VALUE CHAIN FINANCING AND FINANCIAL PERFORMANCE OF EDIBLE OIL MANUFACTURING COMPANIES IN KENYA

By

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university. No part of this work may be reproduced without my approval or that of the university.

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DEDICATION

This thesis is dedicated to my family members for their unwavering support throughout the research period. To my dear wife Shikha Agarwal, for her valuable moral support; to my lovely son and daughter who many a times dearly missed my whole hearted attention that ought to have been theirs as I spent many hours thinking and working on this thesis and to the loving memory of my late father Purshotam Kumar Agarwal – I owe you great debt of gratitude.

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OPERATIONAL DEFINITION OF TERMS

Value Chain	The set of actors (private, public, and including service providers) and the sequence of value-adding activities involved in bringing a product from production to the final consumer.
Value chain members	Farmers, manufacturing companies, Warehouse owners, banks, raw material and input traders, customers, association of farmers.
Value Chain Analysis	Assessment of the actors and factors influencing the performance of an industry, and relationships among participants to identify the main constraints to increased efficiency, productivity and competitiveness of an industry and how these constraints can be overcome.
Value Chain Financing	Financial services and products flowing to and/or through value chain participants to address and alleviate driving constraints to growth. This discussion of value chain finance does not include conventional agricultural financing from financial institutions, such as banks and credit unions
Internal Value Chain Finance	Internal value chain is that which takes place within the value chain such as when an input supplier provides credit to a farmer or when a lead Company advances funds to a market intermediary
External Value Chain Finance	External Value Chain Finance is that which is made possible by value chain relationships and mechanisms: for example, a bank issues a loan to farmers based on a contract with a trusted

	buyer or a warehouse receipt from a recognized storage facility.
Financial performance	A objective measure of how well a firm can use assets from its primary mode of business and generate revenue. This is firm's overall financial health over a given period of time. This can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. Financial performance was measured by return on investment (ROI) and return on Equity (ROE).
Return on investment	A profitability measure that evaluates the performance of a business by dividing net profit by net worth
Return on Equity	It is the ratio of annual net income to average total equity of a business during a financial year. It is a profitability ratio.
Financing in Working Capital	Working capital is net difference between current assets and current liabilities. Current assets are the most liquid of your assets, meaning they are cash or can be quickly converted to cash. Current liabilities are any obligations due within one year.
Financing in primary activities	Primary activities such as inbound logistic, outbound logistic, operations, Marketing and servicing are areas where balance financing is required for optimum utilization of capacity.
Inbound logistics	Includes all the receiving, warehousing and inventory control of raw materials.
Outbound logistics	Are the activities needed to get the finished product or service to the customer so a sale can be made

Operations Cost	Cost of converting inputs to the output in the manufacturing process
Financing in Support activities	Support activities such as firm infrastructure, Human resource management technology development and procurement are the areas where balanced financing is required along with the development of primary activities.
Firm Size	Firm size can be measured by sales value, fixed assets or installed capacity.
Capital structure	Financial leverage used by companies to finance the funds requirements and is expressed with debt equity ratio.

ABBREVIATIONS AND ACRONYMS

ABC	ABC Classification of Inventory
ALFA	Agriculture Livestock and Food Authority of the Government of Kenya
ARB	Agriculture Research Bill in Kenya
AVCF	Agriculture Value Chain Financing
VCA	Value Chain analysis
CEO	Chief Executive Officer
CAPM	Capital Asset Pricing Model
CGS	Cost of Goods Sold
EOQ	Economic Order Quantity
EOSS	Edible Oil Sub Sector
EVA	Economic Value Added
FEM	Fixed Effect Method
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
IFAD	International Fund for Agricultural Development
KAM	Kenya Association of Manufacturers
LLC	Levin-Lin-Chu
MT	Metric Ton
MB	Market to Book ratio
NAFTA	North American Free Trade Agreement
PE	Price Earnings
REM	Random Effects Methods
RBV	Result Based View
ROA	Return on Assets
ROE	Return on Equity
ROIC	Return on Invested Capital
ROI	Return on Investment
SCF	Supply Chain Finance
SCM	Supply Chain Management
VC	Value Chain
VCA	Value Chain Analysis

VCF	Value Chain Finance
VIF	Variance Inflation Factor
PCA	Principal Component Analysis
Ivs	Independent Variables
Mvs	Moderating Variables

ABSTRACT

Edible oil manufacturing companies in Kenya were making profits but not optimal profits. There was no shortage of market demand for the commodity in Kenya and East Africa in general. However, the industry is affected by low production of raw materials in the country and inadequate financing by members in the value chain besides lack of clear initiative and knowledge in developing the value chain. It was therefore necessary to estimate the internal and external financing and investment needs in the development of value chain for the sector. The general objective of this research was to determine the effects of financing by members in the value chain on the financial performance of the edible oil manufacturing companies in Kenya, while the specific objectives were to establish the effects of financing in raw material and operation, financing in working capital arrangement, primary activities and supporting activities together with establishing the effects of moderating variable, firm characteristics such as firm size and capital structure, on the financial performance of these companies. The study used descriptive retrospective panel data and philosophy was positivism where all manufacturing companies in the edible oil sector in Kenya were included making it a census study. The secondary data was extracted from financial statements of edible oil manufacturing companies for the period 2008 to 2014 and primary data by using the interview guide administered to the company executives. Using Principal Component Analysis, composite index of dependent variable (financial performance) was computed representing 3 components for further analysis in the study. Descriptive analysis, correlation and panel regression analysis were used to investigate the relationship and association of variables in value chain financing. The results of this study have provided an improved understanding of the value chain financing and how improved and appropriate financing affects the financial performance of edible oil sector in Kenya. The major findings and conclusions of this study show that, financing in primary activities through inbound logistic, had negative statistical effect on financial performance of companies (Beta value -4.56, P-Value 0.04). Support activities through procurement cost had positive statistical effect on financial performance of companies (P-Value 0.00001, Beta value 6.09). The moderating variable firm characteristics measured through Firm Size had positive statistical effect on financial performance of companies (P-Value 0.0001, Beta value 2.14). Financing through raw material and working capital did not have statistical effect on the financial performance. The study provided statistical model for determining the appropriate finance mix in primary activities, supporting activities and working capital to utilize the optimum capacity for edible oil manufacturing companies in Kenya. Study also suggested that additional financing in value chain affects the financial performance and therefore should be from long term sources of finance. Result of the study will help in understanding and developing the value chain. The study will also help policy makers for preparing guidelines for financial institutions for financing of value chain. The study results form the basis for future research in the area of value chain financing in other manufacturing sectors and can be used by the management of the companies to develop strategies for financing mix in their companies based on the model developed by the study for predicting the financial performance.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The performance of any firm increases the market value of that specific firm but also leads towards the growth of the whole industry which ultimately leads to the overall prosperity of the economy. Most domestic oil processing in Kenya is undertaken by 15 edible oil manufacturing companies (KAM, 2014) accounting for 95% of the manufacturing base of the edible oil industry. Edible oil manufacturing companies are utilizing about 53% of capacity (KAM, 2014). Capacity utilization in the sector is therefore constrained both by the quantity and quality of oil seeds. Capacity utilization of the edible oil sub-sector is by far the lowest among the food manufacturing sector industries and also lower than the average of the Kenya manufacturing industries over the past few years. The edible oil sub-sector has thus diverse and significant constraints (James, 2013).

Value chains is very effective way of focusing on measures to improve the intencity and impact of financing. This will include the financing made by smallholder farmers themselves and those made by large-scale domestic or foreign investors. The value chain describes the full range of activities required to bring a product or service from conception, through the different phases of production, delivery to final consumers and final disposal after use (Kaplinsky & Morris, 2001). The prime objective of the value chain is to ensure the equal distribution of value generated among the members of the value chain (Nedelcovych & Shiferaw, 2012). The ‘Value Chain’ was used in a book "Competitive Advantage: Creating and Sustaining and improving Performance” (Porter, 1985). The value chain analysis explains the activities performed by the organization. This also links activities to the

organization's competitive position. Value chain analysis and describes the activities in the value chain in the organization. This also relates them to the analysis of the competitive strength in the organization. Porter (1985) compiled the value chain design as follows:-

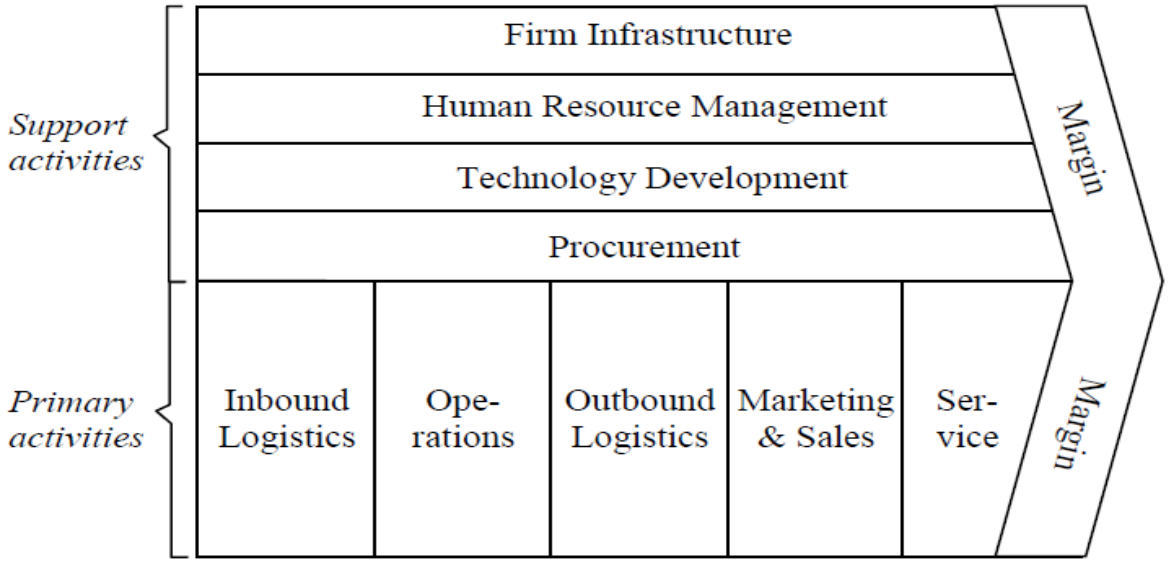

Figure 1.1: Porters Value Chain

Source (Porter, 1990).

Financial performance depends upon capacity utilization and raw material availability is important for optimum capacity utilization in agriculture-based industry. One of the major steps in securing raw material requires the development of value chain and improving financing through the buyer-driven value chain. It is often in the buyer's interest to procure a flow of products and use finance as a way of facilitating and/or committing producers, processors and others in the chain to sell to them under specified conditions. Most often, when financing is involved, the conditions are binding through contracts and, therefore contract farming is the most

common buyer-driven value chain model (Vorley, Lundy & MacGregor, 2008). Based on this study raw material was considered as one of the independent variables.

Working capital (WC) management in the value chain also contributes to the improvement of financial performance of edible oil manufacturing companies. It measure the operating liquidity of the organizations and its requirement increases or decreases with the volume of production of the company. According to Faden (2014), the financing in working capital required by a company will depend on company's characteristics such as size, growth rate, the products offered, or industry specific, corporate policy and value chain strategy and practices adopted by the company.

Financing primary activities in the value chain such as inbounds logistic, operations, outbound logistic, marketing, sales, and service are very important and improve the financial performance depending upon the firm size and production requirements to ensure the regular supply of raw material and delivery of finished goods to the customers in time. According to Ugulumua and Inanga (2013) established that core competencies, financing warehouses, and technology are the most pronounced factors leading to improved productivity and quality by sunflower buyers and consumers in the value chain and leads to improved productivity and quality in the sector.

Financing secondary activities in the value chain also improves the financial performance, efficiency and provides essentially organized information for

optimum utilization of installed capacity in the manufacturing companies. Secondary activities which provide competitive advantages in business are firm infrastructure, human resource management, technology development and procurement of goods and services (Porter, 1985). Empirical evidence by Theuri, Mwirigi, and Namusonge, (2014) found that strategic management of technological competitiveness, market competition, and corporate policies adopted in the value chain in the sea-food processing industry influenced the financial performance of the firms. The study was very instrumental in exposing the value of strategy review and effect on financial performance.

Firm financial performance is also affected by firm characteristics, size and capital structure and may explain the wide variations. Every company has different characteristics to one entity with another entity. Company size can be determined by total sales or total assets. The size of the company affects the company's capital structure. Continuously increase of funding requirements of the company indicates the desire of the growth in profits by the company (Riyadi, 2006). Firms' financial strategies are indicated by the level of leverage and liquidity of the organization. Debt management is also importent because the firm must decide how and when to pay off debts according to cash flow and interest rates. The level of leverage used in this study is measured by debt to equity ratio.

1.1.1 Value Chain Financing

Value Chain finance (VCF) is a practical approach to finance and help in improving the financial performance. Value Chain finance offers an opportunity to reduce cost and risk in financing, and reach out to smallholder farmers. For manufacturing

Companies value chain finance creates the impetus to look beyond the direct recipient of finance to better understand the competitiveness and risks in the sector as a whole and to craft products that best fits to the needs of their businesses in the Value Chain. In fact, much of the finance available to Value Chains is not only from financial institutions but also from other members within the value chain. A study by Walters (2009) showed that finance often looks different when provided within a value chain instead of financial institutions. Many financial instruments can be used for agricultural financing to increase finance access and lower the costs and financing risks in business (Miller, 2007).

In our fast development atmosphere, value chain finance is used and that has taken different meanings and connotations. The flows of funds to the value chainactivities within a value chain comprise what is known as value chain finance. The Company can use value chain to create value for itself and create a competitive advantage among other competitors. Value chain specifically in agribusiness in the recent past received less financing mainly due to the risks related with it and the disintegrated financing (non- financing of the Value Chain). However, there are still some institutions which have managed to keep up with the challenges. They have found innovative ways of financing Agribusiness and they have made it their core business. Value Chain finance therefore plays a very crucial role of addressing the needs and constraints of actors in that value chain (Miller & Jones, 2010).

The result based view (RBV) therefore concentrates on the Value Chain practices and effects on the firm performance. This occurs when the resources and

capabilities are directed towards sustaining Value Chain practices. Demand management, on the main functions, assists in managing customer demand by recording increased demand information (Baltacioglu, Ada, Kaplan, Yurt & Kaplan, 2007). Further, customer relationship management maintains and develops long-term consumer's relationships by taking information from analysis and understanding the customers needs (Baltacioglu *et al*., 2007).

1.1.1.1 Value Chain Financing in Raw Material

Availability of raw material is the lifeline for any business. In Edible oil industry raw material is procured through contract farming and purchase in local market and import of raw material. Main factor is the procurement of raw material at optimum cost and best quality at availability for production to utilize the optimum installed capacity of manufacturing. Contract farming is increasingly used as an instrument for integrating small producers into modern value chains (Singh 2009). Contract farming is in fact one of the most common buyer-driven value chain model and is mostly applied in agriculture, agro-processing involving large supermarkets and large scale producers. Basix and Spencers use contract farming (Dhananjaya and Rao 2009; Singh 2009). Basix works with small-scale potato farmers of Jharkand through contract farming and linking them to Pepsico Holdings India. Spencers uses the concept of 'contract growing' where a limited number of farmers grows vegetable, based on the quality specifications of the company. Under the contract growing arrangement, the farmers are not compelled to sell the products to the company. Another system by, Spencer's procurement system provides opportunities for a big number of small vegetable farmers to participate in their supply chain. The farmers get the assured market, lower cost of transportation and lower labour cost.

They also receive timely payment and fair weight of the produce. But there is no price assurance to the farmers.

The bulk of the empirical research on contract farming has focused on income (as in Bellemare, 2012), some variant thereof (e.g., farm revenue or profits), or some proxy for income (e.g., productivity, as in Bellemare, 2010) or variant thereof. Income and other related measures are convenient outcomes to study because they are somewhat easy to measure and because, from a utilitarian perspective, it is easy to make the case that as income goes, so does welfare indirect utility functions are increasing in income. Swinnen, (2007) and Little and Watts, (1994) suggest that the centralized, multipartite, and intermediary contract models are increasingly prevalent. In a centralized model, an agricultural company purchases a predetermined quantity of crops from a large number of farmers under specified quality standards. The firm may or may not provide inputs to the farmers. Contract farming primarily associated with commodities requiring a high degree of processing. Contract farming reduces the cost and ensures the availability of raw material and social welfare of the farmers. Adequate planning and financing in contract farming ensure the availability of raw material.

1.1.1.2 Value Chain Financing in Working capital

The term working capital refers to a firm‟s short-term assets or currents assets. Managing the firm's working capital is a day-to-day activity which ensures that the firm has sufficient resources to continue its operations. This involves a number of activities related to the firm‟s receipt and disbursement of cash (Ross 2007). Most firms require certain levels of working capital to deal with variable and somewhat unpredictable financial inflows and outflows. Challenges such as disconnected

supply chains processes, excessive stocks caused by non-bridged interfaces, inadequate trade credit terms, and suboptimal loan decisions require higher working capital than necessary. While the latter two originate from the financial area, connecting supply chain activities and reducing stock and inventory belong to the operating area. Companies tend to try to have less capital tied up in non-productive stocks, shorten the collection period for account receivables, and stretch cash payments for accounts payable as far as possible (Hofman and Kotzap, 2010).

Theoretically, Raheman and Nasr (2006) states that there is a positive relationship between working capital management and financial performance of the firms. There is positive relationship between liquidity, profitability and positive relationship between firm size and its profitability.

1.1.1.3 Value Chain Financing in Primary activities

Primary activities are those involved with a product's physical creation, sales and distribution, and after-sales service. In detail, this involves the product interrelations inbound logistic and operations and the market interrelations outbound logistic, marketing, sales and after-sales service (Ireland et al. 2009, Mowen and Hansen 2011). Primary activities are always defined as value-added activities which are "those that customers perceive as adding utility to the goods or services they purchase" (Lanen et al. 2008, p. 4). Adequate financing in different primary activates improve the financial performance (Porter, 1985).

1.1.1.4 Value chain financing in support activities

Support activities provide the assistance necessary for primary activities. In detail,

this involves the infrastructure interrelations firm's infrastructure and human resource management, technological interrelations (technology development) and procurement interrelations (procurement) (Ireland et al. 2009, Mowen and Hansen 2011). Those activities are not part of the closer value chain they are included in every function of the value chain (Lanen et al. 2008). Adequate financing in different support activates improve the financial performance (Porter, 1985).

1.1.1.5 Firm Characteristics

Firm Size and capital structure can also affect the financial performance. This study is considering firm characteristics as a moderating variable. According to a study the following are indicators of the firm size Sales, market value, and total assets (Chang, Lee and Lee, (2009). Furthermore, larger firms generally have better access to capital markets, and have a lower cost of borrowing than smaller firms (Wiwattanakantang, 1999). In addition, larger firms are more likely to have a better credit rating thus financial institutions are more willing to lend funds to larger firms (Eriotis, Vasilio, and Neokosmidi 2007). Therefore, this implies that larger firms should have higher leverage ratios.

1.1.1.6 Financial Performance

Extant studies on service provision in manufacturing have used several measures for firm performance, including sales growth (Kohtamaki, Kraus, Makela, & Ronkko, 2012), shareholder value (Fang, Worm, & Tung, 2008), and profitability (Homburg, Giering, & Menon, 2003). While future research could formulate normative proposals regarding the most appropriate measure to use, the choice inevitably depends on the theoretical approach and empirical context of the study. This study

examines the question of how firm characteristics may affect the causal chain between services and performance. The business performance is measured from the information provided in the accounting system of the organization. The financial performance is measured by Price Earnings Ratio (PER), return on investment (ROI), return on equity (ROE), earnings per share (EPS), economic value added (EVA) and market to book ratio (MB) are computed to ascertain the performance of the organization. Venkatraman and Ramanujam (1987) found that profit margin, ROI; sales growth, business performance are good indicators or proxies.

According to Ray, Barney and Muhanna, (2004) the overall performance of a firm indicate the result of the organization resources and capabilities, competitive nature of the organization. The theory expresses that these resources and capabilities should be directed to ensuring overall firm performance since those not conditioned into sustaining activities and business processes negatively impact on an organizational performance. The resources and capabilities of the organization should be utilized effectively and operated at effective capacity utilization (Baltacioglu *et al*., 2007).

1.1.1.7 Edible Oil Manufacturing Sector in Kenya

Edible oil sector in Kenya is dependent on increased production in the agriculture sector. Agriculture contributes 25 percent of the total Gross Domestic Product (GDP) and another 27 percent indirectly (KAM, 2014). The agriculture sector employs over 40 percent of the total population and over 70 percent of the rural people. In June 2008, Kenya adopted the (Kenya Vision, 2030). In the Kenya Vision 2030, agriculture is identified as a key sector in achieving the required

annual economic growth.

No single institution was tasked with the management of edible oil sector until 2011. Several government agencies such as ministries of agriculture, industry, finance and planning and national development are all involved. Kenya association of manufacturers in 2011 created a sub-sector for promoting edible oil manufacturing in Kenya. Vegetable oil is one of the key sub-sectors of agriculture, with soybean and palm oil being the leading sources in the production of vegetable oil in the world respectively. At present, Kenya's domestic production of edible oils is estimated at 577,800 tones, which is only about one-third of the annual demand. The shortfall is imported, at a cost of $140 million, making edible oil the country's second most important item after petroleum. Kenya currently has about 15 edible oils refiners producing cooking oils (Kenya Association of Manufacturers, 2014).

1.2 Statement of the Problem

Edible oil manufacturing company's financial performance is stagnant and not improving since 2008 to 2014. Further review indicates the finance in the value chain of edible oil industry is inadequate resulting into stagnant financial performance. Companies must use their resources effectively and productively if they are to compete in an increasingly competitive globalized economy. Effective increase in financial performance and knowing how much finance is required in the effective management of the value chain is very important for edible oil companies. Edible oil manufacturing companies have grown in the last 5 years in Kenya and production and demand is increasing every year. Edible oil industry in Kenya

continues to be a critical sector since the demand for edible is experienced by everyone in Kenya and current demand is 1,700,400 tones and increasing regularly (KAM 2014). Production is 577,800 tones and balance is imported with Foreign exchange loss of $140 Million P.A (KAM 2014). Currently installed capacity in this industry is not optimally utilized as it stands at only 53% compared to the food and allied industry average of 80% in Kenya (KAM 2014).

Underutilization of Capacity in Kenya has been linked to inadequate financing in value chain by companies in this industry. Studies have unpacked the value chain in Edible oil industry into raw material, working capital, primary and support activities Porter, (1990), Walters, (2009), Millaer & jones,(2010).According to KAM(2014), the financial performance of edible oil manufacturing industry has contributed to Kenya loosing substantial revenue, Loss of employment opportunity, Foreign exchange outflow and loss of GDP. Due to underutilization of capacity the financial performance is adversely affected in the Edible oil manufacturing companies in Kenya. Other studies Ray, Barney and Muhanna, (2004), Baltacioglu (2007), also postulate that inadequate knowledge of proper financing mix in value chain effect the financial performance.

The purpose of this study is therefore to investigate the effect of Value Chain financing on the financial performance of edible oil manufacturing Companies in Kenya. The study also investigated the effect of firm characteristics as a moderating variable to establish if it mediates the effects on the value chain financing and the financial performance.

1.3 Objectives in the Study

1.3.1 The General Objective in the Study

The purpose of the study was therefore to investigate effect of Value Chain financing on the financial performance of edible oil manufacturing Companies in Kenya.

1.3.2 The Specific Objectives of the Study are:

1. To determine the effect of financing raw material on the financial performance of the edible oil manufacturing companies in Kenya.
2. To establish the effect of financing working capital on the financial performance of the edible oil manufacturing companies in Kenya.
3. To determine the effect of financing primary activities on the financial performance of the edible oil manufacturing companies in Kenya.
4. To establish the effect of financing support activities on the financial performance of the edible oil manufacturing companies in Kenya.
5. To determine the moderating effect of firm characteristics on the relationship between value chain financing and financial performance of the edible oil manufacturing companies in Kenya.

1.3.3 Research Hypotheses

The study tested the following null hypotheses in view of the study specific objectives:

Ho_1: Financing raw material does not significantly affect the financial performance of the edible oil manufacturing firms in Kenya.

$H0_2$: Financing working capital does not significantly affect the financial performance of the edible oil manufacturing firms in Kenya.

$H0_3$: Financing primary activities does not significantly affect the financial performance of edible oil manufacturing firms in Kenya.

$H0_4$: Financing support activities do not significantly affect the financial performance of edible oil manufacturing firms in Kenya.

$H0_5$: Firm characteristics do not significantly moderate the relationship between the value chain financing and financial performance of edible oil manufacturing firms in Kenya.

1.4 Significance of the Study

This study is helpful in providing guidance to the existing and new edible oil manufacturing companies to develop and introduce Value Chain Finance (VCF) at one or more points helps to identify the risk and cost of financing in the Value Chain. Financing also helps to improve the cost efficiency in the Value Chain as a whole to its members. Manufacturer's requirements for sufficient raw material to utilize the installed capacity of production and reducing the raw material cost and working capital cost by introducing sufficient financing, suppliers contracts and organizing information in the value chain to attract banks and institutions to provide larger finance to participant in the value chain. Value Chain finance (VCF) is tested approach to finance that improve financial performance. This will enable them to improve their capacity utilization and understand their current status, as a basis for taking appropriate actions to make more competitive and improve their performances.

The study contributed to the existing literature. There are limited empirical studies in agricultural Value Chain financing in Kenya. The study will therefore, yield a

detailed reference material on financing in agricultural Value Chain financing strategies in the edible oil manufacturing companies. The study constitutes a starting point in efforts to understand and document the application and effects of value chain financing in the edible oil sector in Kenya.

Value Chain financing is in the national interest not only because manufacturing firms account substantially for the nation's economic output and jobs, but also because such companies' complement and compete with one another thus enhancing the nation's competitiveness (Sathe, 2003). It is common practice that when companies experience improved profitability, part of it is reinvested in the form of new business units or expansion of existing units, thus increasing job opportunities and economic vitality in the country. Therefore, knowledge on how financing is flowing in Value Chain financing is of great value to policy makers. The Government will have better information and serves as a background document in formulating guidelines to provide comforts to financial institutions to become part of the Value Chain financing and provide financing in the development of agricultural sector for rapid employment creation and national development.

The communities within which the large agricultural enterprises operate constitute the smallholder farmers who produce the crops which act as the raw materials. Small farmers represent the large proportion of rural area in Kenya and produce maximum of the country's food demand. As such, they are very important target group, offering opportunities to increase income and improve the socio-economic welfare of farmers and improve food security. This will drive the economic development of the country. It is very important to allow the full participation

ofsmall farmers in agricultural Value Chains. Without affordable financial services, reliable information on demand and supply chain or direct market linkages, many small farmers remain in the unprofitable trap of low- financing and low-return production cycles.

1.5 Scope of the Study

The study covers all edible oil manufacturing companies in Kenya for the period 2008 to 2014. This time period was selected in line with Kenya Government vision 2030 which was announced in 2008. Special emphasize has been given on the development of agro-based industry involving public-private partnerships. The companies in Kenya were selected only to limit the geographical coverage with in one country to ensure study was carried out under same legal frame work and keep the time limit and budget in control.

1.6 Organization of the Study

Structure of the thesis is as follows: The chapter one provides the research background, research objectives, significance of the study and scope of the study. Chapter two presents literature review on the value chain financing and the financial performance of edible oil companies in Kenya and a conceptual framework. Chapter three include methodology adopted in the study and the study findings and their interpretation are presented in chapter four. Chapter five include conclusions of the study and policy recommendation.

CHAPTER TWO : LITERATURE REVIEW

2.1 Introduction

This chapter reviews both theoretical and empirical literature on Value chain financing, firm characteristics on the edible oil industry in Kenya. A review of the theoretical underpinning of the value chain and financial performance in the study is captured in this section.. Overview of the existing literature and research in the value chain is also studied and captured for identifying the research gaps. Study developed a conceptual framework and captured with a conceptual model indicating the relationship between variables for each objective followed by research hypotheses. The review is organized along the major theories.

2.2 Theoretical Literature Review

This section offers the theoretical foundation of the study with an aim of determining the existing theories that could explain Value Chain financing and financial performance. The essence of theory is to provide an explanation to both an observed phenomenon and a tentative reality (Kerlinger & Lee, 2000). The researcher explored the theory of Investment, The Capital Asset Pricing Model (CAPM), Concept of contract farming, Porter's Theory of Competitive Advantage and Pareto's Law in Inventory Control. All these theories, concepts, and models helped in developing the variables of the study.

2.2.1 Theory of Risk

It is observed that there are two separate factors affecting the rate of investment, namely expected return and perceived risk. Confidence effectively dominates whether investment will be contemplated or not for financial decisions. Keynes

(1936). It is not important how attractive the expected return, investment will not be done unless the probability of failure is acceptably low.

Keynes also observes that a purely quantitative approach is the exception rather than the rule: “Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits - of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities. Keynes uses a geometry metaphor to emphasise what he saw as the serious limitations of the then current axioms of economic science. The classical theorists resemble Euclidean geometers in a non-Euclidean world who, discovering that in experience straight lines apparently meet, Yet, in truth, there is no remedy except to throw over the axiom of parallels and to work out a non-Euclidean geometry. Something similar is required today in economics.” This provides a second pointer towards a new and better theory of risk. since the dominant scientific paradigm is the one-dimensional expected utility approach, we should in the first instance attempt to find a two-dimensional approach where expected utility can be regarded as a (possibly inaccurate) special case.

In his much earlier “Treatise on Probability” Keynes (1921) suggested different ways to achieve better understanding of how the mind perceives probability and risk. In particular, he is strongly condemning the marginal utility in the wealth approach that was adopted by Daniel Bernoulli (1738, 1954). He relied upon to “solve” the famous St Petersburg Paradox, and observes that what might be called tacit knowledge, especially regarding Peter’s ability to pay Paul and the enormous

risk of Paul incurring a serious loss and leads to considerable "psychological doubt" which makes a purely mathematical approach difficult to adopt in risk and return understanding: We don't agree with Paul, partly because we do not believe Peter will pay us if we have good fortune in the tossing, partly because we do not know what should be done with surplus money. We do not think it would be a rational act to risk larger one, whose attainment is very infinitely unlikely to happen. When we formulate hypotheses and have removed these areas of psychological doubt, the theoretical dispersal of what remains and it must be taken into consideration in the development of the theory of risk.

Keynes also suggests an extension of the second maxim of Jacques, which states that we must take into account all the information we have: "But should this maxim not be reinforced by a further maxim, that we ought to make the weight of our arguments as great as possible by getting all the information we can. However there clearly comes a point when it is no longer worthwhile to spend trouble before acting, and there is no evident principle by which to determine how far we ought to carry our maxim of strengthening the weight of our argument. Keynes discusses instances of where the human mind appears to ignore the risk when it is below some very small value, and cites an interesting observation by the French philosopher Buffon (1777) : "I am thinking of such arguments as Buffon's when he names l/10,000 as the limit, beyond which probability is negligible, on the grounds that, being the chance that a man of 56 taken at random will die within a day, it is practically disregarded by a man of 56 who knows his health to be good." Further developing the theory of risk Many eminent economists of the day, such as Friedman, Malinvaud, Samuelson and Savage, were highly critical of the von

Neumann & Morgenstem utility axioms. However, mathematicians with no practical experience of economics tended to brush these criticisms aside, as exemplified by the highly favourable review in the Bulletin of the American Mathematical Society: “Posterity may regard this book as one of the major scientific achievements of the first half of the twentieth century. This will undoubtedly be the case if the authors have succeeded in establishing a new exact science - the science of economics.

The foundation which they have laid is extremely promising”. This provided a highly satisfactory framework for human choice under conditions of uncertainty and risk. However, by the early 1980s the voluminous experimental evidence. of axiom violations that had been published over the previous decade, particularly by Kahneman & Tversky (1979) and Grether & Plott (1979), forced economic theorists to attempt to build more complex new theories that could give a better explanation of real world behaviour. Anand (1993), Machina (1987) and Quiggin (1993) have been especially prolific in first of all documenting axiom violations (particularly in the areas of “independence” and “transitivity”) and then suggesting more and more complex general & d axiomatic approaches.

The probability of ruin is also used as a measure of risk, but there is no obvious link between this “nonparametric” measure and a “parametric” measure such as variance. Furthermore, the Risk Assessment and Management for Projects (RAMP) methodology, which has been put forward jointly by the UK actuarial profession and the Institution of Civil Engineers as a basic framework for practical risk management, does not incorporate an explicit numerical measure of risk. Can such

an apparently informal approach be regarded as scientific?

Any financial disadvantage resulting from the behavioral traits could be mitigated to a considerable extent by the availability of more detailed information, presented in as impartial a manner as possible. Myopic loss aversion, however, is a much more deeply in gained wealth-destroying behavior trait. A classic physical risk example is a refusal to fly for either business or pleasure purposes, despite the existence of vast amounts of statistical evidence showing that going by car is vastly more risky, in terms of deaths per passenger mile, than flying with a recognized airline. The classic financial risk example is a preference on the part of many investors for long-term investment in bonds rather than equities, despite very strong evidence that the likelihood of equities outperforming bonds increases to near certainty as the investment horizon increases.

2.2.2 Theory of Investment

Value investing for the first time was established by Benjamin and Dodd, (1928). It was further explored by economic theorists such as Keynes (1936) and Hayek (1939), who focused on the employment of capital and investment from a firm's point of view. Investment is the change in capital stock during a period. One of the earliest investment theories, however, came from in his "Nature of Capital and Income" and his later work "Theory of Interest" (Fisher, 1930). In his theory, although simplistic and open to a number of assumptions, he developed a basic investment frontier. This investment frontier indicates the optimum return for an investment over certain time periods, and would form the basis of the more popular investment frontier models today. Investment decisions as explored by the

economists mentioned above concerns the decision to construct a new plant, replace machinery, etc., mostly from a production point of view. Based on this theory if edible oil companies help in developing the value chain and actively finance and invest in the value chain it will improve the financial performance of the manufacturing companies.

2.2.3 The Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM), which is now a centerpiece of modern financial economics, was developed by Sharpe (1964) and later modified by Lintner (1965); Mossin (1966). This model gives us a precise prediction of the relationship that researcher should observe between the risk of an asset and its expected return. This relationship serves two vital functions. Firstly, it provides a benchmark rate of return for evaluating possible investments. Secondly, the model helps us to make an educated guess as to the expected return on assets that have not yet been traded in the marketplace. The CAPM is therefore, a set of predictions concerning equilibrium between the expected returns on risky assets. It is the relationship between expected return and the risk that is consistent with investors behavour according to the prescriptions of portfolio theory. If this rule does not hold, then investors will be able to outperform the market (in the sense of obtaining a higher Sharpe Ratio) by applying the portfolio improvement rule, and if sufficiently many investors do this, stock prices will adjust to the point where the CAPM becomes true.

Since this early work, a vast body of research has looked for additional risk factors that affect expected returns. Most notably Fama and French (1993) find that adding

a “value” factor and a “size” factor (in addition to the overall market) greatly improves the explanatory power of the CAPM. The Capital Asset Pricing Model is a fundamental contribution to our understanding of the determinants of asset prices. The CAPM tells us that ownership of assets by diversified investors lowers their expected returns and raises their prices. Moreover, investors who hold undiversified portfolios are likely to be taking risks for which they are not being rewarded. As a result of the model and despite its mixed empirical performance the study now thinks differently about the relationship between expected returns and risk. How investors should allocate their investment portfolios and think differently about questions such as performance measurement and capital budgeting. CAPM helps in the decision of alternative investment and financing options to the companies and help in selecting which area of value chain needs how much finance by comparing the financing risk and return from that financing. The formula for calculating the expected return of an asset given its risk is as follows:

$$\bar{r}_a = r_f + \beta_a(\bar{r}_m - r_f)$$

Where:
r_f = Risk free rate
β_a = Beta of the security
$\bar{r}_m$ = Expected market return

The general idea behind CAPM is that investors need to be compensated in two ways: time value of money and risk. The time value of money is represented by the risk-free (rf) rate in the formula and compensates the investors for placing money in any investment over a period of time. Contract farming needs long term investment and risk is the expected results and evaluation using CAPM model is very important to understand the effects.

2.2.4 Concept of Contract Farming

Since the early 70s, contract theory has largely evolved into a theoretical field within mainstream economics. Contract theorists typically impose simplifying assumptions to develop tractable stylized models and/or make rather idealized assumptions about what types of contracts are possible and how performance is governed. Many of the assumptions are sufficiently controversial such that there has been a methodological divide between those who advocate the "complete contracts" methodology and those who advocate the "incomplete contracts" approach (Tirole, 1999).

The complete contracts approach has largely dominated the literature and is considered the textbook model on contracts. Classic applications include structuring incentives in order to overcome asymmetric information problems such as moral hazard and adverse selection. The key assumption of complete contract theory is that, in a contractual relationship between two parties, a contract governs all aspects of performance under all contingencies and therefore the key is to design an optimal 3 state-contingent plan. Because the contracting parties are able to foresee all relevant contingencies, there should be no "surprise" contingencies that will arise. Therefore, all performance obligations across all contingencies of both parties can be specified in the initial contract.

Moreover, performance obligations under this contract can be third-party verified and enforced and sufficient legal penalties exist to deter each party from deviating

from the contract taken together, this set of assumptions implies that no party to a complete contract has ex post discretion to deviate from the upfront agreement. Indeed, the presence of discretionary latitude to deviate from the upfront agreement is synonymous with incomplete contracting because there are unspecified or unenforceable contingencies in a contract. Some authors trace the principles of contract farming back to the 19th century, when the mechanism was used in the United States for processing crops such as sugar beets and peaches, and in Taiwan, for sugar production under the Japanese colonial rule (Runsten & Key, 1996; Rehber, 1998; Warning & Hoo, 2000). Its use later expanded into many food and fiber sectors, particularly in the US and in some Latin American countries supplying the US markets (Kirsten & Sartorius, 2002). Recently, contract farming became even more widespread.

The United States Department of Agriculture revealed in a recent report that contracts now govern 36% of the value of US agriculture production, up from 12% in 1969 and are the primary means of vertical coordination in sectors such as hogs, broilers, pork, sugar beets, fruits and processing tomatoes (MacDonald et al., 2004). In developing countries, contracts are also being increasingly used. In Brazil, 75% of poultry production is coordinated via contracts (UBA, 2005). Whereas in Vietnam there are indications that 90% of cotton and fresh milk, 50% of tea and 40% of rice are being purchased by enterprises through contracts (Ahn, 2004). Evidence on the recent emergence of contracting is also available from India (Singh & Asokan, 2005), China (Guo, Jolly, & Shu, 2005), Latin America (Santacoloma & Riveros, 2005) and in several African countries (Woodend, 2003; Rottger, 2005).

Contract farming can take different formats and some typologies for it have been

proposed. In empirical study by Minot, Mighel and Jones, (1963) as originators, of the widely used classification of contracts into three kinds, namely "market specification", "resource providing" and "production management". In the first modality, the transaction between growers and buyers is agreed on terms of what to be produced (product and quality attributes) and what are the commitments for future sale (timing, location and price). The second modality adds the provision of farming inputs to the former contract type. Beyond specifying what to produce and what the conditions for marketing are, in-kind credit is offered via the provision of key inputs, often with cost recovery upon farm product delivery. Finally, under production management contracts growers agree to follow precise technological guidance on how to produce. But regardless of the typology, the general term "contract farming" refers to a particular form of supply chain governance adopted by firms to secure access to agricultural products, raw materials and supplies meeting desired quality, quantity, and location and timing specifications. In this context, contract farming is seen as one of the alternative forms of vertical coordination in which firms can engage. In Edible oil sector shortage of raw material which is the main cause of underutilization of capacity can be overcome by adopting the concept of contract farming as an integral part of the value chain financing.

2.2.5 Porter's Theory of Competitive Advantage

Porter (1985) analyzed the Value Chain an effort to understand the behavior of costs and the existing/potential sources of differentiation, arriving at the Porter's Value Chain analysis (VCA). The Value Chain analysis rotates around; design, produce and market, delivering products, and support firms product. Thereafter Porter's

Theory of Competitive Advantage, which focuses upon individual industries, emerged to extend VCA and related it to performance (Porter, 1990).

The Porter's theory of Competitive Advantage encourages individual industries to build up to the economy as a whole, since the firms are the ones competing in the markets Kohler (2006). These firms should have an understanding the way firms create and sustain competitive advantage. Porter's theory of Competitive Advantage distinguishes between; primary activities Grant (1991) and support activities Porter (1985) The primary activities include; inbound logistics, operations, outbound logistics, marketing and sales, service in the core Value Chain creating directly value. The support activities are procurement, technology development, human resource management, the firm infrastructure supporting the value creation in the core Value Chain. The theory formulates the general strategies for the Value Chain of cost leadership and differentiation to reach competitive advantage Porter (1985). These cross Value Chain strategies established a principle that competitive advantage can be reached only by managing the entire Value Chain as a whole including all involved functions Salvatore (2002). Competitive advantage is necessary to satisfy customers by fulfilling customers' request (Wang, Lin, & Chu, 2011). Michael Porter considers the competitiveness as a function of four major determinants: factor conditions; demand conditions; related and supporting industries, firm strategy, structure, and rivalry. Financing in the value chain provides the competitive advantage to the business is established in different studies. The study adopted independent variables from the porter value chain.

2.2.6 Pareto's Law in Inventory Control

Pareto analysis (also referred to as the 80%/20% rule and as ABC inventory

classification analysis) is a method of classifying items, events, or activities according to their relative importance. Pareto's law has applications throughout the business, including inventory control, where it forms the basis for the ABC analysis. In evaluating inventory management Value Chain and how it leads to improvement in financial performance, the study reviewed the Pareto's Law in Inventory Control Techniques, also known as the Pareto Analysis Theory (ABC inventory classification) of Inventory management (Tanwari, Qayoom, & Shaikh, 2000; Okello & Were, 2014).

Pareto Analysis theory, when used in Value Chain management provides the material management processes foundation, which define the inventory management through classification of the inventory items into the appropriate classes (A, B, and C) in the annual cost of the entire inventory system (Tanwari, Qayoom & Shaikh, 2000). The theory uses the classical economic order quantity (EOQ) model in an effort to ensure obtaining the most economic quantity to procure inventory items by the distributor (Onawumi, Oluleye & Adebiyi, 2011), In choosing the quantity, EOQ model considers the tradeoff between ordering cost and storage cost (Schwarz, 2008; Gonzalez & Jose, 2010) when replenishing item inventories. The Pareto Analysis theory positions inventory management at the center of ensuring financial performance of the firm, through the consideration of the value for each inventory item. The theory helps to establish the financial contribution of each inventory item and would assist the firm to maintain the optimum quantity leading to the highest value (Tanwari, Qayoom, & Shaikh 2000). The study adopted the working capital management as an important function to understand its contribution to value chain financing through inventory, Debtors,

Creditors and prepared and accruals by different members in the value chain.

2.3 Empirical Literature Review

The study reviewed various global, regional and past studies in Kenya which were found beneficial and related to it. The studies reviewed were categorized as effect of Value Chain financing strategies on the financial performance, the effect of Value Chain financing practices on the financial performance, effects Inventory management Value Chain on financial performance, and Value Chain and financial performance**.**

The competitive advantage leads to explaining the role played by the vale chain on the economic environment and thereby promoting firms' ability to compete in a particular industry. The Porter's theory of Competitive Advantage when applied in Value Chain, simply advocate for the use of appropriate Value Chain strategy and having prudent practices to enhance the financial performance Porter (1990). The production of goods and services should be for those that can be produced at a lower opportunity cost Salvatore (2002). The Competitive advantage theory suggests that firm should go for policies that create high-quality products to be sold at high prices (Wang, Lin, & Chu, 2011).

There are four major goals pursued by retailers through the use of supply change management resulting into lowered operating costs, decreased procurement costs, reducing marketing costs, and lower distribution cost. All of these will help to improve financial performance and link smallholders to markets and therefore, move upward from local to provincial, national and in the extreme to international

markets (Kaufman, 2000).

According to MacGregor (2011) understanding Value Chain finance can improve the overall effectiveness of those providing and requiring agricultural financing in the value chain. It can improve the quality and efficiency of financing agricultural chains by identifying internal financing needs for strengthening the chain, tailoring financial products to fit the needs of the participants in the chain, reducing financial transaction costs through direct discount repayments and delivery of financial services and using Value Chain linkages and knowledge of the chain to mitigate risks of the chain and its partners As agribusiness modernizes with increased integration and interdependent relationships, the opportunity and the need for Value Chain finance becomes increasingly relevant. The study provided knowledge or information of value chain as a very useful independent variable which affect the availability of finance in the value chain to investigate if this is true in agricultural value chain financing in edible oil manufacturing companies in Kenya.

Insufficient finance in value chain continues to be a fundamental problem for sustainable development and poverty reduction. There are many financial constraints in the value chain and access & cost is different for different members in the value chain and thus affects their ability to compete and take advantage of Value chain. The question is how the right amount of financing can be acquired in the value Chain, particularly where financial uncertainty causes a reduction in available resources along with increased fear and scrutiny of risk. The environment for Value Chain finance is further influenced by the growing concentration of control in the agricultural sector (World Bank, 2008).

2.3.1 Financial Performance Measurements

A study by Ainapur, Singh, and Vittal (2011) established that Increased financing in Value Chain is expected to maximize revenue and minimize cost by optimizing Value Chain financing activities like increased throughput (increase the output in the process), decreased inventory levels and increased revenues, thereby improving the organization's financial performance. The study conducted by Brau, Fawcett, and Morgan (2007) established those financing in Value Chain primary and support activities in different manufacturing companies' and their positive impact on the financial performance of these companies. The study also established that not following one or more of the primary and support strategies affect the financial performance of the manufacturing companies negatively.

According to Bærentsen (2012), the financial Value Chain management influences the profitability measured by return on invested capital (ROIC) and return on equity (ROE). The supply chain finance is a financial solution that provides win-win outcomes for all the participants in the supply-side Value Chain. Particularly in the economic recession, the positive impact of SCF on corporate performance can increase corporate economic power in the marketplace and remain competitive. An empirical study by Rostami, Jalali, and Nazem (2013) showed that Value Chain management helps the firm to achieve the true return on investment. The study further established that the supply chain finance is a financial solution that provides win-win outcomes for all the participants in the supply-side Value Chain. All these studies increase in financial Performance of the firm.

2.3.2 Value Chain Finance and Financial Performance

Value chain finance can be internal or external. Financing in internal Value Chain finance takes place within the Value Chain when an input supplier provides credit to a farmer as working capital, or when a lead Company advances funds to a market intermediary. External Value Chain finance at the other hand is made possible by Value Chain relationships and mechanisms: for example, when a bank issues loan to farmers based on a contract with a trusted buyer or a warehouse receipt from a recognized storage facility. Marangu (2007) indicates that financing in agricultural Value Chain finance must be seen in the light of the larger context, not only of the Value Chain proper but also the business environment as this impacts value chains and the financial systems. A typical case of external Value Chain finance is exemplified in Kenya where small fruit and vegetable growers are able to access bank finance for agrochemicals. The exporter pays the farmers through the bank, which deducts the scheduled loan payments before releasing the net proceeds to the farmer group.

Agribusiness has been changing rapidly from one of fragmented production and marketing relationships toward integrated market systems, or chains. Driven by gains from economies of scale and globalization of the food chain, multinational agri-enterprises increasingly dominate the sector with more and more vertical and horizontal linkages or integration. The changes are also being driven by the marketplace and responsiveness to consumer interests, including stricter compliance, timeliness and quality standards (Miller & Jones, 2010).

Internal Value Chain lenders consider all financing, including the cost of providing finance, in the context of their overall productivity and profitability. They may

accept higher levels of risk and losses in their lending operation, if the profits from the resulting production provide an acceptable overall rate of return. Internal Value Chain lenders can also more easily bear the transaction costs of thorough client screening, monitoring, and contract enforcement because these activities can be incorporated into production activities, and thus, simultaneously support production and repayment goals. They differ from finance provided by a financial institution because it creates a "two-way street" for lenders and borrowers. Value Chain actors are dependent on each other for producing and marketing products as well as for lending and repayment. Lenders offer credit as a means to achieve their product markets objectives, such as ensuring a supply of commodities for trading and processing activities. Borrowers are often reliant on Value Chain lenders as input suppliers or marketing channels as well as providers of credit. On this "two way street", lenders must decide who to lend to, how to monitor the performance of their clients, and how to successfully collect their loans. But borrowers must also evaluate whether lenders will fulfill their part of the contract, such as supplying promised inputs on time, buying the product at harvest, and paying on time and at a competitive price. Value Chain analysis helps us to evaluate how these financial and product market relationships impact the availability of Value Chain finance (Catherine, Meyer, & Dai, 2007).

Miller and da Silva (2007) empirically found that Value Chain is the set of actors (private, public, and including service providers) and the sequence of value-adding activities involved in bringing a product from production to the final consumer. In agribusiness, they can be thought of as a 'farm to fork' set of processes and flows. Fries (2009) empirically found that Value Chain analysis is the assessment of the

actors and factors influencing the performance of an industry, and relationships among participants to identify the driving constraints to increased efficiency, productivity and competitiveness of an industry and how these constraints can be overcome. Fries further found that the Value Chain finance – financial services and products flowing to and/or through Value Chain participants to address and alleviate driving constraints to growth. Value Chain finance is to address the constraints and opportunities, both through the Value Chain, and to and/or because of the Value Chain.

Ngugi, Gitau and Nyoro (2007) empirically found that in Africa 'Value Chain actors are driven more by the desire to expand markets than by the profitability of the finance. The nature and motive of traders for the Value Chain finance is often different. Traders, for example, commonly use finance as a procurement facility while input suppliers often employ it as part of a sales incentive strategy. For financial institutions, it offers an approach to lower risk and cost in providing financial services. For the recipients of Value Chain finance, such as smallholder farmers or those purchasing their products, in Value Chain finance offers a mechanism to obtain financing that will not be available otherwise to members due to the lack of collateral or transaction costs of securing a loan, and it can be a way to guarantee a market for products.

2.3.3 Financing in Raw Material and Financial Performance

The basic source of raw material is a purchase through supplier's contract and

traders or import of raw material. Bogetoft and Olesen (2002) outline how contracts play a tripartite role in contract farming: they ensure coordination of actions (that the right agricultural products are produced at the right time), they ensure motivation (in other words, that the farm and firm have incentives to make co-ordinated decisions and they ensure that both of these roles are enacted at the lowest possible cost (by reducing transaction costs). For example, co-ordination allows actors to ensure that their actions are aligned with those of the other partner: farms know the quantity and quality of product to be delivered; and firms know how much processing capacity is required. Coordination is achieved through the specific details provided in the contract, outlining the requirements for both farm and firm, as well as the price points Bijman (2008) Efficiency in contracts is attained by trying to ensure that the relationship between farm and firm is as smooth as possible (avoiding hold-ups and moral hazard) without either party (but especially the firm) enjoying excessive rents (Saes, 2005).

Rehber (2007) empirically found that A contractual arrangement between farmers and other firms, whether oral or written, specifying one or more conditions of production, and one or more conditions of marketing, for an agricultural product, which is non-transferable agreement is a suppliers contract. Brau, Fawcett, and Morgan, (2007) empirically found that when a firm invests in the appropriate Value Chain strategies such as; dedicated oversight of firm-wide supply chain goal-setting, superior technology, and customer and supplier development, such firm significantly enhanced their financial performance. The findings assisted the present study to consider the development of supplier chain as one of the independent variables but considered more independent variables affecting the financial

performance which was missing in the study.

Gachora, Kibet, and Musiega (2014) empirically found that there was significant; increase in revenue generated by farmers, and the difference in effectiveness in cost reduction by on the performance of small-scale agricultural enterprise after using new Value Chain strategies. The study found that the use of the appropriate and improved Value Chain strategies was a recipe for the high financial performance of the firm. The study did not fully explain how the entire financial performance was exactly influenced. The current study took the independent variable of supporting farmers as the supplier of raw material through suppliers' agreement as a strategy and will investigate how this has affected the financial performance in value chain financing in edible oil companies in Kenya.

2.3.4 Financing in Working Capital and Financial Performance

Working capital management is considered from an operational view Hill, Kelly, and Highfield, (2010) consisting inventories, accounts receivable and accounts payable. Furthermore, the supply chain is understood as a subset of the value chain similar to the one in the study of (Al-Mudimigh, Zairi, & Ahmed, 2004). Performance rate is an indicator to measure the production speed. Performance problems occur from speed losses, small stops, idling or empty positions (Eti, Ogaji, & Probert, 2004). These losses, stoppages and idling may have different reasons related to inventory management. As an example, the line may be not running, because of lack of raw material. Lack of raw material is a problem in material flow, which causes delays and stoppages. These delays and stoppages are reasons for high production equipment idle time. These losses lead to low operating efficiency (Eti *et*

al., 2004).

Any problem, delay or stoppage in the material flow of raw material can cause higher idle time and stoppages of the production equipment, which results as lower operating efficiency. Material flow in a production system starts with inventory. There are several inventory types such as; raw material, work in process and spare part inventories. Each inventory has different impacts of system effectiveness. As an example, spare part management effects the time of maintenance activities, which also affect the availability of the equipment. Furthermore, raw material inventory management is a two-sided coin, which connects the supply chain to production, which is the first step of material flow in the production. A successful raw material inventory management has several benefits in both sides but as a common, it provides optimization for the flow of material and traces the raw material requirement continuously (Rai & Singh, 2011). Customers may have their own needs for having payment time as well. (Burkart & Ellingsen, 2004) note that companies simultaneously give and take trade credit.

According to Alvarado and Kotzab (2001), the inventory management Value Chain financings affected the financial performance but the findings did not provide in-depth fishing of the inventory management on the financial performance. The studies did not give detailed information on these effects, which what the present study has achieved.

Mulure (2013) found that the inventory turnover was influenced by planning, sourcing, making and deliverance of goods and affects the financial performance.

The study indicated that Value Chain financing leads to positive results in sales growth, cash flow, gross margin, operating margin, net margin, return on assets and return on investments. Another study by Okello and Were (2014) found that physical movement of inventory, product development process, inventory management, lead time, technology and innovation have a significant influence on the performance of food manufacturing companies in Kenya. The study identifies; product development for the food companies, Inventory Management, and Lead Time ensured financial performance through; eradication of unnecessary costs like; demurrage, lost time, and the cost of meeting customers' demands in a timely manner.

2.3.5 Financing in Primary Activities and Financial Performance

Value Chain Finance strategies and models must be flexible. VCF is a comprehensive and holistic approach; that involves systemic analysis of an entire Value Chain and the relationship amongst its actors. The actual tools and applications are dependent upon the particular Value Chain and business model and are preliminarily identified during the Value Chain assessment. These change when conditions change and must be able to be revised according to the interests and capacity of the partners selected and during the course of implementation of the Programme (Miller, 2011).

Wagner, Grosse, Ruyken, and Erhun, (2012) empirically established the relationship between the value chain strategies and their financial impact which was continuing shaping up in the firm. The study investigated this relationship between strategic consistencies of Value Chain taking into account the products' supply, demand

uncertainty, chain design, and the financial performance of the firm. The study found that when the most appropriate Value Chain strategy was adopted, the firm experience higher financial performance in term of higher Return on Investment (ROI) of the firm and vice versa. The current study took (ROI) as the dependent variable and product supply-demand as an independent variable to investigate the effect of supporting the producer driven value chain to manage product supply and demand among the participants affect the financial performance in value chain financing in edible oil companies in Kenya.

Ellram, Tate, and Billington, (2007) used independent variables like information flow, capacity and skills management, demand management, customer relationship management, supplier relationship management, service delivery management and cash flow. The study also found that effective Value Chain financing practices improved firm's market performance and financial performance. These findings were also established using the same indicators in the studies by (Chong, Chan, Ooi, & Sim, 2010).

2.3.6 Financing in Support Activities and Financial Performance

Managers should concentrate on the Value Chain practices which have a stable effect on the performance of the firm. This occurs when the resources and capabilities are directed towards sustaining Value Chain practices (Baltacioglu *et al.,* 2007). Customer demand management assists in managing and balancing customer demand by keeping updated demand information. Customer relationship management helps in maintaining and developing long-term customer relationships by developing continuously quality information and understanding what customers

want (Ellram, Tate & Billington, 2007).

The factors of VCF significantly ensuring financial performance include leadership, IT adoption, training, and customer orientation (Khang, Arumugam, Chong, & Chan, 2010). The Value Chain financing can either be debt financing from external financial institutions or financing from internal accruals within the Value Chain. (Baltacioglu *et al*., 2007) also breaks down Debt financing into long-term borrowing, short-term borrowing, where debt financing opportunities of a company are mainly influenced by the company's credit rating, the securities, and the willingness of the lender. Studies have also revealed that Value Chain financing practices significantly affects the financial performance of the companies and improves the firm's market performance (Li, Ragunathan, & Rao, (2006); Baltacioglu *et al*., (2007).

Li *et al*., (2005) evaluated the effects of Value Chain financing practices on financial performance where it used the indicators; internal operation practices; information flow, information quality, postponement strategy, customer relationship management, and strategic supplier partnership. The study established that Value Chain financing practices significantly affects financial performance. The findings were echoed by (Baltacioglu *et al*., 2007).

According to Cho, Lee, Ahn, and Hwang, (2012) innovation and efficiency of Value Chain financing practices significantly affected organizational performance. The same was established in the (Kerlinger & Lee, 2000). The study by Kumar *et al.,* (2011) indicated that successful Value Chain analysis for different agricultural

commodities affected the firm performance, socially, economically and environmentally. The empirical study by Yap and Tan, (2012) determined that the Value Chain practices significantly influence organizational financial performance. The study by Mensah, Diyuoh, and Oppong, (2014) also concluded that Value Chain practices significantly influence business performance and sales performance. According to Mensah *et al*., (2014) Value Chain financing practices have effects on financial performance but failed to include other very useful indicators such as ABC analysis and optimum level of Inventory management. The current study took independent variables from the above study and investigate the effect of support activities such Firm infrastructure, Procurement of goods and service, Information flow, Technology development, Competition watch on the financial performance of edible oil manufacturing companies in Kenya.

Another study by Khang *et al.,* (2010) found that Value Chain financing practices factors such as; leadership, IT adoption, training, and customer orientation significantly impacted the firms' performance. Accordingly, an empirical review by Sundram, Ibrahim, and Govindaraju, (2011) found that Value Chain development using independent variables of information flow, postponement strategy, customer relationship management, strategic supplier partnership, information quality, agreed vision and goal, and risk and award sharing affected the firm performance. An empirical study by Ainapur, Singh, and Vittal, (2011) found that that optimizing Value Chain financing activities; increases throughput, decreases inventory levels and increases revenues, thereby improving the organization's financial performance. The study showed that the Value Chain financing maximize revenue and minimize cost.

2.3.7 Moderating Effect of Firm Characteristics and Financial Performance

Empirical literature examines how financial characteristics, such as leverage and size have an influence on the firms' financial performance and growth. These characteristics can be easily measured by using available data on edible oil manufacturing companies. Firm size is one of the most influential characteristics in organizational studies. Firm size has also been shown to be related to industry- sunk costs, concentration, vertical integration and overall industry profitability (Dean, Brandes, and Dharwadkar, (1998). Firm leverage is the degree to which a company uses fixed-income securities, such as debt and preferred equity. With a high degree of financial leverage come high-interest payments. Dasgupta, Titman, and Sheridan, (1998), suggest that leverage opens up opportunities for rivalry predation in concentrated product markets, thus conditioning the performance effect of leverage on the degree of competition in the industry. Kamau (2010) in his study on the relationship between capital structure and financial performance of insurance companies in Kenya found out that there was a positive but weak relationship between capital structure and financial performance. Octavia and Brown (2008). has shown empirically that company size is positively related to the financial performance of the USA life insurance companies.

2.4 Overview of Literature and Research Gaps

The findings in the reviewed literature show that the companies which are investing in the contract farming, core working capital, primary and support activities in value chain strategies provide the competitive advantage and contribute to the financial performance of the companies in the edible oil manufacturing companies in Kenya.

Table 2.1: Summary of Literature Review:-

Research study	Context and Focus	Key Findings	Research Gaps	Focus of this study
James C. Braun, 2007	US Managers of small firm's An empirical analysis of the financial impact of supply chain management on small firms	large firms use SCM initiatives significantly more than small firms and SCM leads to significant improvements in asset utilization, revenue generation	The study explained the effect of SCM on small and large organization structure and ignored other strategies.	Current study considered working capital, primary and support strategies as independent variables
Tanwari, 2000	Stores in UK ABC analysis as an inventory control technique	Establish the financial contribution of each inventory item and would assist the firm to maintain the optimum quantity leading to the highest value	Inventory management at the center of ensuring financial performance of the firm	But not considered the other strategies effecting the financial performance which this study has considered
Wagner, 2012	Manufacturing firms in the USA, the UK, Germany, Austria, Switzerland, and France. The Link between Supply Chain Fit and Financial Performance of the Firm	Although the positive relationship between SCM and a company's performance seems to be logical and straightforward	SCM was the focus of the study but did not provide sufficient information on what else would be useful to explain value chain financing as a determinants of firm financial performance.	The study considered other independent variables which affects the financial performance of edible oil companies in Kenya.
Kaufman 2000	U.S.A Grocery Stores Food Retailing Consolidation: implications for Supply Chain Management Practices	SCM consolidating firms to reap cost saving in store operations procurement of retail goods, marketing activities, and product distribution	This study considered SCM and consolidation of inbound and outbound logistic improves the financial performance.	Study determined the adoption of SCM suppliers contracts in edible oil industry in Kenya and include other variables like working capital , primary activities, support activities and inventory management as other independent variables

Research study	Context and Focus	Key Findings	Research Gaps	Focus of this study
Ugulumua and Inanga, 2013	Tanzania's Sunflower Farmers Small-Scale Sunflower Farmers: Upgrading the Value Chain	Offers a step-by-step practical guide to intervention design for achieving competitiveness that benefits the poor First industries are selected with potential for competitiveness and achieve an equitable distribution of benefits, and an action plan is devised to achieve this strategy.	It was not clear to what level this occurred, in fact the effects of financial performance was hidden in productivity.	Study therefore exposed the effects of support activities on financial performance of edible oil companies in Kenya.
Gachora, 2014	Kenya on SCM for cost reduction Supply Chain Cost Reduction Impact on Performance of Small Scale Agricultural Enterprise	Using new value chain strategies Significantly increase in revenue generated by farmers, and difference in effectiveness in cost reduction by on the performance of small-scale agricultural enterprise after	The study did not fully explain how the entire financial performance was exactly influenced.	Study determined the adoption of SCM suppliers contracts in edible oil industry in Kenya and include other variables like working capital , primary activities, support activities and inventory management as other independent variables

Source: Researcher, 2015

2.5 Conceptual Framework

The conceptual framework for this study provides a brief overview of inter-linkages between research variables identified from the literature reviewed in the area of value chain financing by manufacturing companies. The study identified six variables which are captured in the conceptual model on Figure 2 below. The Financial performance is key dependent variable for the study and Value Chain financing a concept formed by combining 4 independent variables. Conceptual frame work also includes moderating variable and its linkage with dependent and

independent variables is shown in the diagram.

Adequate financing in the value chain by its members at different stages of the value chain can help in improving the capacity utilization by edible oil manufacturing companies. In the first stage availability of raw material by extending the value chain to farmers for production of required raw material by providing inputs and technical support and ensuring the supply of raw material required for capacity utilization. Value Chain financial decision in working capital requirement, primary activities such as inbound logistic, outbound logistic, operations, Marketing and servicing together with financing in support activities such as firm infrastructure cost, Human resource management cost, Technology development cost and procurement cost. Sufficient financing creates competitive advantage in the manufacturing industry and improve the financial performance of companies. The conceptual model is developed to reflect the concept of value chain financing with different dimensions and indicators as the independent variables regressed with financial performance as a dependent variable in the edible oil companies in Kenya. Conceptual frame work also indicates the firm characteristics as moderating the relationship of the independent variables and dependent variable.

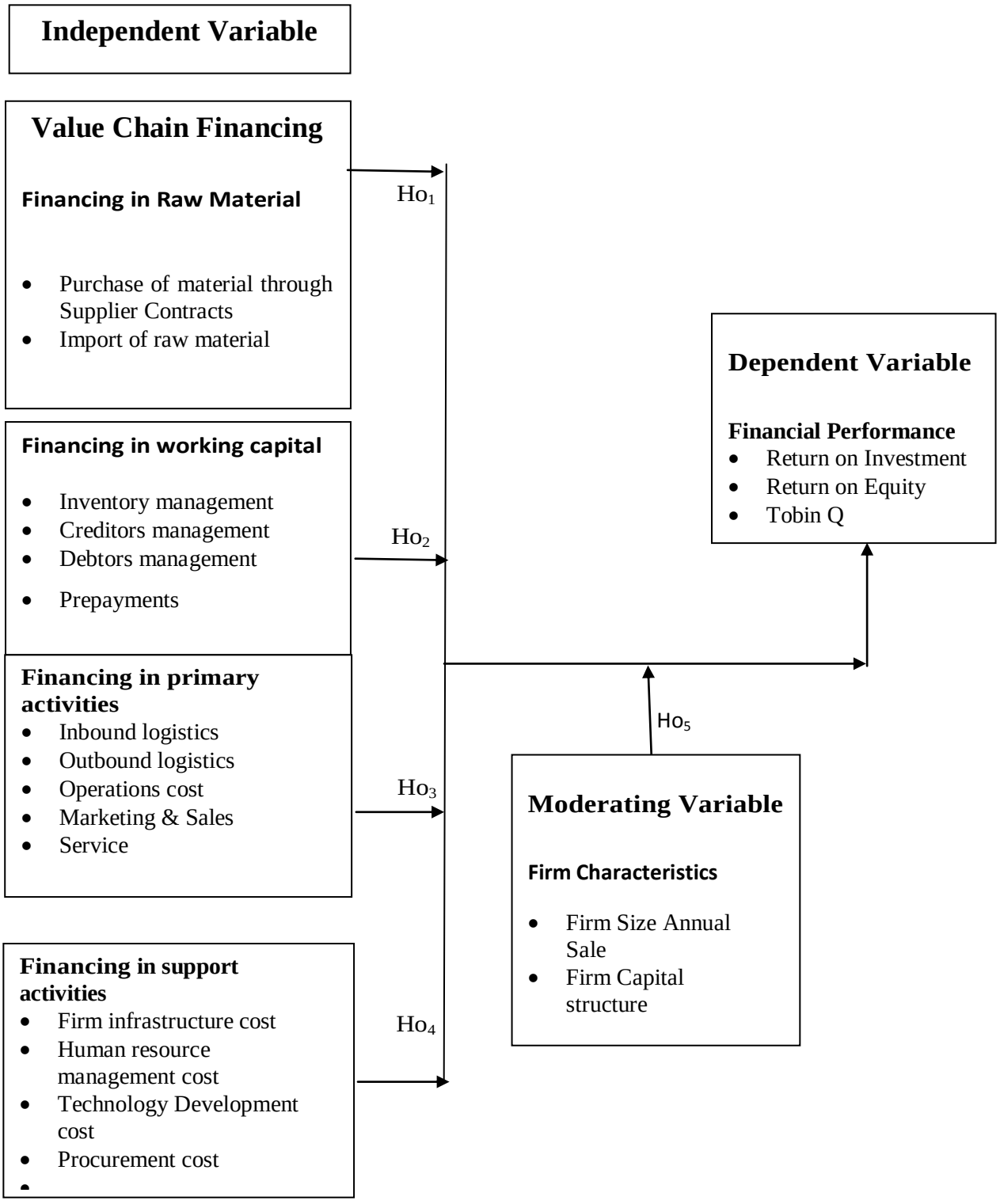

Figure 2.1 : Conceptual Framework

Source: Researcher, 2015

Conceptual framework explains the link between the variables of the study and how they affect each other in the study. Value chain financing is a concept explaining the various dimensions in which finance is required in the value chain. Financing is required at 4 stages in the value chain (1) Raw Material measured by raw material purchased to cost of goods sold (2) Working Capital measured by Current ratio (3) Primary activities measured by the ratio of financing in inbound logistic, outbound logistic, operations , Marketing and sales and servicing to Total Investment (4) Support activities measured by ratio of financing in Firm infrastructure, financing in human resources, Technology development and procurement cost to Cost of goods sold (CGS). Each stage is considered as one independent variable. In each stage finance is required by one or the other member in the value chain. In order to understand each stage, can be divided into variables which can be measured through the data available in the manufacturing industry. The study also has a dependent variable as financial performance measured by the ratio of return on investment, Return on equity and Tobin Q. Conceptual framework indicates the functional relationship between the value chain financing independent variable and the financial performance as dependent variable. Conceptual framework also indicates how the firm characteristics moderate the relationship between the value chain financing an independent variable and the financial performance as the dependent variable.

Conceptual framework also indicates the linking of the independent variables with the null hypotheses Ho_1 to Ho4for each independent variable. The Hypotheses were tested at 5% level of significance and for independent variables do not significantly affect the financial performance of edible oil manufacturing companies. Ho5

Moderating variable, Firm Characteristics does not significantly moderate the relationship between the value chain financing and financial performance of edible oil manufacturing firms in Kenya. Conceptual framework helped in developing the models for the study explaining the functional relationship between the study variables and the moderating effect of moderating variable on the financial performance of the organization.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides a description of the research process and the methodologies adopted in the study. This chapter covers the research philosophy, research design, research approach, research strategy, study population, sampling technique, data collection methods, data analysis and method used in the completion of research. The section also provides an operationalization of the research variables used in the study.

3.2 Research Philosophy

A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analysed and used. The term epistemology (what is known to be true) as opposed to doxology (what is believed to be true) encompasses the various philosophies of research approach. The purpose of science, then, is the process of transforming things believed into things known: doxa to episteme. Two major research philosophies have been identified in the Western tradition of science, namely positivist (sometimes called scientific) and interpretivist (also known as antipositivist) (Galliers, 1991).

3.2.1 Positivism

Positivists believe that reality is stable and can be observed and described from an objective viewpoint (Levin, 1988), i.e. without interfering with the phenomena being studied. They contend that phenomena should be isolated and that observations should be repeatable. This often involves manipulation of reality with variations in only a single independent variable so as to identify regularities in, and

to form relationships between, some of the constituent elements of the social world. 3-2 Predictions can be made on the basis of the previously observed and explained realities and their inter-relationships. "Positivism has a long and rich historical tradition. It is so embedded in our society that knowledge claims not grounded in positivist thought are simply dismissed as ascientific and therefore invalid" (Hirschheim, 1985, p.33). This view is indirectly supported by Alavi and Carlson (1992) who, in a review of 902 IS research articles, found that all the empirical studies were positivist in approach. Positivism has also had a particularly successful association with the physical and natural sciences. There has, however, been much debate on the issue of whether or not this positivist paradigm is entirely suitable for the social sciences (Hirschheim, 1985), many authors calling for a more pluralistic attitude towards IS research methodologies (see e.g. Kuhn, 1970; Bjørn-Andersen, 1985; Remenyi and Williams, 1996). While we shall not elaborate on this debate further, it is germane to our study since it is also the case that Information Systems, dealing as it does with the interaction of people and technology, is considered to be of the social sciences rather than the physical sciences (Hirschheim, 1985). Indeed, some of the difficulties experienced in IS research, such as the apparent inconsistency of results, may be attributed to the inappropriateness of the positivist paradigm for the domain. Likewise, some variables or constituent parts of reality might have been previously thought unmeasurable under the positivist paradigm - and hence went unresearched (after Galliers, 1991).

The positivist approach was adopted for completing the research using quantitative measurements and data collection by survey of edible oil companies in Kenya and use’s statistical methods of data analysis besides conducting hypothesis testing. The

philosophy focuses on facts amongst variables under investigation by testing hypotheses which are eventually verified or rejected. Positivism is also known as objective and scientific approach whereby conceptual and theoretical structures are developed then tested through empirical investigation (Saunders *et al.,* 2007).

3.2.2 Interpretivism

Interpretivists contend that only through the subjective interpretation of and intervention in reality can that reality be fully understood. The study of phenomena in their natural environment is key to the interpretivist philosophy, together with the acknowledgement that scientists cannot avoid affecting those phenomena they study. They admit that there may be many interpretations of reality, but maintain that these interpretations are in themselves a part of the scientific knowledge they are pursuing. Interpretivism has a tradition that is no less glorious than that of positivism, nor is it shorter.

3.2.3 Selection of Research Methodology for the study

Study adopted Positivist research approach as the study is quantitative and is associated with testing of hypothesis. Positivists hold that facts do exist and can actually be measured. Positivism also allows for the use of survey approach or censes approach hence covering a wider population area (Mukherji & Albon, 2010).

3.3 Research Design

This study adopted descriptive research design. Within descriptive research we did cross sectional study with retrospective panels design in which study collected information about the past and present of edible oil companies in Kenya, and treated

information from different times as if it had been collected at those times (Gravlee, Kennedy, Godoy & Leonard, 2009). The research design is a configuration of the research and how the research is structured. It is a logical thread which holds together all the crucial aspects of the research so that they can derive meaning (Laurel, 2011; Kothari, 2008).

Descriptive research is an innovative tool as it presents an opportunity to fuse both quantitative and qualitative data as a means to reconstruct the "what is" of a topic. The study has used descriptive research to describe edible oil companies in Kenya in an accurate way. The study has used cross-sectional data from 2008 to 2014. The descriptive design is appropriate when the purpose is to describe characteristics of certain groups and the study of variables occurs at a single point of time (Churchill & Lacobucci, 2005). The descriptive design facilitates description of trends, attitudes or opinions of a large group in terms of asking questions of who, what, when, where and how of the topic (Burns & Bush, 2010).

3.4 The Empirical Model

After a careful review of the theoretical and empirical studies the study has developed an empirical model which is feasible and applicable in analyzing the effect of Value Chain financing on the financial performance.

To find the appropriate regression model, it is common to begin with a benchmark (or base) specification which rely on theory and then sequentially add or drop variables based on adjusted R2 and t-statistics. To frame the empirical analysis, the subsequent regression analysis starts from the following basic linear equation:

$$\Pi_{it} = \alpha + \sum_{j=1}^{J} \beta_j X_{it}^{j} + \sum_{m=1}^{M} \beta_m X_t^{m} + \varepsilon_{it}$$

Where Π_{it} is the profitability of firm i, at time t, with i=1, . . .,N, t=1, . . .,T; α is the regression constant, X_{it}^{j} is a vector of firm-specific characteristics (j) of firm i during the period t which vary across time and firms; X_t^{m} is a vector of moderating variables (m) and $\varepsilon_{it} = \upsilon_i + \mu_{it}$ is the disturbance, with υ_i the unobserved firm-specific effect/heterogeneity across firms, which could be very large given the differences in corporate governance and μ_{it} the idiosyncratic error. This is a one-way error component regression model, where $\upsilon_i \sim IIN(0, \sigma_\upsilon^2)$ and independent of $\mu_{it} \sim IIN(0, \sigma_\mu^2)$. Based on the general form the **following regression functions are modeled for the purpose of the study:**

3.4.1 Empirical Model Used for Testing Ivs With Financial Performance

In order to combine cross-sectional with time series data and formulate the model, study used pooling methods for our panel data. The models for panel data are powerful research instruments, which give the researcher the ability to take into account any kind of effect that the cross-sectional data may have, and finally to estimate the appropriate empirical model. In using panel data, it is possible to include time effects as well as to control for individual heterogeneity, which is captured by firm specific fixed or random effects components, that leads to biased results when neglected in cross section or time series estimations (Baltagi, 1995). To estimate the results of the relationship between the profitability of Edible oil manufacturing Companies in Kenya and its determinants, the study developed the following static panel model:

$y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + u_{it}$

Where y_{it}=is the dependent variable **Financial Performance** where Y represents the profitability measure (ROI, ROE,TQ one by one and composite as all 3 together).

β_0 = is the intercept

β_1 to β_5 = is regression coefficients for X_{1it} to X_{4it}

X_{1it}= the predictor variable- **financing in Raw Material**

X_{2it}= the predictor variable- **financing in working capital**

X_{3it}= the predictor variable- **financing in primary activities**

X_{4it}= the predictor variable- **financing in support activities**

U_{it}= the error term

In this model, financial performance dependent variable (ROI, ROE,TQ one by one and composite as all 3 together) and all the independent variables together as Value chain financing of the study from X_{1it} to X_{4it}. The study performed regression analysis by regressing independent variable on the dependent variable and the functional relationship between the independent variable and dependent variable are analyzed. An empirical study by Propper and VanReenen (2010) also used similar model to study the effect of regulation of nursing pay on hospital quality Data: 209 NHS Hospitals in the UK 1997-2005.

3.4.2 Empirical Model Used for Testing Ivs with Mvs and Financial Performance

Modeling the Edible oil manufacturing Companies according to the variables along with the moderating variable, firm characteristics, to establish if it moderates the relationship and affect the financial performance. The following model was

developed for testing the Ivs and Mvs and financial performance:

$$y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{Mit} + ((\beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it)*} \beta_5 X_{Mit} + u_{it}$$

Where yit=is the dependent variable **Financial Performance where** Y represents the profitability measure. (ROI, ROE,TQ one by one and composite as all 3 together)

β_0 = is the intercept β_1 toβ_5 = is regression coefficients for X1it to X5it

X_1it= the predictor variable- **Financing in Raw Material**

X_2it= the predictor variable- **Financing in working capital**

X_3it= the predictor variable- **Financing in primary activities**

X_4it= the predictor variable- **Financing in support activities**

X_5it= the Moderating variable - **Firm Characteristics**

U_{it}= the error term

3.5 Operationalization and Measurement of Variables

The explanatory variables included in the empirical model are described and categorized as financing in raw material & operations, financing in working capital, financing in primary activities, financing in support activities, firm characteristics and financial performance. They are operationalized and hypothesized to investigate the effects on financial performance of edible oil manufacturing Companies.

Table 3.1: Operationalization and measurement of variables

Category	Variable	Operationalization	Measurement level /	Predicted effect of Independent Variable
Independent Variable	Financing in raw material	Purchase of material through Supplier Contracts	Ratio of Raw material purchased locally through suppliers contract to cost of goods sold in a year	Positive
		Import of Raw Material (IRM)	Ratio of Raw material imported through suppliers contract to cost of goods sold in a year	Positive
	Financing in working capital	Inventory management (IM)	Ratio of Inventory to Current assets	Positive
		Creditors management (CM)	Ratio of Creditors to current liability	Positive
		Debtors Management (DM)	Ratio of Debtors to Current assets	Positive
		Prepayments	Ratio of prepayments to Current assets	Positive
	Financing in primary activities	Inbound logistics (IL)	Ratio of Financing by companies in developing facility for raw material storage with warehouses and tie-ups logistic companies for collection to their stores in each year to total investment	Positive
		Outbound logistics (OL)	Ratio of Financing by companies in developing facility for finished product storage and tie-ups with logistic companies for reaching to the	Positive

Category	Variable	Operationalization	Measurement level /	Predicted effect of Independent Variable
			customer in each year to total investment.	
		Operations cost	Ratio of Financing by companies in operations cost in each year to total investment.	Positive
		Marketing & sales	Ratio of Financing by companies in marketing & sales in each year to total investment.	Positive
		Service	Ratio of Financing by companies in service in each year to total investment.	Positive
	Financing in support activities	Firm infrastructure cost	Ratio of Firm infrastructure cost to cost of goods sold	Positive
		Human resource management cost	Ratio of Human resource management cost to cost of goods sold	Positive
		Technology Development cost	Ratio of Technology Development cost to cost of goods sold	Positive
		Procurement cost	Ratio of Procurement cost to cost of goods sold	Positive
Moderating / Control Variable	Firm Characteristics	Firm Size Annual Sale	Logarithm of sales	Negative
		Firm Capital structure	Debt equity Ratio	Negative
Dependent Variable	Financial Performance	Return on Investment (ROI)	Ratio of Earnings Before Tax And Interest/Total Assets	None

Category	Variable	Operationalization	Measurement level /	Predicted effect of Independent Variable
		Return on Equity (ROE)	Ratio of Earnings Before Tax And Interest / Equity	None
		Tobin Q	Ratio of Total assets value to replacement value of assets	None

Source: Researcher, 2015

3.6 Target Population

The population to which study results will be generalized is described as target population (Mugenda & Mugenda, 2003). It is a universal set of the study of all members of the real or hypothetical set of people, events or objects to which an investigator wishes to generalize the result (Borg & Crall, 1959). The study targeted all 15 edible oil manufacturing companies in Kenya in the year 2014 KAM, (2014). These companies are engaged in the production of 95% edible oil produced in Kenya as at 31-12-2014. For the List of Edible Oil Manufacturing Companies in Kenya see Appendix A.3.

3.6.1 Unit of Analysis

Units of analysis are essentially the things which are examined in order to create summary descriptions of them and explain differences among them. Unit of analysis for the study were all edible oil manufacturing companies in Kenya as on 31-12-2014.

3.6.2 Sampling Technique and Sample Size

The study covered all the 15 edible oil manufacturing companies in Kenya as at 31-12-2014. The time period covered was from 2008 to 2014. Time period was selected from the launching of Kenya vision 2030 in 2008. While collecting data, three companies were dropped because they changed their business within the sampling period and dropped due to missing data. Final sample size was 12 edible oil manufacturing companies.

3.7 Data Collection Procedure

This study collected both primary and secondary data from edible oil manufacturing companies. Secondary data for the variables used in the study was acquired from financial statements such as balance sheets, income statements and fund flow statement of the sampled manufacturing companies and summarized in using document review guide. The study also collected primary data using interview schedule from executives of the companies in edible oil manufacturing sector in Kenya. Data was collected for the period of 2008 to 2014 and 2007 for the purpose of financial ratios of 2008. The study aimed at investigating the effects of financing in raw material, working capital management, primary activities and support activities on companies' financial performance. The collected data helped in determining whether, and to what degree a functional relationship exists between two or more quantifiable variables. The degree of relationship is expressed as a correlation coefficient.

3.8 Data Management Analysis and Diagnostic Tests

Study computed composite index's using principle component analysis and conducted data analysis using descriptive statistical analysis, correlation analysis, quantitative analysis and panel data regression model. The study also conducted Hausman test for determining the type of model, Pre-estimation tests using unit root for stationarity test and multicollinearity test. The study also conducted post-estimation tests like autocorrelation of residuals test, heteroskedasticiy of residuals test and normality test.

3.8.1 Composite Index's

Study computed the composite index for dependent and independent variables using the Principal components analysis (PCA). It is a method for transforming a set of n correlated variables, $X_1, X_2, \ldots, X_n$, to m uncorrelated variables (principal components), $Y_1, Y_2, \ldots, Y_m$, where $m \leq n$, and the variances of the Ys are in descending order with the sum of these m variances equal to the "salient" or non-random variance of the Xs. PCA is mainly used for data reduction and interpretation.

The principal components are linear functions of the original variables of the form

$$Y_j = e_{1j}X_1 + e_{2j}X_2 + \cdots + e_{nj}X_n \qquad (1) \text{ with}$$

$$e_{1j}^2 + e_{2j}^2 + \cdots + e_{nj}^2 = 1 \qquad (2)$$

for $j = 1, \ldots, n$. These can be understood best if viewed as generated in a sequential manner. The first principal component is the linear function of the form (1) subject to (2) for $j = 1$, where the variance of Y_1has the maximum variance over all

possible linear functions of the original variables subject to (2). This variance is called λ_1. The second principal component, Y_2, is the linear function, uncorrelated with Y_1 with the next largest variance $\lambda_2 \leq \lambda_1$. In a similar fashion, each principal component is uncorrelated with all others and has the largest possible variance $\lambda_j$subject to

$$\lambda_1 \geq \cdots \geq \lambda_n \qquad (3)$$

In practice, usually there are strict inequalities in (3). Thus, principal components are linear transformations of the original variables, uncorrelated with each other and with decreasing variance. One can perform the principal components analysis on the X_s in their original scale, i.e. on the raw data. However, it is usually performed on standardized variables, i.e. variables derived from the original variables by subtracting the mean and dividing by the standard deviation. The principal components derived from the raw data will be different from those obtained on the standardized data. If performed on the original variables, the variables with the largest variances can dominate the results. When the analysis is performed on standardized data, all variables are on equal footing.

The method of principal components requires no assumptions about the data. Usually, the sample size is large. It can be applied to a random sample from some population. However, in practice this is often not the case, and frequently there is interest solely in understanding the sample data themselves. In the study each company financial performance dependent variables can be measured by three measurements; Return on Investment (ROI), Return on Equity (ROE), and Tobin Q. All variable are measured as ratios. The study applied the concept of PCA to

generate a single composite index for financial performance, and use the composite index of financial performance for data analysis.

3.8.2 Data Analysis

Data was analyzed using descriptive statistics thus mean and standard deviation graphs of companies financial performance, heterogeneity in financial performance across years, heterogeneity in financial performance among companies, financial performance across years for all Companies. The study also analyzed qualitative information collected for edible oil manufacturing companies in Kenya.

The study also conducted correlation analysis between all the composites of independent variables and composite of dependent variable obtaining P value and correlation with financial performance. The Pearson's simple correlation coefficient (r) was used to establish the statistical measure of the strength of a linear relationship between two variables. Its value ranges from -1 to +1. Cross tabulation has also been used to compare the relationship between dependent and independent variables. The coefficient of determination (R^2) was calculated as the square of the correlation coefficient (R) between the sample and predicted data. It is a measure of the proportion of variance of a predicted outcome and its value is in between 0 to 1. The coefficient of determination is a key output of regression analysis. It is interpreted as the proportion of the variance in the dependent variable that is predictable from the independent variable. The study hypotheses have also been formulated and tested to confirm significance.

The study established a rate of change in value chain financing an independent variable on the dependent variable financial performance. These estimates are used to construct a predictive model (equation) that relates the magnitude of an independent variable. The study used Static panel data regression model. It has two different motivations. First, the desire of exploiting panel data for controlling unobserved time-invariant heterogeneity in cross-sectional models and second, the use of panel data to disentangle components of variance and estimating transition probabilities. More generally, the study seeks to bring out the dynamics of cross-sectional populations. These motivations can be loosely associated with two strands of the panel data literature labeled fixed effects and random effects models. The study also conducted the following diagnostic tests to ensure that our data is suitable for doing analysis using the panel data regression model.

3.9 Diagnostic Tests

The study also conducted Diagnostic tests to ensure that result of the study can be generalized and used in the edible oil industry.

3.9.1 Hausman Test

The study applied the Hausman test to select fixed effect method (FEM) or random effects methods (REM) in our panel data regression model for data analysis (Green, 2008). This test tells us how significantly parameter estimates differ between the two approaches. It basically tests whether the unique errors (ui) are correlated with the regressors, the null hypothesis is they are not correlated. A fixed effects model was conducted and the estimates were saved, then ran a random model and saved the estimates, then performed the Hausman test. This test is neither a necessary nor a sufficient metric for deciding between fixed and random effects. What matters is

the size of the dataset (both number of units and number of observations per unit), the level of correlation between the covariate and unit effects, and the extent of within-unit variation in the independent variable relative to the dependent variable (Gelman, 2005).

3.9.2 Unit Root for Stationarity Test

The study also conducted unit root tests using STATA software. A unit root test is used to confirm whether all-time series variable are non-stationary using an autoregressive model. In this test null hypothesis was that all the panels contain a unit root. The analysis was done after all the tests were found satisfactory. Checking the stationarity is also important for forecasting. It can tell us about what kind of process need to be built into the models in order to make accurate predictions (Diebold & Kilian, 2000).

3.9.3 Multicollinearity Test

The study also conducted multicollinearity test to ensure error term has a constant variance in the model. Each independent variable of the model was regressed on the remaining independent variables and computed R^2's. The variance inflation factor (VIF) for the test of multicollinearity measures the relationship of all explanatory variables concurrently. It explains how much the variance of a coefficient is inflated due to linear dependence with other explanatory variables. When the VIF is lesser, multicollinearity between explanatory variables is less and the usual rule of thumb is that any variables with a VIF greater than 10 is probably of concern (Singh, 2012).

3.9.4 Autocorrelation Test

The study conducted the Autocorrelation test to detect weather our sample data has the problem of autocorrelation. The regression model is run without any pre-test of autocorrelation and check the value of Durbin-Watson. If it is much far from 2, then there is problem of Autocorrelation. If the problem of Auto-correlation is detected regression must move towards the Dynamic panel data regression model.

3.9.5 Heteroskedasticity Test

The study conducted Heteroskedasticiy test to ensure error term has a constant variance. The study selected FEM based on Hausman test result and also performed hetroskedasticity test keeping the null hypothesis as no homoskedasticity (or constant variance) in the model. The standard error component panel data model assumes that the disturbances have homoscedastic variances and constant serial correlation through the random individual effect (Hsiao, 2003; Baltagi, 2005). Hetroskedasticity is not a problem for the panel data applications. For example, the cross-sectional units may be varying in size and as a result may exhibit heteroskedasticity.

3.9.6 Normality Test

The study conducted test of the normality assumption. A variety of tests of normality have been developed by various statisticians Jarque–Bera goodness-of-fit test to ensure sample data have the skewness and kurtosis matching a normal distribution was used to test Normality.

3.10 Ethical Considerations

To avoid plagiarism all major works and statements in the study were dully cited with source clearly indicated, within text and properly referenced. The work was further run through the plagiarism checker (turnitin.com) to detect plagiarism. The result of this test was 15 % showing that the work is free from plagiarism (above 25% is not admissible). The respondents were fully informed about the purpose of research and how the data was going to be analyzed. All respondents were assured that the information provided through the study will not be made available to anyone who did not participated in the study or any other competitor of the organization. It was also assured that the respondents on their request not to identify themselves throughout the study to avoid the fear of being victimized for providing the required data and assured that no financial data except the ratios collected for the data analysis to be disclosed in any part of the report which can be used for other purposes.

CHAPTER FOUR: RESEARCH FINDING

4.1 Introduction

This chapter presents the results, interprets the findings and discusses issues arising from the interpretation and their resultant implications while relating them to the findings of other related studies. The data for the study was collected and then processed in response to the study problems posed in chapter one. The two fundamental goals that drove the collection and analysis of the datawere development a knowledge base around the value chain financing, in edible oil industry in Kenya, and determination of the level of consistency between the current perception and utilization are basic principles of finance in Value chain financing. These objectives were accomplished. The findings presented in this chapter demonstrate the potential for merging theory and practice.

4.2 Response Rate

The study identified fifteen edible oil manufacturing companies in Kenya for data collection. During data collection it was found that three companies had stopped the business of manufacturing of edible oil in Kenya and were now trading on goods for the last three to four years. These three companies were subsequently dropped and data collected from only twelve Edible oil manufacturing companies for the last 7 years between 2008 and 2014. This gave a total of 84 observations for each variable in the study instead of 105 observations earlier though for 15 companies. The response rate was 80%. As the objective of research was for the benefit of the industry and information was collected from the annual financial statements and expressing in terms

of ratio it was easy to collect data from the field without harming any business interest of any company.

4.3 Descriptive Analysis

This section presents descriptive analysis of the study variables. The research data is presented using measures of central tendency and cross tabulations to appreciate the nature of the relationships between the study variables.

4.3.1 Measurement of Financial Performance

Study has three measurements for financial performance return on investment, return on equity Tobin Q measuring the financial performance of the companies. Principal components analysis (PCA) method was used to reduce the number of variables of interest into a smaller set of components. PCA analyzes all the variance in the variables and reorganizes them into a new set of components equal to the number of original variables. A PCA analysis with covariance was conducted and extracted a component P1 as composite index for each variable for each company for the years covered under the study. The result of PCA with covariance for financial performance is summarised in Appendix A7. The PCA-based index suggests a simple and robust measure, whose values and groupings can only be moderately affected by changes in the socio-economic landscapes. For example PI for company 1 for the year 2008 was computed as;

Dependent variable financial performance for company 1 for the year 2008 = 0.2923*RoI + 0.9523*RoE + 0.087*TQ. Where ROI is return on investment , ROE is

return on equity and TQ is Tobin's Q value for company 1 for the year 2008. Composite index of dependent variables was generated using the principle component analysis (PCA) for the twelve edible oil companies over the period from 2008 to 2014 for 7 years. Results of Composite index are summarized in Annexure A4.

The study also computed the means and standard deviation of the financial performance measured through ROI, ROE and tobin Q and results were summarized below in table: 4.1.

Table 4.1: Statistics for Financial Performance

Variable	Mean	Standard Deviation
Financial Performance	0.6181	0.2289
Return on Investment	0.2837	0.1231
Return on Equity	0.4821	0.2227
Tobin Q	1.0923	0.0399
Financial Performance Composite Index between the companies	0.6181	0.1765

Source: Researcher (2015)

Statistics of composite index for financial performance for all the edible oil companies has a mean of .6181 and standard deviation of .2289 indicating that there is a big variation of profitability among the edible oil companies in Kenya. Variation in financial performance between the companies has a standard deviation of .1765 indicating difference of 0.0524 units in standard deviation of overall companies (at 22.89) and between the financial performances of companies during (at .1765) from the year 2008 to 2014. Tobin Q has a maximum mean of 1.0923, while return on investment (RoI) has a minimum mean of .2837. The minimum standard deviation of Tobin Q is 0.0399, while the maximum standard deviation of return on equity (RoE) is

0.2227. The standard deviation measures indicate about the shape of our 3 distributions, how close the individual data values are from the mean value for each distribution. For return on investment has the minimum difference between the mean and standard deviation indicating the normal data distribution compare to return on equity and Tobin Q. This corroborates the study by other authors in their studies (Guest, 2009; Crespí, 2010) also considered financial performance consisting of return on equity, return on investment and tobin Q and computed dependent variable using principle component analysis and found that found that return on equity has less deviation from mean compare to tobin Q and return on assets in there study indicating that all three variables are significant and contribute in different degree to the composite financial performance index.

An analysis was also done to bring out the individual Companies' financial performance as presented on Figure 4.1 below.

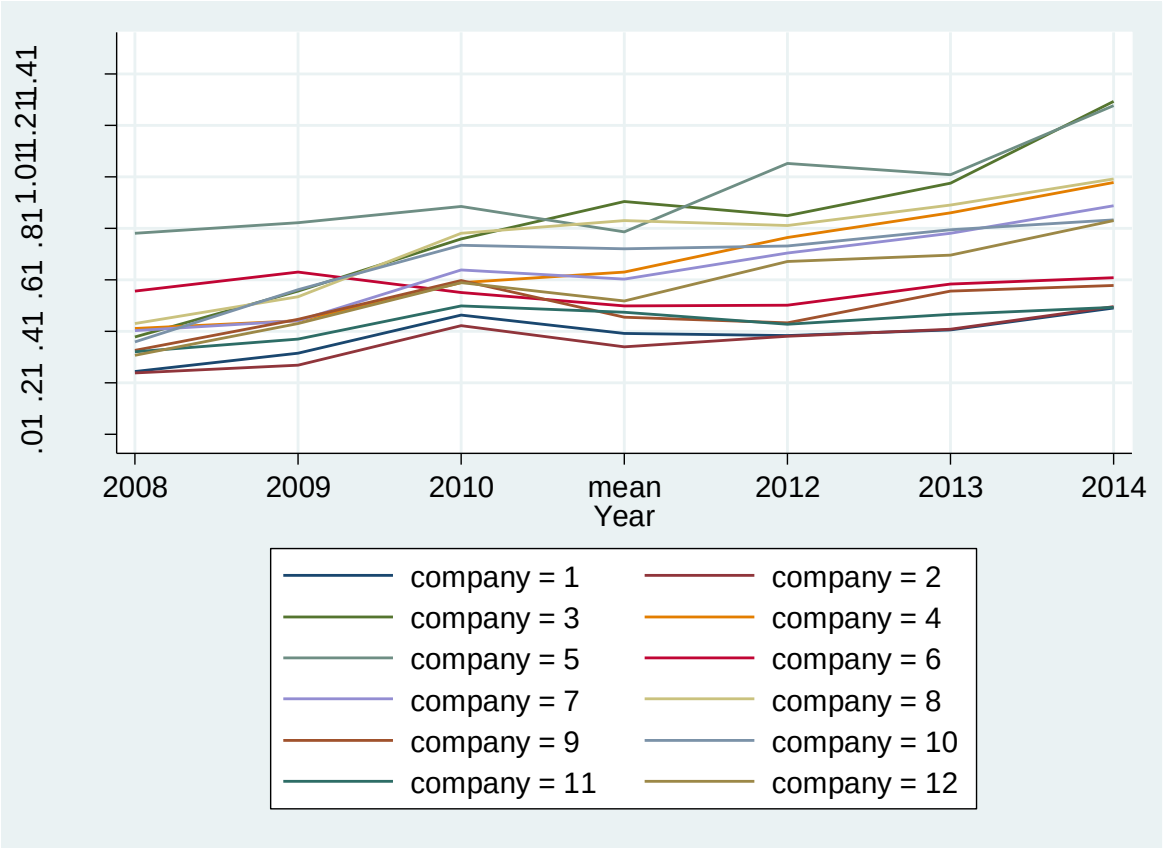

Figure 4.1: Individual Companies' financial performance (2008 - 2014)

Source: Researcher, 2015

The line graphs show the financial performance index for the various companies with a mean index of 0.6181 and standard deviation of 0.2289 indicating that most companies' performances are not far from the mean financial performance index.

Company code is represented by (C_Code) from 1 to 12. Each company has a different color in graph to identify with the company code. When viewing line graphs, study primarily focus on x-y relationships described trend information when viewing line graphs as our data is ratio analysis as found suitable by Shah and Freedman, (2009) in there study they used multiple lines and depicted in the same graph and focus on

comparisons between relative slopes of those lines (i.e., one line is increasing, another is decreasing), and pay less attention to the relative positions of those lines and same concept is used to describe the comparative study of edible oil companies during study period of 2008 to 2015 in Kenya. Industry Average financial performance was also analyzed to help in isolating company specific factors as plotted in figure 4.2.

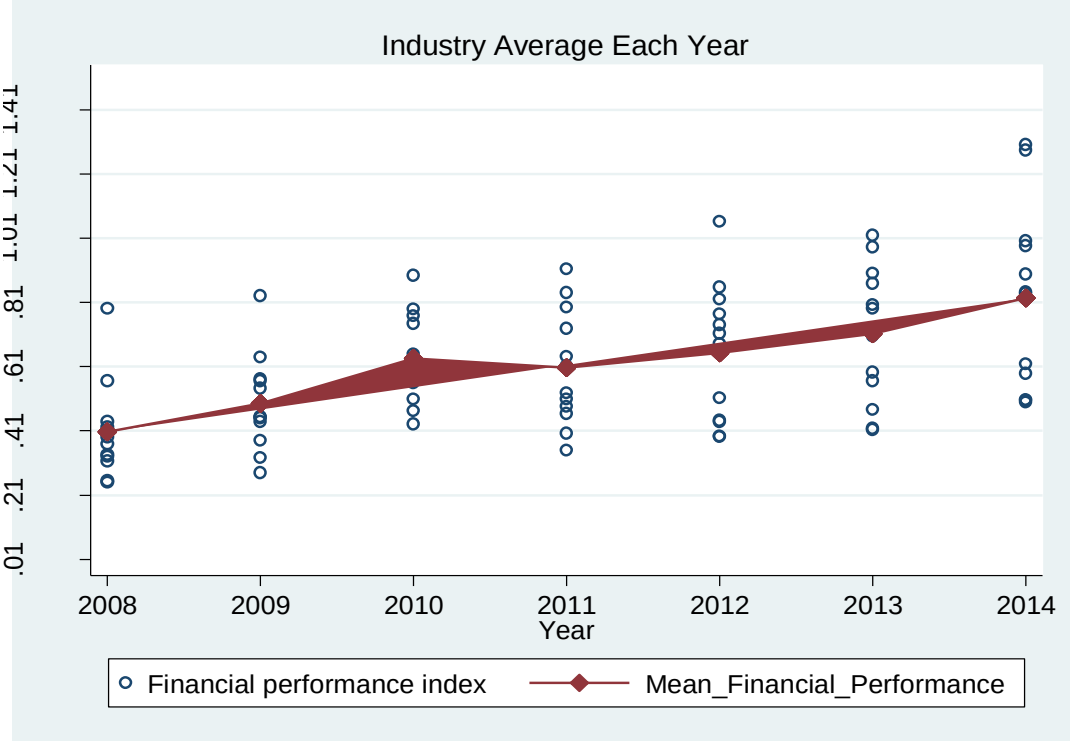

Figure 4.2: Industry average financial performance (2008-2014)

Source: Researcher, 2015

Each company is represented by a Diamond shape and the mean of financial performance index of each year is combined indicating the industry trend. A straight line connecting the average financial performance of 2008 with average financial performance of 2014 is drawn to indicate companies below and above the industry average in each year.

The Industry Average Financial performance index appears to be increasing over time in edible oil manufacturing. There is an even increase up to the year 2009 then a sharp rise in 2010 before going back to the earlier levels in 2011where it rose evenly up to 2014. Edible oil industry in Kenya is growing at an average of 4 % compare to GDP of 5% in 2014 and leading by consumer awareness about health and continue to grow and reduce the gap of demand and production which is filled by import of finished edible oil products. The industry trend indicates growth during 2008 to 2014 mainly led by 4 companies out of 12 companies selected for the study compare to other eight companies with the maximum share of 48% by leading company in 2014. Growth in 2010 was the effect of Kenya vision 2030 adopted in 2008 to give specific emphasis and additional investment was done in agriculture based industry by government and invited for public and private partnerships in agriculture together with good monsoon after the draught of 2009 are few factors which resulted in very good growth in 2010 followed by average growth thereafter. Industry trend shows that such focus investment should be a continue phenomenon. (world bank, 2014).

4.3.2 Descriptive Statistics for Independent Variables

Independent variables including Financing in Raw material, Financing in working capital, Financing in working capital, Financing in primary activities, Financing in support activities and moderating variable Firm characteristics were described using the descriptive statistics of mean and standard deviation. Larger standard deviation indicates that scores are more spread out, and based on mean and standard deviation the variation in the data is understood and ensure that data set is normal and can be used for

further analysis. The summary descriptive statistics showing overall mean and standard deviation of independent and moderating variables is shown in table 4.2.

Table 4.2: Summary statistics for independent and moderating variables

Variable	Mean	Standard Deviation
Financing in Raw Material & Operations		
Purchase of material through Supplier Contracts	0.3164	0.1345
Import of raw material	0.4586	0.1387
Financing in working capital		
Inventory management	0.2612	0.0298
Creditors management	0.0344	0.0074
Debtors management	0.1471	0.0165
Prepayments	0.0113	0.0025
Financing in primary activities		
Inbound logistics	0.0402	0.0134
Outbound logistics	0.0278	0.0071
Operations cost	0.0342	0.0086
Marketing & Sales	0.0260	0.0046
Service	0.0030	0.0008
Financing in support activities		
Firm infrastructure cost	0.0372	0.0186
Human resource management cost	0.1226	0.0298
Technology Development cost	0.0324	0.0161
Procurement cost	0.03279	0.0118
Moderating Variable Firm Characteristics		
Firm Size Annual Sale	2.1381	0.1308
Firm Capital structure	0 .6947	0.4162

Source: Researcher, (2015)

Table 4.2 describes the independent variables of the study by summarizing the mean and standard deviation of each variable for the entire edible oil industry in Kenya from 2008 to 2014. It explains the mean of each variable measured using the ratio of financial of each company for 7 years. Smaller the standard deviation mean variation is small and large the standard deviation mean variation is large. Standard deviations tell

us how the cost of different variables is each company is varying from the mean of the industry for each company. In raw material financing standard deviation is similar but mean for financing purchase of raw material through contracts is much less compare to financing import of raw material. In working capital financing deviation from the mean is highest in financing inventory compare to other measurements and prepayment is lowest deviation from the mean. In debtors management also deviations is more from means but not as high as inventory. In primary activities financing deviation from the mean is highest in financing in marketing and sales is the highest and followed by inbound logistic and outbound logistic. In support activities financing deviation from the mean is highest in financing in human resource management is the highest and followed by firm infrastructure technology development and procurement. In firm characteristics deviation from the mean is highest in firm size and followed by capital structure. Similar study was conducted in Nigerian manufacturing industry on value chain financing analysis by Okoye (2011) assessing the value chain financing and its effect on financial performance. In conclusion to the study it was indicated that financing value chain provides competitive advantage over the other players in the area this study and improve financial performance as in our study.

4.3.3 Company Specific Characteristics

Study also collected the firm specific characteristics by interviewing the CEO of the edible oil manufacturing company. Data was described using the % statistics as summarized in the table 4.3. This helped in describing the company's commitments to finance in value chain so that the result analysis is based on the intention and planning

of financing in the value chain not by default due to the pressing needs of the business. The results are summarized in table 4.3.

Table 4.3: Frequency distribution

Variable	Percentage
Import of Raw material	100
Purchase of Raw Material through supplier Contracts	16.67
Financing Inbound Logistics	75
Financing outbound Logistics	75
Financing Firm Infrastructure cost	100

Source: Researcher (2015)

The study found that out of the twelve companies, only two companies (16.67%) are involved in the financing purchase of the raw materials through supplier contracts and others are purchasing from the open market based on the current prices based on the availability of raw material or importing the raw material. As regards to the financing in import of raw materials, all the companies 100% were found to be importing raw material during the year. while 75% of the companies (9 out of 12) are doing financing of inbound and outbound logistics by doing regular investments in the transport facility and warehousing facility but other 25% of the companies (3 out of 12) are hiring services of transportation and doing temporary arrangements for storage based on the needs during each year. All companies were also found to be financing every year in firm infrastructure such as software development for management of operations, information, accounting, improving customers and suppliers relations and management information system regularly. This qualitative data collected indicates that all the companies are investing finances directly or indirectly in the value chain in edible oil industry and Kenya and this financing is affecting the financial performance. To do

further analysis out of different financing which financing is effecting and how it is effecting in the value chain correlation and regression analysis was carried out as indicated.

4.4 Correlation Analysis

The study also conducted a Pearson product-moment correlation coefficient to assess the relationship between the independent variables and composite index of dependent variable. The Pearson's product-movement correlation coefficient (r) was used to establish the statistical measure of the strength of the relationship. Its value ranges from -1 to +1. Cross tabulation was used to compare the relationship between the variables. The results of correlation analysis are presented in table 4.4.

Raw material purchase through suppliers contract with import of raw material. Raw material import with inventory management. Inventory management with inbound logistic, human resource management, Procurement cost and Firm size. Creditors management with prepayments and service cost. Prepayment with service cost. Inbound logistic with firm infrastructure. Outbound logistic with operations cost, marketing and sales, service cost and firm capital structure. Operations cost with marketing and sales, service cost and firm capital structure**.** Marketing and sales with service cost. firm infrastructure with human resource management, Procurement cost. Human resource management with technical development cost, procurement cost and firm size. Technical development with procurement cost and firm size**.** Procurement cost with Firm size.

Table 4.4: Correlation of financing independent variables and financial performance

Covariates	Financial performance	RM through contract	RM import	Inventory Management	Creditors management	Debtors management	Prepayments	Inbound logistic	Outbound logistic	Operations cost	Marketing and sales	Service cost	Firm infrastructure	Humon resource management	Technical development cost	Procurenent cost	Firm Size	Firm Capital structure
Financial performance	1																	
RM through contract	-0 (0.97)	1																
RM import	-0.04 (0.704)	-0.9(.000***)	1															
Inventory Management	0.008 (0.942)	-0.15 (0.167)	0.427(0.0001***)	1														
Creditors management	0.09 (0.418)	-0.08 (0.45)	-0.05 (0.629)	-0.1 (0.383)	1													
Debtors management	-0.05 (0.639)	0.1 (0.367)	-0.06 (0.559)	-0.03 (0.785)	0.045 (0.682)	1												
Prepayments	0.11 (0.32)	-0.06 (0.57)	-0.02 (0.891)	-0.02 (0.846)	0.953 (0.000***)	0.074 (0.506)	1											
Inbound logistic	0.023 (0.834)	0.01 (0.929)	-0.25 (0.023)	-0.47 (0.000***)	-0.05 (0.684)	-0.16 (0.151)	-0.12 (0.284)	1										
Outbound logistic	0.497 (0.000***)	-0.4 (0.0002)	0.339 (0.002)	0.08 (0.467)	-0.02 (0.844)	-0.28 (0.01**)	-0.04 (0.736)	0.142 (0.197)	1									

Operations cost	0.485 (0.000***)	-0.4(.0002**)	0.316 (.003**)	0.017 (0.878)	-0.01 (0.962)	-0.29 (0.007**)	-0.03 (0.782)	0.203 (0.064)	0.988 (.000***)	1								
Marketing and sales	0.432 (0.000***)	-0.24 (0.026**)	0.286 (0.008**)	0.369 (0.0005**)	-0.01 (0.955)	0.026 (0.813)	-0 (0.968)	0.285 (0.009**)	0.684 (0.000***)	0.669 (0.000***)	1							
Service cost	0.34 (0.002**)	-0.24 (0.027)	0.151 (0.171)	0.102 (0.358)	0.76 (0.000***)	0.024 (0.828)	0.802 (0.000***)	0.182 (0.098)	0.445 (0.000***)	0.457 (0.000***)	0.528 (0.000***)	1						
Firm infrastructure	-0.14 (0.192)	-0.21 (0.05*)	-0.15 (0.17)	-0.56 (0.000)	0.185 (0.092)	-0.12 (0.278)	0.063 (0.569)	0.414 (0.0001***)	0.079 (0.477)	0.124 (0.262)	-0.21 (0.057)	0.044 (0.693)	1					
Human resource management	0.175 (0.111)	-0 (0.976)	-0.39 (0.0002**)	-0.56 (0.000***)	0.378 (0.0004**)	-0.09 (0.412)	0.284 (0.009**)	0.536 (0.000***)	0.08 (0.468)	0.137 (0.214)	-0.06 (0.596)	0.29 (0.008**)	0.618 (0.000***)	1				
Technical development cost	0.054 (0.625)	-0.19 (0.076)	-0.11 (0.339)	-0.37 (0.0005**)	0.15 (0.173)	0.083 (0.456)	0.035 (0.752)	0.291 (0.007**)	0.052 (0.637)	0.099 (0.373)	-0.06 (0.611)	0.064 (0.565)	0.332 (0.002**)	0.396 (0.0002***)	1			
Procurement cost	0.252 (0.021*)	-0.22 (0.04*)	-0.15 (0.178)	-0.46 (0.000***)	0.128 (0.245)	-0.07 (0.524)	0.032 (0.773)	0.388 (0.0003***)	0.157 (0.154)	0.189 (0.086)	-0.03 (0.766)	0.094 (0.395)	0.629 (0.000***)	0.605 (0.000***)	0.572 (0.000***)	1		
Firm Size	0.021 (0.848)	0.368(.0006***)	0.028 (0.804)	0.51 (0.000***)	-0.33 (0.002**)	0.074 (0.505)	-0.21 (0.053)	-0.43 (0.000***)	-0.15 (0.17)	-0.23 (0.039*)	0.078 (0.482)	-0.25 (0.022**)	-0.74 (0.000***)	-0.7 (0.000***)	-0.62 (0.000***)	-0.74 (0.000***)	1	
Firm Capital structure	0.44 (0.000***)	-0.19 (0.077)	0.269 (0.013*)	0.091 (0.409)	0.014 (0.898)	-0.14 (0.22)	0.072 (0.515)	0.038 (0.732)	0.472 (.000***)	0.456 (.000***)	0.326 (0.003*)	0.314 (0.004**)	-0.14 (0.199)	-0.1 (0.382)	-0.2 (0.062)	-0.21 (0.06)	0.241 (.0272**)	1

Table 4.4 indicates the strength and direction of correlation together with P-values of each relationship between all independent and moderating variables with financial. Level of significance (P-value) of each relationship is indicated with one * at 5% level and two ** at 1 % level of significance and three *** for .01% level of significance. Further the study has summarized the strength and direction of correlation for the five (5) specific objectives including moderating variable with their measurement (r) and explained their strength (P-value) and direction.

Table 4.5 summarizes the results of Pearson's product-movement correlation coefficient (r) and significant value (P) for financing in raw material & operations with financial performance.

Table 4.5: Correlation of financing in raw material & operations with financial performance

Covariates	Financial Performance	Purchase of material through Supplier Contracts	Import of raw material
Financial Performance	1		
Purchase of material through Supplier Contracts	-0 (0.97)	1	
Import of raw material	-0.04 (0.704)	-0.9 (.000***)	1

Note: * - p-value < 0.05 , ** - p-value < 0.01, *** - p-value < 0.0001
Source: Researcher, (2015)

The relationship between financing in purchase of material through Supplier Contracts and financial performance in edible oil industry has a negative correlation between the two variables, (r = - 0, p = 0.97) and the relationship between financing in import of material and financial performance in edible oil industry has a negative correlation between the two variables, (r = - 0.04, p = 0.704) and not significant. In Overall, there was a weak negative correlation between financing in raw material purchase &

operations with financial performance in edible oil industry in Kenya. Increase in financing in raw material and operation is correlated with decrease in financial performance. Further as shown in table 4.5 financing in raw material & operations variable was not significant at 5% level of significance. However import of raw material is more significant at 5% level of significance than the purchase of raw material through supplier contract. Another study in which raw material financing through suppliers contract was studied by Bijman (2008) in which he tested and confirmed that efficiency in contracts is attained by ensuring relationship between farm and firm which improve the financial performance.

The second objective of study which is financing of working capital was measured using inventory management, creditor's management, debtor's management and prepayments. Table 4.6 summarizes the results of Pearson's product-movement correlation coefficient (r) and significant value (P) for financing in working capital with financial performance.

Table 4.6: Correlation of Financing working capital with financial performance

Covariates	Financial Performance	Inventory management	Creditors management	Debtors management	Prepay ments
Financial Performance	1				
Inventory management	0.008 (0.942)	1			
Creditors management	0.09 (0.418)	-0.1 (0.383)	1		
Debtors management	-0.05 (0.639)	-0.03 (0.785)	0.045 (0.682)	1	
Prepayments	0.11 (0.32)	-0.02 (0.846)	0.953 (0.000***)	0.074 (0.506)	1

Note:- * - p-value < 0.05 , ** - p-value < 0.01, *** - p-value < 0.0001
Source: Researcher (2015)

The relationship between inventory management and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.008, p = 0.942), that between financing in creditors management and financial performance in edible oil industry also gave positive correlation between the two variables (r = 0.09, p = 0.418) and not significant, while the relationship between financing in creditors management and financial performance in edible oil industry returned a negative correlation between the two variables (r = - 0.05, p = 0.639) and not significant.The relationship between financing in prepayments and financial performance in edible oil industry also gave a positive correlation between the two variables (r = 0.11, p = 0.32) and not significant. In overall, there was a weak positively correlation between financing in working capital with financial performance in edible oil industry in Kenya. Increase in financing in working capital is correlated with increase in financial performance. Further as shown in table 4.6 financing in working capital variables was not significant at 5% level of significance. However prepayments are more significant at 5% level of significance

compare to inventory management, creditor's management and debtor's management. Week positive correlation means not significant relationship between financing working capital and financial performance but direction is positive means more financing helps in improving the financial performance. This result is similar to the result found in a study of inventory management by (Rai & Singh, 2011) confirming sufficient financing helps in optimization of material flow and improve financial performance. Another study of (Burkart & Ellingsen, 2004) empirically tested and confirms that companies simultaneously give and take credit and gap in debtors and creditors should be properly assessed and financed to optimize financial performance.

The third objective of study which is financing in primary activities was measured with inbound logistics, outbound logistic, operations cost, marketing & sales and service. Table 4.7 summarizes the results of Pearson's product-movement correlation coefficient (r) and significant value (P) for financing in primary activities with financial performance.

Table 4.7: Correlation analysis of financing primary activities and financial performance

Covariates	Financial Performance	Inbound logistics	Outbound logistics	Operations cost	Marketing & Sales	Service
Financial Performance	1					
Inbound logistics	0.023 (0.834)	1				
Outbound logistics	0.497 (0.000***)	0.142 (0.197)	1			
Operations cost	0.485 (0.000***)	0.203 (0.064)	0.988 (.000***)	1		
Marketing & Sales	0.432 (0.000***)	0.285 (0.009**)	0.684 (0.000***)	0.669 (0.000***)	1	
Service	0.34 (0.002**)	0.182 (0.098)	0.445 (0.000***)	0.457 (0.000***)	0.528 (0.000***)	1

Note:- * - p-value < 0.05 , ** - p-value < 0.01, *** - p-value < 0.0001
Source: Researcher (2015)

The relationship between inbound logistics and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.023, p = 0.834) and not significant, that between financing in outbound logistics and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.497, p = 0.000) and very significant, the relationship between financing in operations cost and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.485, p = 0.000) and very significant, that between financing in marketing & sales and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.432, p = 0.000) and very significant, while the relationship between financing in service and financial performance in edible oil industry also has a positive correlation between the two variables, (r = 0.34, p = 0.002) and very significant. In overall, there is a moderate positive correlation between

financing in primary activities with financial performance in edible oil industry in Kenya. An Increase in financing in primary activities is medium positively correlated with increase in financial performance. Further as shown in table 4.7 among the primary activities outbound logistic (r = 0.497, p = 0.000) and very significant, operations cost (r = 0.485, p = 0. 000) and very significant, marketing & sales (r = 0.432, p = 0. 000) was very significant at .01 % level of significance and service (r = 0.34, p = 0. 002) is significant at 1% level of significance. However inbound logistics is not significant at 5% level of significance. The positive and significant relationship found between primary activities and financial performance in study postulates that financing in primary activities improving the relationship significantly and improves with further financing. In another study by Boon-itt and Wong (2011) indicated the effects of technological and demand uncertainties on the relationship between supply chain integration (inbound logistic) and customer delivery performance (outbound logistic) and its effects on financial performance. Another study of Mensah, Diyuoh, and Oppong, (2014) tested Supply Chain Management Practices and its Effects on The Performance of Kasapreko Company Limited in Ghana and found positive correlation between primary activities and financial performance same as this study. Another study by Alvarado and Kotzab, (2001) empirically tested the Supply chain management with integration of logistics in marketing and sales and found the positive relationship between the inbound logistic, outbound logistic and financial performance similar to this study.

The forth objective of study which is financing in support activities was measured with firm infrastructure cost, human resource management cost, technology development cost and procurement cost. Table 4.8 summarizes the results of Pearson's product-movement correlation coefficient (r) and significant value (P) for financing in support activities with financial performance.

Table 4.8: Correlation of financing support activities with financial performance

Covariates	Financial Performance	Firm infrastructure cost	Human resource management cost	Technology Development cost	Procurement cost
Financial Performance	1				
Firm infrastructure cost	-0.14 (0.192)	1			
Human resource management cost	0.175 (0.111)	0.618 (0.000***)	1		
Technology Development cost	0.054 (0.625)	0.332 (0.002**)	0.396 (0.0002 ***)	1	
Procurement cost	0.252 (0.021*)	0.629 (0.000***)	0.605 (0.000 ***)	0.572 (0.000***)	1

Note:- * - p-value < 0.05 , ** - p-value < 0.01, *** - p-value < 0.0001
Source: Researcher (2015)

The relationship between firm infrastructure cost and financial performance in edible oil industry has a negative correlation between the two variables (r = - 0.14, p = 0.192) and not significant, that between financing in human resource management cost and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.175, p = 0.111) and not significant, while the relationship between financing in technology development cost and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.054, p = 0.625) and

not significant, and that between financing in procurement cost and financial performance in edible oil industry has a positive correlation between the two variables ($r = 0.252$, $p = 0.021$) and significant. In overall, there was a medium positive correlation between financing in support activities with financial performance in edible oil industry in Kenya. Increase in financing in support activities is medium positively correlated with increase in financial performance. Further as shown in table 4.8, among the support activities only procurement cost ($r = 0.252$, $p = 0.021$) was significant at 5% level of significance. However human resource management cost is more significant at 5% level of significance compare to firm infrastructure cost and technology development cost. In an another study by (Baltacioglu *et al.,* 2007) indicate that managers should concentrate on the value chain practices (Support activities) which has stable effect and positive relationship with performance of the firm. Another study by Mensah, Diyuoh and Oppong, (2014) conclude that value chain practices significantly influence business performance as found in current study. Another study by Yap and Tan (2012) determined the positive relationship between value chain practices and firm financial performance which is also established in the current study.

The fifth objective of study was moderating variable firm characteristics and was measured with firm size annual sale and firm capital structure. Table 4.9 summarizes the results of Pearson's product-movement correlation coefficient (r) and significant value (P) for moderating variable with financial performance.

Table 4.9: Correlation of firm characteristics with financial performance

Covariates	Financial Performance	Firm Size Annual Sale	Firm Capital structure
Financial Performance	1		
Firm Size Annual Sale	0.021 (0.848)	1	
Firm Capital structure	0.44 (0.000***)	0.241 (.0272**)	1

Note:- * - p-value < 0.05 , ** - p-value < 0.01, *** - p-value < 0.0001
Source: Researcher (2015)

The relationship between firm size annual sales and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.14, p = 0.192) and not significant, while that between firm capital structure and financial performance in edible oil industry has a positive correlation between the two variables (r = 0.44, p = 0.000) and very significant. In overall, there was a medium positive correlation between moderating variable firm characteristics with financial performance in edible oil industry in Kenya. An Increase in firm characteristics is positively correlated with increased financial performance. Further as shown in table 4.9, among the moderating variables, only firm capital structure (r= .44 p = .0.000) was very significant at 5% level of significance however other variable firm size annual sales was not significant. In a study by Kim, Liu, and Rhee, (2003) empirically tested the effect of Firm Size on Earnings of the companies and found positive relationship between the size and financial performance the same is found in this study and both studies found relationship very significant. Another empirically study by Kamau (2010) indicated significant positive relationship between capital structure and financial performance in insurance industry in Kenya. Similarly our study found positive significant relationship between capital structure and financial performance.

4.5 Diagnostic Tests (Pre-Estimation)

Various pre-estimation tests were conducted to bring out the best quality results. The tests included Unit root test to ensure stationary in data, and multi-collinearity test to ensure that independent variables are not correlated, Hausman test to help in selection of suitable modal for our data between the fixed effect model and random effect modal. For multi-collinearity tests Variance Inflation Factor (VIF) Test was conducted and all variables with more than 10 (VIF) were removed one by one from the model until VIF for all the variables included came with in 10.

4.5.1 Unit Root Test (Stationarity)

The unit root test was conducted on the variables in the model to ensure there is no stationarity effect in the model. The Levin, Lin, and Chu test was used since the study has 12 companies with total 84 observations from 7 time periods. The Levin-Lin-Chu (LLC) tests have as the null hypothesis that all the panels contain a unit root.

Table 4.10: Unit root test Stationarity

Description	Statistic	p-value
Unadjusted t	-8.8e+02	
Adjusted t*	-8.8e+02	0.0000
Number of panels = 12 Number of periods = 7		

Note:- Time trend: Included Cross-sectional means removed ADF regressions: 1 lag
LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)
Source: Researcher, 2015

Based on the results of Levin-Lin-Chu unit-root test, p-value is 0.000. The test rejects the null hypothesis and confirms that panels are stationary and do not contain the unit root. Based on the result of unit root test therefore, the study found that panel data regression model can be run using panel data.

4.5.2 Multi-Collinearity Test

Since multi-collinearity is only about independent and moderating variables, there is no need to control for individual effects especially in panel data. To test multi-collinearity Variance Inflation Factors (VIF) were computed for all the independent variables and moderating variables in the panel data. The independent or moderating variables with high VIF values more than 10 were removed. Test was rerun to calculate the VIF of the remaining variables. In this process independent variables import of raw material highest VIF from financing in raw material & operations and financing in prepayments with VIF of 116.97 from financing in working capital, financing in operations cost with VIF of 72.99 and in next round services with VIF of 13.37 from primary activities were removed. These four variables were causing maximum multi-collinearity and having VIF of more than 10. Table 4.11 summarizes all the independent variables and moderating variables with VIF less than 10 and were included in the model.

Table: 4.11: Multi-Collinearity test

Variable	VIF	VIF Sq.	Tolerance	Sq. of Tolerance
Purchase of Raw Material through supplier contracts	1.94	1.39	0.5159	0.4841
Inventory management	3.36	1.83	0.298	0.7020
Creditors management	1.64	1.28	0.6088	0.3912
Debtors management	1.70	1.3	0.5884	0.4116
Inbound Logistic	3.99	2	0.2505	0.7495
Outbound logistic	5.15	2.27	0.1943	0.8057
Marketing and Sales	6.57	2.56	0.1523	0.8477
Firm Infrastructure cost	3.02	1.74	0.3309	0.6691
Human Resources management cost	3.20	1.79	0.3129	0.6871
Technology Development	1.97	1.4	0.5078	0.4922
Procurement Cost	2.74	1.66	0.3646	0.6354
Firm Size	6.35	2.52	0.1574	0.8426
Firm Capital structure	1.83	1.35	0.545	0.4550
Mean VIF of all selected variables	3.34			

Source: Researcher, 2015

VIF for all the variables included in the model have a mean VIF of 3.34 (recommended cut off is less than 10) and all individual VIF of all the selected variables is also less than 10. This confirms that selected variables included in the model will not have correlation problem among themselves. This now meant that panel data regression model could be used with the selected variables after conducting the Hausman test to select the best model for our data fixed effect model or random effect model.

4.5.3 Hausman Test

The study conducted the Hausman test to select the best model between fixed effects or random effects considering the panel data of the study. In hausman test the null hypothesis is that the preferred model is random effects model and alternative hypothesis is use fixed effects model. It basically tests whether the unique errors (ui) are correlated with the regressors, the null hypothesis is they are not correlated. There should be no systematic difference between the two estimators. If there exists a systematic difference in the estimates, then there is reason to doubt the assumptions on which the efficient estimator is based. If the P-value is less than .05 fixed effect model will be used otherwise random effect model will be used. Table 4.12 below summarizes the results of fixed effect model, random effect model and the difference between the two models.

Table 4.12: Hausman test for selection of model

Covariate	Fixed Effect Model	Random Effect Model	Difference between FEM and REM	standard error (SE)
Purchase of Raw Material through supplier contracts	-0.2354	0.3226	-0.5580	0.2033
Inventory management	-1.5302	-1.5353	0.0051	.
Creditors management	-1.0416	-0.1791	-0.8625	.
Debtors management	-1.1590	-0.8642	-0.2948	.
Inbound Logistic	-4.6807	-7.0479	2.3672	.
Outbound logistic	-2.3934	2.5602	-4.9536	.
Marketing and Sales	-3.0011	21.6755	-24.6767	.
Firm Infrastructure cost	-1.8050	-4.5299	2.7249	.
Human Resources management cost	0.8929	2.3625	-1.4696	.
Technology Development cost	1.3663	-0.1684	1.5347	.
Procurement Cost	6.2049	11.6738	-5.4690	.
Firm Size annual sale (Moderating Variable)	2.1491	0.2571	1.8920	0.2162
Firm Capital structure (Moderating Variable)	0.0491	0.2120	-0.1629	0.0904

Source: Researcher, 2015

Results of fixed model effects are consistent under Ho and Ha obtained from Hausman test and results of random effect model are inconsistent under Ha and efficient under Ho obtained from Hausman test. Now, the study tested the difference of the two tests considering Ho is difference in coefficients not systematic. The chi square test was conducted χ^2 (10) = 515.28 and Probability of result greater then χ^2 = 0.0000 indicating that a fixed effect model is more appropriate. Based on husman test Fixed Effect model was adopted for conducting panel data regression model in the study.

4.6 Panel Data Regression

The study conducted the Panel data regression analysis based on the conceptual framework and the multiple variate analysis model developed in chapter 3. In this

section of the study the explanatory multivariate method of Panel data regression analysis was used to analyze correlations between variables and establishing the validity of the Panel data regression models. Study further tested independent variables (Raw material, working capital investment in Inventory, creditors, debtors and Primary activity cost through inbound logistic, outbound logistic, marketing and sales, and support activities through firm infrastructure, Human resource cost, technology development, procurement cost) against the dependent variable financial performance. The model developed in the study is used to evaluate the dependent variable and independent variables:-

$$Y_{it} = \beta_0 + \beta_1 RM_{it} + \beta_2 WC_{it} + \beta_3 PA_{it} + \beta_4 SA_{it} + u_{it}$$

Based on the measurement of financial performance the study tested the following variations of the model.

Sub model 1 with return on investment

Sub model 2 with return on Equity

Sub model 3 with Tobin Q

Sub model 4 with composite of financial performance

4.6.1 Value chain financing regressed with Financial performance (ROI)

The study regressed all independent variables against return on investment and results are summarized in the table 4.13.

Table 4.13: Regression Results with Financial Performance (RO I)

Variables	**Values**	
Financial Performance (Return of Investment)	Coef. (β)	P-value
Purchase of Raw Material through supplier contracts	0.02	0.925
Inventory management	-0.27	0.638
Creditors management	-1.75	0.254
Debtors management	0.01	0.993
Inbound Logistic	-2.01	0.217
Outbound logistic	2.52	0.455
Marketing and Sales	10.61	0.06
Firm Infrastructure cost	-2.58	0.0001
Human Resources management cost	-0.02	0.98
Technology Development	-1.59	0.019
Procurement Cost	3.29	0.008
Constant β_0	0.18	0.599

Note:- Regression Statistics of the model sd of residuals within groups = 0. 0943
Overall error term = 0.6353 F(11, 61) = 6.87 P-value = 0.000 rho = 0. 6353 R-sqr = 0.5534
Significant at .05 level
Source: Researcher, (2015)

Table 4.13 indicate that the coefficients of the model are significantly different from 0 and the P-value 0.000 is less than 5%. Besides global significance test, there are also analyzed significance tests of individual coefficients for each explanatory variable in the model. Fisher theoretical value for 11 degrees of freedom for a significance level α = 5% is 2.82, indicating the Inverse of the Right-Tailed F Probability Distribution for a Specified Probability. Overall regression is significant because F * (11,61) value 6.87 is

greater than F theoretical value (2.82), indicating that the regression model is well built. Also, the coefficient of determination shows a good linear model that explains the phenomenon of the change in the eleven analyzed variables according to the explanatory variables in an amount of 55,39%. The remaining 44.61% is about the influence of unregistered or not considered factors affecting the financial performance of edible oil industry in Kenya.

Holding all other variables constant each edible oil company has $\beta_0 = 0.18$ units of financial performance with a probability of 0.599. The results also indicate that firm infrastructure cost (P-value = 0.001) and procurement cost (P-value = 0.008) and technology development (P-value = 0.019) are significantly and affecting financial performance at 5% level of significance. Marketing and sales and other independent variables are not significant at 5% level of significance. In a different study by Wagner, Grosse, Ruyken, and Erhun, (2012) empirically established the relationship between the value chain strategies and their financial impact which was continuing shaping up in the firm and measuring financial performance with return on investment and found significant relationship between financial performance and value chain strategy. Another study According to Bærentsen (2012), the financial Value Chain management influences the profitability measured by return on invested capital (ROIC) According to this study supply chain finance is a financial solution that provides win-win outcomes for all the participants in the supply-side Value Chain and can increase corporate economic power in the marketplace and remain competitive. An empirical study by Rostami, Jalali, and Nazem, (2013) showed that Value Chain management helps the

firm to achieve the true return on investment. The study further established that the supply chain finance is a financial solution that provides win-win outcomes for all the participants in the supply-side Value Chain. All these studies increase in financial Performance of the firm. The study regressed independent variable with return on investment r-sqr value explaining variation is 55.34 %. This result will be compared with the result of return on investment and tobin Q to finalize our model which explain the maximum variation in the financial performance of edible oil manufacturing companies in Kenya.

4.6.2 Value Chain Financing Regressed with Financial Performance (ROE)

The study regressed all independent variables against return equity and results are summarized in the table 4.14.

Table 4.14: Regression Analysis Results with Financial performance (ROE)

Variables	**Values**	
Financial Performance (Return of equity)	Coef. (β)	P-value
Purchase of Raw Material through supplier contracts	0.07	0.838
Inventory management	-0.88	0.376
Creditors management	-4.31	0.099
Debtors management	-0.21	0.873
Inbound Logistic	-3.83	0.166
Outbound logistic	7.3	0.203
Marketing and Sales	11.84	0.218
Firm Infrastructure cost	-5.11	<0.001
Human Resources management cost	0.26	0.824
Technology Development	-2.94	0.011
Procurement Cost	4.88	0.022
Constant β_0	0.61	0.311

Note:- sd of residuals within groups = 0.1579 over all error term = 0.1216 F(11, 61) = 6.92 P-value = 0.000 rho = 0. 0.6228 R-sqr = 0.5553
Significant at .05 level
Source: Researcher, (2015)

Table 4.14 indicate that the coefficients of the model are significantly different from 0 and the P-value 0.000 is less than 5%. Besides global significance test, there are also analyzed significance tests of individual coefficients for each explanatory variable in the model. Fisher theoretical value for 11 degrees of freedom for a significance level α = 5% is 2.82, indicating the Inverse of the Right-Tailed F Probability Distribution for a Specified Probability. Overall regression is significant because F * (11,61) value 6.92 is greater than F theoretical value (2.82), indicating that the regression model is well built. The coefficient of determination also shows a good linear model that explains the phenomenon of the change in the eleven analyzed variables according to the explanatory variables in an amount of 55,53%. The remaining 44.47% is about the influence of unregistered or not considered factors affecting the financial performance of edible oil industry in Kenya.

Holding all other variables constant, each edible oil company is expected to have $\beta 0$ = 0.61 units of financial performance with a probability of 0.311. The results also indicate that firm infrastructure cost (P-value = 0.001) and procurement cost (P-value = 0.022) and technology development (P-value = 0.011) are very significantly and affect financial performance at 5% level of significance. Other independent variables are not significant at 5% level of significance. A study by (Fang, Worm, & Tung, 2008) also considered shareholder value as financial performance measurement in his study and this study also tested value chain on ROE as financial measurement to check which measure of financial performance is best for our study. Study found r-sqr of 55.53% of the variation is explained.

4.6.3 Value Chain Financing Regressed with Financial Performance (Tobin Q)

The study regressed all independent variables against Tobin Q and the results are summarized in the table 4.15.

Table4.15: Regression Results with Financial Performance (Tobin Q)

Variables	**Values**	
inancial Performance (Tobin Q)	Coef. (β)	P-value
Purchase of Raw Material through supplier contracts	0.15	<0.001
Inventory management	-0.33	0.01
Creditors management	0.01	0.964
Debtors management	-0.25	0.146
Inbound Logistic	-1	0.005
Outbound logistic	-2.74	<0.001
Marketing and Sales	-0.86	0.486
Firm Infrastructure cost	0.19	0.251
Human Resources management cost	0.41	0.006
Technology Development	0.26	0.077
Procurement Cost	-0.48	0.078
Constant β_0	1.26	<0.001

Note:- sd of residuals within groups = 0. 0614 over all error term = 0. 01565 F(11, 61) = 7.35 P-value = 0.000 rho = 0.9390 R-sqr = 0.5701
Significant at .05 level

Source: Researcher, (2015)

Table 4.15 indicate that the coefficients of the model are significantly different from 0 and the P-value 0.000 is less than 5%. Besides global significance test, there are also analyzed significance tests of individual coefficients for each explanatory variable in the model. Fisher theoretical value for 11 degrees of freedom for a significance level α = 5% is 2.82, indicating the Inverse of the Right-Tailed F Probability Distribution for a Specified Probability. Overall regression is significant because F * (11,61) value 7.35 is greater than F theoretical value (2.82), indicating that the regression model is well built. The coefficient of determination also shows a good linear model that explains the

phenomenon of the change in the eleven analyzed variables according to the explanatory variables in an amount of 57,01%. The remaining 42.99% is about the influence of unregistered or not considered factors affecting the financial performance of edible oil industry in Kenya.

Holding all other variables constant each edible oil company is expected to have β0 = 1.26 units of financial performance with a probability of 0.001. Study also indicate that Purchase of raw material through suppliers contracts firm (P-value = 0.001), inventory management (P-value = 0.01), inbound logistic (P-value = 0.005), outbound logistic (P-value = 0.001), human resources management cost (P-value = 0.006) are very significantly and affecting financial performance at 5% level of significance. Other independent variables are not significant at 5% level of significance. Tobin Q alone as a measure of financial performance has increase the explanation of model to 57.01 % and maximum compare the ROI and ROE as a measure of financial performance and Tobin Q has only been considered in intellectual property as in the study of Tawan semi conductor business by Chen and Lung (2006) valuation and financial performance and using tobin Q alone will not be representative to industry financial performance.

4.6.4 Value Chain Financing Regressed with Composite Index of Financial Performance

The study regressed all independent variables against composite of financial performance results are summarized in the table 4.16.

Table 4.16: Regression Results (Ivs with financial performance index)

Variables	**Values**	
Financial Performance (Composite Index)	Coef. (β)	P-value
Purchase of Raw Material through supplier contracts	0	0.992
Inventory management	-1.15	0.228
Creditors management	-3.43	0.174
Debtors management	-0.45	0.726
Inbound Logistic	-4.86	0.069
Outbound logistic	6.12	0.27
Marketing and Sales	17.66	0.058
Firm Infrastructure cost	-5.04	<0.001
Human Resources management cost	0.02	0.986
Technology Development	-0.65	0.56
Procurement Cost	6.35	0.002
Constant β_0	0.67	0.248

Note:- sd of residuals within groups = 0.1595 over all error term = 0. 1176 F(11, 61) = 7.24 P-value = 0.000 rho = 0. 6477 R-sqr = 0.5663
Significant at .05 level
Source: Researcher, (2015)

Table 4.16 indicates that the coefficients of the model are significantly different from 0 and the P-value 0.000 is less than 5%. Besides global significance test, there are also analyzed significance tests of individual coefficients for each explanatory variable in the model. Fisher theoretical value for 11 degrees of freedom for a significance level α = 5% is 2.82, indicating the Inverse of the Right-Tailed F Probability Distribution for a Specified Probability. Overall regression is significant because F(11,61) value 7.24 is greater than F theoretical value (2.82),indicating that the regression model is well built. The coefficient of determination shows a good linear model that explains the phenomenon of the change in the eleven analyzed variables according to the explanatory variables in an amount of 56,63%. The remaining 43.37% is about the influence of unregistered or not considered factors affecting the financial performance of edible oil industry in Kenya.

Holding all other variables constant each edible oil company is expected to have β0 = 0.67 units of financial performance with a probability of 0.248. Study also indicate that firm infrastructure (P-value = 0.001), procurement cost (P-value = 0.002) are very significantly and affecting financial performance at 5% level of significance. Other independent variables are not significant at 5% level of significance. This corroborates the study by other authors in their studies (Guest, 2009; Crespí, 2010) also considered composite financial performance index as our study did and adopted to measure financial performance. This model explain 56.63 % variation in financial performance maximum compare to individual ROI, ROE and tobin Q confirming composite financial index is the best measure of financial performance for our data and hence the study further tested the model along with moderating variables.

4.6.5 Regression Analysis Results with Moderating Variables

The study regressed all independent and moderating variables against composite of financial performance results are summarized in the table 4.17 below.

Table 4.17: Regression Results (Ivs and Mvs with financial performance index)

Variables	**Values**	
Financial Performance (Composite Index)	Coef. (β)	P-value
Purchase of Raw Material through supplier contracts	-0.23	0.386
Inventory management	-1.55	0.063
Creditors management	-1.03	0.623
Debtors management	-1.15	0.276
Inbound Logistic	-4.56	**0.04**
Outbound logistic	-2.63	0.576
Marketing and Sales	-3.76	0.659
Firm Infrastructure cost	-1.86	0.097
Human Resources management cost	0.83	0.367
Technology Development	1.36	0.157
Procurement Cost	6.09	**0.0001**
Firm Size	2.14	**0.0001**
Firm Capital Structure	0.05	0.631
Constant β_0	-3.23	0.0001

Note:- sd of residuals within groups = 0.3136 over all error term = 0.09457 F(13, 59) = 12.19 P-value = 0.000 rho = 0.9166 R-sqr = 0.7287
Significant at .05 level

Source: Researcher (2015)

Table 4.17 indicate that the coefficients of the model are significantly different from 0 and the P-value 0.000 is less than 5%. Besides global significance test, there are also analyzed significance tests of individual coefficients for each explanatory variable in the model. Fisher theoretical value for 13 degrees of freedom for a significance level α = 5% is 2.576, indicating the Inverse of the Right-Tailed F Probability Distribution for a Specified Probability. Overall regression is significant because F(11,61) value 12.19 is greater than F theoretical value (2.576), indicating that the regression model is well built. The coefficient of determination shows a good linear model that explains the phenomenon of the change in the eleven analyzed variables according to the explanatory variables in an amount of 72.87%. The remaining 28.13% is about the

influence of unregistered or not considered factors affecting the financial performance of edible oil industry in Kenya.

Holding all other variables constant each edible oil company is expected to have β0 = -3.23 units of financial performance with a probability of 0.001. The results also indicate that inbound logistic (P-value = 0.04), firm infrastructure (P-value = 0.001), procurement cost (P-value = 0.001) and moderating variable firm size (P-value = 0.001), are very significantly and affecting financial performance at 5% level of significance. Other independent and moderating variables are not significant at 5% or 10% level of significance. Another study by Eriotis, Vasilio, and Neokosmidi (2007) empirically tested that larger firms are more likely to have a better credit rating thus financial institutions are more willing to lend funds to larger firms (Eriotis, *et al.*, 2007). Therefore, this implies that larger firms should have higher leverage ratios and in this study regression analysis found the similar result as model r-sqr changed to 72.87% from maximum r-sqr of 57.03 when the model was tested without moderating variable. This confirms that firms with large size and capital structure get batter terms for financing for value chain from the banks and financial institutions. Based on this the study added firm characteristics as moderating variable in the final model.

4.6.6 Model Selection for the Study

The study summarized the results of various models tested to select the model and result for testing the hypothesis formed to test the objectives of the study.

Table 4.18: Model summary

Models			**Values**		
Model Details	F Value	Fisher theoretical value	R-squ	P-value	Rho
Regression results with ROI including moderating variable	F(11,61) = 6.87	2.82	55.34	0.0000	63.53%
Regression results with ROE ROI including moderating variable	F(11,61) = 6.92	2.82	55.53	0.0000	62.28%
Regression results with Tobin Q ROI including moderating variable	F(11,61) = 7.35	2.82	57.01	0.0000	93.90%
Regression results with Composite financial index ROI including moderating variable	F(11,61) = 7.24	2.82	56.63	0.0000	64.77%
Regression results with Composite financial index including moderating variable	F(13,59) = 12.19	2.576	72.87	0.0000	91.66%

Note:- rho = Statistical dependence between two variables
Significant at .05 level

Source: Researcher (2015)

Table 4.18 shows the results of five models adopted by the study. Further on comparison of R-square value the model with moderating variable explain maximum 72.87 % of variance in financial performance of edible oil companies in Kenya. Based on this study adopted the results of model 5 regression results of independent variable and moderating variable with composite of financial performance index which explain the maximum variance in financial performance of edible oil companies with rho of 91.66 indicating the statistical dependence between the two variables. Model is as follows:-

$$y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{Mit} + u_{it}$$

The study utilized the value of β_0 to β_{11} from selected model to evaluate the objectives and test the hypotheses. panel data regression model provide a powerful method to

analyze multivariate data. Considerable caution, however, must is observed when interpreting the results of a panel data regression model analysis. Result of the selected model for analysis and conclusion in the study are summarized below:-

Table 4.19: Regression Results (Ivs and Mvs with financial performance index)

Financial Performance (Composite Index)	Coef. (β)	P-value
Purchase of Raw Material through supplier contracts	-0.23	0.386
Inventory management	-1.55	0.063
Creditors management	-1.03	0.623
Debtors management	-1.15	0.276
Inbound Logistic	-4.56	**0.04**
Outbound logistic	-2.63	0.576
Marketing and Sales	-3.76	0.659
Firm Infrastructure cost	-1.86	0.097
Human Resources management cost	0.83	0.367
Technology Development	1.36	0.157
Procurement Cost	6.09	**0.0001**
Firm Size	2.14	**0.0001**
Firm Capital Structure	0.05	0.631
Constant β_0	-3.23	0.0001

Note:- sd of residuals within groups = 0.3136 over all error term = 0.09457 F(13, 59) = 12.19 P-value = 0.000 rho = 0.9166 R-sqr = 0.7287

Source: Researcher (2015)

4.7 Testing of Hypotheses

The study tested all the five hypotheses of the study using the result of model in which all independent and moderating variables were regressed with financial performance index. Results of hypothesis testing are discussed in the following section.

4.7.1 Financing Raw Material and Financial Performance

Hypothesis Ho1 which was that, Financing Raw material does not significantly affect financial performance of the edible oil manufacturing firms in Kenya; was tested and the results are as give on table 4.20 below.

Table 4.20: Effect of raw material financing on financial performance

Covariates	μ	Σ	R	P	β	P-value
Purchase of raw material through Supplier Contracts	0.3164	0.1345	-0	0.97	-0.23	0.386
Import of raw material	0.4586	0.1387	-0.04	0.704	*	*

Note:- * Variable removed from model due to multi-collinearity

Source: Researcher, (2015)

Raw material consists of purchase of raw material through supplier contracts and import of raw material from other countries. Descriptive statistics indicate that import of raw material has more variation from mean compared to purchase of raw material through suppliers contracts, while correlation analysis indicates a weak negative relationship with financial performance meaning that the relationship is not significant at the .05 (significance) level for both measurements of raw material variable.

As given on table 4.20, the regression results at 5 % level of significance, financing in raw material purchased through supplier contracts (P value 0.386) is not significant and variable measurements of raw material have a p-value of more than 5%. Raw

material was removed from the regression model due to multi-collinearity problem with other variables in the study. Whereas financing of import of raw material variable was removed from the model due to multi-colinearity with very high VIF, the study did not rejected the null hypothesis at 5% level of significance indicating that financing of raw material does not affect the financial performance significantly. Keeping the other variables constant a unit increase in financing in raw materials index is expected to cause financial performance index to decrease by 0.23 per unit. A study by Kamau, Lawrence, Ricardo, and Ruerd, (2011) established the effect of certification of small holders on the financial performance of coffee production after having suppliers contract with farmers. The study by Guo *et al.*, (2005) support that purchase through contract farming improve financial performance. Another study (Birthal et al., (2005) indicate that the supply of raw material through contract farming integrate small and big farmers and improve the financial performance by reducing the cost of raw material. This study's findings confirm the findings of these previous studies.

4.7.2 Financing of Working Capital and Financial Performance

Hypothesis $H0_2$ which was that, Financing working capital does not significantly affect the financial performance of the edible oil manufacturing firms in Kenya; was tested and the results are as give on table 4.21 below.

Table 4.21: Effect of Working Capital financing on financial performance

Covariates	μ	Σ	R	P	B	P-value
Inventory management	0.2612	0.298	0.008	0.942	-1.55	0.063
Creditors management	0.0344	0.0074	0.09	0.418	-1.03	0.623
Debtors management	0.1471	0.0165	-0.05	0.639	-1.15	0.276
Prepayments	0.0113	0.0025	0.11	0.32	*	*

Note:- * Variable removed from model due to multi-collinearity

Source: Researcher, (2015)

Financing in working capital is measured by inventory management, creditor's management, debtor's management and prepayments. Descriptive statistics indicated that variation from the mean is maximum for debtor's management and minimum for inventory management. Working capital inventory, creditors and prepayments have weak positive relationship while debtors management has a weak negative relationship with financial performance and the relationship is not significant at the .05 (significance) level for any measurement of working capital.

As given on table 4.20, the regression results at 5% level of significance for inventory management(P value 0.063), creditors management (P value 0.623), debtors management(P value 0.276) all the measurements of working capital variable have p-values of more than 5%. Prepayment was removed from the regression model due to multi-collinearity problem with other variables in the study. The null hypothesis was not rejected at 5% level of significance indicating that financing of working capital does not affect the financial performance significantly. Keeping the other variables

constant a unit increase in financing in inventory causes financial performance index to decrease by 1.55 units while a unit increase in financing in creditors causes financial performance index to decrease by 1.03 units. A unit increase in financing in inventory on the other hand causes financial performance index to decrease by 1.15 units. This finding is consistent with the findings by Afza and Nasir (2007), Wajahat, *et al.*, (2010), which found no significant relationship between working capital management and profitability. However a study by Ainapur and Vittal (2011) found that optimizing Value Chain financing activities increases throughput, decreases inventory levels and increases revenues, thereby improving the organization's financial performance. The study showed that the Value Chain financing maximize revenue and minimize cost. Another study by Tanwari (2000), on ABC analysis as an inventory control technique improve financial performance.

4.7.3 Financing in Primary Activities and Financial Performance

Hypothesis $H0_3$ which was that, Financing primary activities does not significantly affect the financial performance of the edible oil manufacturing firms in Kenya; was tested and the results are as give on table 4.22 below.

Table 4.22: Effect of primary activities financing on financial performance

Covariates	μ	Σ	R	P	B	P-value
Inbound logistics	0.0402	0.0134	0.023	0.834	-4.56	0.04
Outbound logistics	0.0278	0.0071	0.497	0.000	-2.63	0.576
Operations cost	0.0342	0.0086	0.485	0.000	*	*
Marketing & Sales	0.0260	0.0046	0.432	0.000	-3.76	0.659
Service cost	0.0030	0.0008	0.34	0.002	*	*

Note:- * Variable removed from model due to multi-collinearity

Source: Researcher, (2015)

Financing in primary activities is measured by inbound logistics, outbound logistic, operations cost, marketing & sales and service. Descriptive statistics indicated that variation from the mean is maximum for marketing and sales and minimum for inbound logistic. All Primary activities variables indicate moderate positive relationship except inbound logistic which indicate weak positive relationship with financial performance and relationship of outbound logistic, operations cost, marketing & sales and service is very significant at the .05 (significance) level but relationship of inbound logistic is not significant at 5% level of significance.

As per table 4.22 in the regression results at 5% level of significance, inbound logistic is significant with p-value of 0.04 whereas outbound logistic (P value 0.576), operations cost (removed due to multi-collinearity), marketing & sales (P value 0.659) and service (removed due to multi-collinearity) which are the measurement variables of primary activities all have p-values of more than 5% except inbound logistic (P value 0.04), Operations cost and service cost were removed from the regression model due to multi-collinearity problem with other variables in the study. The null hypothesis is rejected at 5% level of significance for inbound logistic indicating that financing of variable inbound logistic in primary activities does affect the financial performance significantly. Keeping other variables constant, a unit increase in financing in inbound logistic causes financial performance index to decrease by 4.56 units. The null hypothesis for outbound logistic and marketing & sales is however not rejected at 5% level of significance indicating that keeping other variables constant, a unit increase in financing in outbound logistic causes financial performance index to decrease by 2.63

units while a unit increase in financing in marketing and sales causes financial performance index to decrease by 3.76 units. Similar results were found in the study by Sundram, Ibrahim, and Govindaraju, (2011) which found that customer relationship management (outbound logistic), strategic supplier partnership (inbound logistic), and information quality (operations cost), affected the firm performance. Another study by Li et al 2005 brought out a findings that effective SCM practices improve organization's market performance (marketing and sales) and financial performance.

4.7.4 Financing of Support Activities and Financial Performance

Hypothesis $H0_4$ which was that, Financing support activities does not significantly affect the financial performance of the edible oil manufacturing firms in Kenya; was tested and the results are as give on table 4.23.

Table 4.23: Effect of support activities financing on financial performance

Covariates	μ	Σ	r	p	B	P-value
Firm infrastructure cost	0.0372	0.0186	-0.14	0.192	-1.86	0.097
Human resource cost	0.1226	0.0298	0.175	0.111	0.83	0.367
Technology Development Cost	0.0324	0.0161	0.054	0.625	1.36	0.157
Procurement cost	0.03279	0.0118	0.252	0.021	6.09	0.001

Note:- * Variable removed from model due to multi-collinearity

Source: Researcher,(2015)

Financing in support activities is measured by firm infrastructure cost, human resource management cost, technology development cost, procurement cost. Descriptive statistics indicate that variation from the mean is maximum for human resource management cost and minimum for technology development cost. All support activities variables indicate moderate positive relationship except firm infrastructure cost which

indicate weak negative relationship with financial performance. The relationship of procurement cost is significant at the .05 (significance) level while relationship of firm infrastructure cost, human resource management cost and technology development cost are not significant at 5% level of significance; however firm infrastructure is more significant than technology development and human resource management cost.

As given on table 4.23, the regression results at 5% level of significance, procurement cost is very significant with p-value of 0.001 where as firm infrastructure cost (P value 0.097), human resource management cost (P value 0.367), technology development cost (P value 0.157), all the measurements of variable support activities have p-values more at 5% level of significance. The null hypothesis is rejected at 5% level of significance for procurement cost indicating that financing of variable procurement cost in support activities does affect the financial performance significantly. Keeping the other variables constant, a unit increase in financing in procurement cost causes financial performance index to increase by 6.09 units. The null hypothesis for firm infrastructure cost, human resource management cost, and technology development cost is rejected at 5% level of significance indicating that, keeping the other variables constant a unit increase in financing in firm infrastructure cost causes financial performance index to decrease by 1.86 units while a unit increase in financing in human resource management cost causes financial performance index to increase by 0.83 units. A unit increase in financing in technology development cost on the other hand causes financial performance index to increase by 1.36 units. However firm infrastructure cost is more significant than technology development cost, human

resource management cost. In similar study by Chong and Chan (2010) found that improving SCM practices (firm infrastructure) such as leadership, IT adoption (technology development), customer orientation and training have significant impact on service organizational performance. Another study by Lin *et al*., (2005) has also supported the view that SCM practices such as quality management and supplier relationship management (inbound logistic) improves organizational performance.

4.7.5 Firm Characteristics and Financial Performance

Hypothesis $H0_5$ which was that, Firm Characteristics do not significantly affect the financial performance of the edible oil manufacturing firms in Kenya; was tested and the results are as give on table 4.24 below.

Table 4.24: Effect of moderating variable on financial performance

Covariates	μ	Σ	r	P	B	P-value
Firm Size Annual Sale	2.1381	0.1308	0.021	0.848	2.14	0.001
Firm Capital structure	0 .6947	0.4162	0.44	0	0.05	0.631

Source: Researcher,(2015)

Study conducted Baron and Kenny moderation analysis. If moderator moderating the relationship between independent variable and dependent variable. Moderating variable is measured by firm size annual sale and Firm capital structure. Descriptive statistics indicate that variation from the mean is maximum for firm size annual sale and minimum for firm capital structure. Both firm size annual sale variables and firm capital structure indicate moderate positive relationship with financial performance. The relationship of firm size annual sale is significant at the .05 (significance) level

while relationship of firm capital structure is not significant at 5% level of significance. As given on table 4.24,the regression results at 5% level of significance, firm size annual sale is very significant with p-value of 0.001 whereas firm capital structure (P-value .0631) measurement of variable firm characteristics has a p-value is more at 5% level of significance. The null hypothesis is rejected at 5% level of significance for firm size annual sale indicating that this does affect the financial performance significantly. Keeping the other variables constant a unit increase in firm size annual sale causes financial performance index to increase by 2.14 units.

The null hypothesis for firm capital structure is not rejected at 5 % level of significance indicating that unit increase in firm capital structure causes financial performance index to increase by 0.05 units. A study by Razzaque *et al.*, (2006) who examined earnings management in textile sector of Bangladesh found similar results indicating the size of firm has positive relation with earnings management. This corroborates the result of our study. Another study by Kim, Liu, and Rhee, (2003) examined the relationship between corporate earnings management and the firm size. They observed that company size had a strong impact on the earning management a view similar to our study which found firm size has a very significant effect on financial performance. Another study that supports our study result on capital structure is that by Wacziarg, Romain, and Welch, (2003). which found that organizations do not use their debt and equity issuing and repurchasing activities to counter the mechanistic effects of stock returns on their debt equity ratios. Most of the stock has 40% debt ratio dynamics. It means remaining 60% ratio can be used to manipulate the capital structure, which has

direct impact on cost of capital that leads to earning management and has a positive effect on financial performance.

4.8 Post-Estimates Tests.

The study conducted diagnostic tests on post-estimation results obtained. The tests include heteroscedasticity test Poi and Wiggins (2001), test of autocorrelation and normality test to ensure that results of the model are applicable to all the edible oil companies in Kenya.

4.8 Diagnostic Tests (Post-Estimation)

The study also conducted post-estimation tests to ensure that result of the study can be generalized and used in the edible oil industry.

4.8.1 Heteroscedasticity Test

Hetroscedasticity test was conducted on the final model to ensure that our model is free from hetroscedasticity. The study conducted the modified Wald test for group wise heteroskedasticity in fixed effect regression model in which a random effects equation is re-estimated and augmented with additional variables consisting of the original regressors transformed into deviations-from-mean form. The test statistic is a Wald test of the significance of these additional regressors. A large-sample chi-squared test statistic is reported with no degrees-of-freedom corrections. Under conditional homoskedasticity, this test statistic is asymptotically equivalent to the usual Hausman fixed-vs-random effects test; with a balanced panel, the artificial regression and Hausman test statistics are numerically equal.

Table 4.25: Heteroscedasticity test results

Financial Performance (Composite Index)	Coef. (β)	P-value
Purchase of Raw Material through suppliers contract	-1.55	0.063
Inventory management	-1.03	0.623
Creditors management	-1.15	0.276
Debtors management	-4.56	0.04
Inbound Logistic	-2.63	0.576
Outbound logistic	-3.76	0.659
Marketing and Sales	-1.86	0.097
Firm Infrastructure cost	0.83	0.367
Human Resources management cost	1.36	0.157
Technology Development	6.09	<0.001
Procurement Cost	2.14	<0.001
Firm Size	0.05	0.631
Firm Capital Structure	-3.23	<0.001
Constant	-0.23	0.386

Note:- sd of residuals within groups = 0.3136 over all error term = 0.0946 F(13, 59) = 12.19 P-value = 0.000 rho = 0.9166 R-sqr = 0.7290 Modified Wald test for group wise heteroskedasticity in fixed effect regression model H0: Chi square (χ^2) (12) = 88.87 Prob. > χ^2 = 0.0000

Source: Researcher, 2015

The results indicate that study data fits well at the .05 significance level with (F(13,59) and p<.0000). R^2 of .7290 indicate that this model accounts for 72.90 percent of the total variance in the financial performance of edible oil companies. Based on the result of the modified Wald test p-value =< 0.00000 (i.e. significant) leading to the conclusion that there is no problem of heteroskedasticity in the model and results of panel data regression model are valid and can be used for further predictions using the model.

4.8.2 Autocorrelation Test

Serial correlation tests apply to macro panels with long time series (over 20-30 years). It is therefore not a problem in micro panels (with very few years). Serial correlation causes the standard errors of the coefficients to be smaller than they actually are and higher R-squared.

Wooldridge (2002) derived a simple test for autocorrelation in panel-data models which was implemented by Drukker (2003). The test is performed in two steps. The first step regresses the pooled (OLS) model in first difference and predicting the residuals whereas the second stage regresses the residuals on its first lag and tests the coefficient on those lagged residuals.

Table 4.26: Autocorrelation test results

Financial performance	Coef. (β)	Robust Std. Err.	t-test	P- value >t value
Purchase of Raw Material through suppliers contracts	-0.0233	0.3366	-0.0700	0.9460
Inventory management	-0.3112	0.6165	-0.5000	0.6240
Creditors management	0.3371	1.7248	0.2000	0.8490
Debtors management	0.3464	0.7794	0.4400	0.6650
Inbound Logistic	-1.9840	1.4544	-1.3600	0.2000
Outbound logistic	2.8407	3.9268	0.7200	0.4850
Marketing and Sales	5.2988	6.0143	0.8800	0.3970
Firm Infrastructure cost	-0.8800	1.0134	-0.8700	0.4040
Human Resources management cost	1.2944	1.2236	1.0600	0.3130
Technology Development	1.4796	0.6125	2.4200	0.0340
Procurement Cost	2.9407	1.7965	1.6400	0.1300
Firm Size	1.5740	0.5471	2.8800	0.0150
Firm Capital structure	-0.0175	0.0576	-0.3000	0.7670

Note:- R-squared = 0.4693 Wooldridge test for autocorrelation in panel data H0: no first order autocorrelation F(1, 11) = 9.081 Prob > F = 0.0118

Source: Researcher, 2015

The Woodridge test for serial correlation tests the null hypothesis, that there is no serial correlation versus the alternative hypothesis that there is first-order autocorrelation. This pooled OLS model fits the data not very well at the .05 significance level ($F=9.081$ and $p<.0118$). R^2 of .4693 indicate that this model accounts for 46.93 percent of the total variance in the financial performance of edible oil companies. When applied to the data, the test yielded a p-value of .0118 indicating very significant at 5% level. This implies that study should not reject the null hence the conclusion that the data does have first-order autocorrelation. Results from this model can therefore be used for predictions in edible oil industry in Kenya.

4.8.3 Normality Test

The study conducted the normality test to ensure that data is normally distributed and meet the requirements for using the panel data regression model results to predict from the model.

Table 4.27: Skewness & Kurtosis Tests for Normality

Variable	Pr(Skewness)	Pr(Kurtosis)	adj χ^2	Prob> χ^2
Financial performance	0.008	0.5219	6.84	0.0327
Purchase of Raw Material through contract	0.0004	0.8739	10.5	0.0053
Inventory management	0	0.0001	26.81	0
Creditors management	0.2418	0.1104	4.06	0.1316
Debtors management	0.9816	0.0234	5.07	0.0794
Inbound Logistic	0	0.0000	60.65	0
Outbound logistic	0.1003	0.6327	3.03	0.2203
Marketing and Sales	0.6595	0.8104	0.25	0.8818
Firm Infrastructure cost	0.0001	0.0152	16.74	0.0002
Human Resources management cost	0	0.0073	20.96	0
Technology Development	0	0.0004	26.3	0
Procurement Cost	0	0.0490	16.81	0.0002
Firm Size	0.0199	0.3073	6.09	0.0475
Firm Capital structure	0	0.0008	30.27	0

Source: Researcher, 2015

The dependent variable "Financial performance" satisfies the criteria for a normal distribution. The skewness (0.008) and kurtosis (0.5151) were both between -1.0 and +1.0. No transformation is necessary. After evaluating the dependent variable, the study examined the normality of each independent variable with the dependent variable. As given in table 4.27 values of all independent variables, the skewness and kurtosis are both between -1.0 and +1.0 indicating that all independent variables are also normally distributed.

CHAPTER FIVE: SUMMARY CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

This chapter summarizes the results presented in the previous chapter and the study conclusions. Recommendations for policy as well as those for further studies are also made in this chapter.

5.2 Summary of the Study

The overriding purpose of this study was to determine the effect of value chain financing on financial performance of edible oil manufacturing companies in Kenya. Determining what value chain financing means and how this is relevant to the edible oil industry in Kenya became very important during the literature review. The descriptive method of research was utilized and the interview schedule for companies' executives, financial statements and Document review guide were used for gathering data. Finance managers in the edible oil companies in Kenya were the respondent's in the interview while financial statements of companies under study for the year 2008 to 2014 were reviewed using document review guide. A Panel data regression model developed in chapter three was used for testing the hypothesis formed for each of objectives in chapter one. The study then came up with the following findings based on research objectives.

5.2.1 Effects of Raw Material Financing

The first objective of the study is to determine the effect of financing raw material on the financial performance of the edible oil manufacturing companies in Kenya.

The study measured financing in raw material by purchase of raw material through supplier's contract and import of raw material. Question of purchasing raw material through supplier's contract was supported by 2 companies (16.67%) out of 12 companies for financing raw material. The rest other 10 companies (83.33%) were found to be financing raw material by purchasing in the open market in Kenya instead of suppliers' contract. All the 12 companies (100%) were found to be financing the import of raw material. In addition to this, the study also found that all the companies purchasing raw material in Kenya without suppliers contract. Analysis of raw material purchase through supplier's contract returned ($\mu = 0.3164$, $\sigma = 0.1345$, $r = -0.0$, $p= 0.97$, $\beta = -0.23$, P-value = 0.386) indicating week relationship. This lack of significance represents negative effect on the financial performance of edible oil companies. Import of raw material on the other hand has ($\mu = 0.4586$, $\sigma = 0.1387$, $r = -0.04$, $p= 0.704$, Not included in the model) indicating more variance from the mean of the cost of import of raw material. The relationship is not significant at 5% and due to multi-collinearity with other variables it was removed from the final model. The relationship between financing through suppliers contract and import of raw material ($r = -0.90$ $P = 0.000$) has a highly negative and significant relationship at 5% level of significance. Further financing through suppliers contract and operations cost ($r = -0.40$ $P = 0.0002$) are also having moderate negative relationship and is very significant at 5% level of significance.

5.2.2 Working Capital Financing

To establish the effect of financing working capital on the financial performance of the edible oil manufacturing companies in Kenya. The study findings show that all companies are financing working capital required for the operations.

Edible oil Industry financing in working capital measured by inventory management has a (μ = 0.2612, σ = 0.0298, r = 0.008, p= 0.942, β = -1.55, P-value = 0.063) indicating a big variance from the mean of the inventory management and has week positive non-significant relationship with financial performance. It also has a negative association with financial performance and a significance level at .063. Another variable, the creditors management has a (μ = 0.0344, σ = 0.0074, r = 0.09, p= 0.418, β = -1.03, P-value = 0.623) indicating normal variation between mean and standard deviation and week positive relationship and negative association with financial performance. It is however not significant at 5% level. The other variable, debtors management has (μ = 0.1471, σ = 0.0165, r = -0.05, p= 0.639, β = -1.15, P-value = 0.276) indicating large variation between mean and standard deviation. It has a negative non-significant relationship and its association with financial performance is negative. Prepayment as a variable on the other hand has (μ = 0.0113, σ = 0.0025, r = 0.11, p= 0.32, Not included in the model) indicating variation more than normal and moderate positive relationship with financial performance. It was removed from the model because of multi-collinearity between the variables. The relationship between financing import of raw material and inventory management (r = -0.427, P = 0.001) is highly significant and negative. Another very significant relationship is between financing creditors management and prepayment (r = 0.953, P = 0.000) indicating strong positive relationship between the two variables in the study.

5.2.3 Primary Activities Financing

To determine the effect of financing primary activities on the financial performance of the edible oil manufacturing companies in Kenya, an analysis was done on the

investment in warehouse and transportation for inbound logistic and out bound logistic. Nine (9) companies (75%) out of 12 were found to be financing assets for creating in-house facility while three (3) companies (25%) are hiring logistic company for inbound and outbound logistic activities. The companies which are not financing primary activities were taking it as operational cost during the year. This affects the mean and standard deviation of the industry for inbound logistic, outbound logistic, operations cost and ratios of the industry.

Edible oil Industry financing in primary activities measured by inbound logistic gave (μ = 0.0402, σ = 0.0134, r = 0.023, p= 0.834, β = -4.56, P-value = 0.04) indicating normal variation between the mean and standard deviation non-significant positive relationship. The association with financial performance is negative and significant at 5% level of significance. Outbound logistic has (μ = 0.0278, σ = 0.0071, r = 0.497, p= 0.000, β = -2.63, P-value = 0.576) indicating normal variation from the mean and positive medium significant relationship; the association with financial performance is negative and non-significant at 5% level of significance. Another variable operations cost has a (μ = 0.0342, σ = 0.0086, r = 0.485, p= 0.000, Not included in the model) indicating the variation is normal and medium positive and significant relationship with financial performance and was removed from the model due to multi-collinearity with other variables. Another variable marketing and sales has a (μ = 0.0260, σ = 0.0046, r = 0.432, p= 0.000, β = -3.76, P-value = 0.659) indicating large variation between the mean and standard deviation having significant medium positive relationship with financial performance and negative non-significant association with financial performance. The other variable service has a (μ = 0.0030, σ = 0.0008, r = 0.34, p= 0.002, Not

included in the model) indicate normal variation between mean and standard deviation and having significant moderate positive relationship with financial performance. The variable was removed from the model due to multi-collinearity with other variables. The relationship between financing inventory management and inbound logistic (r = -0.47, P = 0.000) is medium negative and very significant affecting the cost. The relationship between financing debtors management and outbound logistic (r = -0.28, P = 0.01) is moderate negative and significant relationship effecting the cost.

5.2.4 Support Activities Financing

To establish the effect of financing support activities on the financial performance of the edible oil manufacturing companies in Kenya, response to the question on financing in firm infrastructure was looked into. All the twelve (12) companies (100%) were found to finance firm infrastructure every year keeping the mean and standard deviation of the industry unaffected due to financing in firm infrastructure as all the companies finance.

Edible oil Industry financing in support activities measured by firm infrastructure cost has ($\mu = 0.0372$, $\sigma = 0.0186$, r = -0.14, p= 0.192, $\beta = -1.86$, P-value = 0.097) indicating normal variation between mean and standard deviation having non-significant moderate negative relationship with financial performance. It returned non-significant negative association with financial performance at 5% level of significance. The other variable human resource management cost has ($\mu = 0.1226$, $\sigma = 0.0298$, r = 0.175, p= 0.111, $\beta = 0.83$, P-value = 0.367) indicating large variation between the mean and standard deviation with non-significant moderate

positive relationship with financial performance and the association is positive non-significant at 5% level of significance. The variable technology development cost has (μ = 0.0324, σ = 0.0161, r = 0.054, p= 0.625, β = 1.36, P-value = 0.157) indicating normal variation between mean and standard deviation with non-significant moderate positive relationship with financial performance.

It also has positive not-significant relationship at 5% level of significance. Another variable procurement cost has a (μ = 0.0327, σ = 0.0118, r = 0.252 , p= 0.021, β = 6.09, P-value = 0.001) indicating normal variation between mean and standard deviation with significant moderate positive relationship with financial performance and association with financial performance is also positive and very significant at 5% level of significance. The relationship between financing firm infrastructure cost and human resource development cost (r = 0.618, P = 0.000) indicating very significant and high positive relationship between the two variables. The relationship between financing firm infrastructure cost and technical development cost is (r = 0.332, P = 0.002) indicating very significant moderate positive relationship between the two variables while the relationship between financing firm infrastructure cost and procurement cost is (r = 0.629, P = 0.000) indicating very significant high positive relationship between the two variables.

5.2.5 Firm Characteristics

Analysis was also done to determine the moderating effect of firm characteristics on the relationship between value chain financing and financial performance of the edible oil manufacturing companies in Kenya.

Edible oil Industry firm characteristics measured by firm size annual sale returned ($\mu = 2.1381$, $\sigma = 0.1308$, $r = 0.021$, $p= 0.848$, $\beta = 2.14$, P-value = 0.001) indicating very large variation between the mean and standard deviation with non-significant moderate positive relationship with positive and very significant association with financial performance. Another variable firm capital structure has ($\mu = 0.6947$, $\sigma = 0.4162$, $r = 0.44$, $p= 0.000$, $\beta = 0.05$, P-value = 0.631) indicating normal variation between mean and standard deviation having very significant medium positive relationship with non-significant positive association with financial performance. The relationship between financing firm size and firm capital structure ($r = 0.241$, $P = 0.0272$) is also significant indicating positive relationship between the two variables.

5.3 Conclusions of the Study

After reviewing data and analyzing each objective of the study, conclusions were drawn based on the finding of the study. The study adopted the financial performance index model which showed the best fit regression model.

5.3.1 Effect of Financing in Raw Material & Operations.

The study concludes that the companies financing in purchase of material through supplier's contract P value at 5% level of significance is 0.386 and beta value -0.23 do not have significant relationship to the financial performance. Import of raw material was removed from the study due to Multicollinearity.

5.3.2 Effect of Financing in Working Capital

Based on the findings, the study concludes that the companies financing in working capital through inventory management P value at 5% level of significance is 0.063 and beta value -1.55, debtors management P value at 5% level of significance is 0.276 and beta value -1.15 and creditors management P value at 5% level of significance is 0.623 and beta value -1.03 do not have significant relationship to the financial performance.

5.3.3 Effect of Financing in Primary Activities

On financing in primary activities, the study concludes that the companies financing in primary activities through inbound logistic P value at 5% level of significance is 0.04 and beta value -4.56 have very significant effect on financial performance and companies financing in primary activities through outbound logistic P value at 5% level of significance is 0.576 and beta value -2.63, operations cost removed due to Multicollinearity, marketing and sales P value at 5% level of significance is 0.659 and beta value -3.76 and service cost removed due to Multicollinearity do not have any significant effect on the financial performance.

5.3.4 Effect of Financing in Support Activities

The study also concludes that the companies financing in support activities through procurement cost P value at 5% level of significance is 0.0001 and beta value 6.09 have very significant moderate positive relationship to the financial performance. Study also concluded that companies financing in Support activities through firm infrastructure cost logistic P value at 5% level of significance is 0.097 and beta value -1.86, Human resources management cost logistic P value at 5% level of

significance is 0.367 and beta value 0.83, technology development cost logistic P value at 5% level of significance is 0.157 and beta value 1.36 do not have any significant effect on the financial performance.

5.3.5 Effect of Moderating Variable

On moderating variables, the study indicated that the firm characteristics measured through firm size P value at 5% level of significance is 0.0001 and beta value 2.14 has very significant moderating effect on the financial performance and the firm characteristics measured through firm capital structure P value at 5% level of significance is 0.631 and beta value .05 do not have any significant moderating effect on the financial performance

5.3.6 Limitations of the Study

The edible oil sector in Kenya is supported by ministry of industry together with all other industry. There is no specific unit of ministry of industries who keeps control of edible oil production and provide support for the development of this section of Industry. Compiling the list of edible oil company and obtaining initial information was a challenge. In order to overcome this problem the researcher contacted the edible oil sub-sector established by KAM and searched various sources to compile the required information. For data collection from non-listed companies in Kenya in the private sector and talked to the senior management and explained the purpose of the study and the benefit they will get from the study. The researcher did not ask for the original financial statements and copy from the companies only prepared an excel file with basic formulas of calculating the ratios required by our study. With the help of this excel file executive in companies calculated the various ratios and

provided us with the ratios for their companies. This helped us in maintaining the identical information from all the companies. Our data collector was well trained to provide clarification on different ratios and purpose of that ratio. After collection of data, researcher reviewed and took clarification from company executive in case of a doubt.

5.4 Recommendations

The edible oil manufacturing firms in Kenya operate in a highly dynamic business environment and need to assess proper requirements of financing in value chain to improve technology, reduce the cost of production and utilize the capacity at the optimum level. This study estimated and compared the performance of different companies and the results indicate that each company can study industry norms and apply it to achieve the industry average or more in terms of financial performance. It also came out that additional financing in value chain affects the financial performance and therefore should be from long term sources of finance. In the overall, the study recommends that a correct mix of investment in primary activities and financing in supporting activities and working capital should be determined to utilize the optimum capacity.

5.4.1 Contribution to the Body of Knowledge

Study provided the model for determining the appropriate finance mix for edible oil companies in Kenya for achieving the optimal production cost and maximizes financial performance. Study compiled the empirical research in value chain development for manufacturing industry across the world and in Kenya which can

be used by manufacturing companies to develop their value chain based on their needs.

5.4.2 Policy Recommendations

Strategies to be developed for the availability of funds along the value chain with incentives to financial institutions. Strategies for improving capacity utilizations are established to improve the revenue collection, reduce foreign exchange loss and create employment opportunities in Kenya.

5.4.3 Recommendation for Practice

The management in the value chain should adopt strategies to reduce the cost of purchase of raw material. The management in the value chain should adopt strategies to reduce the cost of for improving the inbound logistics management

5.4.4 Recommendation for Further Studies

- Contract arrangements with farmers and for production of raw material financing
- Feasibility of establishing an independent organization supporting value chain financing in the different manufacturing sector in Kenya (Like SACO)
- Establish why edible oil companies are financing purchase of raw material from open market in Kenya instead of doing suppliers contract with farmers in large scale and stop importing the raw material to save foreign exchange reserves.

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APPENDICES

A1: Interview guide

Dear Respondent,

My name is Rajiv Agarwal, a PHD (finance) candidate at the Kenyatta university Nairobi. I am undertaking a research on Value Chain analysis in Edible Oil industry in Kenya. By virtue of being a edible oil manufacturing company in Kenya, you form the part of the respondents for this research. Please accept my invitation to participate in this research by sparing some time for interview and completing the documents review guide.

This interview schedule is being administered for research purposes and any information provided will be used purely for academic purposes and will be treated with confidentiality.

Thank you.

Please read the questions and provide the information requested.

A. Financing in Raw Material

a. Supplier Contract

1. Does your company enter into contract with Farmer for raw material for action?Y /N
2. (If Yes) Amount in (KSHL) of raw material purchased using suppliers contract.

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014

Raw Material through suppliers contract							

b. Import of Raw Material

1 Do you meet your entire raw material requirement from the contract arrangement Y /N

2 (If No) How much is the amount of your import of raw material every year in Kenya s

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Cost of Raw Material Imported							

B. Financing in Primary activities

a. Inbound logistic

1. Do you put premium financing in inbound logistic (Warehousing & Transportation) Y /N

2. (If Yes) What is your additional amount invested in last 6 years.

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014

Financing Inbound logistic							

b. Outbound logistic

1. Do you put premium in outbound logistic (Warehousing & Transportation) Y/N
2. (If Yes) What is your additional amount invested in last 6 years.

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Financing Outbound logistic							

C. Financing in support activities

a. Firm Infrastructure

1. Do you have corporate practices to expend the firm infrastructure
2. (If Yes) What is your additional amount invested in last 6 years in improving firm infrastructure

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Financing improving the infrastructure of the firm							

b. Human Resource Management

1. What is your amount invested in last 6 years in improving the human resources

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Expenditures in Human resources management							

c. Financing in Technology Development

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Expenditures in Technology development							

d. Financing in procurement development

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Financing in Procurement development							

D. Firm Characteristics

a. Firm Size

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Sales Turnover							

b. Capital structure

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Debt							
equity							

E. Working Capital details

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Current Assets							
Current Liabilities							

F. Cost of Goods Sold

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Cost of Goods sold							

G. Financial performance

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
ROI							
ROE							

H. Total Investment

Year / Cost in KSH	2008	2009	2010	2011	2012	2013	2014
Total Investment							

A2: Document Review Guide

Variable Definition / Year	Measurement	2008	2009	2010	2011	2012	2013	2014
Purchase of material through Supplier Contracts	Ratio of Ram material Locally purchased to Cost of goods sold							

Import of Raw Material (IRM)	Ratio of Imported raw material to cost of goods sold							
Inventory management (IM)	Current ratio Current asset to current liabilities							
Creditors management (CM)	Current ratio Current asset to current liabilities							
Debtors Management (DM)	Current ratio Current asset to current liabilities							
Inbound logistics (IL)	Ratio of Financing in inbound logistic to total investment							
Outbound logistics (OL)	Ratio of Financing in outbound logistic to total investment							
Firm infrastructure cost	Ratio Firm infrastructure cost to cost of goods sold							
Human Resources Management	Ratio Human resource management cost to cost of goods sold							
Technology Development	Ratio Technology Development cost to cost of goods sold							
Procurement Development	Ratio Procurement cost to cost of goods sold							
Firm Size	Logarithm of sales							
Firm Capital structure	Debt equity Ratio							
Return on Investment (ROI)	Ratio Earnings Before Tax And Interest/Total Assets							
Return on Equity (ROE)	Ratio Earnings Before Tax And Interest / Equity							
Tobin Q	Ratio Total assets value to replacement value of assets							

A3: List of Edible Oil Manufacturing Companies in Kenya

S No	Company Name	Location	Activity Category
1	Aberdare Oil Millers	Nyeri	Millers
2	Bidco Oil Refineries Ltd	Nairobi	Refiners
3	Corn Products Limited	Nairobi	Millers
4	Kapa Oil Refineries	Nairobi	Refiners
5	Menengai Oil Refineries Ltd	Nakuru	Refiners
6	Nakuru Oil Mills	Nakuru	Millers
7	Oil Extraction Limited	Nakuru	Oil Extractors
8	Palmac Oil Refiners	Nakuru	Refiners
9	Pwani Oil Products	Mombasa	Refiners
10	Rift Valley Product Limited	Nakuru	Processors
11	Voi Industries Ltd	Nakuru	Processors
12	Diamond Industries	Mombasa / Nairobi	Processors
13	Western Seed and Grain Co	Kitale	Processors
14	United Millers Ltd	Nakuru	Millers
15	Gill Oil	Nairobi	Refiners

Source: Kenya Manufacturing Association, 2015

A4: Composite Index for Financial performance (The dependent variable)

year	Company Code	Dependent Variable final Index
2008	1	0.254105
2008	2	0.247183
2008	3	0.420292
2008	4	0.789091
2008	5	0.564701
2008	6	0.411051
2008	7	0.334325
2008	8	0.366715
2008	9	0.32917
2008	10	0.315892
2008	11	0.387393
2008	12	0.438525
2009	1	0.323363
2009	2	0.277569
2009	3	0.448671
2009	4	0.828312
2009	5	0.637889
2009	6	0.450342
2009	7	0.453715
2009	8	0.569427
2009	9	0.378179
2009	10	0.43848
2009	11	0.563751
2009	12	0.540864
2010	1	0.469894
2010	2	0.430071
2010	3	0.597479
2010	4	0.892335
2010	5	0.557894
2010	6	0.64665
2010	7	0.604978
2010	8	0.741956
2010	9	0.507065
2010	10	0.596786
2010	11	0.763168
2010	12	0.787325
2011	1	0.399485
2011	2	0.345592
2011	3	0.637875
2011	4	0.79167
2011	5	0.50596

2011	6	0.608685
2011	7	0.461432
2011	8	0.726497
2011	9	0.482015
2011	10	0.524522
2011	11	0.907389
2011	12	0.838265
2012	1	0.392077
2012	2	0.390363
2012	3	0.773232
2012	4	1.060621
2012	5	0.511268
2012	6	0.713678
2012	7	0.443342
2012	8	0.741595
2012	9	0.438414
2012	10	0.680476
2012	11	0.858335
2012	12	0.819946
2013	1	0.415116
2013	2	0.417948
2013	3	0.870145
2013	4	1.019572
2013	5	0.59284
2013	6	0.791817
2013	7	0.565789
2013	8	0.804017
2013	9	0.475884
2013	10	0.707039
2013	11	0.984614
2013	12	0.901477
2014	1	0.499889
2014	2	0.506477
2014	3	0.988036
2014	4	1.286017
2014	5	0.617822
2014	6	0.898931
2014	7	0.589179
2014	8	0.844146
2014	9	0.504699
2014	10	0.840421
2014	11	1.30388
2014	12	1.002525

Source researcher 2015

A5: Letter of approval for data Collection

THIS IS TO CERTIFY THAT:
MR. RAJIV KUMAR AGARWAL
of KENYATTA UNIVERSITY, G-62 A Kaika Ji New Delhi India-110019 New Delhi India,has been permitted to conduct research in *All Counties*

on the topic: *EFFECT OF VALUE CHAIN FINANCING AND FINANCIAL PERFORMANCE OF EDIBLE OIL MANUFACTURING COMPANIES IN KENYA*

for the period ending:
22nd September,2016

.....
Applicant's Signature

Permit No : NACOSTI/P/15/10864/7980
Date Of Issue : 22nd September,2015
Fee Recieved :Ksh 41,600

.....
Director General
National Commission for Science, Technology & Innovation

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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Ref: No.

Date:

22nd September, 2015

NACOSTI/P/15/10864/7980

Rajiv Kumar Agarwal
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Effect of value chain financing and financial performance of edible Oil Manufacturing Companies In Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **all Counties** for a period ending **22nd September, 2016.**

You are advised to report to **the Managing Directors of the selected Manufacturing Companies, the County Commissioners and the County Directors of Education, all Counties** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

SAID HUSSEIN
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Managing Director
Selected Manufacturing Company.

The County Commissioners
All Counties.