted for by each of the factors. Factor 1 accounted for 45percent of the variability in all variables, factor 2 accounted for 14percent and factor three accounted for 12percent

Table 4.42: Supplier Total Variance Explained on Performance of Dairy Processing Firms

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	4.524	45.245	45.245	4.524	45.245	45.245	2.689	26.895	26.895
2	1.416	14.162	59.407	1.416	14.162	59.407	2.480	24.801	51.696
3	1.293	12.926	72.333	1.293	12.926	72.333	2.064	20.637	72.333
4	.900	9.002	81.335						
5	.490	4.898	86.233						
6	.367	3.675	89.908						
7	.344	3.435	93.343						
8	.305	3.054	96.397						
9	.277	2.765	99.162						
10	.084	.838	100.000						

Extraction Method: Principal Component Analysis.

4.21.2 Customer Total Variance Explained on Performance of Dairy Processing Firms

Results from table 4.47 shows customer total variance explained on performance of Dairy Processing Firms . With regards to customer, factor analysis showed three components with Eigen values greater than one (1) were extracted, which represented 67.365 percent of variance in Performance of dairy processing firms . This means that Performance of dairy processing firms can be explained by first three components. The "% of variance" column shows how much of the total variability (in all of the variables together) can be accounted for by each of the factors. Factor 1 accounted for 39percent of the variability in all variables, factor 2 accounted for 16 percent and factor three accounted for 10 percent.

Table 4.43 : Customer Total Variance Explained on Performance of Dairy Processing Firms

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	3.996	39.961	39.961	3.996	39.961	39.961	2.841	28.409	28.409
2	1.664	16.642	56.603	1.664	16.642	56.603	2.189	21.887	50.295
3	1.076	10.762	67.365	1.076	10.762	67.365	1.707	17.070	67.365
4	.842	8.422	75.787						
5	.664	6.636	82.423						
6	.528	5.281	87.704						
7	.426	4.263	91.967						
8	.326	3.256	95.224						
9	.269	2.688	97.911						
10	.209	2.089	100.000						

Extraction Method: Principal Component Analysis.

4.22 Rotated Component Matrix on Performance of Dairy Processing Firms

4.22.1 Supplier Rotated Component Matrix on Performance of Dairy Processing Firms

Results from table 4.48 shows rotated components matrix on performance of dairy processing firms . To better interpret Construct validity, factor rotation analysis was used with principle component, Varimax rotation method with Keiser Normalization. Varimax rotation attempts to maximize the spread of factor loadings for a variable across all factors. Rotation has the effect of optimizing the factor structure and consequence for these data is that the relative importance of three factors is equalized. The research adopted Tabachnick and Fidell, (2013) by interpreting factor loadings of .32 or higher. This was

good rule of the thumb according to them. The results shows; "Five items on the first factor include; the firm focuses on existing milk suppliers for growth, focuses on existing milk suppliers for expansion, focuses on establishing itself in markets, has served its milk suppliers according to various market, and considers how products are manufactured had strong FL between 0.480 to 0.899. This therefore shows that Performance of dairy processing firms can be explained by "Focus milk existing milk suppliers for growth and expansion".The factors loading on the second factor included: Focus in establishing itself in markets, Outreach efforts through establishment of coolers, Serve milk suppliers according to various market, considers how products are manufactured and considers how products are transported had strong FL between 0.502 to 0.848. This can be explained by "Outreach efforts through establishment of coolers" The factors loading on the third factor included:The firm considers how products are manufactured, Considered how products are transported, aware about dairy farmers complaints, farmers satisfied with the price paid and market share of the firm is sizeable compared to others had strong FL between 0.395 to 0.767. This can be explained by "The Company aware of dairy farmer's complaints".

Table 4.13: Supplier Rotated Component Matrix on Performance of Dairy Processing Firms

Statements	Component		
	1	2	3
The firm focuses on existing milk suppliers for business growth	.856	.106	.317
The firm focuses on existing milk suppliers for business expansion	.899		.277
The firm focuses on establishing itself in markets	.710	.502	
Outreach efforts through the establishment of coolers	.227	.848	
The firm has served its milk suppliers according to various market	.486	.721	
The firm considers how products are manufactured	.480	.521	.395
The firm considered how product s are transported	-.142	.792	.424
The company is aware about dairy farmer's complaints	.247	.202	.767
Dairy farmers are satisfied with the price paid	.211		.745
The market share of the firm is sizeable compared to other firms		.166	.633

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

4.22.2 Customer Rotated Component Matrix on Performance of Dairy Processing Firms

Results from table 4.49 shows customer rotated matrix on performance of dairy processing firms . With regards to customerfactor loadings (FL) of Performance of dairy processing firms showed "Five items on the first factor include; Products high in quality, Firms products highly reliable, Wide range of products, Products are competitive and effectively promotes its products had FL between 0.579 to 0.853. This therefore shows that Performance of dairy processing firms can be explained by "Products high in quality". The factors loading on the second factor included: Products are competitive, products conveniently delivered, Firm improved of existing milk products, Products meets various

market segments, and Respond to customer complaints had FL (0.442 to 0.741). This can be explained by "Firm improved existing products" The factors loading on the third factor included:Respond to customer expectations and Respond to customer complaints had strong FL between 0.756 and 0.894. This can be explained by "Respond to customer expectations".

Table 4.45: Customer Rotated Component Matrix on Performance of Dairy Processing Firms

Statements	Component		
	1	2	3
The firm has improved on existing milk products	.166	.741	
The firms' products meets various market segments	.280	.617	.385
The firm offers products that are highly reliable	.852		
The firm offers products that are of high quality	.853		
The firm offers a wide range of products to the market	.693	.155	.231
The firm quickly respond to customer expectations	.246		.894
The firm quickly respond to customer complaints		.442	.756
Milk products are conveniently delivered to customers		.842	.178
The firm effectively promotes its products	.579	.269	.312
Firms products are competitive compared to others	.637	.502	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

4.23 KMO and Bartlett's Test on Performance of Dairy Processing Firms

4.23.1 Supplier KMO and Bartlett's Test on Performance of Dairy Processing

Firms

The functionality of factor analysis was measured using Kaiser-Meyer-Olkin. Table 4.50 shows the results of KMO Measure of Sampling Adequacy. Keiser, (1974) recommends accepting values greater than .5 as barely acceptable. Values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great and values above .9 are superb (Field, 2013), for these data the value is 0.775, which falls in to range of good: so we should be confident that factor analysis is appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.14: Supplier KMO and Bartlett's Test on Performance of Dairy Processing Firms

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.775
	Approx. Chi-Square	1928.500
Bartlett's Test of Sphericity	Df	45
	Sig.	.000

4.23.2 Customer KMO and Bartlett's Test on Performance of Dairy Processing Firms

With regards to customer, the value is 0.727, which falls in to range of good as shown on table 4.51. This implied factor analysis was appropriate for these data. Bartlett's Test of Sphericity result is significant at 0.000 level indicating a significant relationship among the variables and therefore suitable for factor analysis.

Table 4.15: Customer KMO and Bartlett's Test on Performance of Dairy Processing Firms

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.727
Bartlett's Test of Sphericity	Approx. Chi-Square	1268.276
	Df	45
	Sig.	.000

4.24 Descriptive Statistics on Supply ChainInformation Sharing

4.24.1 Supplier descriptive Statistics on Supply Chain Information Sharing

Table 4.52 shows the descriptive statistics on an overall rating of five-point Likert scale of Supply chain information sharing of 342 respondents.Respondents were asked whether the firm communicates to dairy farmers about its demand. Majority of the respondents 41.5 percent agreed that the firm communicate, 35.9 percent disagreed with the statement, while 22.5 percent were neutral on the statement.Respondents were asked whether effective and Information technology is used to communicate to dairy farmers,   Majority of the respondents 59.4 percent disagreed that the firm has effective and technology, 26.1 percent were in agreement with the statement and 14.6 percent were neutral on the statement.Respondents were asked whether the farmers are informed on any change of delivery schedules effectively. Majority of the respondents 54.4 percent were in agreement that the farmers are informed, 19.8 percent disagreed that farmers are informed, and 25.7 percent were neutral on the statement. Respondents were askedwhether dairy farmers get to know early enough on price changes. Majority of the respondents 68.7 percent strongly disagreed with the statement 25.1 percent were in agreement, and 6.1 percent were neutral on the statement.

Respondents were requested to provide information on whether there is exchange visits both in and outside to share information. Majority of the respondents 37.4 percent were in agreement that there are exchange visits both in and outside to share information, 29.8

percent disagreed with the statement, and 32.7 percent were neutral on the statement.

Respondents were requested to provide information on whether Information about Inventory levels is shared with dairy farmers. Majority of the respondents 53.9 percent disagreed with the statement, 11.4 percent were in agreement on the statement, and 39.8 percent were neutral on the statement.Respondentswere asked whether Information on product development is always shared with milk suppliers. Majority of the respondents 61.2 percent disagreed with the statement, 17.0 percent were in agreement on the statement, and 17.8 percent were neutral on the statement. Respondents were requested to provide information on whether Information about milk supply disruptions is always communicated to farmers. Majority of the respondents 71.3 percent were agreement 13.4 percent disagreed with the statement and 15.2 percent were neutral on the statement.

Respondents were requested to provide information on whether Information about market conditions is always shared to milk supplier. Majority of the respondents 59.0 percent disagreed that Information about market conditions is always shared to milk suppliers, 9.6 percent were in agreement on the statement and 31.3 percent were neutral on the statement. The supply chain practitioners gave their opinions on the key supply chain partners to include farmers, service providers, transporters, AI services personnel, suppliers of packaging materials and the consumers of dairy processing firms products. They commended that information is key for the success of the firm. From the results the firm has not done well in disseminating information or sharing of the information. Empirical evidence by Namusonge's, Mukulu and Kirima (2015) in their thesis entitled "Supply chain information sharing, Cooperative Behaviour and Hotel Performance" posits that the starting point of supply chain collaboration is Supply chain information sharing. This shows that the firm has not been good enough in Supply chain information sharing and should consider enhancing its performance.

Table 4.16: Supplier Descriptive Statistics on Supply ChainInformation Sharing

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	%
The firm communicates to dairy farmers about its demand	7.0	28.9	22.5	36.8	4.7	100.0
Effective and Information Technology is used to communicate to dairy farmers	23.7	35.7	14.6	21.1	5.0	100.0
Dairy Farmers are informed on any change of delivery schedules effectively	2.0	17.8	25.7	36.0	18.4	100.0
Dairy Farmers get to know early enough about price changes	35.4	33.3	6.1	21.3	3.8	100.0
There is exchange visits both in and outside to share information	10.2	19.6	32.7	34.5	2.9	100.0
Information about inventory levels is shared with dairy farmers	24.9	24.0	39.8	9.6	1.8	100.0
Information about product developments is always shared with our milk suppliers/farmers	41.2	24.0	17.8	12.6	4.4	100.0
Information about milk supply disruptions is always communicated to farmers	2.9	10.5	15.2	45.3	26.0	100.0
Information about market conditions is always shared to milk suppliers/farmers	22.5	36.5	31.3	6.1	3.5	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.24.2 Customer Descriptive Statistics on Supply ChainInformation Sharing

Table 4.53 shows the descriptive statistics on an overall rating of five-point Likert scale of Supply chain information sharing of 314 respondents. Respondents were requested to provide information on whether Customers are informed on products introduced, majority

respondents 49.4 percent were in agreement, 23.9 disagreed on the statement and 26.8 percent were neutral on the statement. On the item, effective information technology as a mode of communication is used to inform customers on products, majority respondents 53.9 percent were in agreement, 26.1 disagreed on the statement and 20.1 percent were neutral on the statement. On the item,milk products are conveniently delivered to customers, majority respondents 57.0 percent were in agreement, 10.9 disagreed on the statement and 32.2 percent were neutral on the statement. On the item customers get to know early enough about price changes, majority respondents 44.6 percent were in agreement, 35.4 disagreed on the statement and 20.1 percent were neutral on the statement. On the item the Company is aware about customer complaints and responds on time, majority respondents 41.8 percent were in agreement, 35.9 disagreed on the statement and 22.3 percent were neutral on the statement.Respondents were requested to provide information whether customers are informed of the varied milk products, majority respondents 49.4 percent were in agreement, 26.4 disagreed on the statement and 24.2 percent were neutral on the statement. On the item customers informed on the benefits of products, majority respondents 40.1 percent were in agreement, 30.9 disagreed on the statement and 29.0 percent were neutral on the statement. On the item, customers know where to buy the firm's, majority respondents 66.2 percent were in agreement, 12.1 disagreed on the statement and 21.7 percent were neutral on the statement. On the item, customers understand very well the products of dairy processing firms , majority respondents 63.0 percent were in agreement, 14.3 disagreed on the statement and 22.6 percent were neutral on the statement.

It appeared that most of the customers we in agreement that the firm Supply chain information sharing on products of dairy processing firms was fairly done. This shows that the firm has fairly tried in reaching to customers and explained the benefits of the products. It also shows that the customers have really understood and know where to buy the products. Empirical evidence shows the firm is trying to achieving Vision 2030 by offering high quality products for all its citizens/customers.

Table 4.17: Customer Descriptive Statistics on Supply Chain Information Sharing

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	%
Customers informed on products introduced	4.5	19.4	26.8	44.3	5.1	100.0
effective information technology as a mode of communication is used to inform customers on products	3.2	22.9	20.1	45.9	8.0	100.0
Milk products are conveniently delivered to customers	4.8	6.1	32.2	45.2	11.8	100.0
Customers get to know early enough about price changes	15.0	20.4	20.1	31.2	13.4	100.0
The company is aware about customer complaints and responds on time	12.7	23.2	22.3	32.2	9.6	100.0
Customers are informed of the varied milk products	7.3	19.1	24.2	43.3	6.1	100.0
Customers informed on the benefits of products	5.4	25.5	29.0	27.7	12.4	100.0
Customers know where to buy the firm's	0.0	12.1	21.7	43.9	22.3	100.0
Customers understand very well the products of DAIRY PROCESSING FIRMS	1.6	12.7	22.6	35.0	28.0	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.25 Descriptive Statistics on Supply Chain Decision Synchronization

4.25.1 Supplier Descriptive Statistics on Supply Chain Decision Synchronization

Table 4.54 shows the descriptive statistics on an overall rating of five-point Likert scale of Supply chain decision synchronization of 342 respondents. Respondents were requested to provide information whether fixing of milk prices are done as required, Majority of the respondents 73.6 percent strongly disagreed that fixing of milk prices are done as required, 17.3 percent agreed on the statement and 11.1 percent were neutral on the statement. On the item, weights disparities between dairy farmers and dairy processing firms are well resolved, Majority of the respondents 70.1 percent strongly disagreed that weights disparities between dairy farmers and dairy processing firms are well resolved, 16.7 percent were in agreement on the statement and 13.2 percent were neutral on the statement.

Respondents were asked on whether quality control measures are understood by dairy farmers. Majority of the respondents 79.9 percent were agreement that Quality control measures are understood by dairy farmers, 10.2 percent disagree with the statement and 9.9 percent were neutral on the statement. On the item, extension services are offered to increase production of milk, Majority of the respondents 53.2 percent were in agreement that extension services are offered to increase production of milk, 34.5 percent disagreed that extension services are offered to increase production of milk and 12.3 percent were neutral on the statement. On the item, Extension services are offered to increase to increase quality, 38.3 percent of the respondents were in agreement that extension services are offered to increase to increase quality, 42.7 percent disagree with the statement, and 19.0 percent were neutral on the statement. On the item, Demand for early milk deliveries is understood by dairy farmers, Majority of the respondents 85.1 percent were in agreement that Demand for early milk deliveries is understood by dairy farmers, 8.8 percent disagreed on the statement and 6.1 percent were neutral on the statement. On the item, Dairy farmers receive record their daily deliveries, 92.6 percent of the respondents agreed that Dairy farmers receive record their daily deliveries, 2.6 percent of the respondents

disagreed with the statement and were neutral on the statement.

The respondents were asked whether tenders offered to transporters, coolers are done as done as required, 25.1 of the respondents percent were in agreement that tenders offered to transporters, coolers are done as done as required, majority 49.4 percent were neutral on the statement.However the respondents disagreed with the statement product inventory levels are understood farmers, Majority of the respondents 38.9 percent disagreed that Product inventory levels are understood farmers, 23.1 percent agreed on the statement and majority 38.0 percent were neutral on the statement. Empirical studies by Liang*et al.,*(2015) studies of participatory governance in co-operatives in China which showed that in reality, participation in decision-making is only nominal as most decisions are made by board members and management.

Table 4.50: Supplier Descriptive Statistics on Supply Chain Decision Synchronization

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	%
Fixing of milk prices are done as required	36.8	34.8	11.1	13.5	3.8	100.0
Weight disparities between dairy farmers and dairy processing firms are well resolved	37.4	32.7	13.2	16.7	0.0	100.0
Quality control measures are understood by dairy farmers	6.1	4.1	9.9	70.5	9.4	100.0
Extension services are offered to increase production of milk	10.8	23.7	12.3	46.5	6.7	100.0
Extension services are offered to increase quality of milk	14.6	28.1	19.0	32.5	5.8	100.0
Demand for early milk deliveries is understood by the dairy farmers	0.3	8.5	6.1	50.6	34.5	100.0
Dairy farmers receive record of their daily	0.3	2.3	4.7	56.1	36.5	100.0

deliveries						
Tenders offered to transporters , coolers are done as required	11.7	13.7	49.4	19.3	5.8	100.0
Product inventory levels are understood by dairy farmers	15.2	23.7	38.0	17.0	6.1	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.25.2 Customer Descriptive Statistics on Supply Chain Decision Synchronization

Table 4.55presents the descriptive statistics on an overall rating of five-point Likert scale of Supply chain decision synchronization of 314 respondents. Respondents were requested to provide information on whether dairy processing firms Products prices are reasonable and understood, majority respondents 58.6 percent were in agreement, 16.5 disagreed on the statement and 24.8 percent were neutral on the statement. The respondents were asked whether price variation between dairy processing firms products and others are understood by customers, majority respondents 57.0 percent were in agreement, 17.9 disagreed on the statement and 25.2 percent were neutral on the statement. On the item Quality of products are understood by customers, majority respondents 70.7 percent were in agreement, 8.6percent disagreed on the statement and 20.7 percent were neutral on the statement.

Respondents were requested to provide information on whether Promotion services are offered to increase demand, majority respondents 52.2 percent were in agreement, 11.7 disagreed on the statement and 36.0 percent were neutral on the statement. On the item promotion efforts are done according to customers' demands, respondents 31.5 percent were in agreement, 36.9 disagreed on the statement and 31.5 percent were neutral on the statement.Respondents were requested to provide information on whether dairy processing firms products offer solutions to customer's demands, majority respondents 50.0 percent were in agreement, 27.4 disagreed on the statement and 22.6 percent were neutral on the statement. On the item, firm's products are introduced timely, majority

respondents 58.2 percent were in agreement, 23.6 disagreed on the statement and 18.2 percent were neutral on the statement. On the item, promotion of products are done rightfully in the retail store, majority respondents 59.9 percent were in agreement, 28.0 disagreed on the statement and 12.1 percent were neutral on the statement.

The role of the firm on decisions cannot be underestimated has it has effect on its performance. This was supported by exploratorystudy ofFrench co-operatives by Allemand (2013) when they recommended the use of one-to-one interviews and observation during meetingsand debatesaswellassemi-structuredinterviews. Essential information will assist in customer participation and decision making.

Table 4.51: Customer Descriptive Statistics on Supply Chain Decision Synchronization

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	
Dairy Processing Firms Products prices are reasonable and understood	2.5	14.0	24.8	42.7	15.9	100.0
Price variation between Dairy Processing Firms products and others are understood by customers	4.5	13.4	25.2	49.7	7.3	100.0
Quality of products are understood by customers	0.3	8.3	20.7	51.3	19.4	100.0
Promotion services are offered to increase demand	.6	11.1	36.0	40.4	11.8	100.0
Promotion efforts are done according to customers' demands	8.9	28.0	31.5	23.2	8.3	100.0
Dairy Processing Firms products offer solutions to customers	4.5	22.9	22.6	41.7	8.3	100.0
Firm's products are introduced timely	6.4	17.2	18.2	50.6	7.6	100.0
Promotion of products are done rightfully in the retail store	5.7	22.3	12.1	48.4	11.5	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.26 Descriptive Statistics on Supply Chain Incentive Alignment

4.26.1 Supplier Descriptive Statistics on Supply Chain Incentive Alignment

Table 4.56 shows the descriptive statistics on an overall rating of five-point Likert scale of Supply chain Supply chain incentive alignment of 342 respondents.Respondents were

requested to provide information on whether increased Sales demands are extended to farmers, majority of the respondents 53.5 disagreed that Increased Sales demands are extended to farmers, 22.2 percent were in agreement with the statement and 24.3 percent were neutral on the statement.   On the item, Milk products provided to dairy farmers at subsidized prices, majority of the respondents 84.2 percent disagreed that Milk products provided to dairy farmers at a subsidized prices, 10 percent were on agreement on the statement and 5.5 percent were neutral on the statement. The item Artificial Insemination/Veterinary programs availed when required, majority of the respondents 67.3 percent disagreed with the statement, 22.2 percent were in agreement with the statement and 10.5 percent were neutral on the statement. The item Artificial Insemination/Veterinary programs provided at subsidized prices, majority of the respondents 63.5 percent strongly disagreed that Artificial Insemination/Veterinary programs provided at subsidized prices, 20.2 percent were in agreement on the statement and 16.4 percent were neutral on the statement.

Respondents were asked whether the firm link dairy farmers to financial services, majority of the respondents 55.8 percent agreed that Firm link dairy farmers to financial services, 28.1 percent disagreed with the statement and 16.1 percent were neutral on the statement. On the item, Payment for milk produce done promptly, 50.6 percent of the respondents disagreed that Payment for milk produce done promptly, 42.4 percent were in agreement with the statement and 7.0 percent were neutral on the statement. The item, Establishment of cooler plants for mutual benefit, 57.3 percent of the respondents were in agreement that establishment of cooler plants is for mutual benefit, 17.2 percent of the respondents disagreed with the statement and 25.4 percent were neutral on the statement.

On the item Shared savings on milk reduced prices, majority of the respondents 51.8 percent disagreed that Shared savings on milk reduced prices, 17.5 percent agreed on the statement and 30.7 percent were neutral on the statement. Respondents were asked whether transport services are aligned for mutual benefit, majority of the respondents 50.0 percent were in agreement that Transport services are aligned for mutual benefit, 23.7 percent disagreed on the statement and 26.3 percent were neutral on the statement.

Other scholars suggest that long-term orientation has to do with incentivizing managers to make decisions that benefit the organization in the long run, even at the cost of forgoing short-term profits in order to avoid short-termism and managerial myopia (Bouwens *et al.,* 2013; Flammer and Bansal, 2017). It is a focus on future benefits and reflects a desire to build and maintain long-term relationships (Hwang, Chung, and Jin, 2013; Malekiand de Jong, 2014).). Moreover, Pay-for-performance contracts, in particular, emphasise incentive alignment (Kim et al., 2007; Datta and Roy, 2011), motivating suppliers to achieve the buyer's objectives e.g. cost reduction or innovation (Sumo et al., 2016). It has also been established that about 80% of the milk sold in Kenya goes through the informal channels (Karanja, 2004). Therefore the improvement of these marketing channels will also play an important role in improving the marketing and also the profitability of farmers.

Table 4.18: Supplier Descriptive statistics on Supply Chain Incentive Alignment

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	
Increased sales demand are extended to dairy farmers	16.4	37.1	24.3	22.2	0.0	100.0
milk products are provided to dairy farmers at subsidized prices	60.8	23.4	5.0	8.8	2.0	100.0
Artificial Insemination/Veterinary programs are availed when required by the dairy farmers	38.6	28.7	10.5	17.5	4.7	100.0
Artificial Insemination/Veterinary programs are provided to the dairy farmer at subsidized price	39.5	24.0	16.4	20.2	0.0	100.0
The firm link dairy farmers to financial services	7.0	21.1	16.1	48.2	7.6	100.0
Payment for milk produce is done promptly	6.4	44.2	7.0	31.0	11.4	100.0
The establishment of the cooler plants is for mutual benefit	6.1	11.1	25.4	47.7	9.6	100.0
Savings as a result of reduced milk production costs are shared	31.0	20.8	30.7	17.5	0.0	100.0
Transport services are aligned for mutual benefit	7.0	16.7	26.3	43.3	6.7	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.26.2 Customer Descriptive Statistics on Supply Chain Incentive Alignment

Table 4.57 shows the descriptive statistics on an overall rating of five-point Likert scale of Supply chain Supply chain incentive alignment of 314 respondents. Respondents were requested to provide information on whethersales demand are aligned to the customers'

requirements, majority respondents 59.9 percent were in agreement, 8.9 disagreed on the statement and 31.2 percent were neutral on the statement. On the item,milk products accessed to customers, majority respondents 71.3 percent were in agreement, 15.9 disagreed on the statement and 12.7 percent were neutral on the statement. On the item, the firm pricing is demand driven, majority respondents 46.2 percent were in agreement, 18.4 disagreed on the statement and 35.4 percent were neutral on the statement. On the item, there is shared cost on high demand of products, majority respondents 46.8 percent were in agreement, 25.8 disagreed on the statement and 27.4 percent were neutral on the statement. On the item the product prices are align to the demand, majority respondents 49.0 percent were in agreement, 24.6 disagreed on the statement and 26.4 percent were neutral on the statement.Respondents were also requested to provide information on whether prices of the products are align to quality, majority respondents 60.5 percent were in agreement, 18.8 disagreed on the statement and 20.7 percent were neutral on the statement. On the item promotion of the products are align to the contents of the products, majority respondents 65.3 percent were in agreement, 13.4 disagreed on the statement and 21.3 percent were neutral on the statement.

Table 4.19: Customer Descriptive Statistics on Supply Chain Incentive Alignment

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	
Sales demand are aligned to the customers' requirements	0.6	8.3	31.2	47.8	12.1	100.0
milk products accessed to customers	5.4	10.5	12.7	59.2	12.1	100.0
The firm pricing is demand driven	5.7	12.7	35.4	36.6	9.6	100.0
There is shared cost on high demand of products	10.2	15.6	27.4	36.6	10.2	100.0
The product prices are align to the demand	6.1	18.5	26.4	38.2	10.8	100.0
Prices of the products are align to quality	5.1	13.7	20.7	53.2	7.3	100.0
Promotion of the products are align to the contents of the products	3.5	9.9	21.3	48.1	17.2	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.27 Descriptive Statistics on Teamwork

4.27.1 Supplier Descriptive Statistics on Supply Chain Teamwork

Table 4.58 shows the descriptive statistics on an overall rating of five-point Likert scale of Supply chain teamworkof 342 respondents. Respondents were requested to provide information on whether the firm is committed to the growth of the industry, Majority of the respondents 52.9 percent agreed that firm committed to the growth of the industry, 24.9 percent disagreed on the statement and 22.2 percent were neutral on the statement.

On the item, the firm committed to improving services to milk suppliers, Majority of the respondents 36.3 percent disagreed that Firm committed to improving services to milk suppliers, 26.6 percent were in agreement with the statement and 37.1 percent were neutral on the statement. On the item there are joint efforts to increase milk production, Majority

of the respondents 48.5 percent disagreed that there are joint efforts to increase milk production, 26.9 percent were in agreement with statement and 24.6 percent were neutral on the statement. The item firm enhances coordination through teamwork. 24.3 percent of the respondents were in agreement that firm enhances coordination through teamwork, 23.4 percent disagreed on the statement and majority 52.3 percent was neutral on the statement. On the item,all the parties along the chain plan together, Majority of the respondents 39.8 percent of the respondents disagreed that all the parties along the chain plan together, 27.5 percent were in agreement with the statement and 42.7 percent were neutral on the statement.

On the item, there is Cordial relationship between firm and milk suppliers. 59.7 percent of the respondents were in agreement that there is Cordial relationship between firm and milk suppliers, 24.5 percent disagreed on the statement and majority 25.8 percent was neutral on the statement. Respondents were asked whether there are supply alliances with all parties within the chain. 28.9 percent of the respondents were in agreement that there is there are supply alliances with all parties within the chain, 21.1 percent disagreed on the statement and majority 50.0 percent was neutral on the statement. On the item there is mutual trust between firm and milk suppliers. 35.4 percent of the respondents were in agreement that there is there is mutual trust between firm and milk suppliers, 31.3 percent disagreed on the statement and majority 33.3 percent was neutral on the statement. On the item there is spirit of togetherness between firm and milk suppliers. 56.4 percent of the respondents were in agreement that there is there is spirit of togetherness between firm and milk suppliers, 18.1 percent disagreed on the statement and majority 25.4 percent was neutral on the statement. Empirical studies by Simatupang *and*Sridharan (2005) support this study. The scholars noted that Collaborations between trading partners in Supply chain information sharingfacilitates Supply chain decision synchronization between these partners contributing towards achieving significant business performance.

Table 4.20 : Supplier Descriptive Statistics on Supply Chain Teamwork

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	%
The firm is committed to the growth of the industry	0.3	24.6	22.2	30.7	22.2	100.0
The firm is committed to improving the services to milk suppliers	0.0	36.3	37.1	21.9	4.7	100.0
There is joint efforts to increase milk production	5.8	42.7	24.6	20.5	6.4	100.0
The firm enhances coordination through teamwork	4.4	19.0	52.3	20.5	3.8	100.0
All the parties along the chain plan together	13.2	26.6	42.7	13.7	3.8	100.0
There is Cordial relationship between the firm and milk suppliers	2.6	21.9	25.8	45.9	3.8	100.0
There is supply alliances with all the parties within the chain	9.4	11.7	50.0	25.1	3.8	100.0
There is mutual trust between the firm and milk suppliers	4.7	26.6	33.3	29.8	5.6	100.0
There is the spirit of togetherness between the firm and milk suppliers	2.6	15.5	25.4	52.6	3.8	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.27.2 Customer Descriptive Statistics on Supply Chain Teamwork

Table 4.59 below shows the descriptive statistics on an overall rating of five-point Likert scale of Supply chain teamworkof 314 respondents.Respondents were requested to provide information on whether the firm is committed to needs of customers, majority respondents 69.1 percent were in agreement, 10.8 disagreed on the statement and 20.1

percent were neutral on the statement. On the item the firm is committed to improving the quality of their products, majority respondents 72.3 percent were in agreement, 11.1 disagreed on the statement and 16.6 percent were neutral on the statement. On the item there is joint effort to increase market share, majority respondents 65.3 percent were in agreement, 8.6 disagreed on the statement and 26.1 percent were neutral on the statement. On the item the firm enhances cooperation to deliver required products, majority respondents 69.4 percent were in agreement, 5.4 disagreed on the statement and 25.2 percent were neutral on the statement. On the item all the parties along the chain promote the products, majority respondents 59.2 percent were in agreement, 18.7 disagreed on the statement and 22.0 percent were neutral on the statement. Respondents were asked on whether there is Cordial relationship between the firm and customers, majority respondents 67.5 percent were in agreement, 10.8 disagreed on the statement and 21.7 percent were neutral on the statement. On the item there is supply alliances with all the parties within the chain, majority respondents 53.8 percent were in agreement, 17.5 disagreed on the statement and 28.7 percent were neutral on the statement. On the item, the firm has measures to ensure customers trust their products, majority respondents 58.0 percent were in agreement, 16.5 disagreed on the statement and 25.5 percent were neutral on the statement. On the item, through coordinated promotion the customers are informed and retained, majority respondents 51.3 percent were in agreement, 26.8 disagreed on the statement and 22.0 percent were neutral on the statement.

The results showed divergent opinions on the statements although majority were in agreement with the statements. Scholars have saidthat "different stakeholders from different functional areas or organizations are involved in a working team, such as an SCM team, contradictory interests, assumptions, expectations, knowledge and perceptions may seriously jeopardize team processes" (Elias and Zwikael, 2007) Similarly. Holweg et al. (2005) state that firms often have diverging interests in the shortterm, and such conflicts of interest mitigate the commitment of SC collaboration and fully sharing demand information.

Table 4.21: Customer Descriptive Statistics on Supply Chain Teamwork

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	
The firm is committed to needs of customers	0.0	10.8	20.1	58.6	10.5	100.0
The firm is committed to improving the quality of their products	0.0	11.1	16.6	58.9	13.4	100.0
There is joint effort to increase market share	2.5	6.1	26.1	56.1	9.2	100.0
The firm enhances cooperation to deliver required products	0.0	5.4	25.2	54.8	14.6	100.0
All the parties along the chain promote the products	2.5	16.2	22.0	51.6	7.6	100.0
There is Cordial relationship between the firm and customers	2.2	8.6	21.7	52.5	15.0	100.0
There is supply alliances with all the parties within the chain	2.9	14.6	28.7	43.3	10.5	100.0
The firm has measures to ensure customers trust their products	4.1	12.4	25.5	43.0	15.0	100.0
Through coordinated promotion the customers are informed and retained	2.9	23.9	22.0	43.3	8.0	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.28 Descriptive Statistics on Dairy Board Policies and Regulations

4.28.1 Supplier Descriptive Statistics on Dairy Board Policies and Regulations

Table 4.60 shows the descriptive statistics on an overall rating of five-point Likert scale of Dairy Board of 342 respondents. Respondents were requested to provide information on whether the Dairy Board Act influences growth of industry, 43.2 percent of the

respondents were in agreement, 36.5 percent disagreed with the statement and 20.3 percent were neutral on the statement. On the item Dairy Board Organs improve services of milk suppliers, Majority of the respondent's 56.5 percent s disagreed that Dairy Board Organs improve services of milk suppliers, 21.1 percent agreed on the statement and 22.5 percent were neutral on the statement.

Respondents were asked whether the Dairy Board delivers its mandate to increase milk production, Majority of the respondents 51.2 percent s disagreed that Dairy Board delivers its mandate to increase milk production, 18.1 percent agreed on the statement and 30.7 percent were neutral on the statement. The item Dairy Board Guidelines enhances teamwork, Majority of the respondents 45.1 percent disagreed that Dairy Board Guidelines enhances teamwork, 24.0 percent agreed on the statement and 31.0 percent were neutral on the statement.

Respondents were asked to provide information on whether the Dairy Board Policies are in line to chain parties' performance, Majority of the respondents 32.1 were in agreement that Dairy Board Policies are in line to chain parties' performance, 31.0 percent disagreed with the statement and 36.8 percent were neutral on the statement. On statement, Dairy Board regulates the prices of dairy produce, 37.7 percent of the respondents were in agreement that Dairy Board regulates the prices of dairy produce, 41.5 percent disagreed with the statement and 20.8 percent were neutral on the statement. On the statement, Dairy Board improves the quality of milk produce, 35.1 of the respondents were in agreement that Dairy Board improves the quality of milk produce, 43.3 percent disagreed with the statement and 21.6 percent were neutral on the statement.

Respondents were asked on whether there is mutual trust between Dairy Board and milk Suppliers, Majority of the respondents 51.4 percent disagreed that there is mutual trust between Dairy Board and milk Suppliers, 15.2 percent agreed on the statement and 33.3 percent were neutral on the statement. Respondents were asked on whetherthe Dairy Board work in association with other participants, Majority of the respondents 36.5 percent disagreed on the statement Dairy Board work in association with other

participants, 20.0 percent agreed on the statement and 43.6 percent were neutral on the statement.

Empirical studies by Makoni *et al*. (2013) shows that over 28 dairy processors are organized under the relatively Kenya Dairy Processors' Association, which is more focused on members' interests than a shared vision for the dairy industry. This might have contributed to the divergent views of the respondents.It is worthwhile to mention affront that the dairy board regulations still remain a challenge, particularly to milk supplies who normally demand better prices compared to the prices offered by themilk processors. The main reason is that farmers want the cash for their immediate use and at a better price.

Table 4.22: Supplier Descriptive Statistics on Dairy Board Policies and Regulations

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	%
The Dairy Board Act influences the growth of industry	15.2	21.3	20.3	37.1	6.1	100.0
The Dairy Board organs improve the services of milk suppliers	12.9	43.6	22.5	17.3	3.8	100.0
The Dairy Board delivers its mandate to increase milk production	12.0	39.2	30.7	16.1	2.0	100.0
The Dairy Board guidelines enhances teamwork	13.2	31.9	31.0	19.9	4.1	100.0
The Dairy Board policies are in line to chain parties performance	7.0	24.0	36.8	30.1	2.0	100.0
The Dairy Board regulates the prices of dairy produce	18.1	23.4	20.8	30.7	7.0	100.0
The Dairy Board improves the quality of milk produce	8.2	35.1	21.6	27.2	7.9	100.0
There is mutual trust between Dairy Board and	9.9	41.5	33.3	15.2	0.0	100.0

milk Suppliers

The Dairy Board work in association with other participants	7.0	29.5	43.6	19.9	0.0	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.28.2 Customer Descriptive Statistics on Dairy Board Policies and Regulations

Table 4.61 shows the descriptive statistics on an overall rating of five-point Likert scale of Dairy Board of 314 respondents. Respondents were requested to provide information on whether the Dairy Board influences customer satisfaction, majority respondents 34.4 percent were in agreement, 32.2 disagreed on the statement and 33.3 percent were neutral on the statement. On the item, the Dairy Board organs improve services of customers, respondents 40.8 percent were in agreement, 42.1 disagreed on the statement and 17.2 percent were neutral on the statement. On the item the Dairy Board embraces joint effort to increase milk production, majority respondents 41.7 percent were in agreement, 25.1 percent disagreed on the statement and 33.1 percent were neutral on the statement.

Respondents were requested to provide information on whether the Dairy Board guidelines enhances teamwork, respondents 28.9 percent were in agreement, 29.3 disagreed on the statement and 41.7 percent were neutral on the statement.Respondents were also requested to provide information on whether the Dairy Board policies are in line to chain parties' performance, respondents 36.4 percent were in agreement, 42.3 disagreed on the statement and 21.3 percent were neutral on the statement. On the item the Dairy Board regulates the prices of dairy products, majority respondents 41.4 percent were in agreement, 22.3 disagreed on the statement and 36.3 percent were neutral on the statement. On the item, the Dairy Board improves the quality of milk products, majority respondents 47.4 percent were in agreement, 29.0 disagreed on the statement and 23.6 percent were neutral on the statement. On the item there is mutual trust between dairy board and milk customers, majority respondents 44.0 percent were in agreement, 24.5 percent disagreed on the statement and 31.5 percent were neutral on the statement. On the

item, the Dairy board work in association with other participants in milk chain to enhance customer satisfaction, majority respondents 39.2 percent were in agreement, 33.8 percent disagreed on the statement and 27.1 percent were neutral on the statement.

Table 4.57: Customer Descriptive Statistics on Dairy Board Poloicies and Regulations

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	
Dairy Board influences customer satisfaction	4.8	27.4	33.4	28.7	5.7	100.0
The Dairy Board organs improve services of customers	1.3	40.8	17.2	37.3	3.5	100.0
The Dairy Board embraces joint effort to increase milk production	0.6	24.5	33.1	31.8	9.9	100.0
The Dairy Board guidelines enhances teamwork	2.5	26.8	41.7	24.8	4.1	100.0
The Dairy Board policies are in line to chain parties performance	3.8	38.5	21.3	30.3	6.1	100.0
The Dairy Board regulates the prices of dairy products	6.7	15.6	36.3	29.6	11.8	100.0
The Dairy Board improves the quality of milk products	2.9	26.1	23.6	36.9	10.5	100.0
There is mutual trust between dairy board and milk customers	1.6	22.9	31.5	34.1	9.9	100.0
The Dairy board work in association with other participants in milk chain to enhance customer satisfaction	5.1	28.7	27.1	34.7	4.5	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral ; A- Agree; SA- Strongly Agree

4.29 Descriptive Statistics on Performance of Dairy Processing Firms

4.29.1 Suppliers Descriptive Statistics on Performance of Dairy Processing Firms

Table 4.62shows the descriptive statistics on an overall rating of five-point Likert scale of performance of dairy processing firms of 342 respondents.Respondents were requested to provide information on whether the firm focuses on existing milk supplies for business growth. Majority of the respondents 48.5 percent were in agreement with the statement, 20.1 percent disagreed with the statement while 31.3 percent were neutral on the statement. On the item; firm focuses on existing milk suppliers for business expansion. 38.0 percent respondents were in agreement with the statement, 23.6 percent disagreed with the statement while 38.3 percent were neutral on the statement. On the item; the firm focuses on establishing itself in market, majority of the respondents 58.2 percent were in agreement that the firm focuses on establishing itself in markets for business growth and expansion, 10.5 disagreed with the statement and 31.3 percent were neutral on the statement. Empirical studies conducted by mwakida in (2009) indicate that the dairy sub-sector achieved improved growth because of the turnaround strategies adopted. The growth of the dairy subsector happened concurrently with the growth of dairy processing firms .

The respondents were asked whether outreach effort through the establishment of coolers has led to business growth, majority of the respondents 77.5 percent were in agreement, 22.2 percent were neutral on the statement. Only 0.3 percent disagreed that outreach efforts through establishment of coolers has led to business growth. On the item; the firm has served its milk suppliers according to various; majority of the respondents 55.9 percent were in agreement with the statement, 10 percent disagreed on the statement while 34.2 percent were neutral on the statement. On the item, the firm considers how products are manufactured by extending their services to the dairy farmers 34.8 percent were in agreement that the firm does, 54.9 percent disagreed on the statement while 32.2 percent were neutral on the statement. On the item; the firm considers how products are transported from milk suppliers in respective localities majority of the respondents 46.7

percent were in agreement that the firm does, 32.4 percent disagreed that the firm considers how products are transported from milk suppliers in respective localities while 20.8 percent were neutral on the statement.

Crook and Combs (2007) found that strong members reap most of the direct benefits, weak members can often gain by building switching costs with strong members, leveraging SCM outside the focal chain, and increasing survival chances. The results are not in agreement with the opinions of supply chain practitioners when they were interviewed. They gave their opinions on the programmes they have in place to expand the market, they said "formation of cooperative farms for example kibbutz, to increase milk volume, exporting products to different countries, they also teach farmers on quality of milk. To maintain and improve profits they have programmes for extension services, have programmes on reduction of cost of production. The supply chain practitioner's opinions were a cover up considering the actual results from farmers (suppliers).Respondents were asked to provide information on whether the firm considers the company is aware about dairy farmer's complaints and respond on time as a performance indicator. Majority of the respondents 73.7 percent disagreed on the statement, 12.6 percent we in agreement while 13.7 percent were neutral on the statement. The item, dairy farmers are satisfied with the price paid to milk produce as a performance indicator. Majority of the respondents 81.0 percent strongly disagreed that the firm does, 9.4 percent were in agreement and 9.6 neutral on the statement. The item, the Market share of the firm is sizeable compared to other processing firms, 34.8 percent of the respondent was in agreement that the firm does, Majority of the respondents 42.1 percent were neutral on the statement. However, 23.1 percent disagreed that the share of the firm is sizeable compared to other processing firms.

The results are in agreement with supply chain practitioners that the market is sizeable. They gave their opinions on firm's performance, according to the managers they say the company is making profits. On justification they said "the market is always available for our products. In fact Dairy Processing Firms products are always competitive". However none could approximate the profits of the firm for the last years. They said the records on the same were in the main office Nairobi. They also gave their opinions on the positioning

of the firm. According to majority they said is position two after close competitor from private milk processing firm Brookside.

Table 4.58: Suppliers Descriptive Statistics on Performance of Dairy Processing Firms

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	%
The firm focuses on existing milk suppliers for business growth	6.1	14.0	31.3	40.6	7.9	100.0
The firm focuses on existing milk suppliers for business expansion	5.8	17.8	38.3	30.1	7.9	100.0
The firm focuses on establishing itself in markets for business growth and expansion	2.3	8.2	31.3	47.4	10.8	100.0
Outreach efforts through establishment of coolers has led to business growth	0.0	0.3	22.2	64.6	12.9	100.0
The firm has served its milk suppliers according to various market segments	0.6	9.4	34.2	43.9	12.0	100.0
The firm considers how products are manufactured by extending their services the to the dairy farmers	29.8	25.1	10.2	22.8	12.0	100.0
The firm considers how products are transported from milk suppliers in respective localities	10.2	22.2	20.8	36.8	9.9	100.0
The company is aware about dairy farmers complaints and responds on time	14.9	58.8	13.7	8.8	3.8	100.0
Dairy farmers are satisfied with the price paid to milk produce	59.9	21.1	9.6	5.3	4.1	100.0
The market share of the firm is sizeable compared to other processing firms	2.0	21.1	42.1	26.9	7.9	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.29.2 Customer Descriptive Statistics on Performance of Dairy Processing Firms

Table 4.63 shows the descriptive statistics on an overall rating of five-point Likert scale of performance of dairy processing firms of 314 respondents. Respondents were requested to provide information of Likert scale1-5. On the item; the firm has improved on existing milk products, majority respondents 69.1 percent were in agreement, 18.1 disagreed on the statement and only 12.7 percent were neutral on the statement. On the item, the firm's products meets various market segments majority respondents 64.0 percent were in agreement, 8.8 disagreed on the statement and only 27.1 percent were neutral on the statement. On the item, the firm offers products that are highly reliable majority respondents 78.1 percent were in agreement, 9.6 disagreed on the statement and only 12.4 percent were neutral on the statement. On the item, the firm offers products that are of high in quality respondents 72.6 percent were in agreement, 4.1 disagreed on the statement and only 23.2 percent were neutral on the statement. On the item, the firm offers a wide range of products to the market compared to its competitor's majority respondents 57.3 percent were in agreement, 14.6 disagreed on the statement and only 28.6 percent were neutral on the statement.

The respondents were asked whether the firm quickly responds to customer expectations majority respondents 58.3 percent were in agreement, 17.2 disagreed on the statement and only 24.5 percent were neutral on the statement. On the item the firm quickly responds to customer complaints majority respondents 45.5 percent were in agreement, 23.3 disagreed on the statement and only 31.2 percent were neutral on the statement. On the item, milk products are conveniently delivered to customer's majority respondents 64.7 percent were in agreement, 16.2 disagreed on the statement and only 19.1 percent were neutral on the statement. On the item, the firm effectively promotes its products majority respondents 60.8 percent were in agreement, 18.8 disagreed on the statement and only 20.4 percent were neutral on the statement.

Since majority of the respondent were in agreement with the performance of the firm then it clearly shows that customers are satisfied with products of dairy processing firms.

Customer responsiveness is key on customer orders and requests. Several researches pointed out that customer responsiveness is one of the most important factors that can be measured in the performance of SC. This tudy is is consistent with findings by scholars by sayin that effective performance measurement can be achieved based on SC metrics linked to customer satisfaction particularly (Banomyong & Supatn, 2011). Therefore, responsiveness is usually related with innovative products or products with short lead time, which describes the level of collaboration needed (Ramanathan et al., 2011).

Table 4.59: Customer Descriptive Statistics on Performance of Dairy Processing Firms

Statements	SD	D	N	A	SA	Total
	%	%	%	%	%	%
The firm has improved on existing milk products	4.1	14.0	12.7	61.1	8.0	100.0
The firms products meets various market segments	5.1	3.8	27.1	52.5	11.5	100.0
The firm offers products that are highly reliable	1.0	8.6	12.4	63.1	15.0	100.0
The firm offers products that are of high in quality	0.0	4.1	23.2	58.9	13.7	100.0
The firm offers a wide range of products to the market compared to its competitors	1.9	12.7	28.0	38.2	19.1	100.0
The firm quickly respond to customer expectations	4.5	12.7	24.5	51.0	7.3	100.0
The firm quickly respond to customer complaints	6.7	16.6	31.2	33.1	12.4	100.0
Milk products are conveniently delivered to customers	2.5	13.7	19.1	52.9	11.8	100.0
The firm effectively promotes its products	1.0	17.8	20.4	48.1	12.7	100.0
Products are competitive compared to others	4.8	12.4	19.7	51.0	12.1	100.0

Key: SD-Strongly Disagree; D-Disagree; N- Neutral; A- Agree; SA- Strongly Agree

4.30 Quantitative Results

4.30.1 Supplier Correlations Results

The results on the Table 4.64 shows supplier correlations.Saunders, Lewis and Thornhill (2015) assert that, correlation coefficients enable a researcher to quantify the strength of the linear relationship between two or more variables.Correlation is often used to explore the relationship among a group of variables and in turn helping in testing for Multicollinearity(Pallant, 2010). Multicollinearity is the undesirable situation where the correlations among the independent variables are strong. Multicollinearity misleadingly bloats the standard errors thus making some variables statistically insignificant while they should be else significant (Martz, 2013).

Numbers are Pearson correlation coefficients, which go from -1 to 1. The closer to 1 means strong correlation. A negative value indicates an inverse relationship. The correlation analysis of the study revealed that IS (r=.151, p=.03), DS (r= .094, p=.042) and IA (r=.0148, p=.003) indicating there positive relationship on Performance of Dairy Processing Firms while T(r=.632, p=.000) and DB (r=.247, p=.000) indicating a strong positive relationship on Performance of Dairy Processing Firms .

Table 4.23: Supplier Correlations Results

	Variables	Performance	Information	Decision	Incentive	Team	Dairy
Pearson Correlation	Performance	1.000					
	Information	.151					
	Decision	.094					
	Incentive	.148					
	Teamwork	.632					
	Dairy	.247					
Sig. (1-tailed)	Performance	.					
	Information	.003	.				
	Decision	.042	.000	.			
	Incentive	.003	.000	.000	.		

Teamwork	.000	.000	.000	.000	.	
Dairy	.000	.000	.000	.000	.000	.

Correlation is significant at 0.05 level (1-tailed)

4.30.2 Customer Correlations Results of SCC on Performance of Dairy Processing Firms

Table 4.65 shows the Pearson correlation matrix for all variables of the study model. Numbers are Pearson correlation coefficients, which go from -1 to 1. The closer to 1 means strong correlation. A negative value indicates an inverse relationship. The correlation analysis of the study revealed that IS (r=.448, p=.000), DS (r= .269, p=.000) and IA (r=.556, p=.000), T(r=.558, p=.000) and DB (r=.413, p=.000) all indicating a strong positive relationship on Performance of Dairy Processing Firms .

Table 4.24: Customer Correlations Results of SCC on Performance of Dairy Processing Firms

	Variables	Performance	Information	Decision	Incentive	Team	Dairy
	Performance	1.000					
	Information	.448					
Pearson	Decision	.269					
Correlation	Incentive	.556					
	Teamwork	.558					
	Dairy	.413					
	Performance	.					
	Information	.000	.				
Sig.(1-	Decision	.000	.000	.			
tailed)	Incentive	.000	.000	.000	.		
	Teamwork	.000	.000	.000	.000	.	
	Dairy	.000	.000	.000	.000	.000	.

Correlation is significant at 0.05 level of confidence(1-tailed)

4.30.3 Autocorrelation or Serial Test

Autocorrelation occur when the residuals are not independent from each other (Tabachnick & Fidell, 2013). The assumption of independence means that the errors in the model or in equation are not related to each other. The equation that is used to estimate the standard error is valid only if observations are independent (Field, 2013). From the

regression model summary on table 4.66 with respect to supplier and 4.67 with respect to customer autocorrelation was tested using Durbin-Watson. As a conservative rule, values less than 1 or greater than 3 raise alarm. The closer to 2 the value is, the better. The data for the study with respect to supplier gave values 1.911 without mediator and 1.949 with mediator. With respect to customer the values were 1.860 without mediator and 1.820 without mediator. As a rule of the thumb values showed that there is no autocorrelation in the data.

4.30.4 Supplier and Customer Normality Test of Variables

Figures 4.2and 4.3 shows the selected variables matches the test distribution as the points cluster around a straight line. Performance of Dairy Processing Firms was conceptualized as the dependent variable in the present study. Performance was measured using nine items. The P-P plot presented in figures shows that plotted points were close to the diagonal line on either side. This shows that the distribution for performance of Dairy Processing Firms was normal. Hence the variable was used in its original form.

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PERFORMANCE
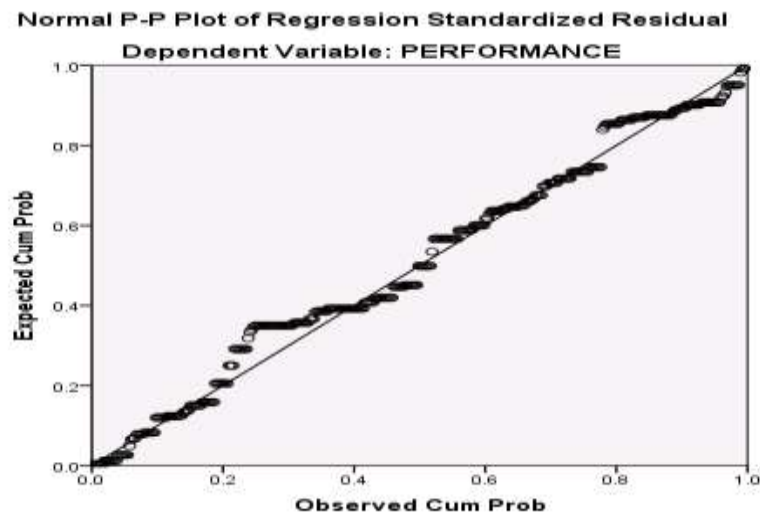
Figure 4.1: Supplier Normal P-P plot of Variables

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PERFORMANCE
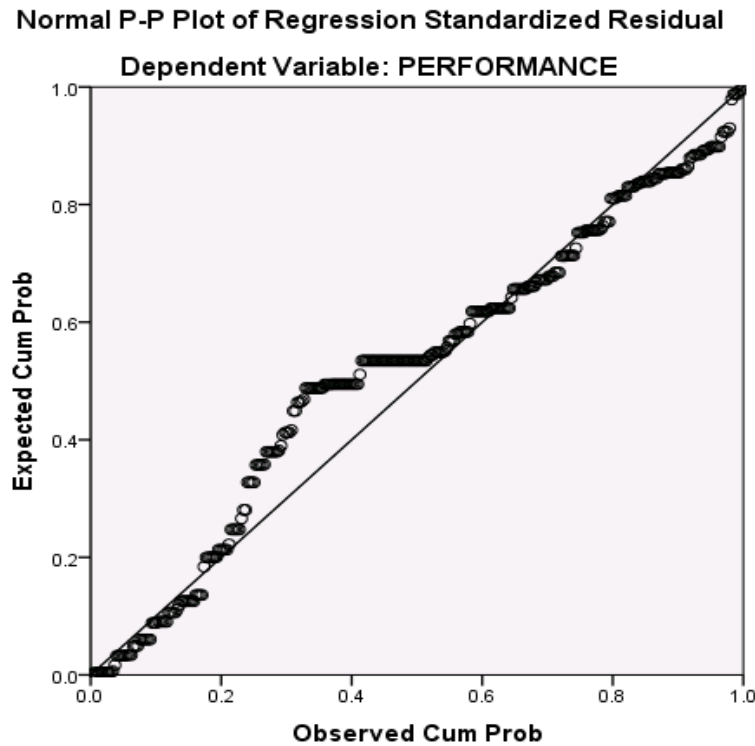
Figure 4.2: Customer Normal P-P plot of Variables

4.30.5 Supplier and Customer Normality Test of study Variables

The histogram shownin figures 4.4 and 4.5 shows the variables normality. According to Abebe & Angriawan (2013) the residual should a mean of zero and a standard deviation of 1 for a normal distribution. For the study (mean -1.91 and std. Dev. 0.993) for supplier and (mean-1.12 and std. Dev. 0.992) for the customer.
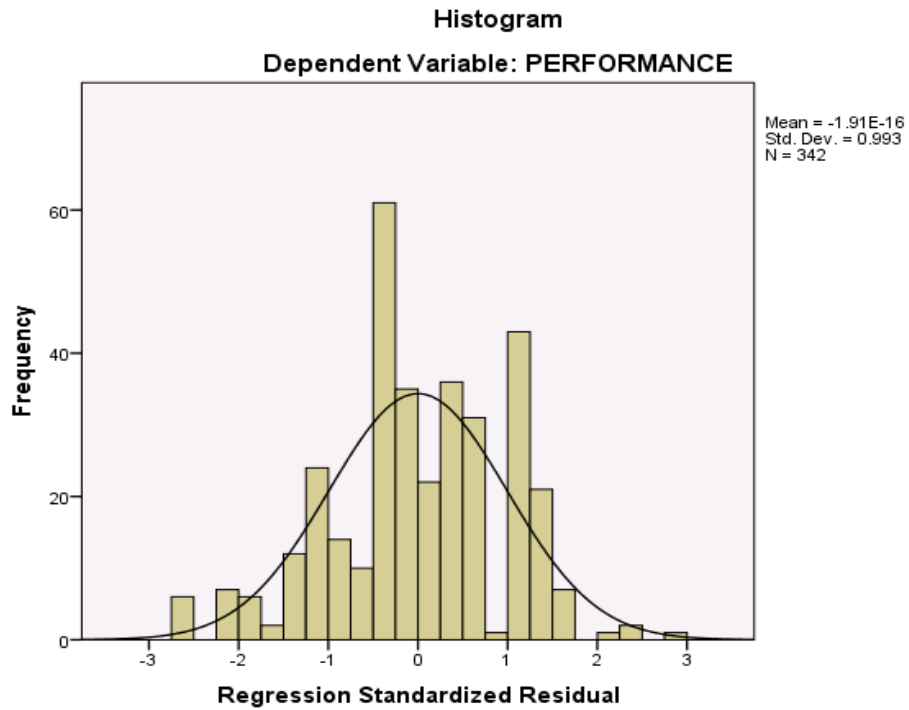
Figure 4.3: Supplier Histogram of Normality Test of study Variables

Figure 4.4: Customer Histogram of Normality Test of study Variables
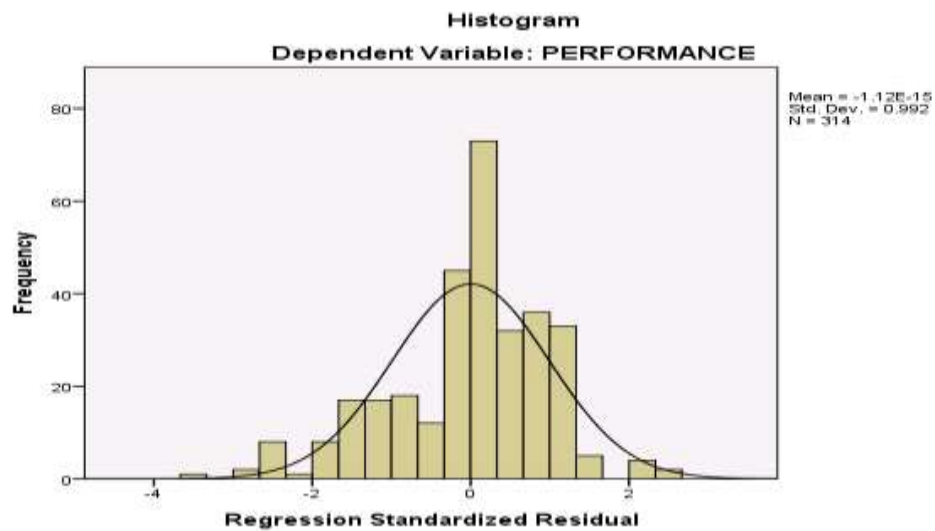
4.30.6 Test of Multicollinearityof Predictors

Multicollinearity exists when there is a strong correlation between two or more predictors (Field, 2013). Correlation matrix gives correlation coefficients between a single factor and every other factor in the investigation. The correlation coefficient between a factor and itself is always 1; hence the principal diagonal of the matrix containts 1s'. This therefore means it is an identity matrix (Khotari, 2014). Table 4.64 and 4.65 shows there was no Multicollinearity amongst the observed factors for the variable under investigation. According to Field (2013) posit another way of checking Multicollinearity is by use of SPSSdiagnostic Variance Inflation Factor (VIF). The VIF indicates whether a predictor has a strong linier relationship with other predictors. Related to the VIF is the tolerance statistic, which is its reciprocal (1/VIF). The general guidelines " if the largest VIF is greater than 10 then there is cause for concern; If the average VIF is substantially greater than 1 then the regression may be biased; tolerance below 0.1 indicates a serious problem and tolerance below 0.2 indicates a potential problem". The results of the study VIF with respect to supplier without mediator range between (1.122- 2.227) and (1.128 - 2.182) with mediator. All this showed no cause for concern hence no Multicollinearity as indicated in table 4.70 and 4.71. Tolerance range between (0.447 - 0.891) without mediator and (0.458 - 0.886) with the mediator. All values not below 0.1 hence no Multicollinearity.

With respect to customer, VIF without mediator range between (1.288- 1.886) and (1.372 – 1.943) with mediator. All this showed no cause for concern hence no Multicollinearity as indicated in table 4.72 and 4.73. Tolerance range between (0.447 - 0.891) without mediator and (0.530 - 0.776) with the mediator. All values not below 0.1 hence no Multicollinearity.

4.31 Regression Model Summary for SCC and Performance of Dairy Processing Firms

Multiple linear regression analyses were employed to develop models relating the fourindependent variables, one mediating variable and one dependent variable. In the first model, the model is without mediator and the secondmodel with mediator.

4.31.1 Supplier Regression Model Summary for SCC and Performance of Dairy Processing Firms

Table 4.66 shows a multiple regression summary. A multiple regression is an extension of simple linear regression. A multiple linear regression was carried out to ascertain the extent to which Supply chain information sharing, Decision Synchronization, Incentive Alignment, Supply chain teamworkand mediating effect of Dairy board can predict Performance of dairy processing firms .

R is a Pearson correlation between predicted values and actual values of the dependent variable. R^2 is multiple correlation coefficients that represent the amount of variance of performance of dairy processing firms is explained by four predictor variables: Supply chain information sharing, Decision Synchronization, Incentive Alignment, and Teamwork.The magnitude of the beta coefficients associated with the independent variables can be compared to determine the strongest independent variable in predicting the dependent variable (Mugenda, 2008).

The findings of the study revealed that R (.634) without the effect of mediation variable and (.642) with the effect mediation. This was the correlation between the predictors and the outcome. The Multiple correlation coefficient known as the coefficient of determination, (R^2) is a measure of the amount of variability in one variable that is explained by the other (Field, 2013). The adjusted R^2 gives some idea of how well the model. In this case generalizes and its value should be close to the value of $R^{2.}$ The R^2 value tells us that our model accounts 40.2 percent without the effect of mediating variable

and 41.3 percent with mediating variable. This was the variance in the influence of SCC on performance of dairy processing firms. The coefficient of determination R^2 indicated that the model explained only 40.2percent without effect of mediation and 41.3 percent with mediation of the variation or change in dependent variable. Conversely, that means that 58.7 percent with the effect of mediating variable and 59.8 percent without the effect of the mediating variable was the variability in performance of dairy processing firms shared with other factors than those measured on the Questionnaire. A study should be done to establish other factors

From these findings the model generalizes well and it is close to the adjusted. The change statistic tells whether the in R^2 is significant. The significance of an R^2 can be tested by F-ratio. The model causes R^2 to change from zero to .413 with mediation 0402 without mediation. The change is the amount of variance explained and gives rise to F-ratio 47.195 with mediation and which is significant with a probability less than .005. Durbin-Watson statistic informs whether the assumption of independent errors is tenable. As a conservative rule values less than 1 or greater than 3 should definitely raise alarm. The closer to 2 that the value is, the better, and data for the study gave the value 1.949 close to 2 then the assumption has almost certainly been met.

Table 4.62: Supplier Regression Models Summary for SCC and Performance

Model 1	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics F Change	df1	df2	Sig. F Change	Durbin-Watson
Without Mediation										
1	.634[a]	.402	.394	.61338	.402	56.535	4	3377	.000	1.911

a. Predictors: (Constant), Teamwork, Decision, Incentive, Information
b. Dependent Variable: Performance

Model 2	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
With	.642[b]	.413	.404	.60863	.413	47.195	5	336	.000	1.949
Mediation										

a. Predictors: (Constant), Dairy, Decision, Teamwork, Incentive, Information
b. Dependent Variable: Performance

4.31.2 Customer Model Summary for SCC and Performance of Dairy Processing Firms

R is a Pearson correlation between predicted values and actual values of the dependent variable. R^2 is multiple correlation coefficient that represents the amount of variance of performance of dairy processing firms is explained by five predictor variables: Supply chain information sharing, Decision Synchronization, Incentive Alignment, Supply chain teamworkand Dairy board.

The magnitude of the beta coefficients associated with the independent variables can be compared to determine the strongest independent variable in predicting the dependent variable (Mugenda , 2008). The Multiple correlation coefficient known as the coefficient of determination, (R^2) is a measure of the amount of variability in one variable that is explained by the other (Field, 2013). The adjusted R^2 gives some idea of how well the model. In this case generalizes and its value should be close to the value of R^2. The findings of the study reveal that R without mediation 62.7 percent and with mediation 63.9

is the correlation between the predictors and the outcome. The R^2 value tells us that our model accounts 39.3 percent without the effect of mediating variable and 40.9 percent with mediating variable.The coefficient of determination R^2indicated that the model explained only 39.3percent without effect of mediation and 40.9 percent with mediation of the variation or change in dependent variable. From these findings the model generalizes well and it is close to the adjusted. The change statistic tells whether the in R^2 is significant. The significance of anR^2 can be tested by F-ratio. The model causes R^2 to change from zero to .409 and the change is the amount of variance explained and gives rise to an F-ratio 47.195 which is significant with a probability less than .005. Durbin-Watson statistic informs whether the assumption of independent errors is tenable. As a conservative rule values less than 1 or greater than 3 should definitely raise alarm. The closer to 2 that te value is, the better, and data for the study gave the value 1.820 close to 2 then the assumption has almost certainly been met. They are presented on table 4.67.

Table 4.63: Customer Regression Model Summary for SCC and Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1 Without Mediation	.627[a]	.393	.385	.54578	.393	50.025	4	309	.000	1.860
a. Predictors: (Constant), Teamwork, Decision, Information, Incentive										
b. Dependent Variable: Performance										
2 With Mediation	.639[b]	.409	.399	.53952	.409	42.595	5	308	.000	1.820
a. Predictors: (Constant), Dairy, Incentive, Decision, Information, Teamwork										
b. Dependent Variable: Performance										

4.32 Model Significance

4.32.1 Supplier Model Significance

Table 4.68shows ANOVA results. The (ANOVA) tests whether the model is significantly better at predicting the outcome than using the mean as a 'best guess'. Specifically, F-ratio represents the ratio of improvement in prediction that results from fitting the model (fitting a regression to the data rather than using the mean as estimate of outcome), a relative to inaccuracy that still exists in the model. This table reports overall significance of our model. For the model F-ratio is 47.195 ($p < 0.05$) our model is significant. There is a significant relationship between Performance of Dairy Processing Firms and five predictors. The results are interpreted as meaning the model significantly improved our ability to predict the outcome.

Table 4.64: Supplier Model Significance ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	85.082	4	21.271	56.535	.000[b]
	Residual	126.792	337	.376		
	Total	211.874	341			

a. Dependent Variable: Performance

b. Predictors: (Constant), Teamwork, Decision, Incentive, Information

Model		Sum of Squares	Df	Mean Square	F	Sig.
2	Regression	87.411	5	17.482	47.195	.000[b]
	Residual	124.464	336	.370		
	Total	211.874	341			

a. Dependent Variable: Performance

b. Predictors: (Constant), Dairy, Decision, Teamwork, Incentive, Information

4.32.2 Customer Model Significance

Table 4.69 shows ANOVA results with regards to customer. (ANOVA) tests whether the model is significantly better at predicting the outcome than using the mean as a 'best guess'. Specifically, F-ratio represents the ratio of improvement in prediction that results from fitting the model (fitting a regression to the data rather than using the mean as estimate of outcome), a relative to inaccuracy that still exists in the model. This table reports overall significance of our model. For the model F-ratio is 42.595 ($p < 0.05$) our model is significant. There is a significant relationship between Performance of Dairy Processing Firms and five predictors. The results are interpreted as meaning the model significantly improved our ability to predict the outcome.

Table 4.65: Customer Model Significance ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	59.604	4	14.901	50.025	.000[b]
1	Residual	92.042	309	.298		
	Total	151.646	313			

a. Dependent Variable: Performance

b. Predictors: (Constant), Teamwork, Decision, Information, Incentive

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	61.993	5	12.399	42.595	.000[b]
2	Residual	89.653	308	.291		
	Total	151.646	313			

a. Dependent Variable: Performance

b. Predictors: (Constant), Dairy, Incentive, Decision, Information, Teamwork

4.33 Coefficients of SCC on Performance of Dairy Processing Firms without

Mediation

According to IBM SPSS Manual Linear regression is used to model the value of a dependent scale variable based on its linear relationship on one or more predictors. The study predictors without mediation were four.

4.33.1 Supplier Regression Coefficients of SCC on Performance of Dairy Processing Firms without Mediation

Table 4.7 shows supplier Coefficients table without mediation. The study concluded that the independent variable; Supply chain teamworkinfluence Performance of dairy processing firms. Supply chain teamworkp $0.000 < 0.05$ which is significant at 0.05 (5%) Hence the multiple Regression coefficient of performance of dairy processing firms with respect to Supplier:

$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$................. (i)Without a mediator
can be explained as: Y $=1.540 + 0.044 X_1 - 0.050 X_2 - 0.019 X_3 + 0.588 X_4 +$
0.51 ....(i)Without a mediator

Where Y is the dependent variable (performance of dairy processing firms) X_1 is the Supply chain information sharing , X_2 Decision Synchronization, X_3 is Incentive alignment, X_4 is and Teamwork. Taking all independent variables constant at zero, the performance of dairy processing firms will be 1.540. The data findings also showed that taking all other independent variables at zero, a unit increase in the Supply chain teamworkwill lead to a 0 .588x_4 increase in the performance of the dairy processing firms . The t-values test the hypothesis that the coefficient is different from 0. To reject this, you need a t-value greater than 1.96 (for 95% confidence). The t-values also show the importance of a variable in the model. The t-values for Supply chain teamwork (T=14.210). 14.210>1.96 implying H_{O4} is rejected and accepting that there is significant effect between Supply chain teamworkand Performance of Dairy Processing Firms .

Table 4.66: Supplier Regression Coefficients of SCC on Performance of Dairy Processing Firms without Mediation

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	1.540	.151		10.169	.000	1.242	1.838		
Information	.044	.047	.060	.945	.345	-.048	.135	.447	2.237
1 Decision	-.050	.048	-.064	-1.026	.306	-.145	.046	.462	2.164
Incentive	-.019	.036	-.024	-.517	.605	-.089	.052	.801	1.248
Teamwork	.588	.041	.634	14.210	.000	.507	.670	.891	1.122

a. Dependent Variable: Performance

4.33.2 Suppliers Regression Coefficients of SCC on Performance of Dairy Processing Firms with Mediation

Table 4.71 shows supplier Coefficients table with mediation. The study predictors were four plus theZ value which is the mediador. It is concluded that the independent variables; Supply chain teamworkand Dairy Board, influence Performance of Dairy Processing Firms. Supply chain teamworkp 0.000 < 0.05 which is significant at 0.05 (5%). Mediation of Dairy board p 0.009 < 0.05 which is significant at 0.05 (5%).

Regression coefficient of performance of dairy processing firms with respect to Supplier:

: $Y = \beta 0 + \beta_1 X_1. Z + \beta_2 X_2. Z + \beta_3 X_3. Z + \beta_4 X_4. Z + \varepsilon$.............. With a mediator can be explained as Y =1.402-.015X_1. Z -0.011X_2 . Z-0.050X_3. Z + 0 .580X_4. Z + 0.158 with a mediatorResults shows that Supply chain information sharing (T =-.323 , p>.05), Supply chain decision synchronization (T =-.240 , P>.05), Supply chain Supply chain incentive alignment   (T =-1.327 , p >.05) didn't made significant contribution to the model, however Supply chain teamwork(T=14.075 ,p=< 0.05) and Dairy Board (T =2.644 , P < .05) made significant contributions to the model.Where Y is the dependent variable (performance of dairy processing firms) X_1 is the Supply chain information sharing , X_2 Decision Synchronization, X_3 is Incentive alignment, and X_4 is Supply chain teamworkZ is mediating influence of dairy board policies, regulations and mandate. Taking all independent variables constant at zero, the performance of dairy processing firms will be 1.402. The data findings also showed that taking all other independent variables at zero, a unit increase in the Supply chain teamworkwill lead to a 0 .580x_4 increase in the performance of the dairy processing firms . The t-values for Supply chain teamwork(T=14.075). 14.075>1.96 implying H_{O4} is rejected and accepting that there is significant effect between Supply chain teamworkand Performance of Dairy Processing Firms . (DB=2.644) |2.644|>1.96 implying H_{O5} is rejected and accepting that there is significant effect between DB and Performance of Dairy Processing Firms .

Table 4.67: Supplier Coefficients of SCC on Performance of Dairy Processing Firms

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			LB	UB	Tole	VIF
(Constant)	1.402	.158		8.873	.000	1.091	1.713		
Information	-.015	.047	-.020	-.323	.747	-.108	.078	.458	2.182
Decision	-.011	.047	-.014	-.240	.811	-.103	.081	.485	2.061
1 Incentive	-.050	.038	-.066	-1.327	.186	-.124	.024	.711	1.407
Teamwork	.580	.041	.625	14.075	.000	.499	.661	.886	1.128
Dairy	.107	.041	.129	2.644	.009	.027	.187	.732	1.366

a. Dependent Variable: Performance

4.34 Regression Coefficients of SCC on Performance of Dairy Processing Firms without Mediation

4.34.1 Customer Regression Coefficients of SCC on Performance of Dairy Processing Firms without Mediation

Table 4.72 shows customer coefficient table without mediation. The study concluded that the independent variables; Supply chain Supply chain incentive alignment p 0.000 < 0.05 which is significant at 0.05 (5%) and Supply chain teamworkp 0.000 < 0.05 which is significant at 0.05 (5%) both Supply chain teamworkinfluence Performance of dairy processing firms. Hence the multiple Regression coefficient of performance of dairy processing firms with respect to Supplier: $Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$.................(i) Without a mediator

can be explained as: Y $= Y 1.414 + 0.130 X_1 - 0.023 X_2 + .0219 X_3 + 0.293\ X_4 + 0.183$ ....(i) Without a mediator

Where Y is the dependent variable (performance of dairy processing firms) X_1 is the Supply chain information sharing , X_2 Decision Synchronization, X_3 is Incentive alignment, and X_4 is and Teamwork. Taking all independent variables constant at zero, the performance of dairy processing firms will be 1.414. The data findings also showed that taking all other independent variables at zero, a unit increase Supply chain information sharing will lead to 0.130 X_1 increase in the performance of the dairy processing firms, a unit increase Supply chain Supply chain incentive alignment will lead to 0.219 X_3 increase in the performance of the dairy processing firms , and a unit increase in Supply chain teamworkwill lead to 0.293 X_4. The t-values test the hypothesis that the coefficient is different from 0. To reject this, you need a t-value greater than 1.96 (for 95% confidence). The t-values forSupply chain information sharing (T=2.696) 2.696>1.96 implying H_{O1} is rejected and accepting that there is significant effect between Supply chain information sharing and performance of dairy processing firms , Supply chain Supply chain incentive alignment (T=4.791) 4.791>1.96 implying H_{O3} is rejected and accepting that there is significant effect between Supply chain Supply chain incentive alignment and performance of dairy processing firms. Supply chain teamwork(T=5.093). 5,093>1.96 implying H_{O4} is rejected and accepting that there is significant effect between Supply chain teamworkand Performance of Dairy Processing Firms .

Table 4.68: Customer Regression Coefficients of SCC on Performance of Dairy Processing Firms without Mediation

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	1.414	.183		7.739	.000	1.055	1.774		
Information	.130	.048	.149	2.696	.007	.035	.225	.644	1.552
1 Decision	-.023	.043	-.027	-.528	.598	-.108	.062	.776	1.288
Incentive	.219	.046	.292	4.791	.000	.129	.309	.530	1.886
Teamwork	.293	.057	.307	5.093	.000	.180	.406	.539	1.855

a. Dependent Variable: Performance

4.34.2 Customer Regression Coefficients of SCC on Performance of Dairy Processing Firms with Mediation

Table 4.73 shows customer coefficient table with mediationIncentive p $0.000 < 0.05$ is significant at 0.05, Supply chain teamworkp $0.000 < 0.05$ which is significant at 0.05 and Dairy board p $0.004 < 0.05$ also significant at 0.05. Information p $0.25 > 0.05$ was not significant at 0.05; Supply chain decision synchronization p 0.211 was also not significant at 0.05. Hence the multiple regression equation:

$Y = \beta0 + \beta_1 X_1 . Z + \beta_2 X_2 . Z + \beta_3 X_3 . Z + \beta_4 X_4 . Z + \varepsilon$........................... With a mediator can be explained as:

$Y = 1.394 + .109 X_1 .Z - 0.054 X_2 . Z + 0.212 X_3 . Z + 0.116 X_4 . Z + \varepsilon$With a mediator Results shows that Supply chain decision synchronization (T $= -1.226$, P>.05) didn't made significant contribution to the model, , However Supply chain information sharing (T $= 2.255$, p <.05), Supply chain Supply chain incentive alignment   (T $= 4.683$, p < .05)

Supply chain teamwork(T=4.424 ,p=< 0.05) and Dairy Board (T =2.865 , P < .05) made significant contribution to the model.

Where Y is the dependent variable (performance of dairy processing firms) X_1 is the Supply chain information sharing, X_2 is Decision Synchronization, X_3 is Incentive Alignment, X_4 is Supply chain teamworkand X_5. Taking all independent variables constant at zero, the performance of dairy processing firms will be 1.394. The data findings also showed that taking all other independent variables at zero, a unit increase in Supply chain information sharing will lead to a 0.109 increase in the performance of dairy processing firms ; a unit increase in Supply chain Supply chain incentive alignment will lead to a 0.212 increase in the performance of the dairy processing firms ; a unit increase in Supply chain teamworkwill lead to 0 .257 increase in the performance of the dairy processing firms ; a unit increase in mediation of dairy board increase in the performance of the dairy processing firms ; While a unit increase in Supply chain decision synchronization will lead to a -0.054 decrease in the performance of the dairy processing firms . This means that for every unit increase SCC will influence performance of dairy processing firms by 40.9% as results in table 71 shows.

The t-values test the hypothesis that the coefficient is different from 0. To reject this, you need a t-value greater than 1.96 (for 95% confidence). The t-values also show the importance of a variable in the model. The t-values for the study were (IS= 2.255),|-2.255|>1.96 implying H_{O1} is rejected and accepting and there is significant effect between IS and Performance of Dairy Processing Firms . (DS= -1.226), |-1.226|<1.96 implying H_{O2} is accepted and there is no significant effect between DS and Performance of Dairy Processing Firms . (IA= 4.683), |4.683|>1.96 implying H_3 is rejected accepting and there is significant effect between IS and Performance of Dairy Processing Firms . (T=4.424). |4.424|>1.96 implying H_{O4} is rejected and accepting that there is significant effect between T and Performance of Dairy Processing Firms . (DB=2.863) |2.863|>1.96 implying H_{O5} is rejected and accepting that there is significant effect between DB and Performance of Dairy Processing Firms .

Table 4.25: Customer Regression Coefficients of SCC on Performance of Dairy Processing Firms with Mediation

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			LB	UB	Tole	VIF
1	(Constant)	1.394	.181		7.711	.000	1.038	1.750		
	Information	.109	.048	.125	2.255	.025	.014	.204	.629	1.590
	Decision	-.054	.044	-.063	-1.226	.221	-.141	.033	.729	1.372
	Incentive	.212	.045	.282	4.683	.000	.123	.301	.529	1.891
	Teamwork	.257	.058	.270	4.424	.000	.143	.371	.515	1.943
	Dairy	.116	.040	.151	2.865	.004	.036	.195	.691	1.448

a. Dependent Variable: Performance

4.35 Tests of Hypotheses

Inferential analyses were conducted to specifically ascertain the effect of the conceptualized supply chain collaboration on performance of dairy processing firmsby testing the formulated hypotheses.Multiple linear regressionanalysiswasdone and the coefficients was usedtotestthe hypotheses.

Statistical significance of each of the independent tests on unstandardized coefficients are equal to 0 (zero) in the population (i.e for each of the coefficients, H_0: $\beta=0$ versus Ha:$\beta \neq 0$ is conducted). If p> 0.05, the coefficients are statistically significantly different to 0 (Dhakal, 2016).The t-values also test the hypothesis that the coefficient is different from 0. To reject this, the t-value should be greater than 1.96(for 95 percent confidence). T is calculated difference represented in units of error. The greater the magnitude of t value i.e |either positive or negative|, the greater the evidence against the null hypothesis that there is no significant different (Runkel,2017). Test of hypothesis was done on independent

variables(with mediation) as the model proved better compered to without mediation.

4.35.1 Supplier Hypotheses Testing

With respect to supplier, results of regression coefficients were presented on table 4.71 and summary of hypothesis testing presented on table 4.74.

H_{01}: Supply chain information sharing does not have a significant effect on performance of dairy processing firms in kenya.

The results of multiple regression coefficientspresented on table 4.71 gave p value of 0.747>0.05 and t-value of|-0.323|< 1.96. This implies that the variable was not significant at 5 percent confidence level The results also implies thatSupply chain information sharing does not add substantial contribution on performance of dairy processing firms .The regression coefficient displayed(β= -0.015,p>0.05) indicatedthat Supply chain information sharingwasnegative implying thateach unit increase in Supply chain information sharing is likely to decrease performance of dairy processing firms by -0.015 when other influences are held constant. H_{01}stated as: Supply chain information sharing does not a significanteffecton performance of dairy processing firms limitedwas accepted and adopted. The effect of Supply chain information sharing was also tested by t-test valueof|-.323|, implies that the stardard error associated with the paremeter warrants the accepting of the null hypothesis.The implication of the test is consistent with the results that revealed that dairy processing firms faceschallengeson Supply chain information sharingand the test was in agreement with the views of suppliers when theywere asked whether effective and Information technology was used to communicate to dairy farmers, majority of the respondents 59.4 percent disagreed that the firm has effective and information technology. The researcher noted that the firm Supply chain information sharingwas not understood by suppliers because the means was not compactible and understood by them.

Moreover the test is in agreement with results in the study when the respondents were

asked whether they get to know ealry enough on price changes, majority 68.7 percent disagreed on the measure.This was not consistent with findings by Namusonge (2015) done in an hotel (service industry) which showed that supply chain information systems positively and significantly contributes to organizational performance through its ability to drive procurement. The current study was done in dairy industry and gave a divergent views. The perspectives of respondents in an hotel will not be same as those in processing firm and touching the suppliers/customers in form suppliers of milk and those buying milk products in retail supermarkets. It also shows that the firm has not been good in Supply chain information sharing and should consider sharing in a more compatible and understood means.

H02: Supply chain decision synchronization does not have a significant effect on performance of dairy processing firms in kenya.

The results of multiple regression coefficients presented on table 4.71 indicated that p value of $0.811 > 0.05$ and t-value of|-.240|<1.96 implyingH02stated that:Supply chain decision synchronization does not a significanteffecton performance of dairy processing firms wasthereforeaccepted.The variable was not significant at 5 percent confidence, regression coefficient displayed(β= -0.011,p > 0.05) indicated that Supply chain decision synchronization wasnegativehenceno significantinfluence on performance of dairy processing firms . This shows thateach unit increase in Supply chain decision synchronization is likely to decrease performance of dairy processing firms by -0.011 when other influences are held constant.T value of|-.240| implies that the stardard error associated with the paremeter warrants the accepting of the null hypothesis.The implications of the test was consistent with the results that showed dairy processing firms faceschallengesintermsof milk prices, weignt desperities and extention services. Findings in the present study regarding fixing of milk prices done as required majority of the respondentst 73.6 percent disagreed, also wheights deperities resolved majority 70.1 percent disagreed and extention services offere to increase quality majority 42.7 disagreed.Empirical studies have shownthat suppliers' involvement needs to identify

buyers' expectations in terms of quality, quantity, delivery, service and price, and can help firms to improve them in overall quality, reduce costs and competition (Morrisey & Pitaway, 2006);when the expectations are met, this relationship becomes valuable and it turns into a useful tool that helps the company achieve its objectives (Fierro & Rendondo, 2008).

H03: Supply chain incentive alignment does not have a significant effect on performance of dairy processing firms in kenya

The results of multiple regression coefficients presented on table 4.71 indicated that p value of 0.186> 0.05 and t-value .|-1.327|< 1.96 implying H03stated that:Supply chain Supply chain incentive alignment does not a significanteffecton performance of dairy processing firmswasaccepted and adopted. The regression coefficientforSupply chain Supply chain incentive alignment wasnegative, (β= -0.050,p > 0.05)implies no significantinfluence on performance of dairy processing firms .The regression coefficient displayedimplies that each unit increase in Supply chain Supply chain incentive alignment is likely to decrease performance of dairy processing firms by -0.050 when other influences are held constant. T value of|-1.327| implies that the stardard error associated with the paremeter warrants the accepting of the null hypothesis.The test in the present study is in agreement with the findings regarding milk products providedto farmers at subsidized prices ,where majority of the respondents 84.2 percent disagreed and on Artificial Insemination programs provided at susidised prices, majority 67.3 percent of the respondents disagreed.

H04: Supply chain teamworkdoes not have a significant effect on performance of dairy processing firms in kenya

The results of multiple regression coefficients presented on table 4.71 indicated that p value of 0 .000< 0.05 and t-value of |14.075|> 1.96 implying H04stated that:Supply chain teamworkdoes not a significanteffecton performance of dairy processing firmswasrejected and adopting alternative hypothesis. The regression coefficient displayedindicatesthat Supply chain teamworkwaspositiveinplies significantinfluence on performance of dairy

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processing firms (β= 0.580,p < 0.05).The influence of Supply chain teamworkwas also tested by t-test value of|14.075| which implies that the stardard error associated with the paremeter warrants the rejecting of the null hypothesis and adopting the alternative hypothesis.This shows thateach unit increase in Supply chain teamworkis likely to increase performance of dairy processing firms by 0.580when other influences are held constant. Dairy Processing Firms are committed to the growth of industry and there is spirit of togetherness between the firm anf suppliers. The results of the test are in agreement with suppliers views when respondents were asked whether the firm was committed to the growth of the industry and   Majority of the respondents 52.9 percent were in agreemen. Also the respondents were asked wether there is spirit of togetherness between firm and milk supplies, majority 56.4 were in agreement.

The results of the test are also in agreement with the findings previously establishedfrom studies which showed thatjoint activities could give rise to inter-partner trust in the supply chain. Commitment builds inter-firm trust embedded in the relationship and this provides a foundation for the collaborating firms to make a commitment to their supply chain partners. In supply chain relationships, Supply chain teamworkbetween supply chain partners is hardly established without trust between the two (Chen et al., 2017).

H$_{05}$: Dairy Board policies and regulations does not have significant mediating influence on relationship between supply chain collaboration and Performance of Dairy Processing firms in Kenya.

The results of multiple regression presented on table 4.71 indicated that p value of   0 .009< 0.05 and t-value of |2.644|> 1.96 implying H$_{05}$stated that:Dairy board does not a significantmediating   effecton   performance   of   dairy   processing   firms washthereforerejected and adopted the alternative hypothesis. The regression coefficients displayedindicatesthat dairy boardwerepositiveand there was significantinfluence on performance of dairy processing firms (β= 0.107,p < 0.05).This shows thateach unit increase in dairy board policies and regulationsis likely to increase performance of dairy processing firms by 0.107when other influences are held constant.Dairy Processing

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Firms are committed to the growth of industry and there is spirit of togetherness between the firm anf suppliers. Theresearcher noted that the firm Supply chain information sharingwas not understood by suppliers because the means was not compactible to them.T value of|2.644|implies that the stardard error associated with the paremeter warrants the rejecting of the null hypothesis.The results of the test are in agreement with suppliers views when respondents were asked whether dairy board policies were inline with supply chain parties when majority 32.1 percent were in agreement. The results of the test are also consistent with dairy board Regulations (2020) which showed ininspection, licencing and quality sur of milk in compliance with the requirements of the dairy Act CAP 366.

Table 4.26: Supplier Summary of Hypotheses Testing

	Hypothesis	Findings t-values	Sig.	Decision
$H0_1$	Supply chain information sharing does not have a significant effect on Performance of Dairy Processing Firms	-.323	.747	Accepted
$H0_2$	Supply chain decision synchronization does not have a significant effect on Performance of Dairy Processing Firms	-.240	.811	Accepted
$H0_3$	Supply chain incentive alignment does not have a significant effect on Performance of Dairy Processing Firms	-1.327	.186	Accepted
$H0_4$	Supply Chain Teamworkdoes not have a significant effect on Performance of Dairy Processing Firms	14.075	.000	Rejected
$H0_5$	Dairy Board does not have a significant mediating effect on Performance of Dairy Processing Firms	2.644	.009	Rejected

4.35.2 Customer Hypotheses Testing

With respect to customer, results of regression coefficients were presented on table 4.73 and summary of hypothesis testing presented on table 4.75.

H_{01}: Supply chain information sharing does not have a significant effect on performance of dairy processing firms in kenya.

The results of multiple regression presented on table 4.73 indicated that p value of 0.025< 0.05 and t-value of|2.255|> 1.96 implying H_{01} stated that:Supply chain information sharing does not a significanteffecton performance of dairy processing firms wasthereforerejected and adopting the alternative hypothesis.The regression coefficients displayed indicated that Supply chain information sharing were positive implies significant influence on performance of dairy processing firms (β= -0.109,p<0.05).The influence of Supply chain information sharing was also tested by t-test valuewhich gave|2.255| implying that the stardard error associated with the paremeter warrants the rejecting the null hypothesis. The researcher noted that the firm customers are informed on new products introduced, new effective mode of communication is used to inform customers, milk products are conveniently delivered, customers get to know ealy enough about price changes, customers aware of customers complaints, and respond on time, customers informed of varied products, they know where to buy and understand the products of dairy processing firms . The results of the study indicated most of the customers were in agreement that the firm Supply chain information sharing on products of dairy processing firms was fairly done. This shows that the firm has fairly tried in reaching to customers and explained the benefits of the products. It also shows that the customers have really understood and know where to buy the products. Empirical evidence shows the firm is trying to achieving Vision 2030 by offering high quality products for all its citizens/customers.

The results of the test are also in agreement with are consistent studies established by other scholars showing that "Sharing information can reduce uncertainty in demand and

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supply and significantly improvesupply chain service levels, decrease inventory levels, lower stockouts ,increase product freshness, and greatly reduce product wastage due to time expiry (Kaipiaetal.,2013).

H02: Supply chain decision synchronization does not have a significant effect on performance of dairy processing firms in kenya.

The results of multiple regression presented on table 4.73 indicated that p value of 0.221> 0.05 and t-value of|-.054|< 1.96.Thehypothesisstated that:Supply chain decision synchronization does not a significanteffecton performance of dairy processing firms wasthereforeaccepted. The regression coefficients displayedindicatedthat Supply chain decision synchronization werenegativeand and no significantinfluence on performance of dairy processing firms (β= 0.221 > 0.05).The influence of Supply chain decision synchronization was tested by t-test value of|-.240| which implies that the stardard error associated with the paremeter warrants the accepting of the null hypothesis.The results of the test are in agreement with empirical studies by Weele (2010) when he considers that the top management commitment and internal cross-functional coordination of collaborating parties are very important especially in decision making.

He reiterated that the uncertainty of another partner on aspects of their expectations and for the firm at times can be achallenge.This study is consistet with a study done by Kenon and Palsole (2019)on Developing an Agile Global Worforce. They noted that said impending market changes make it necessary for organisations to be higly adaptable.They was discussion on challenges and critical success factors affecting the management.

H₀₃: Supply chain Supply chain incentive alignment does not have a significant effect on performance of dairy processing firms in kenya

The results of multiple regression presented on table 4.73 indicated that p value of 0 .000< 0.05 and t-value .|4.683|> 1.96 implying H₀₃stated that:Supply chain Supply chain incentive alignment does not a significanteffecton performance of dairy processing firmswasthereforerejected. The regression coefficients displayedimpliesthat Supply chain Supply chain incentive alignment werepositivehence significantinfluence on performance of dairy processing firms (β= 0.212,p < 0.05).The influence of Supply chain Supply chain incentive alignment was also tested by t-test valueand implied that the stardard error associated with the paremeter warrants the rejecting of the null hypothesis and adopting the alternative hypothesis.The results of the test are in agreement with the views of the respondents when they were askedwether sales demand are aligned to the customers' requirements, majority respondents 59.9 percent were in agreement, wether new milk products accessed to customers, majority respondents 71.3 percent were in agreement, wether the firm pricing is demand driven, majority respondents 46.2 percent were in agreement, wether there is shared cost on high demand of products, majority respondents 46.8 percent were in agreement, wether the product prices are align to the demand, majority respondents 49.0 percent were in agreement and Respondents were also requested to provide information on whether prices of the products are align to quality, majority respondents 60.5 percent were in agreement.

H₀₄: Supply chain teamworkdoes not have a significant effect on performance of dairy processing firms in kenya

The results of multiple regression presented on table 4.73 indicated that p value of 0 .000< 0.05 and t-value of |4.424|> 1.96.Thehypothesisstated that:Supply chain teamworkdoes not a significanteffecton performance of dairy processing firmswasthereforerejected and adopted the alternative hypothesis. The regression coefficients displayedindicatesthat Supply chain teamworkwerepositiveand there is significantinfluence on performance of dairy processing firms. the influence of Supply

chain teamworkwas tested by t-test value of|14.075|.(β= 0.257,p < 0.05) which implies that the stardard error associated with the paremeter warrants the rejecting of the null hypothesis.

The results of the test are in agreement with empirical studies showing participating members who combine their heterogeneous competencies seek to create collaborative advantages which benefit all members in the long run (Khoja et al., 2011). Hence, entering into a collaborative relationship is often radical and can lead to a new leadership with different directions and capabilities. The companies that establish themselves as dominant players in a supply chain network will often have strong influences on others to streamline supply chain operations that can deliver excellent customer service levels.

H05: Dairy Board policies and regulations does not have significant influence on relationship between supply chain collaboration and Performance of Dairy Processing firms in Kenya.

The results of multiple regression presented on table 4.73 indicated that p value of 0 .004< 0.05 and t-value of |2.865|> 1.96. Thehypothesisstated that:Dairy board does not a significanteffecton performance of dairy processing firmswasthereforerejected and adopted the alternative hypothesis. The regression coefficients displayedindicatesthat dairy boardwerepositiveand there was significantinfluence on performance of dairy processing firms (β= 0.116,p < 0.05).The influence of Dairy Boardwas tested by t-test value of|2.865|which implies that the stardard error associated with the paremeter warrants the rejecting of the null hypothesis.

The results of the test wassupported by views of respondents when they were asked onwhether the Dairy Board influences customer satisfaction, majority respondents 34.4 percent were in agreement, Dairy Board embraces joint effort to increase milk production, majority respondents 41.7 percent were in agreement, Dairy Board regulates the prices of dairy products, majority respondents 41.4 percent were in agreement, Dairy Board improves the quality of milk products, majority respondents 47.4 percent were in agreement, there is mutual trust between dairy board and milk customers, majority

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respondents 44.0 percent were in agreement and the Dairy board work in association with other participants in milk chain to enhance customer satisfaction, majority respondents 39.2 percent were in agreement.According to (KDB, 2018) the role of the board has come under scrutiny because International best practice indicates a move towards stakeholder managed industry associations with responsibility for productivity, quality control, research and development; and sectoradvocacy and promotion. Transformation of the dairy board into an industry association would mean that membership would include all industry players (farmers, co-operatives, processors and marketers). The governance and leadership of the association would then be bestowed upon an elected Board accountable to members and day to day operations carried out by technical staff appointed by the board. To finance its operations a levy would then be charged on all milk handled along the value chain.

Table 4.27: Customer Summary of Hypotheses Testing

	Hypothesis	t-values	Sig.	Decision
$H0_1$	Supply chain information sharing does not have a significant effect on Performance of Dairy Processing Firms	2.255	.025	Rejected
$H0_2$	Supply chain decision synchronization does not have a significant effect on Performance of Dairy Processing Firms	-1.226	.221	Accepted
$H0_3$	Supply chain incentive alignment does not have a significant effect on Performance of Dairy Processing Firms	4.683	.000	Rejected
$H0_4$	Supply chain teamworkdoes not have a significant effect on Performance of Dairy Processing Firms	4.424	.000	Rejected
$H0_5$	Dairy Board does not have a significant mediating effect on Performance of Dairy Processing Firms	2.865	.004	Rejected

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives the summary of findings and discussions of the study which sought to analyze the influence of supply chain collaboration on performance of dairy processing firms in kenya. This was based on objectives and hypothesis of the study. The chapter captures the summary of the research findings;conclusions drawn from the study findings in relation to the literature reviewed, policy recommendations and areas of further research.

5.2 Summary

The study sought to establish the influence of Supply Chain Collaboration on Performance of Dairy Processing Firms . The purpose of the study was to test the influence of Supply chain Collaboration on Performance of Dairy Processing Firms . The study analyzed the influence of SCC on Performance of Dairy Processing Firms . This was important for the firm to realize the influence of SCC on firm's performance and consider its implications to the firm.

The relationship between SCC and Performance of Dairy Processing Firms was determined by critically examining the five specific objectives: the influence of Supply chain information sharing on Performance of Dairy Processing Firms , influence of Supply chain decision synchronization on Performance of Dairy Processing Firms , the influence of Supply chain Supply chain incentive alignment on Performance of Dairy Processing Firms, the influence of Supply chain teamworkon Performance of Dairy Processing Firms and influence of Dairy Board on Performance of Dairy Processing firms in Kenya. The summary of the findings was derived from research objectives with corresponding hypothesis.

5.2.1Influence of Supply chain information sharing on Performance of Dairy Processing Firms.

Supplier's results on the item the firm does communicate to dairy farmers about its demand majority disagreed with the statement. On Information technology is used to communicate to dairy farmers majority disagreed and only few agreed. The degree of influence on Supply chain information sharing was low and the firm has to take measures to increase the level of influence.

However from customers, on items; they are informed on products introduced, effective information technology as a mode of communication is used to inform customers on products, and milk products are conveniently delivered to customer's majority respondents were in agreement. The results showed that the firm has shared substantially information to the customers of dairy processing firms . They have to maintain and strive to improve for continued client satisfaction.

The supply chain practitioner's respondents gave their opinions on the way the firm share information to milk suppliers. The respondent's respondent that "The firm share information through extension agents and the transporters of milk. They also said sometimes give them pamphlets with important information. They also share through "barazas", exhibitions, field days, exchange visits and sending messages to farmers". More so, the kind of information they share is related to prices, feeding technology and when payments are made. Also share information on feeding of dairy cows, and milk hygiene. The effect of sharing information according to supply chain practitioners is the increase on supply of milk to the processing firm, increase farmers confidence and loyalty to the firm.

5.2.2 Influence of Supply chain decision synchronization on Performance of Dairy Processing Firms.

Suppliers indicated on items; fixing of milk prices done as required by Majority of the respondents disagreed, on weights disparities between dairy farmers and dairy processing firms are well resolved strongly on the statement, on Quality control measures understood by dairy farmers, Majority of the respondents were agreement with the statement. They also indicated that, extension services are offered to increase production of milk and the Dairy farmers receive record their daily deliveries by agreeing on the statements.

Customer's respondents indicated on the items; Dairy processing firms Products prices are reasonable and understood majority respondents in agreement on the statement. On the item price variation between dairy processing firms products and others are understood by customers, majority respondents were in agreement on the statement, on the item Quality of products are understood by customers, majority respondents were in agreement on the statement.

Concerning Supply chain decision synchronization supply chain practitioners gave their opinions that they arrive at join decision when there is oversupply and the market is not good and thus agree on price reduction. Also when supply exceed demand the firm sit with the farmers to agree on price reduction. They also gave their opinions on instances they incorporate supply chain partners. They said when there is long drought resulting to low supply of milk they mobilize. They also pointed instances of making join resolutions with supply chain partners "is when there is shortage of milk". They said another instance to make join resolution with supply chain partners is during the dry season when the animal feeds are inadequate. The effect of Supply chain Supply chain incentive alignment according to them is "the milk volume will go up'. The farmers also will deliver the milk because the feeds will be available.

5.2.3 Influence of Supply chain Supply chain incentive alignment   on Performance of Dairy Processing Firms.

Supplier's respondents on item Increased Sales demands are extended to farmers revealed the majority disagreed that Increased Sales demands are extended to farmers. Also on Milk products provided to dairy farmers at subsidized prices, Majority of the respondents disagreed that Milk products provided to dairy farmers at a subsidized prices. On Artificial Insemination/Veterinary programs availed when required, Majority of the respondents disagreed with the statement. However on, item firm link dairy farmers to financial services, Majority of the respondents agreed that Firm link dairy farmers to financial services, on Payment for milk produce done promptly, majority respondents disagreed that Payment for milk produce done promptly, on establishment of cooler plants for mutual benefit, majority respondents were in agreement that Establishment of cooler plants is for mutual benefit.

Customer respondents provided information Incentive Alignment; On Sales demand aligned to the customers' requirements, majority respondents were in agreement, on milk products accessed to customers, on the item milk products accessed to customers, majority respondents were in agreement, on the item the firm pricing is demand driven, majority were in agreement, On the item there is shared cost on high demand of products, majority respondents were in agreement, On the item the product prices are align to the demand, majority respondents were in agreement on the statement

Supply chain practitioners gave their opinions on Supply chain Supply chain incentive alignment they respondent that "programs are like sponsoring farmers to field days, shows, benchmarking with other countries like Israel". Another incentive they said was "facilitating linkages between the farmers and service providers. The effect Supply chain Supply chain incentive alignment according to them is "the milk volume will go up, confidence of milk suppliers and trust.

5.2.4 Influence of Supply chain teamworkon Performance of Kenya Co-operative Creameries.

The supplier's results showed that firm committed to the growth of the industry by Majority of the respondents agreeing that firm committed to the growth of the industry. Also, the firm committed to improving services to milk suppliers by Majority of the respondents disagreed that Firm committed to improving services to milk suppliers, on there are joint efforts to increase milk production, Majority of the respondents also disagreed that there are joint efforts to increase milk production. The item firm enhances coordination through Supply chain teamworkfrom the results.

Customer's results revealed that firm is committed to needs of customers by majority respondents in agreement on the statement. Also on Cordial relationship between the firm and customers majority respondents were in agreement on the statement, on there is supply alliances with all the parties within the chain by majority respondents were in agreement on the statement. The firm has measures to ensure customers trust their products, majority respondents were in agreement on the statement.

Pertaining teamwork, the suppliers gave opinions that "they embrace Supply chain teamworkon extension services and service providers". The effect Supply chain teamworkaccording to them is "the milk volume will go up and Supply chain teamworkwill be embraced.

5.2.5Mediating influence of dairy board policies and regulations on the relationship between supply chain collaboration and Performance of dairy processing firms Supplier's results revealed that Dairy Board Act influences growth of industry by majority respondents in agreement on the statement. On the Dairy Board Organs improve services of milk suppliers, Majority of the respondent's disagreed that Dairy Board Organs improve services of milk suppliers, However, Dairy Board on delivering of its mandate to increase milk production, Majority of the respondent's disagreed that Dairy Board delivers its mandate to increase milk production. Also Dairy Board Guidelines for enhancing

Supply chain teamwork Majority of the respondents, disagreed on the statement.

The customer's results on dairy board has mediating influence on customer satisfaction, majority respondents were in agreement on the statement, on the Dairy Board organs improving services of customers by respondents were in agreement on the statement. On the Dairy Board embraces joint effort to increase milk production, Majority respondents were in agreement were on the statement. The board also regulates the prices and of products. There is mutual trust between dairy board and milk customers as also revealed by the results. However, The Dairy Board policies are in line to chain parties' performance, majority disagreed on the statement.

On mediating effect of Dairy board the respondents suggest to them "to educate the farmers on the importance of government policies". In their opinion the dairy the board are policies majority said are good and another feel very good but at the same time the dairy farmers don't understand the policies and regulations.

Their suggestions were "The Dairy board and milk processors to hold workshop jointly". Also "they need to organize for farmers' "barazas" and meetings to sensitize farmers on importance of policies and regulations".

Their general recommendation on what to be done on supply chai partners in order to enhance performance of dairy processing firms , " they said information is key, strengthening the extension activities, formation of kibbutz farms for the dairy animals, and engaging more service providers and feeds inputs suppliers."

5.3 Conclusions of the Study

This study sought to analyze the influence of SCC on Performance of Dairy Processing Firms. Milk processing firms that perform attract sizeable milk suppliers and maintain customer loyalty on choice of milk products. The ability of the firm to retain customers lies on market share, profitability and client satisfaction. Findings showed a positive correlation between the set of five selected regressors and the regressed. The explanatory

variables explored by this study were: Supply chain information sharing, Decision Synchronisation, incentive Alignment, Supply chain teamworkand Dairy board.

The study concludes that Supply chain information sharing affects the performance of dairy processing firms with respect to customer. The results showed thatcustomers are informed on new products introduced and delivered, new and effective information technology as a mode of communication was used to inform customers on new products, know early enough about price changes, the company aware of customer complaints and respond on time, customers are informed of varied products, informed on the benefits of new products, know where to buy the firms products and they understand very well the product.With respect to customer Supply chain information sharing significantly contributed to the performance of dairy processing firms . With respect to supplier the firm has not done fairly well on Supply chain information sharing.

The study also concludes that Supply chain incentive alignment with respect to customer has a positive effect of on the performance of dairy processing firms . The effect was deduced by the fact that Supply chain Supply chain incentive alignment used by the organization improved the market share, enhance customer satisfaction, as financial implications and improve competitive advantage of the milk processing firm. Further the study deduced that all measureswith respect to customer have helped to improve customer satisfaction among other performance measures. However, the study found that Supply chain Supply chain incentive alignment with respect to supplier did not made significant effect on the performance of the dairy processing firms .

The study concludes that Supply chain teamworkhas a positive effect on the performance of dairy processing firms with respect to supplier and customer. In this case the study deduced that the firm is committed to the growth and needs of customers, committed to improving the services to milk suppliers and the quality of their products to customers, there is joint effort to increase milk production and market share, enhances coordination through Supply chain teamworkand cooperation to deliver required products, all parties along the chain plan together and promote products, there is supply alliance with all the

parties, mutual trust between the firm and suppliers also customers, there is cordial relationship between the firm and milk suppliers and customers, and there is spirit of togetherness.

Overall, the study concludes that Supply chain team workand mediating influence hadthe greatest effect on the performance of dairy processing firms , followed by Supply chain Supply chain incentive alignment and Supply chain information sharing least effect to the performance of dairy processing firms Ltd. The mediation generally improved the model.

5.4 Recommendations of the Study

Inview ofthe conclusions made above, the following managerial and policy recommendations were made:

5.4.1 Management Recommendations

As clearly indicated by previous researchers, performance of milk processing firm is key. The study established that the influence of supply chain collaboration is significant to performance of dairy processing firms . Therefore, the study recommends it would be appropriate for the management of milk processing firm to exploit Supply chain information sharing, decision synchronization, incentive alignment, Supply chain team workand dairy board on the day to day operations with aim of ensuring sizeable market share, profitability, and client satisfaction for performance of the firm.

Based on research findings on Supply chain information sharing and performance of dairy processing firms , thefarmers the results were contradictory on firmSupply chain information sharing. This result shows that although supply chain practitioners findings are positive on the aspects the suppliers and customer's findings are at times contradicting which could means that the practitioners are giving positive views to cover for the firm's weakness. It clearly shows that the firm's form of Supply chain information sharing has not influenced the farmers. The study recommends that relevant information could be communicated to farmers in a compatible means to influence them. The firm should

understand the demographic characteristics of the farmers for their communication to be effective. With regards to customers the firm could enhance their performance by putting more tracking orders and formalization of Supply chaininformation sharing.

With regards to Supply chain decision synchronization and performance of dairy processing firms , the results were contradictory. The study recommends to the firm to find other ways to influence farmers and customers. The firm should collaborate with key stakeholders by join decisions and share benefits. They find ways of ensuring that their decisions, planning and resolution are understood.

Based on the results on Supply chain Supply chain incentive alignment and performance of dairy processing firms , the firm offers subsidized AI/Veterinary services but not effective. It is recommended that the firm offer other collaborative Supply chain Supply chain incentive alignment measures to influence farmers. The study recommends that supply chain practitioners/managers could exploit other possible options like collaborating with financial institutions, cooperative societies, donors, educational institutions for training needs, public-private development partnerships and all committed group of partners.It would be of competitive advantage if the firm could provide collaborative programmes with international supply chain partners. This could be better incentive to farmers.With regard to customers the firm should enhance Supply chain Supply chain incentive alignment for better performance.

Based on the results on Supply chain teamworkand performance of dairy processing firms , there is significant influence on performance of the firm. The study recommends that the firm maintain Supply chain teamworkwith its supply chai partners for cordial relationships and togetherness. The studyrecommends that the firm should be fully committed to imparting trust to suppliers and customers of dairy processing firms .

The dairy industry has become increasingly competitive and this research demonstrates that milk processing firms need to demonstrate sensitivity in performance in terms of market share, profitability and client satisfaction. Managers/supply chain practitioners

should be cautious and should have appropriate knowledge regarding farmers and customer feedback regarding to performance measures. The study recommends that the firm should not underestimate the mediating effect of dairy board but instead appreciate the policies and regulation of the body and find ways to realign the policies and regulations to the objectives of the firm and also consider the key stakeholders of the firm (suppliers). The study recommends tradeoffs to be made wisely on client satisfaction and expectation of suppliers/customers.

5.4.2 Policy Recommendations

Milk processing firm should realign their policies and other collaborative partners. The firm should realign policies in line with dairy board. The board policies and regulations is a driving force behind performance of milk processing firm. Also, the firm should broaden the vision beyond the firms' internal supply or value chain for their growth

5.5 Areas for Future Research

This study should be interpreted with some concern as it is directed only to the SCC towards performance of dairy processing firms hence there is also a necessity to recognize other variables or constructs that may possibly have an influence on Performance of dairy processing firms . It is anticipated that this will stimulate future research considering the importance of client satisfaction.Moreover the studies on supply chain collaboration on performance have shown inconsistent results.

The researcher recommends tha tsimilar studies maybe replicated in milk processing firms in othe rregions or in wider scopesoasto improve the external validity of the findings. Also,comparative analysis could be done involving other dairy processing firms milk processing firms in Kenya. This would ascertain whether there are significant differences between firms with respect to performance of the firm.Future studies may be conducted on the influence of SCC on performance of other firms but under different social, economic and political conditions. The study focused on five supply chain collaboration

variable which were; Supply chain information sharing, decision synchronization, incentive alignment, Supply chain teamworkand dairy board. With respect to supplier, the variables accounted for 40.2% without mediation and 41.3% variation with mediation. With respect to customer, the variables accounted for 39.3% without mediation and 40.9% variation with mediation. From empirical evidence, it actually demonstrates the whole of supply chain collaboration is beyond the scope of five collaborations identified in the study. Therefore, similar study can be conducted using different supply chain collaboration variables that influence performance of dairy processing firms or other milk processing firms.

Finally, further research can be conducted on the influence of supply chain collaboration but in different sectors other than milk processing firms such as in education, public service, private and health sectors.The study should examine objective measures of supply chain collaboration with other firms and come with conceptual model.

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APPENDICES

Appendix I: Questionnaire for Milk Suppliers to Dairy Processing Firms

Hello, I am a doctorate student at Jomo Kenyatta University of Agriculture and Technology. I am carrying a field study on "Influence of Supply Chain Collaboration on Performance of Dairy Processing Firms in kenya". Any information you give is purely for academic purpose and will be handled with utmost confidentiality. Your contribution, participation and cooperation will be highly appreciated.

QUESTIONNAIRE

Section A: GENERAL INFORMATION

1. Gender: Male ( )

Female   ( )

2. Indicate the entity you fall in the farmer category:

    a) Large, Medium and small scale groups   ( )

    b) Large scale, small individual   farmers   ( )

3. Years you have supplied milk to dairy processing firms :

    a) Less than One Year   ( )

    b) 1-5   Years   ( )

    c) More than 5 Years   ( )

Section A: **Effect of Supply chain information sharing on performance of dairy processing firms**

To what extent do you agree or disagree with the following statements regarding Supply chain information sharing when used in enhancing performance of dairy processing firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	The firm communicates to dairy farmers about it's demand					
2	Effective and Information Technology is used to communicate to dairy farmers					
3	Dairy farmers are informed on any change of delivery schedules effectively					
4	Dairy farmers get to know early enough about price changes					
5	There is exchange visits both in and outside to share information					
6	Information about inventory levels is shared with dairy farmers.					
7	Information about product developments is always shared with our milk suppliers/farmers					
8	Information about of milk supply disruptions is always communicated to farmers					
9	Information about market conditions is always shared to milk suppliers/farmers					

Section B: Effect of Supply chain decision synchronization on performanceof dairy processing firms

To what extent do you agree or disagree with the following statements regarding Supply chain decision synchronization when used in enhancing firm's performance?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	Fixing of milk prices are done as required					
2	Weight disparities between dairy farmers and Dairy Processing Firms are well resolved					
3	Quality control measures are understood by dairy farmers					
4	Extension services are offered to increase production of milk					
5	Extension services are offered to increase quality of milk					
6	Demand for early milk deliveries is understood by the dairy farmers					
7	Dairy farmers receive record of their daily deliveries					
8	Tenders offered to transporters, coolers are done as required					
9	Product inventory levels are understood by dairy farmers.					

Section C: Effect of supply chain incentive alignment on performance of dairy processing firms

To what extent do you agree or disagree with the following statements regarding Supply chain Supply chain incentive alignment when used in enhancing performance of dairy processing firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	Increased sales demand are extended to dairy farmers					
2	milk products are provided to dairy farmers subsidized prices					
3	Artificial Insemination/veterinary programs are availed when required by the dairy farmers					
4	Artificial Insemination/Veterinary programs are provided to the dairy farmer at subsidized price					
5	The firm link dairy farmers to financial services					
6	Payment for milk produce is done promptly					
7	The establishment of the cooler plants is for mutual benefit					
8	Savings as a result of reduced milk production costs are shared					
9	Transport services are aligned for mutual benefit					

Section D: Effect of Supply chain teamworkon performance of dairy processing firms

To what extent do you agree or disagree with the following statements regarding Supply chain teamworkwhen used to enhance firm's performance?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	The firm is committed to the growth of industry					
2	The firm is committed to improving the services to milk suppliers					
3	There is joint effort to increase milk production					
4	The firm enhances coordination through Supply chain teamwork					
5	All the parties along the chain plan together					
6	There is cordial relationship between the firm and milk suppliers					
7	There is supply alliances with all the parties within the chain					
8	There is mutual trust between the firm and milk suppliers					
9	There is the spirit of togetherness between the firm and milk suppliers					

Section E: Mediating Effect of Dairy Board on performance of dairy processing firms

To what extent do you agree or disagree with the following statements regarding dairy board when used to mediate the relationship between supply chain collaboration and performance dairy processing firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	The dairy board Act influences the growth of industry					
2	The dairy board organs improve the services of milk suppliers					
3	The dairy board delivers its mandate to increase milk production					
4	The dairy board guidelines enhances Supply chain teamwork					
5	The dairy board policies are in line to chain parties performance					
6	The dairy board regulates the prices of dairy produce					
7	The dairy board improves the quality of milk produce					
8	There is mutual trust between dairy board and milk suppliers					
9	The dairy board work in association with other participants in milk chain to enhance efficiency in the dairy industry					

Section F: Dairy Processing Firm's Performance

To what extent do you agree or disagree with the following statements regarding performance of dairy processing firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	The firm focuses on existing milk suppliers for business growth					
2	The firm focuses on existing milk suppliers for business expansion					
3	The firm focuses on establishing itself in markets for business growth and expansion					
4	Outreach effort through the establishment of coolers has led to business growth					
5	The firm has served its milk suppliers according to various market segments					
6	The firm considers how products are manufactured by extending their services to the dairy farmers					
7	The firm considers how products are transported from milk suppliers in respective localities					
8	The company is aware about dairy farmers complaints and responds on time					
9	Dairy farmers are satisfied with the price paid to milk produce					
10	The market share of the firm is sizeable compared to other processing firms					

Recommendations: In your opinion, what do you recommend to be done in order to enhance performance of dairy processing firms ? -- --

Appendix II: Questionnaire for Customers of Processed Products of Dairy processing firms

Hello, I am a doctorate student at Jomo Kenyatta University of Agriculture and Technology. I am carrying a field study on "Influence of Supply Chain Collaboration on Performance of Dairy Processing Firms in kenya" Any information you give is purely for academic purpose and will be handled with utmost confidentiality. Your contribution, participation will be highly appreciated

QUESTIONNAIRE

Section A: GENERAL INFORMATION

1. Gender: Male( )

 Female   ( )

2. Indicate the brand of milk product:

      a) Fresh UHT Milk   ( )

      b) Gold Crown Milk Whole   ( )

      c) Fresh Milk TFA   ( )

      d) Mala   ( )

3. How often do you buy products of dairy processing firm?

      a) Always   ( )

      b) Rarely   ( )

      c) For the First time   ( )

Section A: **Effect of Supply chain information sharing on performance of dairy processing firms**

To what extent do you agree or disagree with the following statements regarding Supply chain information sharing when used in enhancing performanceDairy Processing Firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	Customers are informed on products introduced					
2	Effective and Information Technology as a mode of communication is used to inform customers on products					
3	Milk products are conveniently delivered to customers					
4	Customers get to know early enough about price changes					
5	The company is aware about customer complaints and respond on time					
6	Customers are informed of the varied milk products					
7	Customers are informed on the benefits of products					
8	Customers know where to buy the firm's products					
9	Customers understand very well the products of dairy processing firms					

Section B: Effect of Supply chain decision synchronization on performance ofdairy processing firms

To what extent do you agree or disagree with the following statements regarding Supply chain decision synchronization when used in performance of dairy processing firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	Dairy processing firms Product prices are reasonable and understood					
2	Price variation between dairy processing firms products and others are understood by customers					
3	Quality of products are understood by customers					
4	Promotion services are offered to increase demand					
5	Promotion efforts are done according to customers' demands					
6	Dairy processing firms products offer solution to customers					
7	Firm's products are introduced timely					
8	Promotion of products are done rightfully in the retail store					

Section C: Effect of Supply chain incentive alignment   on performance of dairy processing firms

 To what extent do you agree or disagree with the following statements regarding Supply chain Supply chain incentive alignment   when used in enhancingperformance dairy processing firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	Sales demand are aligned to the customers' requirements					

2	milk product are accessed to customers					
3	The firm pricing is demand driven					
4	There is shared costs on high demand of products					
5	The products prices are align to demand					
6	Prices of the products are align to the quality					
7	Promotion of the products are align to the contents of the products					

Section D: Effect of Supply chain teamworkon performance of dairy processing firms

To what extent do you agree or disagree with the following statements regarding Supply chain teamworkwhen used in enhancing performance of dairy processing firms ?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	The firm is committed to the needs of customers					
2	The firm is committed to improving the quality of their products					
3	There is joint effort to increase market share					
4	The firm enhances cooperation to deliver required products					
5	All the parties along the chain promote the products					
6	There is cordial relationship between the firm and customers					
7	There is supply alliances with all the parties within the chain					
8	The firm has measures to ensure customers trust their products					
9	Through coordinated promotion the customers are informed and retained					

Section E: Mediating Effect of Dairy Board on performance of dairy processing firms

To what extent do you agree or disagree with the following statements regarding dairy board in enhancing performance of dairy processing firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly Disagree (SD) =**1** Disagree (D) =**2**, Neutral (N) =**3**, Agree (A) =**4** and Strongly Agree (SA) =**5**.

No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	Dairy board influences customer satisfaction					
2	The dairy board organs improve the services of customers					
3	The dairy board embraces joint effort to increase milk production					
4	The dairy board guidelines enhances Supply chain teamwork					
5	The dairy board policies are in line to chain parties performance					
6	The dairy board regulates the prices of dairy products					
7	The dairy board improves the quality of milk products					
8	There is mutual trust between dairy board and milk customers					
9	The dairy board work in association with other participants in milk chain to enhances customer satisfaction					

Section E: Milk Processing Firm's Performance

To what extent do you agree or disagree with the following statements regarding performance of dairy processing firms?

Please indicate your agreement or otherwise with the following statements using the following scale of 1 – 5 where: -Strongly disagree=**1** Disagree=**2**, Neither Agree nor Disagree=**3**, Agree=**4**, and Strongly Agree=**5**.

Thefollowing itemsrelatetotopicalareasrelatedSupply Chain Collaboration on Performance of Dairy Processing Firms.

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No.	Statement	1	2	3	4	5
		SD	D	N	A	SA
1	The firm has improved on existing milk products					
2	The firms products meets various market segments					
3	The firm offers products that are highly reliable					
4	The firm offers products that are of high quality					
5	The firm offers a wide range of products to the market compared to its competitors					
6	The firm quickly responds to customer expectations					
7	The firm quickly responds to customer complaints					
8	Milk products are conveniently delivered to customers					
9	The firm effectively promotes its products					
10	Firms products are competitive compared to others					

Recommendations: In your opinion, what do you recommend to be done in order to enhance performance of dairy processing firms ?

Appendix II: Interview for Supply Chain Practitioners of Dairy Processing Firms

Hello, I am a doctorate student at Jomo Kenyatta University of Agriculture and Technology. I am carrying a field study on "Influence of Supply Chain Collaboration on Performance of Dairy Processing Firms in kenya". Any information you give is purely for academic purpose and will be handled with utmost confidentiality. Your contribution, participation and cooperation will be highly appreciated. Thefollowing itemsrelatetotopicalareasrelatedto supply chain collaboration on performance ofdairy processing firms. Pleaseprovideyourcandidviewswithrespectto each of the items

Section A: **Effect of Supply chain information sharing on performance of dairy processing firms**

1a) How do you as a firm communicate to your supply chain partners

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b) What information do you share with your supply chain partners?

----

c) How do you think will affect the performance of the firm**?----------------------------------**

Section B: **Effect of Supply chain decision synchronization on performance of dairy processing firms**

2 a)In what instances to you arrive at a join decision with your supply chain partners**?----**
----

 b) In what instances to you incorporate your supply chain partners in your planning?

_____

------

c) In what instances to you make join resolution with your supply chain partners?

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--

c) How do you think will affect the performance of the firm**?**--------------------------------
----

Section C: Effect of Supply chain Supply chain incentive alignment   on performance of dairy processing firms

3a) In relation supply chain partners what incentive programs/ measures do you have?

--

b) How do you thick will the performance of dairy processing firms -------------------------
----

Section D: Effect of Supply chain teamworkon performance of dairy processing firms

3a) In relation supply chain partners, what programs that you have in place that enhances teamwork?

--

b) How do you think will affect the performance of dairy processing firms ------------------
----

Section E: Mediating Effect of Dairy Board on performance of dairy processing firms?

a) KDB is body mandated by the Government. What can you suggest to them as they deliver their mandate?---
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b) In your opinion what can you comment on the dairy board policies?

-

c) In your opinion what can you comment on the dairy board regulatory?

-

In your opinion what can you comment on the dairy board policies?------------------------
----

In your opinion what can you comment on the dairy board mandate and guidelines?

Section F: Performance of Dairy Processing Firms

a) Being one of the key managers of the firm, is the firm is making profits or losses

------------------------- Justify your choice--

If your choice above is "profits" kindly mention approximately how much for the last three years in Kenya shillings (You are requested to give figures from documentary evidence).

2013----------------------------2014--

2015----------------------------2016---

b) Position your firm in terms of market share, are they the leaders or otherwise kindly indicate the current position---

c) What programmes do you have in place to expand your market share?

----

d) What programmes do you have in place to maintain and improve your profit margins?--
----

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e)Who are the key supply chains partners the firm collaborate with-------------------------
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Recommendations: In your opinion, what do you recommend to be done on Supply Chain partners in order to enhance performance of dairy processing firms ?

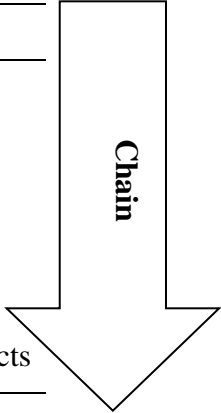---
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Thank you for your participation

Appendix III: List of Licensed DairyMilk Processors in Kenya

S/NO.	LICENSEE	ADDRESS	COUNTY	PRODUCTS
1	K.C.C Eldoret	P. O. Box 609 Eldoret	UasinGishu	Fresh Milk & Milk Powder
2	K.C.C- Kitale Factory	Private Bag Kitale	Trans-Nzoia	Pasteurised Milk, Butter, Ghee, Skim & Full Cream, Powder Milk
3	K.C.C Sotik	P. O. Box 191 Sotik	Bomet	Fresh Milk,Mala, Milk Shakes & UHT
4	K.C.C Nairobi	P.O. Box 30131 Nairobi	Nairobi	Fresh Milk, Mala, Yoghurt, UHT, Ghee, Cream & Butter

Source: The Kenya Dairy Board, 2014

Appendix IV: Dairy Supply Chain Collaborative Partners

Department	Actors
Production	Dairy Farmers
Transport	Human/Vehicles
Bulking/Chilling	Milk Sheds Coolers
Processing	Dairy Processing Firms
Markets	Supermarkets, Chain stores
Customers	Consumers of processed milk products

Chain

Appendix V: Top Ten Dairy Suppliers' for Second Quarter 2015

	Average kgs	Suppliers
Mois-bridge	209793	4600
Koitogos	59200	350
Naitiri	39733	3150
Taito	51500	250
Mbuthia	44100	320
Ndalu	38666	268
Dairy farm of Cheranganyi	34177	600
North Highlands Dairy	26603	400
Meevoot Society	30010	300
Chepkoilel	26453	250
TOTAL	86,7835	10,488

Source: KCC Food Safety Manual, (2016)

Appendix VI: Proceed to Field Introduction Letter

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

KITALE CBD CAMPUS

P.O. BOX 3347 KITALE, TELEPHONE: 054-30800

Email: admin-kitale@jkuat.ac.ke, info-kitale@jkuat.ac.ke

Office of the Director, Kitale CBD Campus

REF: HD411-C008-1049/2014   DATE: 08TH NOV. 2016

TO WHOM IT MAY CONCERN

RE: ZIPPORAH BERUT - HD411-C008-1049/14

The above named is a student at Jomo Kenyatta University of Agriculture and Technology, Kitale CBD Campus pursuing **PhD. in Supply Chain Management**.

She has successfully completed the coursework and has proceeded to the field to collect data. The topic of her study is "Influence of Supply chain collaboration on performance of new Kenya Cooperative Creameries Limited in Trans Nzoia County".

Please accord her the necessary assistance.

Yours faithfully

MR. PATRICK SICHANGI

DIRECTOR

PS/

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Appendix VII: Approval of Research Proposal and Supervisors

JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY
DIRECTOR, BOARD OF POSTGRADUATE STUDIES

P.O. BOX 62000   TEL: 254-067-52711/52181(6114)
NAIROBI – 00200   FAX: 254-067-52164/52030
KENYA   Mobile:0708-602225
Email: director@bps.jkuat.ac.ke

REF BPS/ HD411-C008-1049/2014   21ST SEPTEMBER, 2017

ZIPPORAH JEROP BURET
C/o SEPM
JKUAT

Dear Ms. Buret,

RE: APPROVAL OF RESEARCH PROPOSAL AND SUPERVISORS

Kindly note that your PhD. research proposal entitled: **"Influence of supply chain collaboration on performance of new Kenya Cooperative Creameries Limited"** has been approved by the Board of Postgraduate Studies. The following are your approved supervisors:-

1. Prof. G. S. Namusonge
2. Dr. Elizabeth Nambuswa

PROF. MATHEW KINYANJUI
DIRECTOR, BOARD OF POSTGRADUATE STUDIES
Copy to: Dean, SEPM

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Source: JKUAT, BPS (2017)

Appendix IX: Approval of Intent to Submit PhD Thesis

JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY
DIRECTOR, BOARD OF POSTGRADUATE STUDIES

P.O. BOX 62000
NAIROBI – 00200
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TEL: 254-067-52711/52181-4
FAX: 254-067-32164/52030

REF: JKU/2/11/HD411-C008-1049/2014   25TH FEBRUARY, 2019

BERUT ZIPPORAH JEROP
C/o KITALE CBD CAMPUS
JKUAT

Dear Ms. Jerop,

RE: **APPROVAL OF YOUR INTENT TO SUBMIT PhD. THESIS FOR EXAMINATION**

We are in receipt of your letter of intent to submit your PhD. thesis for examination.

This is to inform you that your request **has been approved**. It is a requirement that you clear with all the relevant departments/sections of the University and forward the duly completed Clearance Form to the BPS office to enable us processes your thesis for examination.

The Clearance Form is obtainable from the Office of the Director, Board of Postgraduate Studies.

Yours sincerely

PROF. MATHEW KINYANJUI
DIRECTOR, BOARD OF POSTGRAUDATE STUDIES
Copy to: Dean, SEPM

/cm

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Source: JKUAT, BPS (2019)