THE CONTRIBUTION OF EFFECTIVE SUPPLY CHAIN MANAGEMENT TO THE QUALITY OF EXPORT VEGETABLES IN UGANDA: MUBUKU GROWERS ASSOCIATION, KASESE DISTRICT UGANDA

BY

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A DISSERTATION SUBMITTED TO THE HIGHER DEGREES DEPARTMENT IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A MASTERS DEGREE IN MANAGEMENT STUDIES (PROJECT PLANNING AND MANAGEMENT) OF UGANDA MANAGEMENT INSTITUTE

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DECLARATION

I, UMRAN KAGGWA declare that this is my original work and has not been presented to any other institution or University for award of a degree or any other award.

Signed:……..

Date:……

APPROVAL

This dissertation has been submitted for the examination with our approval as supervisors.

SIGNED: …….

Dr. BENON. C. BASHEKA

DATE:…….

SIGNED:…….

FRED ERIA SSANGO (WORK BASED SUPERVISOR)

DATE:…….

DEDICATION

This dissertation is dedicated to all members of my family, colleagues at Agribusiness Management Associates (U) Ltd, Mubuku Growers Association and friends who have contributed in various ways to enable this piece of work to be completed. You will always remain a source of joy and inspiration.

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LIST OF ABBREVIATIONS

DV	Dependent Variable
ICT	Information and Communication Technology
IDEA	Investment in Developing Export Agriculture
IV	Independent Variable
NAADS	National Agricultural Advisory Services
PMA	Plan for Modernization of agriculture
SCM	Supply Chain Management

ABSTRACT

This study was premised on the assumption that quality of export vegetables at Mubuku Growers Association could be predicted by effective supply chain management with three factors; effective procurement management, effective information management and effective logistics management. The study was guided by three objectives, three corresponding research questions and three hypotheses. The study adopted a case study (research) design that used both qualitative and quantitative approaches. Data were collected both from primary and secondary sources which included filled in questionnaires by respondents through interviews, online journals and book reviews. A sample size of 76 farmers derived from the population was drawn and 3 focus group discussions. The response rate was 100% because farmers met at pack-house during the delivery of their produce; this therefore made it easy for the researcher to interview all the respondents. The survey instruments had an overall reliability coefficient of 6 determined using the cronbach Alpha. Data analysis was done using descriptive statistics utilizing percentages; correlation and regression analysis was also used. The study empirically established that there is a positive and significant correlation between effective procurement management, effective information management, effective logistics management and quality of export vegetables. The test using Pearson correlation analysis returned a result of ($r = 0.306$, $p<0.01$) for effective procurement management, ($r = 0.402$, $p<0.01$) for effective information management and ($r = 0.27$, $p<0.05$) for effective logistics management. The strength of the relationship was statistically significant at 0.05 level of significance. The study concluded that effective supply chain management contributes to the quality of export vegetables. . Recommendations adopted from the study findings are provided in chapter five with the hope that effective procurement management, effective information management and effective logistics management get due consideration.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study was an assessment of the contribution of effective supply chain management to the quality of export vegetables in Kasese district, south-western Uganda. Effective Supply chain management was the independent variable and quality of export vegetables was the dependent variable. This chapter presents the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, hypotheses, conceptual framework, and scope of the study, significance and definition of operational terms.

1.1 Background to the Study

1.1.1 Historical Background

The term supply chain management was first coined by a U.S. industry consultant in the early 1980s. However, the concept of a supply chain in management was of great importance long before, in the early 20th century, especially with the creation of the assembly line (Wikipedia 2011). Supply chain management on the other side is relatively new and logistics managers in retail, grocery, and other high inventory industries began to realize that a significant competitive advantage could be derived through the management of materials that flow in their 'inbound' and 'outbound' channels. Since its introduction in the retailing and manufacturing industries, the supply chain concept has spread to other industries, including the agri-food sector (Jack, G.A., et al, 2007). Just as their counterparts in manufacturing and retailing, executives of agri-food enterprises are becoming aware that successful coordination, integration and management of key business processes across members of their supply chains will ultimately determine their competitive success.

Historically, logistics has been considered an issue deserving modest priority in organizations and was merely regarded as a cost component. Nowadays logistics is seen as a value-adding process which also enables competitive price, quality and compliance with rules and regulations, in order to satisfy extensive qualitative service and information requirements imposed by consumers and other stakeholders of the supply chain (FAO 2007).

The increased interest in SCM has also been spurred by developments in information and Communication Technology (ICT) that enable frequent exchange of huge amounts of information among chain participants, for purposes of coordination. Consequently, there is a need and an opportunity for a joint approach of business partners towards the establishment of more effective and efficient supply chains. This is especially true in agri-food supply chains because of shelf-life constraints of food and agricultural products and increased consumer attention to safe and environment friendly production methods.

Mubuku Growers association is an organization for growers at Mubuku irrigation scheme which was established in 1963 as a model project to bring together farmers from different areas to utilize the continuous flow of water from the mountains in Kasese through out the year. After along time of working together, farmers decided to from an organization that could consolidate the interests and development needs in the area, Mubuku Growers Association was born in 1970 and locally referred to as Abasajja Kweyamba Growers Cooperative Society. The association has a well defined structure comprising of the General assembly and the executive committee.

Organizations increasingly find that they must rely on effective supply chains, or networks, to compete in the global market and networked economy. Activities related to obtaining products and materials from outside suppliers involve resource planning, supply sourcing, negotiation, order placement, inbound transportation, storage, handling and quality assurance,

many of which include the responsibility to coordinate with suppliers on matters of scheduling, supply continuity, hedging, and research into new sources or programs.

1.1.2 Theoretical Review

There exists a gap in the literature available in the area of supply chain management studies, on providing theoretical support for explaining the existence and the domain of SCM. This study identified eight SCM theories and views for SCM studies: Resource-based view, transaction cost theory, knowledge-based view, strategic choice theory, agency theory, institutional theory, systems theory, and network perspective, (Halldorsson, et al.2003).

Theoretically this study only utilized the Systems Theory which views the world in terms of collections of resources and processes that exist to meet superordiante goals. Systems theory is the interdisciplinary study of systems in general, with the goal of elucidating principles that can be applied to all types of systems at all nesting levels in all fields of research. The term does not yet have a well-established, precise meaning, but systems theory can reasonably be considered a specialization. A system may be constituted by materials, people, information and financial resources configured into organizational or technical processes intended to deliver goods and services that enable the system to achieve some desired level of performance. Supply chain management encompasses the planning and management of all activities involved in sourcing, procurement, conversion, and logistics management. The application of general systems theory adds that the identification of supply chain sub-systems leads to a better understanding of the dynamics within supply chains as they evolve over time

1.1.3 Conceptual Background

Conceptually, this study was guided by concepts of effective supply chain management and quality of export vegetables. The supply chain is an arrangement between the producers and

the buyer about what and how much to produce, time of delivery, quality and safety conditions and the price (Ahmad, M. M. and Fehér, P. 2010).

The autonomy and independence of international food supply chains is shifting toward inter-connected systems with a large variety of complex relationships. Changes in sourcing, producing and marketing as a result of the increased globalization of food trade, leads to exposure to new risks and greater potential consequences of food-borne illness outbreaks. During the last decade, concerns about food quality and food safety have risen among consumers (FAO 2007). This actually explains the procurement process which is a contractual arrangement between the farmers and the buyer to produce for export.

Procurement gives details of how key issues like product planning and description, contract administration, farmer group organization and contract close out are thoroughly managed. Logistics is another concept which places emphasis on transportation, storage and handling and operations management in which inputs are transformed into finished products. Effective information flow was another concept that was studied, it comprised of information gaps, information planning, collection, dissemination, storage, utilization and decision making. There is a lot of information exchange amongst the different actors, this helps with technology transfer and utilization.

In addition, FAO (2007) adds that food quality and food safety have also become an integral element of most wholesalers' and retailers' business strategies. These developments indicate that business strategies must now pay attention not only to traditional economical and technological aspects, but also to topics like the safety, healthfulness, taste, nutritional benefits and freshness of food products.

1.1.4 Contextual Background

Mubuku Growers Association is a Cooperative Society founded by farmers at Mubuku Irrigation Scheme. Currently the Cooperative has more than 150 farmers having an average of 8 acres of land per farmer. These farmers have been growing crops for income generation for more than fifty (50) years. However, these farmers had not been formerly engaged in contractual activities to grow for a particular buyer targeting export. The type of supply chain management is actually rare in this region since most farmers are used to growing crops to be sold on open markets. Farmers have been running this contract production for the last three years and they learnt a lot as they move year by year.

The government of Uganda introduced a program known as Plan for Modernization Agriculture (PMA) with seven (7) major components but emphasis was put on The National Agricultural Advisory Services (NAADS). The component of Marketing and Agro-processing services was not activated thus contributing nothing to farmers' incomes. This study therefore sought to establish whether effective procurement management, effective information management and effective logistics management contribute to the quality of export vegetables.

1.2 Statement of the Problem

Mubuku irrigation scheme has been running for the last forty (40) years, growing horticultural products especially for the local market. In 1995, USAID/IDEA project (Investment in developing Export Agriculture: 1995 - 2004), through one of its clients identifies the growers association as a potential producer of export vegetables since it has continuous flow of water through – out the year. USAID's main interest was to develop export vegetables for the EU market. The successful products like hot pepper were expanded from commercial production targeting mainly UK and the Netherlands market. Well as

farmers started production for export, there was a lot of technical support from IDEA project to the management of the supply chain which ended three years ago.

Despite all the support by the USAID project to develop good quality products for export, the farmers' association still records a rejection rate of up to 20% in the park house (export reports 200/04/05). In addition, there are continued complaints by the buyer over shipments of vegetables of low quality, which fetches low prices in the market (Hilo Supermarket 2004/05 annual report). Several factors could be contributing to the low quality of the vegetables; they may include effective procurement management, effective information flow, logistics, education level of the farmers, effect of producing other crops and agricultural equipment. No research however has been carried out to establish how these factors contribute to the quality of the export vegetables. The study therefore focused on: The contribution of effective procurement management to the quality of export vegetables, the contribution of effective information management to the quality of export vegetables and the contribution of effective logistics management to the quality of export vegetables.

1.3 Purpose of the study

To examine the contribution of effective supply chain management to the quality of export vegetables in Uganda with Mubuku Growers Association being the case study.

1.31 Objectives

This study was guided by the following objectives:

(i) To examine the contribution of effective procurement management to the quality of export vegetables at Mubuku Growers Association

(ii) To asses the contribution of effective information flow management to the quality of export vegetable at Mubuku Growers Association

(iii) To examine the contribution of effective logistics management to the quality of export vegetables at Mubuku Growers Association.

1.4 Research Questions

The following questions were posed for this study.

(i) How does effective procurement management contribute to the quality of export vegetables at Mubuku Growers Association?

(ii) To what extent does effective information management contribute to the quality of export vegetables at Mubuku Growers Association?

(iii) How does effective logistics management contribute to the quality of export vegetables at Mubuku Growers Association?

1.5 Research Hypothesis

The following hypotheses guided this study:

(i) Effective procurement management contributes to the quality of export vegetables by Mubuku Growers Association.

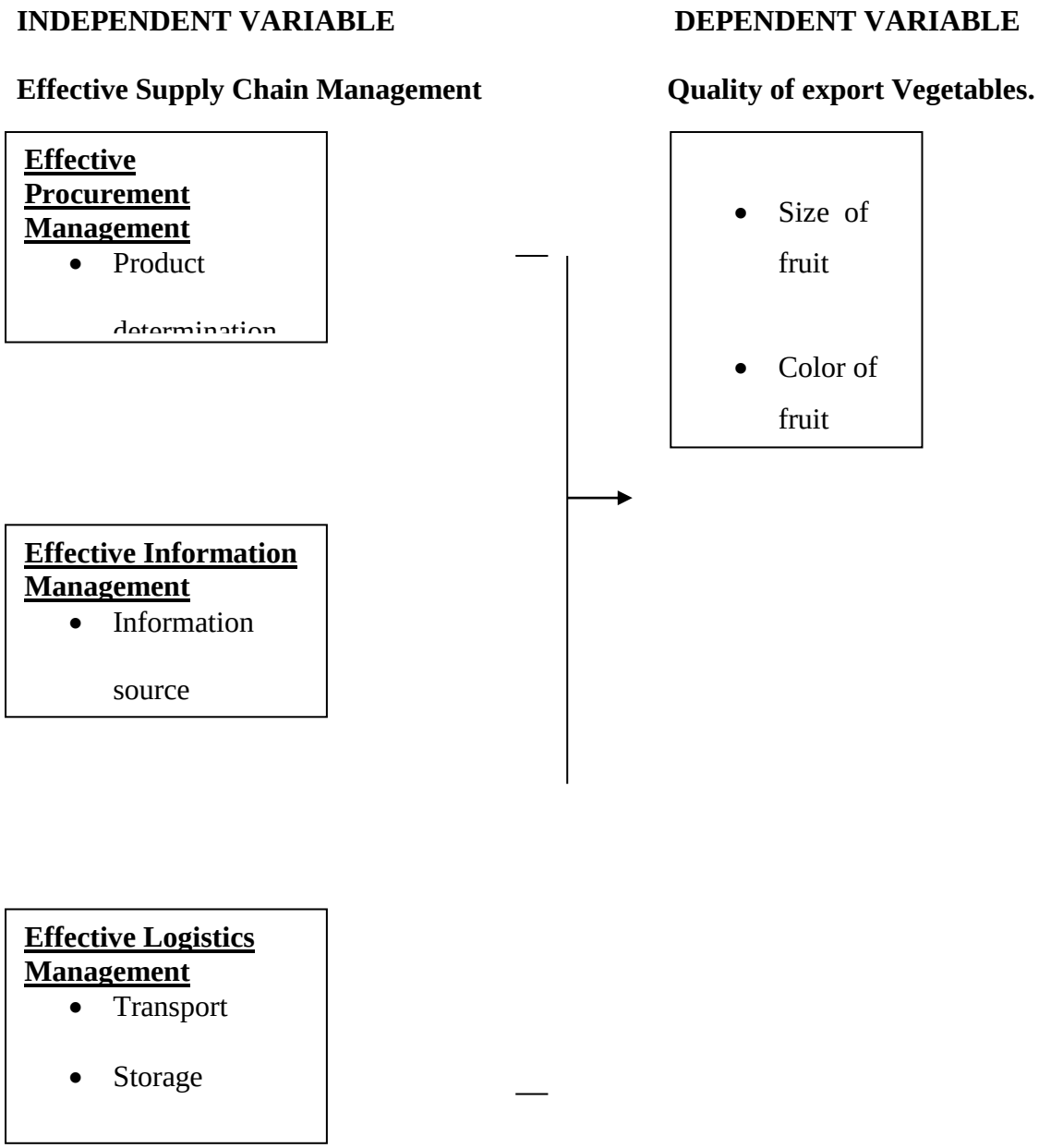
(ii) Effective information management contributes to the quality of export vegetables by Mubuku Growers Association.

(iii) Effective logistics management contributes to the quality of export vegetables by Mubuku Growers Association.

1.6 Conceptual Framework

The conceptual frame work below illustrates the relationship between effective supply chain management conceptualized as (effective procurement management, effective information flow management, effective logistics management) and quality of export vegetables manifested through (size of fruit, color of fruit, defects on the fruit and Safety of the fruit)

Figure 1: Conceptual framework



Source: Adopted and modified by the researcher

The conceptual framework illustrates the relationship between effective supply chain management as the independent variable (IV) and quality of export vegetables (DV). Effective supply chain management was conceptualized to include effective procurement management, effective information flow management and effective logistics management.

Quality of export vegetables was characterized by size of the fruit, color of the fruit, defects on the fruit and food safety of the fruit. Other variables that could have affected effective supply chain management were controlled and therefore their effect was realized.

1.7 Scope of the study

The study covered farmers at Mubuku irrigation scheme in Kasese district that produce vegetables (hot pepper) for export. The study also considered the following variables; effective procurement management, effective information flow and effective logistics management and quality of export vegetables. This study covered a time period of 2007 – 2008 for the export season.

1.8 Significance of the study

The study contributed new knowledge in the area of quality management especially with small-scale farmers in rural areas. There was wide spread fear that small scale farmers would be excluded from the coordinated supply chain, but the integration of issues concerning effective procurement management, effective information management and effective logistics management into the day to day management of quality of export vegetables by small-scale farmers have as a result of low production cost in labor intensive products. This therefore increased the volumes of vegetables which are homogeneous in quality and supply was organized and bulking up of volume into a steady stream of products of constant quality.

1.9 Operational definition of terms

Effective supply chain management; In this study, effective supply chain management consists of effective procurement management, effective information flow management and effective logistics management.

Supply chain management: 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, suppliers, intermediaries, third party service providers and consumers

Effective supply chain *management*: Refers to the integration of those activities, through improved supply relationships, to achieve a sustainable competitive advantage.

Effective procurement management: Refers to managing a process by which people, goods and services are obtained with written contract. Its constituents include; product determination, product description, contact management and contract close-out.

Effective information management: Refers to the movement of complete, accurate and timely information through – out the total supply chain. Its constituents include; information source, collection, storage and dissemination.

Effective logistics management: Refers to that part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption in order to meet customers' requirements. It constitutes of the following; transport, storage and handling.

Quality of export vegetables: Quality has different connotations when used by different people; all definitions include a central concept of customer needs. The quality of a product is satisfactory generally when the product is able to satisfy the needs of the customer like the size, color, defect free and safety.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the arguments and observations of different authors regarding effective supply chain management and its contribution to the quality of export vegetables. The review focused on the main themes of the study; effective procurement management, effective information management and effective logistics management. This was done by reviewing primary and secondary data from journals, articles, books, reports and interviews.

In addition literature review also identified the existing information gaps that needed to be filled in order to fully examine the contribution of effective supply chain management to the quality of export vegetables from Uganda

In the early 1990s, academics first described SCM from a theoretical standpoint to clarify how it differed from more traditional approaches to managing the flow of materials and the associated flow of information (Christopher, 1998). SCM was defined as the integrated planning, implementation, coordination and control of all business processes and activities necessary to produce and deliver, as efficiently as possible, products that satisfy market requirements.

Supply Chain viewed as a sequence of (decision making and execution) processes and (material, information and money) flows that aim to meet final customer requirements, that take place within and between different stages along a continuum, from production to final consumption. Supply Chain not only includes the producer and its suppliers, but also, depending on the logistic flows, transporters, warehouses, retailers, and consumers themselves. In a broader sense, supply chains include also new product development, marketing, operations, distribution and finance and customer service.

Ballou, 2007 quoted in Habib, M.M (2010) noted 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, SCM integrates supply and demand management within and across companies. Jan Van Roekel, 2002 noted that benefits of SCM are numerous but one of the most important issues is better control of product safety and quality. Product quality was defined in terms of colour, size and form, firmness, lack of blemishes and damage (Lusine, H.A., et al, 2007).

2.1 Effective procurement management and quality of export vegetables.

The concept of Agriculture supply chain refers to the activities of procurement, order fulfillment, product design and development, distribution, delivery and customer service executed by two or more separate organizations in the agribusiness industry, to fulfill customer orders (Shilpa, K. 2008).

Prior to 1900, purchasing was recognized as an independent function by many railroad organizations, but in few other industries. Prior to World War I, purchasing was regarded as primarily clerical. During World War I & II, the function increased due to the importance of obtaining raw materials, supplies, and services needed to keep the factories and mines operating. During 1950s & 1960s, purchasing continued to gain stature as the techniques for performing the function became more refined and as the number of trained professionals increased. The emphasis became more managerial with introduction of major public bodies and intergovernmental organizations, such as United Nations, procurement become a well-recognized science. During 1970s & 1980s more emphasis was placed on purchasing strategy as the ability to obtain needed items from suppliers at realistic prices increased. During

1990s procurement starts to become more integrated into the overall corporate strategy and a broad-based transformation of the business function is ignited, fueled strongly by the development of supply management software solutions which help automate the source-to-settle process.

Project Management Institute, (2000) defines procurement as a process by which people, goods and services are obtained with a written contract; this process culminates in a contract and entails the following aspects: procurement planning, solicitation planning' solicitation, source selection, contract administration and contract close-out. Jifsan, (2002) defines quality as the totality of features and characteristics of a product that bear on its ability to satisfy the stated or implied needs. In addition the author identifies three quality attributes. External, internal and Hidden but external attribute which mainly cover size, colour and defects is considered to be the most important in addition to safety which is hidden. Lysons and Farrington, (2006) argue that procurement is a wider term than purchasing and it determines quantities, processing works and stores requisitions, issuing, enquires, evaluating quotations, supplier appraisal, negotiation, placing contracts, deliveries and payments.

Lysons and Gillingham, (2003) adds that purchasing must select and manage a supply base capable of providing advantages in quality. Dijkstra, (2001) concurs that a coordinated supply chain refers to how much to produce and supply accepted quality of a product. Ayer, (2001) discusses supply chains under four points: Functional, procurement, logistics and information. Logistics is expanded to look at the planning, implementation, and control of the effective flow and storage of goods and services.

Procurement is the acquisition of goods or services. It is favorable that the goods/services are appropriate and that they are procured at the best possible cost to meet the needs of the purchaser in terms of quality and quantity, time, and location.

2.1.1 Product determination and quality of export vegetables

Suggested indicators for product quality are appearance, taste, shelf life, salubrity, product safety, product reliability, and convenience in information on packaging (.Lusine, H. A., et al, 2007). Two indicators of product quality have been included in the framework; these indicators are considered to be of a high importance and are measurable and applicable for all chain members. Although some indicators of process quality received high scores of importance e.g. traceability, storage, transportation conditions, pesticide use and working conditions they are not included as separate indicators into the condensed framework because these indicators are basic requirements in all indicators of product quality. The first process of procurement is defining the business need; you need to understand what the fundamental business requirement is. At this point, it is important to understand the difference between a requirement and a solution (Purchasing Insight, 2012).

2.1.2 Product description and quality of export vegetables

The autonomy and independence of international food supply chains is shifting towards inter-connected systems with a large variety of complex relationships. Changes in sourcing, producing and marketing as a result of the increased globalization of food trade, lead to exposure to new risks and greater potential consequences of food-borne illness outbreaks. During the last decade, concerns about food quality and food safety have risen among consumers.

2.1.3 Contract management and quality of export vegetables

Quality control is of a specific nature in the case of fresh vegetables, since buyers regularly face problems in monitoring the freshness, safety and shelf-life of the produce. Pesticide residues and phyto-sanitary aspects are difficult to detect but influence business relationships between sellers and buyers. In order to guarantee reliable supply, retailers search for

sustainable partnerships with producers that reduce such information and screening costs and reinforce mutual trust amongst chain agents (Hueth et al., 1999) cited by (Ruerd, R.,et al, 2007). The fifth process of procurement is induction and integration, no goods or services should be ordered or delivered until the contract is signed (Purchasing insight, January 2012).

Suresh (2005) quoted in Shilpa, K (2008) notes that supply chain management is the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole. Thus the focus of supply chain management is upon the management of the relationships in order to achieve a more profitable outcome for all parties in the chain.

2.1.4 Contract close out and quality of export vegetables

Contracts are usually basic relationships developed between suppliers and buyers but must be well managed. Reviews of success areas during the implementation or on-going activities provide necessary information on how future activities should handled. Contract closeout is one area that needs to be emphasized by small growers as it provides an opportunity for them to highlight challenges that need to be worked on for future smooth implementation of projects.

2.2 Effective information management and the quality of export vegetables

Information and knowledge usually flow up and down the supply chain. Most supply chain actors believe information is very important and communication has to be considered as an interactive dialogue between the company and its customers that takes place during the pre-selling, consuming and post consuming stages.

Lyson and Gillingham, (2003) emphasize that information is a key element in the supply chain success since without information managers are unaware of what customers require, what inventory exists to meet those requirements and when more of a product should be place or ordered. Day, 2002 urges that information flow between organization make supply chain becomes effective. The accuracy and timeless of this information is critical to the effective

management of the supply chain. Information is vital to ensure effective coordination of the supply chain. The coordination activities result in plans which specify logistical requirement, purchasing and procurement requirements and forecasting.

Woods (2004) discusses the key relationships between members of the supply chain, information systems to track product and standards. McGregor, Batt., et al (2003) suggest that correct information is a vital factor for marinating balance and efficiency along the supply chain. Alistair & Ray, (2000) go further to add that better quality management can improve the whole chain and to understand quality related factors in an incentive to adopt supply chain orientation for emerging fruit industries.

2.2 1 Information source and quality of export vegetables

Initially, SCM definitions only included materials flows, but over the years they have expanded to include information flows (Stock et.al 2011). Anand and Mendelson (1997) cited by Anad,S.K and Goyal, M (2006) say that there are two types of information; data which is transferrable and local knowledge which by its very nature cannot be shared in an organizational setting. It also requires a fundamental reorganization of information streams and agency relationships, providing opportunities to smallholders to adjust their supply to consumers' demands and to become a recognizable part of global sourcing regimes FAO 2007).

2.2.2 Information collection and quality of export vegetables

The relevance of the information differs in each stage of the chain, even if the information is of high importance for the overall supply chain performance (Lusine, H.A., et al 2007).

2.2.3 Information storage and quality of export vegetables

Information storage remains a key attribute especially when it comes to processing and dissemination of information to the end users. Companies or organizations should have proper systems to store and retrieve information for the benefit of their clients or members.

2.2.4 Information dissemination and quality of export vegetables

Information sharing, clear communication, recognition of mutual benefits, and a high level of cooperation lead to the increasing likelihood of supply chain relationship success (Bowersox and Closs, 1996) cited in (Lusine, H. A., et al. 2007)

Issues such as price and quality are more important than ever, since consumers can now choose from an increasing number of products offered by competing chains. The increasing integration of local and cross-border agrifood chains can be considered both a threat and a challenge for agricultural and rural development. Poor farmers in developing countries, who have limited resources and scarce access to markets and information, meet major constraints in the adoption of technological innovations and may therefore be excluded from trade. Sharing more information has been directly linked to increased levels of satisfaction about the relationship by the supermarket and its supplier of the farmers' cooperative.

Information sharing in both traditional and modern supply chains like prices, quality requirements and plans for promotion, led to better coordination and joint planning between stakeholders.

Finally, sharing information has also been linked to increased levels of trust among supply chain stakeholders, although the more refined component of information transparency generally determine trust. Furthermore, being transparent on the different grades of product and their respective value had a direct impact on increasing profits for both farmers and collectors, as both had a joint-interest in harvesting and selling more of the better-quality product which would be sold for higher prices.

2.3 Effective logistics management and the quality of export vegetables

Ballou, (2004) defines logistics as a process that includes all activities that have an impact on making goods and services available to customers when and where they wish entire process. Transport is the most important and expensive aspect of logistics but logistics is more than transport. Transportation refers to the movement of a product from one location to another a sit makes way from the beginning of supply chain to the costumers' hands. It plays a key role in every chain because products are rarely produced and consumed in the same location.

Kotler (1999) suggests that market logistics discussions must be with regard to how orders are handled, location of stocks, size of stocks to be handled and how goods are to be transported. Meer, (2004) stresses that in the last decade, coordinated supply chains spread rapidly in the food markets of the industrial countries. The spread depended on the increased sophistication in customer demand, stringency of quality and safety requirements, and the possibilities of efficiency gains through improves logistics.

Developing countries are becoming more and more integrated in the global food market due to the global sourcing, this means, however, that developing countries must adapt to the stringent quality and safety standards and regulations in these markets (FAO 2007).

Buurma and Saranark (2001) add that the establishment of distribution and packing centers for fruits and vegetables at the airport is the first step in getting a better control of product quality. Manalili (2003) supports this case adding that the series of activities in agricultural marketing or logistics effect quality and cannot be compensated by extra cautious handling in the succeeding levels.

2.3.1 Transport and quality of export vegetables

The development of logistics services and communication technologies has revolutionized supply chain management and has created a "global" market. Shippers and consignees require efficient logistics services that can move their goods to the right place, at the right

time, in the right condition, and at the right price (Grant et al. 2006) cited by (Ruth Banomyong 2010) adds that economies of scale in processing, transport and distribution also lead to demands for growing volumes of production and for stable delivery capacities of homogeneous quality. These demands can be met better by commercially oriented, larger scale farm enterprises. On the other hand, smallholder production could offer cost advantages for farming enterprises based on labor-intensive products that require strong quality supervision. Leonardo, F.D., et al (2008 noted that the transport stage is a very important step in the food chain. The main impact of transport on the quality of agricultural products concerns the wide spread lack of awareness of the correct food management, packing and transport practices for the market. Food quality and safety can be seriously compromised unless transport operations are correctly and promptly carried out.

2.3.2 Storage and quality of export vegetables

The enormous losses of fruits and vegetables produced in the country are mainly because of the lack of proper infrastructure for storage and transportation under controlled conditions. Of late, Supply chain management is gaining importance due to globalization. Supply chain management endorses a supply chain orientation, and involves proactively managing the two-way movement and co-ordination of goods, services, information and funds from raw material through to end user (Vadivel, E and Balamohan, T.N. 2009). The changing lifestyle and open economies have forced the manufacturers or suppliers to produce or supply quality products.

2.3.3 Sorting and quality of export vegetables

Fruit maturity determines harvest time and directly affects postharvest handling/storage regimes and thus fruit quality. Maturity measurements include skin and flesh color, fruit firmness, soluble solids content, acid content, starch level, and ethylene production. The

maturity determination methods are destructive, time consuming or inefficient, and prone to operational error. After harvest, fruit are sorted and graded based on color and size or weight. However, sorting for color or size cannot guarantee the eating quality of individual fruit. Poor, inconsistent fruit quality continues to be a major concern for the fruit industry (USDA, 2011). Immature fruit and vegetables generally have very tender skins that are easily damaged during harvest and handling. Special care must be taken in all handling operations to prevent product damage and subsequent decay (Lauri Brandeberry, 2010). Grading of products is usually a voluntary program used by the industry. Grading standards describe the quality requirements for each grade of product, giving the industry a common language for buying and selling. Grading is based on certain characteristics, generally related to external attributes of appearance such as product size, shape and colorization (United Nations 2007).

2.3.4 Packing and quality of export vegetables

Packaging fresh fruits and vegetables is one of the most important steps in the long and complicated journey from grower to consumer. Bags, crates, hampers, baskets, cartons, bulk bins, and palletized containers are convenient containers for handling, transporting, and marketing fresh produce. Although the industry generally agrees that container standardization is one way to reduce cost, the trend in recent years has moved toward a wider range of package sizes to accommodate the diverse needs of wholesalers, consumers, food service buyers, and processing operations (Food editorials, 2011). Packaging to maintain produce quality during transportation and marketing must withstand rough handling during loading and unloading, compression from the overhead weight of other containers, impact and vibration during transportation, high humidity during pre-cooling, transit, and storage. Packaging materials are chosen on the basis of needs of the produce, packing method, pre-

cooling method, strength, cost, availability, buyer specifications, and freight rates (Codes of practice, 1995).

2.3.5 Loading/unloading and quality of export vegetables

The major causes of loss in quality of fruits and vegetables during handling and transport have been identified to be severe during loading and unloading operations (Horticultural Journal 2000). Most growers suffer tremendous quality losses due poor management of loading and unloading process.

Proper loading practices are critical to maintaining temperature and relative humidity, protecting the produce from impact and vibration forces in transit, and preventing insects from entering the load. Special care must be taken when shipping mixed loads. The produce must be compatible. Basic loading methods include bulk loading by machine or hand of unpackaged commodities, hand loading individual shipping containers with or without pallets, unit loading of palletized or slip-sheet loads of containers with pallet jacks or forklifts (Code of practice 1995).

2.4 Summary of Literature Review

Attaining quality of vegetables comes with a number of challenges ranging from proper procurement management, information flow and sharing amongst the actors within the supply chain and logistical issues which mainly include managing movement of goods from one place to another. Different scholars generally agree that effective procurement management, effective information management and effective logistics management contribute to quality of export vegetables. However the extent to which the above mentioned factors contribute to quality of export vegetables by farmers from Kasese, Uganda is not known.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the research design, study population, sampling procedures, data collection methods and procedures for data analysis and management of information that was gathered from the field. The chapter also describes how validity and reliability of the instruments were measured.

3.1 Research design

This study employed a case study research design. A case study research design allowed in-depth investigation of individuals, groups, institutions or phenomenon under study (Mugenda and Mugenda, 2003:173). The case study tried to understand the contribution of effective supply chain management to the quality of export vegetables. This study was carried out in Kasese district at Mubuku Irrigation Scheme with farmers, the association executive, staff of Ministry of Agriculture Animal Industry and Fishers, Kasese Small Holder Income and Investment Project (KSIIP) staff and Mubuku Growers Association employees as the units of analysis. The study was carried out during the major harvesting season of October to May, 2008 when all participating farmers were cultivating the vegetables. This study was also correlational and non contrived setting with minimum influence through questionnaire administration and interviews.

3.2 Population of the study

The study population focused on Mubuku Growers Association members totaling 94 people, these included both male and female participants all growing hot pepper as an export crop to The Netherlands. For purposes of getting in-depth information about the study, groups like the executive members of the farmers' cooperative, Mubuku Growers Association, agricultural staff attached to the Irrigation scheme, and a group of sorting and grading staff employed by the association were also interviewed using a focus group discussion guide.

3.3 Sample size and selection.

By definition, a sample is a portion of the population selected from the population or universe. Sample size depends on such factors as number of variables for the study, type of research design, method of data analysis and size of accessible population (Mugenda and Mugenda, 1999). Mugenda and Mugenda (1999) noted that determining sample size is a very important issue because samples that are too large may waste time, resources and money, while samples that are too small may lead to inaccurate results since they might not reproduce the salient characteristics of the population. Sekaran (2003) recommends that in a qualitative studies, only small samples of individuals, groups or events are invariably chosen in view of the in depth nature of the study. As a rule of thumb, , sample sizes between 30-500 could be effective depending on the type of sampling design used and the research question investigated. He further states that qualitative studies like this one use small sample sizes because of their intensive nature. Based on the recommendations by (Mugenda and Mugenda, 1999) and (Sekaran 2003), the following formula was used to determine the sample size;

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size

N: population of the study

e: level of precision (usually fixed at 0.05)

Using the above formula, the sample size came to seventy six (n=76).

3.4 Sampling techniques and procedures

Mugenga and Mugenda, (1999) says that after deciding on the sample size, the researcher formulates a procedure which must first have a sampling frame. For this study, the sampling

frame was a list of names that were growing hot pepper for export; this was drawn by the chairperson of the association. The sampling techniques included both random sampling and non-random sampling techniques. Simple random sampling with use of lottery method in selection was used from the list of the participating farmers from the association files. This technique allowed each element to have equal chance of being selected, it is also simple and a non-random sampling technique was used when selecting respondents to attend the focus group discussions.

3.5 Data collection methods and instruments.

3.5.1 Questionnaire

Structured questionnaire with closed ended questions was used in collection of quantitative data. It had a likert scale with a five category response continuum of strongly disagree, disagree, neither agree or disagree, agree and strongly agree. These were preferred because they elicited specific responses which were easy to analyze. For the dependent variable, a continuum of very seldom, seldom, neither agree nor disagree, often and more often. The questionnaire was administered by the researcher with help of a research assistant. Given that some of the respondents understood English language and others did not, the researcher and research assistant read out the questionnaire to them both in Rukonzo and English and the choice of the respondent was ticked

3.5.2 Focus group discussion

Focus group discussions were conducted with the following groups; executive members of the farmers' cooperative, agricultural staff attached to the Irrigation scheme and the group of workers carrying sorting of the vegetables at the pack-house. The qualitative information also uncovered key issues in terms of constraints that existed for the different these groups. Other gender-related issues that affect these groups were also uncovered. In order to generate precise and accurate information, the members of the focus group discussions were selected

and the discussion were moderated by the researcher together with the research assistant including taking of notes

3.6 Validity of Instruments

Validity is defined as the degree to which an instrument measures what it purports to measure (Mugenda, 1999). The validity of research instruments was checked using face and content validity approaches, the objective of which was to ensure that the instruments included an adequate and representative set of items that tap the key concepts of the study. This was done using the expert judgment of both the work based and UMI based supervisors as suggested by Sekaran (2003) and Amin (2005). Prior to the distribution of the instruments, the draft formats were discussed with both the work based and UMI based supervisors, corrected and refined until an acceptable format was drawn up.

3.7 Reliability of Instruments

Reliability of instruments was tested to ensure consistency of the respondents answers. Mugenda and Mugenda (1999) confirm that random errors that affect reliability of the instruments of data collection cannot be completely eliminated regardless of the procedures used in a study. A reliability coefficient of 0.80 and above implies that there is high degree of reliability. Internal consistency of the scales as one of the methods of assessing reliability in data was estimated by means of the coefficient alpha developed by Cronbach in 1946. Cronbach's alpha splits all the questions in the instrument and computes correlation values for them. Like correlation coefficient, the closer it is to 1 the higher the reliability estimate of the instrument. Reliability coefficients for the variables were tested and results are shown below;

Table 3.7: Reliability statistics of the study variables

Dimension	Cronbach's alpha	Number of items
Effective procurement management	0.816	18
Effective Information management	0.883	20
Effective Logistics management	0.779	25
Quality of export vegetables	0.752	4

From table 3.8 above, it can noted that effective information management had the highest reliability coefficient of 0.883 and Quality of export vegetables had the lowest of 0.752 which is still in the acceptable range meaning that the instruments can be considered reliable.

3.8 Data Collection Procedures

Introductory letter was obtained from Uganda Management Institute. The letter helped the researcher seek permission from the district authorities and association leadership to allow the study to proceed. The purpose and possible benefits of the study were explained to the respondents before the interviews and a positive response was obtained.

3. 9 Data Analysis

Data analysis is a process of bringing order, structure and meaning to the mass of information gathered (Mugenda and Mugenda, 1999). The quantitative data from questionnaires were sorted and edited in the field by the researcher and research assistant, and also centrally after all forms and schedules had been returned. The data was then categorized according to the variables measuring the concepts in the study. An entry data sheet was developed in ACESS, data was entered and later processed using STATA statistical package. Use of this package helped to summarize the coded data into frequency tables and percentages were generated, this facilitated interpretation. Correlation analysis was used to determine the degree of association between effective supply chain management and quality of export vegetables.

Regression analysis was used to establish strength of the independent variables on the dependent variable. It was specifically used to establish the combined effect of the independent variables on the dependent variable. This is revealed by the adjusted R –squared (Sekaran, 2003).

Qualitative data obtained from the interviews and documents was analyzed for the content or language used (discourse analysis). Content and discourse analysis was through reading the script to detect categories, themes and patterns and establish the relationships that existed in the information gathered. Qualitative data was used to make narrative statements of how categories or themes of data are related. Berg (2004) pints out that qualitative data will help to describe opinions of respondents regarding variables under the study (effective supply chain management through effective procurement management, effective information management, effective logistics management and quality of export vegetables). Graphic presentations, specifically pie-charts, frequency tables and bar graphs were used to represent the findings.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents the analyses and interpretation of the study findings. The findings are presented in line with the study objectives. Pearson's rank correlation was used to establish the relationship between variables as demonstrated in the conceptual framework in chapter one and to test the hypotheses. The chapter also presents demographic characteristics of the respondents and descriptive statistics for the various dependent and independent variables.

4.1 Response rate

From Table4.1 below, the rate of response return was 100% for the questionnaires and 100 % for the focus group discussions. This was attributed to the fact all farmers collect their products at the pack-house during an export day; this made it possible to talk to all the participants.

Table 4.1: Response rate

Questionnaires	**Individual Farmers**		**Focus groups discussions**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Received	76	100	3	100
Unfilled	0	0	0	0
Total	**76**	**100**	**3**	**100**

Source: Primary data

4.2 Demographic characteristics of the respondents.

The researcher wished to establish some demographic characteristics of the respondents from Mubuku Growers Association managing the supply chain. Sex, education level and age were important to the study in establishing categories of respondents who participated in the study

and relevance of the study variables to them. Varied characteristics of respondents also enabled the researcher to get sufficient information on the study variables. The demographic characteristics are presented below.

4.2.1 Respondents sex ratio

Table 4.2.1: Sex ratio

Variable	Frequency (n)	Percentage (%)
Sex		
Male	41	53.9
Female	35	46.1

The researcher set out to find the sex of the respondents and the findings are presented below. From the findings in table 4.1.1above, 54% of the respondents are male and 46% females. This also shows that the ownership of the farms at Mubuku is held more by men than women. This could be explained that women are culturally not supposed to own land.

4.2.2 Respondents education level

Table 4.2.2: Education level of respondents

Variable	Frequency (n)	Percentage (%)
Primary	40	52.6
Secondary	34	44.6
Tertiary	2	2.6

Source: Primary data

The study found out that 53% of the farmers attained primary level education, 45% attained secondary education level and only 2% reached the tertiary educational level.

Findings show that most of the farmers could basically read and write in the local language which is key to making farming decisions although there is a very small percentage (2.6%) that can serious be engaged in investment decisions which require higher levels of education.

4.2.3 Respondents Age group

Table 4.2.3: Respondents Age

Variable	Frequency (n)	Percentage (%)
18-30	25	32.9
30-50	48	63.2
50-65	1	1.3
Over 65	2	2.6

Majority (63%) of the farmers are within the age group of 30-50 years, this means that they are mature and still energetic to carry out farming activities including producing good quality vegetables. They can also participate in the proper management of the supply chain which can deliver good quality products for export.

4.3 Contribution of Effective procurement management to the quality of export vegetables

Objective one of the study aimed at examining the contribution of effective procurement management to the quality of export vegetables. Dimensions of effective procurement management included the following: Product determination, product description, contract management and contract close out. Respondents were asked to react to the items in the questionnaire as presented in table 4.3 below intended to gauge their perceptions about effective procurement management and its contribution to the quality of export vegetables. There after the findings were subjected to Pearson product moment coefficient analysis to explore the relationship between the variables and to test the hypotheses. Regression analysis was also done to establish how a set of independent variables explain variations of the dependent variable. Respondents agreed on all items presented on effective procurement management as possible contributors to quality of export vegetables as shown in table 4.3 below.

Table 4.3: Effective Procurement Management (N=76)

Item	SD	D	N	A	SA
Product determination					
I have much say or influence in determining the product to grow	1	5	11	40	43
I have mush say or influence in determining the acreage to grow	8	0	2	65	25
I am much involved in determining when to grow	3	16	5	36	40
I am much involved in determining the variety to grow.	1	24	5	47	23
I am much involved in determining how much to grow.	1	11	5	47	36
Product description					
I know much of the characteristics of the product you grow	0	8	0	56	36
I regularly participate in the review of product characteristics you grow.	0	0	3	68	29
I meet the described characteristics of the product.	3	0	8	47	42
Contact management					
In your opinion, are you satisfied with the reports made during the growing season	1	3	8	48	40
In your opinion, the quality of the products you grow has consistently improved	15	20	9	29	27
I am satisfied with the production and marketing contract	4	0	26	37	33
I am much involved in the overall contract management	4	23	0	39	34
I know what can fail proper contract management	13	4	0	30	53
Contract close out					
I am much involved in the end of year contract review	0	15	0	49	36
I am happy with last year's product price	36	42	0	15	7
In my opinion, past contracts were distributed amongst the members	0	8	0	54	38
I am regularly involved in contract management activities	4	21	0	42	33
I used much of last year's contract close information to improve this year's production	0	13	5	45	37

Source: Primary Data

Key: SD (strongly disagree), D (disagree), N (neither agree or disagree), A(agree) and SA(strongly agree)

In relation to product determination, respondents agreed that 83% participated in determining what to grow, 90% % determined acreage to grow, 76% determined when to grow, 80% determined the variety to grow and 83% determined how much to grow during the production season. This overwhelming support was attributed to the fact that all the farmers had several crops being grown at the time of study and was confirmed by observations and focus group discussions held with farmer. During the focus group discussion, farmers revealed that; "… *we have a large choice of crops to grow and in case one does not make a profit this time he or she can switch to another crop……"*

As far as product description is concerned, respondents agreed that 92% knew the characteristics of the product to grow, 97% reviewed the characteristics of the products to grow and 89% met the prescribed characteristics of the products grown by them. A key informant described the situation as……"you *join the group, you are taken through all the trainings before you are allowed to grow during a particular season…….This helps the group members to accept the rejects that will later be weighed after sorting and grading by the pack-house team…"* It was also noted that there was a lot of rotten fruits at the rubbish pit during the survey as the researcher visited the pack-house and one of the farmers had this to say …."*For those farmers who do not like to attend training in post harvest, they end up filling the rubbish pit as others make money due to high percentage of accepted fruits after sorting and grading……*"

In addition, respondents agreed that contract management contributed to effective procurement since 88% of the respondents agreed that they were satisfied with the reports they made, 56% that quality consistently improved, 70% were satisfied with the production and marketing contracts, 73% were involved in the overall contract management and 80% knew what could fail a proper contract management. One of the respondents confirmed by saying..."*Mubuku farmers group is very clear on the contract before the season begins and*

*whenever there are issues in this area, they have to be resolved before new planting season starts…."*In addition, when you discussing the same issue in focus group, the farmers said….*we sell to a muzungu (European) and if we want to remain in business, we have to strictly understand what the contract says otherwise we can easily lose our income due to negligence……."*

As far as contract closeout was concerned, 85% of the respondents agreed that they participated in reviewing end of year contracts, 78% disagreed that they were happy with last year product price, 92% contracts were distributed amongst the members, 75% were regularly involved in contract management activities and 82% used last seasons contract close information to improve current production. Disagreement on price was very evident and during the focus group discussion, members revealed that……"*prices of inputs have continued to go up and this should be reflected in the price of the final product to the market but later agreed that since the buyer was taking all the volumes and has been buying from them for some time, contract will be reviewed at the beginning of the new season and price will be one thing to discuss, lets give the buyer time….."*

Correlations were done between effective procurement management and quality of export vegetables and results are presented in the table 4.3.1below.

Table 4.3.1: Correlation matrix results between effective procurement management and quality of export vegetables

Correlations

		Effective procurement management	Quality of vegetable exports
Effective procurement mgt	Pearson Correlation	1	.306**
	Sig. (2-tailed)		.007
	N	76	76
Quality of vegetable exports	Pearson Correlation	.306**	1
	Sig. (2-tailed)	.007	
	N	76	76

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

The study findings revealed that there is significant positive correlation between effective procurement management and quality of export vegetables at 0.306** with a significance of 0.007 at the level of 0.01. The implication is that effective procurement management could contribute to the quality of export vegetables for Mubuku Growers Association. Thus the hypothesis that effective procurement contributes to the quality of export vegetables is substantiated.

Regression analysis was done to develop a model for predicting the capacity for effective procurement management to contribute to the quality of export vegetables and the results are shown in the model summary and regression coefficient in the table 4.3.2.

Table 4.3.2: Regression model summary for effective procurement management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.306[a]	.094	.081	4.18979

a. Predictors: (Constant), effective procurement management

Table 4.3.3: Regression coefficients: Effective procurement management

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.191	3.481		.342	.733
	Effective procurement management	.135	.049	.306	2.765	.007

a. Dependent Variable: Quality of export vegetables

The results in the model summary indicate that the R squared = 0.094 or 9.4%. (R2 tells how a set of independent variables explain the variations of the dependent variable). This means that the independent variable dimension; effective procurement management accounts for 9.36% of the variations in the quality of the export vegetables with Mubuku Growers Association, 90.64% could be attributed to other factors other than effective procurement management.

From the table above, Y = a + bx where Y is quality, a is the constant, b is the coefficient and x is the independent variable (effective procurement management).

Therefore Quality = 1.19 + 0.135 Effective procurement management. On the overall, significance f (0.007) is less that is 0.05 confirming the relationship between effective procurement management and quality of export vegetables. From the table 4.3.2, the standardized coefficient (b) of 0.135 is positive which means that improving effective procurement management could contribute to quality of export vegetables with Mubuku Growers Association.

4.4 Contribution of effective information management to the quality of export vegetables:

The second objective of this study was to assess the contribution of effective information management to the quality of export vegetables of Mubuku Growers Association. Respondents were asked to respond to the dimensions of effective information management

in relation to information source, information collection, and information storage and information dissemination.

Table 4.4: Effective information management (N=76)

Item	SD	D	N	A	SA
Information source					
The source of information about products contributes to final quality of product	4	0	1	45	50
I find most information to be very helpful	0	0	10	29	61
I usually get information when you need it	0	8	0	65	27
I regularly get the required information	0	8	7	38	47
I find information from fellow members very useful	0	0	11	38	51
Information collection					
I find meetings as a useful source of information	0	0	0	37	63
I find verbal communication a useful source of information	1	14	29	24	32
I am much involved in information collection	0	11	3	56	30
I find written communication a useful source of information	0	1	4	62	33
I am much involved in information review	0	5	3	62	30
Information storage					
Proper storage of information contributes to the quality of product	0	0	8	47	45
I have much say in determining how to store information.	0	9	11	55	25
I am much involved in determining when to store information	0	22	9	41	28
I am much involved in determining the type of information to store	0	25	13	33	29
I am much involved in determining how much information to store	3	13	8	43	33
Information dissemination					
Communication channels for association activities contribute to final quality of product.	0	0	3	51	46
Designated communication personnel contributes to the final quality of product	0	3	1	58	38
I am satisfied with the number of times you communicate to the association about the quality of your products	0	3	8	54	35
I am much involved in reviewing the communication channels used.	0	15	3	49	33
I am much involved in designing the information procedures	3	32	0	28	37

Source: Primary Data

Key: SD (strongly disagree), D (disagree), N (neither agree or disagree), A(agree) and SA(strongly agree)

Respondents generally agreed that effective information management contributes to quality of export vegetables. For information source of the 95% agreed that source of information contributed to final quality of the product, 90% information was very helpful, 92% used to get information when they needed it, 85% regularly got the required information and 89% information from fellow members was very useful. In their opinion, effective information management contributes to quality of export vegetables.

From a focus group discussion, members revealed ……"*the association keeps us informed of all issues that affect our business otherwise there is a high chance of losing quality since the product we are dealing with was perishable….."*

In regard to information collection, 100% of the respondents agreed that they found meetings as a very useful source of information, 56% verbal information was useful source of information, 86% involved in information collection, 95% written communication was a useful source of information and 92% involved in information review. During the focus group discussion farmers confirmed …."*we always hold monthly meetings with the executive to share information on when our money is to be collected ……Section leaders also hold meetings with a few farmers almost every two days to discuss water sharing during irrigation, harvesting dates and shared transportation to the pack-house…."*

It was also observed from the registry that farmers keep minutes of what was discussed and members who are absent are advised to check on fellow farmers in the neighbor hood to get was discussed. When asked further about meetings, farmers said….."*if you do not attend 80% of the meetings, you receive a caution letter from the secretary to over come arguments especially when quality is challenged by the pack-house graders……..."* It was disappointing to see some fields not planted due to the fact that members do not want to attend meetings were important issues are discussed before a growing season takes off.

As far as information storage was concerned, 92% of the respondents agreed that proper storage of information contributed to quality of the product, 80% % involved in determining how to store information, and 69% involved in determining when to store information, 62% involved in determining the type of information to store and 76% determined how much information to store. On the overall, respondents agreed that information storage contributed to quality of export vegetables. The support for information storage was confirmed with the observation made when checking through documents of delivery to the pack-house and signing by famers who had delivered particular qualities of hot pepper. During the focus group discussion, it was very clear……..”*As a member you must continuously check on your personal records to make sure quantities and quality delivered otherwise you get problems when paying at the end of the month by the association treasurer…..”*

How information is circulated amongst farmers like any other group was very important, this can be seen derived from the responses to information dissemination, 97% agreed that communication channel for association activities contribute to final quality of product, 96% agreed to a designated communication, 89% number of times they communicate, 82% reviewed the communication channels and 65% involved in designing information dissemination procedures. This overwhelming support to information dissemination was also confirmed by focus group discussion……” *communication is very important for such a large group like this one, members do not only grow one product therefore we must receive so much communication especially since we all want to sell as a group……..we also need to negotiate together to reach the proposed prices which can then be told to the buyer……..”*

Correlation between effective information management and quality of export vegetables was done and results are presented in the table 4.4.1 below.

Table 4.4.1: Correlation between Effective information management and Quality of export vegetables

Correlations

		Quality of export vegetables	Effective information flow
Quality of export vegetables	Pearson Correlation	1	.402**
	Sig. (2-tailed)		.000
	N	76	76
Effective information flow	Pearson Correlation	.402**	1
	Sig. (2-tailed)	.000	
	N	76	76

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

The study findings revealed that there is significant positive correlation between effective information flow management and quality of export vegetables at 0.402** with a significance of 0.000 at the level of 0.01. The implication is that effective information management could contribute to the quality of export vegetables for Mubuku Growers Association. Thus the hypothesis that effective information management contributes to the quality of export vegetables is substantiated.

Regression analysis was done to develop a model for predicting the capacity for effective information management to contribute to the quality of export vegetables and the results are shown in the model summary and regression coefficient in the table 4.4.2

Table 4.4.2: Regression model summary for Effective information management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.402[a]	.162	.150	4.02908

a. Predictors: (Constant), Effective information management

Table 4.4.3: Regression coefficients; Effective information management

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.472	3.784		-.917	.362
	Effective information management	.172	.045	.402	3.780	.000

a. Dependent Variable: Quality of export vegetables

The results in the model summary indicate that the R squared = 0.162 or 16.2%. (R^2 tells how a set of independent variables explain the variations of the dependent variable). This means that the independent variable dimension; effective information management accounts for 16.2% of the variations in the quality of the export vegetables with Mubuku Growers Association, 83.82% could be attributed to other factors other than effective information management.

From the table above, **Y = a + bx** where **Y** is quality, **a** is the constant, **b** is the coefficient and x is the independent variable (effective information management).

Therefore Quality = -3.472 + 0.172 Effective information management. On the overall, significance f (0.0003) is less than 0.05 confirming the relationship between effective information management and quality of export vegetables. From the table 4.4.2, the standardized coefficient (b) of 0.172 is positive which means that improving effective

procurement management could contribute to quality of export vegetables with Mubuku Growers Association.

4.5 Contribution of effective logistics management to the quality of export vegetables

The third objective of this study aimed at examining the contribution of effective logistics management to the quality of export vegetables by Mubuku Growers Association. The dimensions of effective logistics management used included transport, storage, grading, packaging and loading.

Table 4.5: Effective logistics management (N=76)

Item	SD	D	N	A	SA
Transport					
I am satisfied with the type of transport for your products to the field shed	5	13	0	57	25
I am satisfied with the type of transport for your products to pack-house.	7	34	4	30	25
I am satisfied with the container you use during transport of your products.	0	25	3	36	36
I am involved in determining the type of transport used for your products	3	26	3	40	28
I am much involved in determining the type of transport used for your products.	0	17	8	46	29
Storage					
I am much involved in selecting the type of storage facility for your products	3	38	5	43	11
I am satisfied with storage temperature for your products.	1	10	14	50	25
I am satisfied with fiber baskets for storage of your storage.	3	15	7	42	33
I am much involved in determining the length of storage for your products.	3	35	7	34	21
I am much involved in reviewing storage in reviewing storage for your products..	3	27	5	43	22
Grading					
I am satisfied with the percentage rejects.	57	21	7	12	3
Most rejects are due to bruises.	7	43	11	32	7
I am well trained in grading	0	0	3	48	49
I am much involved in reviewing grading procedures for your product	0	7	8	47	38
The pack-house grading tables are in good condition.	0	0	8	31	61
Packing					
I am satisfied with the percentage rejects.	0	12	8	23	57

Most rejects are due to bruises.	3	2	5	49	41
I am well trained in grading	0	8	0	36	56
I am much involved in reviewing grading procedures for your product	0	12	8	43	37
The pack-house grading tables are in good condition.	3	15	0	51	31
Loading					
I am happy with the way boxes are loaded onto the truck	1	1	8	55	35
I am satisfied with the time of loading boxes onto the truck.	1	4	13	49	33
I am satisfied with handling of boxes during loading.	0	7	3	46	44
I am satisfied with the way boxes are palletized onto the truck.	0	4	8	55	33
I am satisfied with the strength of the boxes used.	0	4	3	49	44

Source: Primary Data

Key: SD (strongly disagree), D (disagree), N (neither agree or disagree), A (agree) and SA (strongly agree)

Respondents generally agreed that effective logistics management contributed to quality of export vegetables, Satisfied with transport to the field shed (82%), satisfactory transport to the pack-house (55%), containers for transporting products (72%), determining transport type (68%) and transport effect on the quality of the product (75%). It was observed during the survey that the product was transported using interlocking plastic crates from the farmers' fields to the pack-house. This special attention must be accredited to value of transport towards quality of the vegetables. The focus group discussion revealed that "……. *in case you do not properly take care of your product during transport the soft skin can easily be damaged thus losing all the effort put during field maintenance up to harvesting……"*

As far as storage was concerned, respondents agreed that selecting the type of storage for their products (54%), storage temperatures for their products (75%), fiber woven baskets for storage of their products (75%), determining the length of storage for their products (55%)

and reviewing storage for their products (65%) could contribute to effective logistics management and quality of the export vegetables. Farmers revealed during the focus group discussion that; "……..wh*enever power went off at the cold room at the scheme, most of their products were later rejected due to softening and that is why they agreed to put a charcoal cool room which could be used as an alternative room to store the products……."*

It was disappointing to see some of the product that was going to be thrown out at the rubbish pit due to softening of the fruit skin which was contributed to the poor storage.

Effective logistics management is highly affected by grading and respondents generally agreed that this could affect quality of export vegetables; 76% of the respondents disagreed on the percentage rejects, 50% disagreed that most rejects were due to bruises, respondents agreed that well trained in grading (97%), involved in reviewing grading procedures (85%), and pack-house tables were in good condition (92%). Farmers were not happy with the reject percentages as reported by the pack-house staff, this was evident during the focus group discussion that; "…….*when we deliver our products at the pack-house, reports from the staff were that products look good but later surprising results come out with big percentage of rejects……..we think most staff are negligent and could be the cause of this……"*

Packaging is recognized internationally as an important factor of logistics. This was confirmed by 80% of the respondents who were happy with the training of the packing staff, (90%) packing was done under well lit conditions. Respondents also revealed that quality of the packing boxes was good (92%), recommended temperatures followed (80%) and involvement in reviewing packing procedures at the pack-house (82%). Looking at the boxes stuck up on a pallet ready for transporting to the airport, no weaknesses on the edges could be

traced. This was also confirmed by the farmers during the discussion that; ……"*we buy our boxes as a group therefore we can afford good quality boxes which can withstand the distance from and cool conditions in the truck from Kasese to Entebbe airport…….".*

Loading came out as another important factor to effective logistics management, generally all respondents agreed onto its contribution; happy with the way boxes were loaded onto the truck (90%), satisfied with the time of loading (82%), good handling of boxes during loading (90%), satisfied with the palletizing of boxes (88%) and strong boxes (93%). During the data collection time, you could see boxes stuck up before loading them into the truck for Entebbe. Mubuku Growers have a cool truck which means the boxes must be of good quality to stand the coldness in the truck for such a long distance to the airport.

Correlations were done between effective logistics management and quality of export vegetables and results are presented in the table 4.5.1below.

Table 4.5.1: Correlation matrix results between effective logistics management and quality of export vegetables

		Quality of export vegetables	Effective Logistics Management
Quality of export vegetables	Pearson Correlation	1	.270*
	Sig. (2-tailed)		.018
	N	76	76
Effective Logistics management	Pearson Correlation	.270*	1
	Sig. (2-tailed)	.018	
	N	76	76

*. Correlation is significant at the 0.05 level (2-tailed).

The study findings revealed that there is significant positive correlation between effective logistics management and quality of export vegetables at 0.270* with a significance of 0.018 at the level of 0.05. The implication is that effective logistics management could contribute to the quality of export vegetables for Mubuku Growers Association. Thus the hypothesis that effective logistics management contributes to the quality of export vegetables is substantiated.

Regression analysis was done to develop a model for predicting the capacity for effective procurement management to contribute to the quality of export vegetables and the results are shown in the model summary and regression coefficient in the table 4.5.2 below.

Table 4.5.2: Regression model summary for effective logistics management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.270[a]	.073	.060	4.23752

a. Predictors: (Constant), Effective Logistics management

Table 4.5.3: Regression Coefficients; Effective logistics management

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.850	3.712		.498	.620
	Effective Logistics management	.091	.038	.270	2.411	.018

a. Dependent Variable: Quality of export vegetables

The results in the model summary indicate that the R squared = 0.073 or 7.3%. (R2 tells how a set of independent variables explain the variations of the dependent variable). This means

that the independent variable dimension; effective logistics management accounts for 7.3% of the variations in the quality of the export vegetables with Mubuku Growers Association, 92.7% could be attributed to other factors other than effective logistics management.

From the table above, Y = a + bx where Y is quality, a is the constant, b is the coefficient and x is the independent variable (effective logistics management).

Therefore Quality = 1.85 + 0.091 effective logistics management. On the overall, significance F (0.0184) is less that is 0.05 confirming the relationship between effective logistics management and quality of export vegetables. From the table 4.5.2, the standardized coefficient (b) of 0.091 is positive which means that improving effective procurement management could contribute to quality of export vegetables with Mubuku Growers Association.

4.6 Findings on Quality of export vegetables

Quality of export vegetables as a dependent variable was assessed in relation to the independent variables so as to establish the relationship between effective supply chain management and quality of export vegetables. Dimensions of quality of export vegetables included size of fruit, color of fruit, defects on the fruit and food safety of the fruit.

Table 4.6: Descriptive results for Quality of Export Vegetables.

Item	VS	S	N	O	VO
I often have problems with or complains about the size of the products I supply	16	34	16	25	9
I often have problems with or complains about the color of the products I supply	26	37	11	5	21
I often have problems with or complains about the defects of the products I supply	13	41	15	26	5
I often have problems with or complains about the safety of the products I supply	38	23	15	26	5

There was general census for all respondents that they had no problem with quality, no problem with size of the fruit (50%), no problem with color of the fruit (63%), no problem

with defects of the products (54%) and no problem with the safety of the products they supplied (61%). This was further confirmed through observations that revealed that boxes of the product ready for shipment contained fruits of accepted size, color and had minimal defects.

4.7 Hypothesis Testing

Correlation analysis was used to test the three hypotheses formulated in chapter one. The hypotheses were applied to test the relationship between the independent and dependent variables and it was concluded as follows;

1. There is a positive and significant correlation between effective procurement management and quality of export vegetables. The test using Pearson correlation analysis returned a result of ($r = 0.306$, $p<0.01$) confirming that the strength of the relationship was statistically significant at 0.01 level of confidence. The alternate hypothesis (**H_{1a}**: Effective procurement management contributes to the quality of export vegetables by Mubuku Growers Association) was substantiated and therefore up held.
2. There is a positive correlation between effective information management and quality of export vegetables. The test using Pearson correlation analysis returned a result of ($r = 0.402$, $p<0.01$) confirming that the strength of the relationship was statistically significant at 0.01 level of confidence. The alternate hypothesis (**H_{2a}**: Effective information management contributes to the quality of export vegetables by Mubuku Growers Association) was substantiated and therefore up held.
3. There is a positive correlation between effective logistics management and quality of export vegetables. The test using Pearson correlation analysis returned a result of ($r = 0.2699$, $p<0.05$) confirming that the strength of the relationship was statistically significant at 0.05 level of confidence. The alternate hypothesis (**H_{3a}**: Effective

logistics management contributes to the quality of export vegetables by Mubuku Growers Association) was substantiated and therefore up held.

CHAPTER FIVE
SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction
This chapter presents the summary, discussion, conclusions and recommendations of the study. Limitations of the study and areas for further research are also presented. The summary follows the order in which the objectives were presented in chapter one.

5.1 Summary
The general objective of this study was to examine the contribution of effective supply chain management to the quality of exports vegetables in Uganda with Mubuku Growers Association. The findings indicated that all the three dimensions of effective supply chain management had a critical contribution to the quality of export vegetables as submitted below.

5.1.1 Effective procurement management and quality of export vegetables
The correlation results showed that effective procurement management in regards to product determination, product description, contract management and contract close out had a significant positive relationship with the quality of export vegetables at 0.306** with a significance of 0.007 at the level of 0.01. The implication of this is that effective procurement management could positive contribute to the quality of export vegetables with Mubuku Growers Association. The regression model results for effective procurement management with a significance value of 0.007 indicate that the R squared (R^2) = 0.094 or 9.4% also confirming that a standard deviation increase in effective procurement management led to 9.4% increase in the rating of quality for export vegetables. The ratings are positively significant showing that effective procurement management is a critical factor for the quality of export vegetables.

5.1.2 Effective Information management and quality of export vegetables

The study also found out that effective information management could have an effect on the quality of export vegetables of Mubuku Growers Association. The Pearson correlation results r, was positive 0.402** and a significance value of 0.000 at the level of 0.01 showed that all the dimension of effective information management (information source, information collection, information storage and information dissemination) had a significant positive relationship with the quality of export vegetables. The regression model results R squared (R^2) = 0.162 or 16.2% revealed that a standard deviation increase in effective information management led to 16.2% increase in quality of export vegetables and results were significantly showing that effective information management is a critical factor the quality of export vegetables for Mubuku Growers Association.

5.1.3 Effective logistics management and quality of export vegetables

The study also found out that effective logistics management could have an effect on the quality of export vegetables of Mubuku Growers Association. The Pearson correlation results r, was positive 0.270* and a significance value of 0.018 at the level of 0.05 showed that all the dimension of effective logistics management (transport, storage, sorting, packing, and loading and unloading) had a significant positive relationship with the quality of export vegetables. The regression model results R squared (R^2) = 0.073 or 7.3% revealed that a standard deviation increase in effective logistics management led to 7.3% increase in quality of export vegetables and results were significantly showing that effective logistics management is a critical factor the quality of export vegetables for Mubuku Growers Association.

5.2 Discussion of findings

Research findings on the contribution of effective supply chain management to the quality of export vegetables for Mubuku Growers Association were based on three objectives and hypotheses with support for field evidence and literature. The findings are consistent with each of the hypothesis and confirm that the identified effective supply chain indicators (effective procurement management, effective information management and effective logistics management) contributed to the quality of export vegetables. This therefore suggests that the conceptual frame work which was summarized in figure 1 can reasonably be applied to the quality of export vegetables. The findings are discussed objective by objective

5.2.1 Effective procurement management and quality of export vegetables

The study wanted to find out whether effective procurement management could have a contribution towards quality of export vegetables for Mubuku Growers Association. The findings presented in chapter four revealed a moderate but statistically significant positive correlation between effective procurement management and quality of export vegetables at 0.306** with a significance of 0.007 at the level of 0.01. This study found out that effective procurement management through product determination, product description, contract management and contract close out has a significant implication on the attainment of quality of export vegetables.

Determining product to grow (83%), determining acreage to grow (90%) and determining how much to grow (83%) were found to be contributing to the quality of export vegetables. This support could be as a result of the time farmers take to look after their production gardens. Observations in the field revealed small but well maintained gardens. Farmers could easily express their happiness about being allowed to establish a given size of a field based on their experience of getting labour to keep the fields clean which later contributes to the quality of the products harvested. This finding is supported by Lyson and Gillingham

(2003) who suggest that purchasing must select and manage a supply base capable of providing advantages in quality. Dijkstra (2001) concurs that a coordinated supply chain refers to how much to produce and quality of a product. The findings therefore support the fact that improving product determination could improve the quality of export vegetables at Mubuku Irrigation Scheme.

Product description issues were said to be critical for the attainment of quality of export vegetables for Mubuku Growers Association. Respondents know much of the characteristics of the product to grow (92%), participate in the review of the characteristics of the products to grow (97%) and meet the characteristics of the products for export. Farmers were well informed of the product characteristics that contribute to the export quality of vegetables. This was revealed during the sorting and grading exercise which was mainly done by farmers to remove all products that do not meet the quality specifications before the products are delivered to the pack-house.

Respondents satisfied with the reports made during the growing season (88%) and knowing what can fail proper contract management (83%) were found to be contributing to the quality of export vegetables. This support could be a result of what farmers described as keen interest in discussing the reports during the selling season mainly about quality issues of the exported products. The finding is supported by Ruerd Ruben et al (2007) who revealed that in order to guarantee reliable supply, retailers search for sustainable partnerships with producers that reduce such information and screening costs and reinforce mutual trust amongst chain agents. Shilpa, K. 2008 confirms that focus of supply chain management is upon the management of the relationships in order to achieve a more profitable outcome for all parties in the chain.

5.2.2 Effective Information management and quality of export vegetables

Effective information management contributes to quality and is achieved through information source, collection, storage and dissemination. This was confirmed by the Pearson correlation results on effective information management ($r = 0.402^{**}$: $p<0.01$) presented in chapter four. This means that the relationship between effective information management and quality of export vegetables is positive and significant; implying that whenever you improve effective information management, there is likely to be a corresponding positive effect on quality of export vegetables.

Source of information (95%), timely receipt of information (92%) and content of information (90%) were found to be contributing to the quality of export vegetables. This support could be as a result of the farmers experience in getting information in time since the products for export bare perishable and any delay in information could be detrimental to the quality. Observations made during one of the farmers meeting were based on how readily information was available and when to be used. In case the importer has changed the specifications or when the shipping date has been changed, farmers have to be advised in time such that they can easily harvest less ripe fruits in order to compensate for the time the product will be kept into the cool. This finding is supported by FAO (2007) noting that it requires a fundamental reorganization of information streams and agency relationships, providing opportunities to smallholders to adjust their supply to consumers' demands and to become a recognizable part of global sourcing regimes.

Information collection issues were said to be critical for the attainment of quality of export vegetables for Mubuku Growers Association. Respondents find meetings a very useful source of information (100%), written communication is important (95%) and involvement in information review (92%) were contributing to the quality of export vegetables. All farmers unanimously agreed that meetings held at the scheme were the most important source of

information where they are given chances to discuss the performance of the products in the market especially with issues of quality at arrival.

Respondents satisfied with the communication channels for the association activities (97%) and designated communication personnel (96%) were found to be contributing to the quality of export vegetables. This support could be a result of what farmers described that proper dissemination of information was important to take care of such a big group since farmers grow different types of products and have different buyers. The finding is supported by Lusine H. Aramyan et al, 2007 who revealed that information sharing, clear communication, recognition of mutual benefits, and a high level of cooperation lead to the increasing likelihood of supply chain relationship success.

5.2.3 Effective logistics management and quality of export vegetables

Effective logistics management contributes to quality and is achieved through transport, storage, sorting, packing and loading and unloading. This was confirmed by the Pearson correlation results on effective information management ($r = 0.27$: $p<0.05$) presented in chapter four. This means that the relationship between effective logistics management and quality of export vegetables is positive and significant; implying that whenever you improve effective logistics management there is likely to be a corresponding positive effect on quality of export vegetables

Proper training in grading of export products (97%) and the status of pack-house grading tables were found to be contributing to the quality of export vegetables. This support could be as a result of the fact that farmers deliver their products to the pack-house for final grading and the experience of the staff contribute much of the final grades received by the buyer. This finding is supported by Lauri Brandeberry, (2010) confirming that grading of products is usually a voluntary program used by the industry. Grading standards describe the quality requirements for each grade of a product; giving the industry a common language for buying and selling.

Packing issues were said to be critical for the attainment of quality of export vegetables for Mubuku Growers Association. Respondents know that most rejects are due to bruises (90%) and respondents were well trained in packing (92%). This support could be as result of the farmers' attention to the number of kilos packed into a box to make sure that the products is not damaged but at the same time they directly buy good quality boxes to take care of the staking during palletizing process. In support of the above, Food Editorials (2011) confirms that packaging to maintain produce quality during transportation and marketing must withstand rough handling during loading and unloading, compression from the overhead weight of other containers, impact and vibration during transportation, high humidity during pre-cooling, transit, and storage.

Respondent's satisfaction with the way boxes are loaded onto the truck (90%) and satisfaction with the strength of the boxes (93%) were found to be contributing to the quality of export vegetables. This support could be as a result of the time taken to load a truck taking boxes to the airport for export. Observations at the pack-house revealed the care taken when handling boxes and at the same time the number of boxes palletized inside the truck. This could reveal the strength of the boxes and the proper organization of the loading process. Horticultural Journal (2000) revealed that the major causes of loss in quality of fruits and vegetables during handling and transport have been identified to be severe during loading and unloading operations and most growers suffer tremendous quality losses due poor management of loading and unloading process.

5.3 Conclusions

The following conclusions were drawn from the study and are presented according to the objectives of the study.

5.3.1 Effective procurement management and quality of export vegetables

The research findings returned ($r = 0.306$, $p<0.01$) confirming that effective procurement management through product determination, product description, contract management and

contract close out have a positive and significant relationship with the quality of export vegetables. The hypothesis that effective procurement management contributes to quality of export vegetables for Mubuku Growers Association was supported by the evidence from the findings and was accordingly adopted. The study therefore concludes that effective procurement management through product determination; product description, contract management and contract close out have significant implications for the attainment of quality of export vegetables. This makes it clear that effective procurement management is a factor for quality supplied and should be properly managed during supply contracts.

5.3.2 Effective Information management and quality of export vegetables

The findings clear show that effective information management through information source, collection storage and dissemination have a significant positive relationship with quality of export vegetables and this was confirmed by ($r = 0.402$, $p<0.01$). The hypothesis that effective information management contributes to quality of export vegetables for Mubuku Growers Association was supported by evidence from the findings and adopted. It was therefore concluded that effective information management through information source, collection, storage and dissemination contribute to quality of export vegetables.

5.3.3 Effective logistics management and quality of export vegetables

The findings revealed that effective logistics management through transport, storage, sorting, packing and loading and unloading had an effect on quality of export vegetables. Pearson correlation test returned a result of 0.27 verifying the strength of a relationship statistically significant at 0.05 level of significance. The hypothesis that effective logistics management contributes to quality of export vegetables was adopted. All the dimensions of effective logistics management contribute to quality, in this case transporting, storage, sorting, packing and loading and unloading contribute seriously to quality. Therefore farmers working together under Mubuku Growers Association should seriously look into issues of logistics if they want to maintain good product quality.

5.4 Recommendations

Supply chain management is one of the most complex business disciplines, comprising activities and interactions within and between many of the traditional functional areas of a firm and their channel partners. No longer can a company place its entire focus on its own operations because long-term success is becoming increasingly dependent on actions and decisions of upstream and downstream firms in the supply chain (Drake and Mawhinney, 2011). The researcher recommends the following;

5.4.1 Effective procurement management

- A proper planting and harvesting calendar should be developed by both farmers and the buyer to make sure that both stakeholders make informed decisions on when to start the growing season.
- Product specifications should be properly drawn and annually reviewed by the buyer and discussed with farmer association in order to reduce future rejects related to product description and quality parameters
- Proper contract management with details on planning, organization, coordination and control should be developed per season between the buyer and the association and annual reviews carried out for comparison purposes between two consecutive growing seasons.

5.4.2 Effective Information management

The study examined effective information management in line of information source, collection, storage and dissemination. The researcher recommends the following;

- Farmers' association together with the buyer should develop a market information review team that will keep informing them of the need to improve the communication strategy on an annual basis especially issues related to the final price of the product.
- Farmer and buyer meetings should be organized to record stakeholder concerns during and at the end of the selling season; this will help the farmers to be updated on

their performance before next production season set in. This will also improve the on verbal communication as it tends to be undependable for decision making.

- A formal system for informing the farmers of their quality should be put in place to compare the performance of different farmers during the different seasons.

5.4.3 Effective logistics management

Logistics being another important factor in the supply chain and Kasese being far from the main port of exit for the farmers produce, the researcher recommends the following;

- Farmers should have a documented procedure on how to manage the transport of product from the field to the pack-house. This is due to the fact the pack house is not central therefore some farmers move a long distance before reaching the pack-house which increases chances of damage to the fruits.
- The exporter together with the farmers' association should put in place a proper cooling facility with human and financial resources for the maintenance in order to reduce breaking down of the machine
- The pack-house staff and farmers should always receive annual training review in the grades and rejects selection criteria in order to much with the increasing demands of the market.
- The Association should have an annual review of the packaging and packing issues derived from market reports to improve and reduce quality losses during transport to the market.

5.5 Limitations of the study

The farmers gave optimistic answers thinking that the interviews held will contribute to the long awaited rehabilitation of the entire irrigation scheme including infrastructure like roads and water hydrants by government. However the researcher took time to give a thorough

explanation that the research was academic and made emphasis to enrich the results with observations.

The Researcher did not have enough time to follow up the product from Mubuku, Kasese to the airport to ascertain the quality issues after the seven hour transport. However details of quality remarks from the market were analyzed.

In addition, the researcher would have been interested in being around from the time of field preparation up to end of season, this was not possible due to time constraint but secondary data reviewed revealed how the whole process was managed.

5.6 Contributions of the study

- The study gave more light on the status of the out-grower arrangements with the present import buyer and a description of how the value chain is being managed.
- New areas for donors or NGO's interventions and research were identified
- The executive for the farmers' cooperative were able to operationalize the supply chain into components or areas they need serious attention to improve farmers incomes

5.7 Areas for further research

- This particular study was focused on more organized farmers in one location and under an umbrella organization called a cooperative, further studies should investigate other export supply villages in the country to establish how more supply chains are managed
- A more focused study may be undertaken to investigate only one of the sub-variables mentioned in the study, this will yield more in-depth information to improve the present status of the supply chain at Mubuku Irrigation scheme
- Further research should investigate other products that are not grown for export at Mubuku Irrigation scheme to understand how the supply chains are managed

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