THE MODERATING EFFECT OF AGE ON FIRM'S INTERNAL DETERMINANTS OF TRADE CREDIT OF LISTED FIRMS IN KENYA

BY

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DECLARATION

Declaration by the Candidate

This thesis is my original work and has not been presented for a degree in any other university or institution. No part of this thesis may be reproduced without prior permission of the author and/or Moi University.

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DEDICATION

First and foremost is to thank our Almighty God who has seen me through the thesis writing. I would also like to dedicate this project to my late father Mr John Ngeny and my mother Teresa Ngeny, my wife Jocelyn Sang and the Extension & Outreach Department of Moi University where I work for their financial and moral support. I also offer my gratitude to my friends and classmates for their encouragement.

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ABSTRACT

Trade credit is one of the main sources of funding for global companies. The importance of trade credit can also be seen from the proportion of investment that is financed through it. Despite the potential importance of trade credit, limited attention has been paid to its role and use, especially in developing countries. The main aim of the study was to establish the determinants of trade credit and moderating role of the age of the firms listed in Nairobi securities exchange. The study specifically determined the effect of debt levels, collateral, liquidity and inventory on firm trade credit. The study further determined the moderating effect of firm age on determinants of trade credit. The study was guided by both the transaction cost and the credit substitution theories and adopted an explanatory research design. The study was based in firms listed on the Nairobi securities exchange for the period 2012 to 2013 and used document analysis to collect secondary data from the company's annual report. Data were analysed through the use of descriptive statistics such as means and standard deviation while inferential statistics methods included correlation and moderated multiple regression techniques. The study findings indicated that debt levels ($\beta_1 = 0.5422$, $\rho<0.05$), liquidity ($\beta_3 = -0.0275$, $p < 0.05$) and inventory ($\beta_4 = -0.0399$, $p < 0.05$) have a significant effect on firm trade credit with an explanatory power of 56% ($R^2 = 0.5695$, $p< 0.05$), while collateral ($\beta_2= -0.1363$, $\rho > 0.05$) have an insignificant effect. On the other hand, firm age has a significant moderating effect on the relationship between determinants and trade credit. In particular, firm's age has significant interaction effect on debt level ($\beta_6 = -2.3609$, $p < 0.05$), the interaction effects on liquidity ($\beta_8 = -2.4649$, $p < 0.05$). Therefore, firms need to establish a well-defined trade-credit granting criteria to assess the creditworthiness of the buyers to avoid default risk or late payment by buyers. Firms should be cautious while pledging an asset as collateral since the bank has exclusive access to pertinent information. Also, firms should hold liquid assets to meet their financial obligations. There is also a need for firms to transform the raw material supplied into finished goods so that suppliers' advantage in repossessing and selling supplied goods is reduced. The study also contributes to credit substitution theory by indicating the possibility of using internal equity or external debt financing that cannot be undervalued in the market.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

OPERATIONAL DEFINITION OF TERMS

Age: Age is the length of time during which a being or thing has existed (Ismail, Rose, Abdullah & Uli, 2010). Here it is the firm's age which is defined as the number of years a firm has been listed in NSE

Firm: A commercial organization that operates on a for-profit basis and participates in selling goods or services to consumers (Coase, 1995).

Collateral: Property or it's equivalent that a debtor deposits with a creditor to guarantee repayment of a debt (Benmelech & Bergman, 2009).

Debt levels: The debt ratio is defined as the ratio of total – long-term and short-term – debt to total assets, expressed as a decimal or percentage. It can be interpreted as the proportion of a company's assets that are financed by debt (Denis & Mihov, 2003).

Inventory: Inventory is the raw materials, work-in-process products and finished goods that are considered to be the portion of a business's assets that are ready or will be ready for sale (Stevenson, Hojati & Cao, 2007).

Liquidity: This represents the current ratio that measures a company's ability to pay short-term and long-term obligations. The current ratio considers the current total assets of a company (both liquid and illiquid) relative to that company's current total liabilities (Goyenko, Holden & Trzcinka, 2009).

Trade Credit: Trade credit (measured by accounts receivable and accounts payable in the balance sheet of a firm) is an arrangement that allows firms to buy goods or services without making an immediate payment (Delanny & Weill, 2004).

ABBREVIATION AND ACRONYMS

AIMS: Alternative Investment Market Segment

AMT: Advanced Manufacturing Technologies

CMA: Capital Market Authority

MIMS: Main Investment Market Segment

NSE: Nairobi Securities Exchange

OECD: Organization for Economic Co-operation and Development

RPED: Regional Development on Enterprise Development

TCE: Transaction Cost Economics

UK: United Kingdom

US: United States

CHAPTER ONE

INTRODUCTION

1.1 Introduction/Overview

This chapter presents the background of the study, statement of the problem, the objectives of the study, the research hypotheses, and significance of the study and the scope of the study.

1.2 Background to the Study

Trade credit has been viewed as one of the main sources of funding for companies worldwide in all developing or developed economies (Van Horen, 2007). Trade finance is more advantageous to the buyers because of several reasons; first, suppliers are better placed in evaluating and controlling the credit risk of their buyers, that specialized financial institutions, trade credit may serve as a channel to access capital for firms that are unable to raise it through more traditional channels; second, it allows the suppliers to price discriminate through credit, third, trade credit reduces the cost of the transaction involved in accessing credit from a financial institution and lastly, it provides assurances about the quality of the supplier's products (Rajan & Petersen, 1997).

There are variations in trade credit across countries and across time, however, with perfect legal protection of creditors, trade credit loses its edge, because it becomes as difficult to divert cash as to divert inputs (Burkart & Ellingsen, 2004). The importance of trade credit as short-term finance has been documented by several studies (Vaidya, 2011). Recent research has found evidence that trade credit is financing approximately 60 per cent of small businesses in the US (Cuñat & Garcia-Appendini, 2012). Evidence from a study done in Italy showed that trade credit finances average

38.1% of the input purchases of non-rationed firms, as opposed to the 37.5% of rationed ones (Fabbri & Menichini, 2010). In all economies, the volume of trade credit is higher than short-term loans received from banks (Blasio, 2005) and it results from payment intervals mutually agreed by non-financial companies, Therefore, firms in countries with efficient legal systems use higher bank credit in comparison to trade-credit indicating that the development of a country's banking system and legal infrastructure predicts the use of trade credit (Demirgüç-Kunt & Maksimovic, 2001).

In developed market economies, access to a bank loan is positively correlated with familiar determinants of high credit quality (Cook, 1999) and represents more than one half of businesses' short-term liabilities and a third of all firms' total liabilities in most OECD countries (Boissay & Gropp, 2007). Therefore, in almost all industries, the volume of trade credit is higher than short-term loans received from banks (Blasio, 2005) Li, Zhou, Du and Zhao (2018) found that there exist differences between the use of trade credit between developed and developing countries. They went to indicate that a country's legal system has a larger impact on trade credit for firms with overdraft facilities than for those without overdraft facilities, and the impact of legal systems on trade credit is significant in more developed countries but not in less developed countries.

In the United States, Dary and Haruna (2019) indicated that trade credit accounted for 17.8% of firms total assets. In the UK, accounts receivable accounted for 28% of total assets while accounts payable constituted 19% of total assets of SMEs (Garcia-Teruel and Martinez-Solano, 2010). In Sub-Saharan Africa, Ghana, Dary (2018) reveals trade credit as the most important external source of financing working capital among firms in the informal sector. In related studies, Abor (2017) found high use of trade credit as

informal finance in Ghana among small and medium scale non-traditional exporters while trade credit ranks second to personal finance as source funds for new small and medium enterprises in South Africa (Fatoki and Odeyemi, 2010). Among African agro-food manufacturing firms, Dary and James (2017) found that 19% and 22% of sales and purchases of inputs respectively are on trade credit terms. In Tanzania, 65% of rice trade occurs in trade credit terms (Kihanga et al., 2010). Using survey data from Kenya and Zimbabwe, Fafchamps (2015) found a median share of trade credit in total purchases and sales of 75% and 50% respectively. Finally, Kwenda and Hosten (2014) found trade-credit payable and trade credit receivable constitute 32% and 29% of firms' total assets respectively. Also, recent empirical evidence does not support the long-held notion that trade credit is a costly form of credit relative to bank credit (Dary, 2017; Ellingsen *et al.*, 2016).

A study in the US revealed that trade credit is a net source of financing for about a third of the firms while for the firms in the retail sector it is over half of the net source of funds (Rajan & Petersen, 1997). A survey covering 48 countries by Beck, *et al.*, (2008) showed that on average 19.7% of all investment financed through trade credit, while in Russia 17% of the firms use trade finance with a further 31% of the firms use both bank loans and trade credit suggesting that bank credit and trade credit are used concurrently (Cook, 1999). In the UK and France, trade credit is the second most important source of external finance, preceded only by bank credit and as observed, trade credit represents more than 30% of all external finance (Cunningham, 2004).

In Europe, the number of creditors as a percentage of total assets is between 16 to 24 per cent for these countries (Gama, Mateus & Teixeira, 2010). Italian firms display high levels of trade credit in their balance sheets either as receivables or payables with

both representing more than 35 % and 25% of the asset amounts respectively (Blasio, 2005). In Turkey, trade credits constitute a large portion of the corporate sector's external finance (Özlü & Yalçın, 2012). Giannetti (2003) analysed a sample of non-traded smaller European firms in Portugal and found slightly higher ratios of accounts payable to assets, but lower ratios of accounts payable to other short-term debt indicating that trade credit can represent up to three times other types of short-term debt. Russian firms using trade credit are shown to have a higher probability of acquiring bank credit indicating that the use of trade credit is the precursor to obtaining bank credit (Cook, 1999).

In the African region, a study by Fisman (2001) indicated that credit shortage impact on the firm's capabilities and thus trade credit is an important form of financing for businesses in a broad range of industries and economies. Fisman and Love (2003) document that industries with higher dependence on trade credit financing achieve higher rates of growth in countries with weak financial institutions. This advantage is especially important in an environment with weak financial institutions. While the study by Biggs *et al.,* (1996) seeks to identify the determinants of access to trade credit using the first survey year (1993) of the Kenyan RPED data. In a Probit model, they find that access to trade credit increases with firm age and that it is positively influenced by the owner being of Asian origin.

A Kenyan RPED survey by Biggs *et al.,* (1994) focused on enterprise finance in Kenya at large confirmed that the use of trade credit increases with firm age. Advance payment by clients, on the other hand, appears to be more frequent among relatively small firms. Asian entrepreneurs appear to use trade credit preferably compared with their African counterparts. The ratios of various forms of trade credit to sales are

below 10 per cent, except for trade credit provided, which climbs to 17 per cent at most (for medium-sized firms). A Tobit regression on the proportion of suppliers extending credit shows that African-owned firms obtain trade credit from a smaller proportion of suppliers than do ethnic groups. Another Tobit regression reveals that African-owned firms rely less on trade credit for purchases, while relatively large firms tend to rely more on such credit.

1.3 Statement of the Problem

Trade credit is considered an important source of finance for firms and has been well researched, but the focus has been on financial trade-offs and is a major element of corporate finance (Bougheas, Mateut & Mizen, 2009) such that at the onset, small firms facing financial constraints due to their newness or opaqueness in their balance sheet use trade credit (Blasio, 2005). Thus, relatively few studies have attempted to ascertain its determinants. Past empirical evidence has indicated that trade credit is prevalent in countries with weaker financial institutions and poorly developed financial markets (Fisman & Love, 2003). This forms the external determinants of trade credit which is significant in African firms which are highly rationed out of credit markets, and thus trade credit has become an important source of financing (Dary & Haruna, 2019). Most of the study findings on trade credit have attributed trade credit to heterogeneity in country characteristics (Dary & Haruna, 2019) and markets (Dary, 2017) and methodological weaknesses (Kihanga, Lensink, Lutz, & Hermes, 2010). Second, most studies estimate demand and supply equations for trade credit separately raising concerns of model misspecification and estimation bias (Kihanga *et al.*, 2010).

Despite the potential importance of trade credit, limited attention has been paid to its role and use, especially in developing countries (Gustafson, 2004). The uptake of trade credit seems to weaken the credit channel as firms substitute it for bank credit in instances of monetary tightening regimes (Bougheas *et al.*, 2009). Unfortunately, there is very little systematic evidence about why trade credit is extended or which firms are the largest providers or users of trade credit (Rajan & Petersen, 1997). There is a dearth in studies on trade credit in listed firms coupled with few comprehensive empirical tests in Africa and thus the study seeks to estimate the moderating effects of firms' age on determinants of trade credit on the firms listed in the NSE, Kenya.

1.4 Purpose of the Study

The main aim of the study was to establish the determinants of trade credit and the moderating role of age of firms listed in the Nairobi Securities Exchange.

1.4.1 Specific objectives

1. To assess the effect of debt levels on firm trade credit
2. To determine the effect of collateral on firm trade credit
3. To assess the effect of liquidity on firm trade credit
4. To determine the effect of inventory on firm trade credit
5. To determine the moderating effect of firm age on the relationship between firm's determinants and trade credit

1.5 Hypotheses

H_{01}: Debt levels has no significant effect on firm trade credit.

H_{02}: Collateral has no significant effect on firm trade credit.

H_{03}: Liquidity has no significant effect on firm trade credit.

H_{04}: Inventory has no significant effect on firm trade credit.

H_{05i}: Firm age has no significant moderating effect on the relationship between debt levels and firm trade credit.

H_{05ii}: Firm age has no significant moderating effect on the relationship between collateral and firm trade credit.

H_{05iii}: Firm age has no significant moderating effect on the relationship between liquidity and firm trade credit.

H_{05iv}: Firm age has no significant moderating effect on the relationship between inventory and firm trade credit.

1.6 Significance of the Study

Completing this study brings together aspects of theory and practice. For theory, this study is an expansion of previous studies on the determinants of trade credit practices. Besides, utilizing data from Nairobi Securities Exchange, one of the emerging economies contributes to the literature of determinants of trade credit, which traditionally concentrates on developed economies rather than other economies.

The research hopes to inform readers on the factors influencing trade credit for listed firms in the Nairobi Securities exchange, and also enables managers to understand how collateral, profitability and liquidity affect trade credit.

It educates investors that listed firms may rebalance their trade credit after implementing substantial investment plans, such that initial public offer activities follow high investment and growth and not vice versa hence getting to the desired trade-credit level.

This research would improve the financing of most organizations in third world countries like Kenya hence provide a base for development, and it is also useful to academicians as a source of knowledge for further research.

1.7 Scope of the Study

The study was limited to Nairobi securities exchange. The data was captured from owners of the company. Considering the exponential growth of Nairobi Securities exchange, the number of firms is growing on a daily basis hence accurately capturing these companies was a challenge.

The study covered those companies that were listed in the Nairobi securities exchange (N.S.E) and have actively traded for the last eight years. Companies that have not traded actively their shares in the N.S.E from 2004 to 2011 were excluded from the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents relevant literature related to the study and compares the views of different authors on the same. It includes the concept of trade credit, profitability on firm trade credit, liquidity on firm trade credit, collateral on firm trade credit, inventory on firm trade credit, trade credit and firm performance theoretical framework and conceptual framework.

2.2 Study Concepts

2.2.1 Trade credit

Trade credit is one of the oldest forms of corporate financing and it continues to be very important at present (Wei & Zee, 1997). It typically involves three elements: the agreed discount rate, qualification for early payments and maximum payment days (Cunat, 2007) three elements; the agreed discount price, qualification for early payment and maximum payment days, however, depending on the type of credit policy, payments can be made at different times and may occur before delivery, on delivery or after delivery (Bastos & Pindado, 2007).

Trade credit has both financial and transactional components. The financial aspects relate to the source of financing alternative to the bank credit while the transactional components serve to facilitate the exchange of goods, time-invariant aspects of trade credit (Blasio, 2005). Trade credit can also be a convenient cash management tool by matching the timing between the cash inflows and outflows. Firms also the growth effects of working capital needs, thus suggesting that the use of trade credit is related to a firm's revenues and current assets such as inventories and account receivables,

which are themselves related to a firm's field of activity or industry (Alphonse, Ducret & Séverin, 2006). The three important factors driving trade credit: 1) as a way for suppliers with cheaper access to credit to finance buyers; 2) As a means for the buyer to exercise market power and obtain favourable price discrimination, and 3) As a warranty assuring buyers of product quality. Given these three factors, terms may be influenced by the supplier's need to contain financial risks (Klapper *et al.,* 2012).

Trade credit is an arrangement where the suppliers lend to firms under constraints because of the comparative advantage of information access which gives them access to assets during liquidation and is generally associated with the purchase of intermediate goods with empirical evidence showing that the implicit interest rate in a trade credit agreement is generally very high compared to the rates of bank credit (Cunat, 2007). This, therefore, lends the supplier firms an implicit equity stake in the firms in exchange for better access to more credit than would have been not available (Rajan & Petersen, 1997) in that suppliers not only sell goods and services but extend large amounts of credit as well (Burkart & Ellingsen, 2004). In some instances, suppliers may also act as lenders of last resort by insuring against liquidity shocks (Cunat, 2007).

Non-financial firms have a comparative advantage of acting as intermediaries to channel funds short terms to buyer firm information (Demirgüç-Kunt & Maksimovic, 2001), therefore the importance of trade credit is also seen from the proportion of investment that is financed through it, a fact that is attributable to suppliers who lend more liberally than the banks because it is typically less profitable for an opportunistic borrower to divert inputs than to divert cash (Fisman & Love, 2003). However, in the

absence of effective legal enforcement, trade credit requires trust and reputation (Fisman & Love, 2003).

Trade credit (measured by accounts receivable and accounts payable in the balance sheet of a firm) is an arrangement that allows firms to buy goods or services without making an immediate payment (Delanny & Weill, 2004) and has been conceptualized as trade receivables fewer trade payables (divided by the total assets) (Blasio, 2005). Trade credit does not require immediate payment for product delivery and is an important source of funds for business customers (Alphonse, Ducret & Séverin, 2006). Its use may likely be a very expensive source of credit in the long run (Cunningham, 2004) but varies substantially across firms and industries and a substantial body empirical research exists that attempts to explain this variation (Vaidya, 2012). According to Burkart & Ellingsen (2004), trade credit should have shorter maturity than bank credit, in that the trade credit loses its advantages once illiquid input is transformed into liquid output.

Trade credit may also be used as a source of funds if raising capital through other sources is more expensive. Price discrimination being illegal in many countries, firms may choose to discriminate between buyers using trade credit. Some firms may choose to make early payments to take advantage of discounts while others may have an incentive to pay towards the end of the credit period. Suppliers may have some funding advantage over banks in evaluating and controlling credit risk. If suppliers are likely to interact much more closely and more often with buyers compared to banks then this is likely to give them a better idea of the business prospects that the buyer faces. If the good supplied cannot be resold by the buyer then the supplier could hold

off the threat of stopping supplies if payments are not made in time (Rajan & Petersen, 1997).

Trade credits usually a highly flexible form of credit, which relies mostly on informal mechanisms of enforcement, based on ‘reputation’ and long-term relationships and often without any written contract. For example, suppliers are often willing to accept late payments without charging interest or to allow customers to take unearned cash discounts, especially when they have a long-standing relationship (Summers and Wilson, 2002; Cannari *et al.*, 2004). Besides being an obvious advantage for the buyer, this flexibility can also benefit the supplier, when he has an interest in relaxing *ex post*-trade credit terms, for example in order to help customers overcome a temporary financial difficulty, thereby protecting his long-term investment. In this case, suppliers can be seen as liquidity insurance providers (Cuñat, 2002).

When supplier firms deliver goods to their customers, they often do not require to be paid immediately, but instead, they offer credit terms with a delay in the payment. This practice is called trade credit (García-Appendini, 2007). Trade credit transactions normally involve short-term for example thirty to sixty days delayed payment of purchases of intermediate goods or services. By delaying payment, these supplier firms are effectively funding their clients with short-term debt. However, trade credit has three main differences concerning other types of corporate debt. First, suppliers lend ‘in-kind’; they seldom lend cash. Second, in contrast with bonds or loans, trade credit is frequently not subject to specific, formal contracts between the lender and the borrower. Finally, trade credit is issued by non-financial firms. Trade credit is one of the most important sources of borrowing at an individual firm level. This is true among all types of firms and throughout different economies (Giannetti, 2003).

Suppliers may also have an advantage over banks concerning the repossession and resell of the goods supplied in case of default. Trade credit may arise as a financial response to variable demand. Trade credit can be seen as an outcome of the interaction between the product and financial markets which arises because it provides the seller with an advantage in inventory management. Sellers can reduce their finished goods inventories by offering trade credit. When business conditions are bad (i.e. inventories pile up) firms may choose to postpone payments for raw materials purchased. Trade credit may also enable firms to lower transactions costs (Cunningham, 2004).

Trade credit has been thoroughly researched mainly from the financial substitutes and complements perspective (Bougheas *et al.*, 2009) with numerous theories providing explanations for the provision of credit by suppliers, however, these theories relate to the market structure and/or product characteristics and suggest that certain industries have a greater ability to utilize trade credit more than others (Fisman & Love, 2003).

2.2.2 Determinants of trade credit

Giannetti, Burkart and Ellingsen (2015) highlight the importance of demand characteristics and firm creditworthiness in influencing the use of trade credit as well as the ultimate end-usage of such facilities. Klapper, Laeven and Rajan (2011) find that larger and more creditworthy buyers receive contracts with extended maturities. Using US data, Aktas et al. (2012) find evidence that trade credit usage is affected by investment quality. Casey and O'Toole, C. (2014) also test the determinants of the terms attached to trade credit, finding that these are determined by information availability and buyer creditworthiness.

When liquidity dries up, firms have a propensity to complement bank lending with trade credit. Casey and O'Toole (2014) indicate that, when firms are facing the bank lending constraints, firms are more inclined to borrow from more expensive non-institutional sources provided that investment returns exceed the cost of funding from alternative credit providers. Burkart and Ellingsen (2004) find that, where banks are rationing credit, suppliers are often better positioned to provide credit. Again, this arises due to relative advantages in overcoming firm-related moral hazard and information asymmetries.

Using dynamic and static structural equation modelling, Dary and Haruna (2019) indicated that the demand and supply trade credit is simultaneously determined by the firm's short-term leverage, firm size and experience. The study further showed that turnover (inverse relationship) as the unique determinant of trade credit supply, and cashflows (inverse effect), raw material inventories (inverse effect) and investment in current assets (positive effect) as the peculiar determinants of trade credit demand

2.3 Theoretical Review

2.3.1 Transaction cost economics theory

The transaction cost theory according to Coase (1937) and Williamson (1985) indicate that the decreasing costs of search, evaluation and monitoring of competing suppliers should lead to a shift toward markets as a form of organizing economic activity. The theory stipulates the transaction costs are encountered whenever a firm seeks to procure a service or good from a provider (Williamson, 2007). It further argues that a firm can make the efficient allocation of resources than a market due to imperfections in the markets and three types of transaction cost exist; search and information cost, bargaining cost and enforcement costs. Transaction cost economics

has been the predominant theory used to examine business sourcing decisions from make versus buy and the tenets imply that sourcing decisions involve a comparison of production costs incurred in producing a product or process internally with the transaction cost associated in purchasing a process or product from an external source or market (Adams et al., 2009).

The transaction cost economics (TCE) is premised on the fact that transactions must be governed as well as being designed and carried out under certain institutional arrangements (Shelanski & Klein, 1995) and thus it identifies service-specific characteristics that affect the efficacy of contracting (Brown & Potoski, 2005). The transactional efficiency, in essence, cost minimization, will be achieved if the transactions are assigned to differing governance structures (Yukins, 2010). The transaction costs include the administrative resources needed to manage and implement the contract and perform adequate oversight (Girth, Hefetz, Johnston & Warner, 2012).

Transaction costs are found to be positively related to contract extensiveness with the costs of contracting being associated with the increased use of contract terms on the assignment of rights, after-sales service, and legal recourse (Anderson & Dekker, 2005). Trade credit economizes on the need to raise funds from inefficient financial markets while still permitting profitable real transactions to take place. Trade credit plays an important role in providing finance to many firms in developing countries. In such countries, the firms that rely particularly on trade credit grow faster than do the firms without access to trade credit. In developing countries, the provision of trade credit by suppliers may be an important channel by which firms can access capital indirectly, through their suppliers. This may permit productive transactions to take

place which might not have taken place if they needed to be financed directly. This type of intermediation can be efficient because it economizes on the total amount that the buyer and the seller need to raise from the inefficient financial market (Frank & Maksimovic, 2018).

2.3.2 Credit substitution hypothesis

The credit substitution hypothesis was advanced by Meltzer in 1960 and postulates trade credit – bank credit is substituting since banks and financial institutions were not only the sources of credit for small firms. The hypothesis relies on the trade credit being an alternative to bank credit as a source of finance. The use of trade credit is prominent in both small and large firms who have no access to open market credit (Blasio, 2005). Substitution hypothesis theorizes that firms are more likely to use trade credit when credit is constrained despite the supposedly high cost (Alphonse, Ducret & Séverin, 2006) thus it is traditionally considered as a substitute for bank loans, empirical analysis indicates that trade credit helps firms to improve the reputation by signalling the firm's quality and thus facilitates access to bank debt (Alphonse, Ducret & Séverin, 2006). They, therefore, use trade credit and accordingly in times of monetary tightening, they would preferably use bank credit however, the magnitude of substitution effect is modest (Blasio, 2005).

Trade credit is substitutable to bank loans, the literature generally argues that simultaneous decreases in bank loans and increases in trade credit indicate that firms are unable to obtain financing from banks and that trade credit works to mitigate the effects of firms' financial constraints (Boissay & Gropp, 2007). Use of trade credit alleviates the credit constraint due to imperfect information and credit rationing both directly as a substitute and indirectly as a bank loan. Therefore, the use of trade credit

acts as a signal and reveals the supplier's unique information to the bank (Alphonse *et al.,* 2006). Findings by Lin and Chou(2015) indicated that there is a significantly positive relationship between the supply of trade credit (i.e., accounts receivable) and bank loans and a significantly negative relationship between the demand of trade credit (i.e., accounts payable) and bank loans, indicating a complementary and substitution effect between trade credit and bank loans.

The substitution hypothesis holds that trade credit is a substitute for financing by financial intermediaries with the reliance on trade credit is likely to be highest in countries where financial systems are undeveloped (Demirguc-Kunt & Maksimovic, 2001). In this condition, the potential borrowers are constrained from access to capital and turn to substitute sources of financing, in particular, non-financial corporations. In this sense, trade credit and bank credit are substitutes, and trade credit is expected to be used more heavily in countries with undeveloped financial systems. Since financial contracts are more likely to be enforceable in countries with efficient legal systems that guarantee creditor rights, the substitution hypothesis predicts a negative relation between the efficiency of the legal system and the use of credit.

2.4 Empirical Literature

2.4.1 Debt levels and trade credit

Empirical studies by Kohler *et al.,* (2000), Nielson, (2002) and Petersen and Rajan (1997) indicated that firms that obtain enough credit from institutional sources have lower accounts payable, thereby indicating the possibility that trade credit is a substitute for bank credit. Evidence by Deloof & Jegers (1999) indicates that short term bank credit is a substitute for accounts payable. Fisman & Love (2003) found

that small firms in the US held significantly higher levels of accounts payable which indicate that these firms preferentially use trade credit as a source of financing of the last resort because they are constrained to access bank credit. Ferrando & Mulier (2013) argue that accounts receivable is important for the performance of inventory management. For a given aggregate demand, higher production increases inventories in their model; and minimization of the (inventory) costs implies that firms will increase accounts receivable offered to sell more and consequently hold fewer inventories. Furthermore, accounts receivable is proven to be a useful tool when there is considerable uncertainty about the quality of a firm's product among potential customers.

The lower borrowing cost on loans secured by accounts receivable stems essentially from the principle of risk diversification (Klapper, 2001; Burkart and Ellingsen, 2004). The bank will not be repaid only if both the buyer and the supplier default on their obligations. As in standard portfolio analysis, when the probabilities of default are not perfectly correlated, diversification lowers total portfolio risk. As a result, in these models, where suppliers have an advantage over banks in screening their clients and in monitoring and enforcing loan contracts, trade credit only flows from larger or more creditworthy firms to those that are in some way riskier or credit-constrained. On the contrary, when accounts receivable can be collateralized, it is not necessarily true that trade credit can only be extended by firms with easier access to capital markets.

Dermirguc-Kunt and Maskimovic (2001) showed that trade credit is a compliment to lending by financial institutions. The studies by Burkart and Ellingson (2004) and Cunningham (2004) provide strong support that trade credit and bank credit are

compliments for firms whose investments are more likely to be financially constrained. However, for firms whose investments are less likely to be financially constrained trade credit and bank credit are substitutes. The study by Bougheas *et al.,* (2009) find that accounts payable are substitutes for bank loans while accounts receivable are compliments to bank loans.

2.4.2 Inventory and trade credit

The studies on the effects of inventory on trade have been highlighted by several studies. Chen and Teng (2015) observed that in today's competitive markets, most firms in the United Kingdom and the United States offer their products on trade credit to stimulate sales and reduce inventory. Another study by Cuñat and Garcia-Appendini(2012) indicate that suppliers offer more credit to firms with a lower ratio of finished goods to inventory, providing validity to theories posing a higher ability to liquidate collateral by suppliers (Cunat, 2007) reported that liquid assets negatively impacted accounts payable, thus a fall in liquid assets will precipitate a rise in accounts payable. Liquid assets have a significant positive impact on accounts payable and significant negative impact on accounts receivable (Bougheas *et al.,* 2009) thus it influences both accounts payable and accounts receivable (Vaidya, 2011) contrary to the findings of Petersen & Rajan (1997) and Bougheas *et al.,* (2009).

An empirical study by Vaidya (2011) found a strong negative relationship between the two the ratio of finished goods inventories to total inventories with respect to accounts payables. He argues that the ratio of finished goods inventories to total inventories reflects the "supplier's advantage in liquidating the borrower's assets". If the ratio of finished goods inventories to total inventories is large this reflects a

lowering of the supplier's advantage in repossessing and selling supplied goods because the buyer has transformed the raw material supplied into finished goods.

Giannetti *et al.*, (2011) affirmed that trade credit depends on the nature of the goods that the firm is providing such that suppliers of differentiated products and services have larger accounts receivable than suppliers of standardized goods and firms buying more services receive cheaper trade credit for longer periods. When investments in inventory are constrained by the availability of trade credit, firms will then substitute trade credit for bank credit (Blasio, 2005). Evidence by Mateut, Mizen & Ziane (2015) indicated that trade credit extended is influenced by the extent to which firms hold different types of inventories. Firms with large shares of inventories in raw material form increase their extension of trade credit (relative to sales). As this is the last type of inventories to leave the storage, firms reduce inventory costs through sales of final goods financed by trade credit, if necessary. Therefore, the composition of inventories affects trade credit offered by suppliers.

Cunat (2007) found a significant and positive relationship between inventories and accounts payable of firms. Thus, when the accounts payable are higher, inventories should also be correspondingly and significantly higher inventories. A strong negative relationship between inventories and accounts receivable providing the link that firms use trade credit to increase sales while reducing inventories, however, inventories insignificant related to accounts payable (Bougheas *et al.*, 2009). Another study used econometric analysis and focused on the direct effect that trade credit plays on firms' inventory investment and the indirect effect that it has on the sensitivity of firms' inventory investment to the coverage ratio (Valderrama, 2003). The study found that three reasons justify the choice of inventory investment. First, inventory investment

plays a crucial role in business cycle fluctuations. Second, because of its high liquidity and low adjustment costs, inventory investment is likely to be more sensitive to financial variables (including trade credit) than investment in fixed capital. Third, trade credit is often related to the financing of inventories.

2.4.3 Liquidity and trade credit

The studies on the effects of liquidity on trade credit have been highlighted empirically. For instance, in the state-owned enterprises in China, Oh and Kim(2016) found that the relationship between growth opportunities and trade credit (both accounts receivable and payable) is significantly negative and is more pronounced in private firms than in state-owned enterprises(SOEs). Alphonse *et al.,* (2003) argued that firms adopt what is called the matching approach to finance i.e. finance short term needs with short-term finance. While Cunat (2007) reported a negative influence of liquid assets on accounts payable. If such an approach is adopted by firms then accounts payable should have a positive relationship to liquid assets.

Among Belgian firms, liquid assets do not influence accounts payable (Deloof & Jegers (1999). The holding of liquid assets is assumed to have a direct relation to the cost of extending trade credit but theoretically, the expected sign for this variable remains indeterminate (Bougheas *et al.,* 2009). They report that liquid assets have a negative and significant influence on accounts receivable and a positive and significant influence on accounts payable. Among Indian manufacturing firms, firms with greater access to bank credit offer less trade credit to their customers. On the other hand, firms with higher bank loans receive more trade credit. Holdings of liquid assets have a positive influence on both accounts receivable and account payable (Vaidya, 2011).

Several studies have ascertained the role of liquid assets as a determinant of trade credit. Such studies include Deloof & Jegers (1999); Bougheas, et al., (2009) and Cunat (2007). While Deloof & Jegers (1999) find that liquid assets are not related to accounts payable, Cunat (2007) reports that liquid assets negatively impacted accounts payable. Asides, the study shows that a fall in liquid assets will precipitate a rise in accounts payable. Bougheas *et al.,* (2009) found that liquid assets have a significant positive impact on accounts payable and significant negative impact on accounts receivable. Vaidya (2011) finds that liquid assets have a significant positive influence on both accounts payable and accounts receivable contrary to the findings by Bougheas *et al.,* (2009).

2.4.4 Collateral and trade credit

Empirical studies show that small firms, which are characterized by a small amount of collateral relative to their liabilities, tend to have more problems to access external finance and thus would preferably substitute financial credit with trade credit. In this respect, accounts payable could be particularly important as an alternative source of finance. At the same time, the cash management tool argument suggests that also large firms tend to use accounts payable but also accounts receivable (Murfin & Njoroge, 2012). The issue of collateralization is not the only special feature that trade credit has when it comes to bankruptcy and financial distress. The combination of trade credit being a short-term form of debt and a possible informational advantage on the supplier's side may make it effectively quite a senior form of credit, even though, formally is a very junior contract (Cuñat & Garcia-Appendini, 2012).

Furthermore, as Klapper (2001) points out, the decision to pledge accounts receivable may have different motivations than pledging other collateral'. From the seller's

perspective, the main purpose of trade credit is to provide a guarantee of product quality or more generally to build customer relationships (Summers and Wilson, 2001). As a result, being able to extend trade credit at competitive conditions is an essential tool for competition in the product market. The decision of a firm to post accounts receivable collateral can be seen as a way to lower funding costs in order to be able to offer trade credit at competitive terms.

As Boot and Thakor (2003) point out, it is somewhat puzzling that unsecured loans are observed despite the obvious benefit of a lower borrowing cost with a secured loan: 'what exactly is the cost the borrower perceives in pledging an asset as collateral?' The collection of accounts receivable provides the bank with exclusive access to a continuous stream of information about the borrowing firm and its customers (Mester, *et. al.,* 2002). This gives the bank an information advantage, but it can represent a cost for the borrowing firm and its customers. This is evident if we imagine that all sales are made on credit and all accounts receivable are pledged as collateral to only one bank. In this case, the bank will know every customer of the borrowing firm, their relative shares in firm's total sales; the length of payment delays granted to each customer, whether the customer pays on time or not or is insolvent. As in Ruckes and Rheinbaben (2004), if such information is disseminated through voluntary or unintentional leaks to third parties (such as competitors and suppliers), this can be highly detrimental to the borrower as well as to the customers.

The borrower can reduce information disclosure costs by limiting the total amount of information which is disclosed (the share of accounts receivable pledged as collateral), but this comes at the cost of higher interest rates. As an alternative, the borrower can achieve the same goal by dispersing a given amount of information

among a plurality of banks. This represents a sharp difference between standard lending and lending secured by accounts receivable. In the first case, when the borrowing firm is required to release confidential information to the lenders to demonstrate its creditworthiness, increasing the number of creditors enhances the probability of an information leak because the same amount of information is revealed to a plurality of lenders. By contrast, in the second case, each bank has access only to a limited amount of information and cannot exploit the complementary effect of the different pieces of information. There is an additional reason, closer in spirit to the analysis by Boot and Thakor (2003), why information disclosure can represent a cost for the borrowing firm and its customers. Boot and Thakor (2003) suggest that pledging an asset as collateral entails the loss of flexibility, which may represent the other side of its financial advantage.

Pledging accounts receivable as collateral involves waiving this form of flexibility. Since it is the bank (and not the seller) which collects the receivables, sellers and buyers are prevented from informally renegotiating their contracts. Moreover, when the customer cannot pay his trade debts on time, this information will directly damage his reputation and indirectly ruin the reputation of his supplier. As an extreme case of relationship lending, trade credit can be particularly exposed to the soft-budget-constraint problem. In some cases, the seller may find it convenient to relinquish the flexibility of trade credit and the possibilities of renegotiation, for example when he wants to make it costlier for the buyer to delay payment or to default. Pledging accounts receivable as collateral, in this case, can be seen as a tool to discipline the buyer's behaviour and should result in a lower probability of default or late payment.

2.4.5 Firm's age and trade credit

Casey and O'Toole, C. (2014) used euro area firm-level data and found that small- and medium-sized enterprises (SMEs) are more likely to use trade credit. Use of trade credit increased with firm size and age. Their findings indicate a robust positive relationship between country- and firm-level variables including controls for firm risk. Gama, Mateus and Teixeira (2010) indicated that there exists a positive relationship between young firms and trade credit that helps to solve principal-agent problems of managerial behaviour, more pronounced for small firms due to the lack of separation between ownership and management.

2.5 Knowledge Gap

Since Meltzer (1960) research, a substantial number of studies have investigated the determinants of using trade credit, however, most of these studies have been done in industrialized economies. Only a few researches have specifically been interested in developing countries' cases (McMillan & Woodruff, 1999; Fafchamps, 1997; Demirgüç-Kunt and Maksimovic, 2001; Fisman, 2001; Isaksson, 2002; Fisman and Love, 2003). It appears that companies operating in countries having underdeveloped and/or inefficient legal and financial system depend relatively more on trade credit (Johnson *et al.,* 2002; Beck *et al.,* 2008; Saito & Bandeira, 2010). Further, previous studies only provided partial results on the effect of collateral, liquidity, debt levels and inventory on trade credit. Most of the studies were also conducted in developed countries which have different financial markets from developing countries such as Kenya.

2.6 Conceptual Framework

A conceptual framework defines the research problem and guides the subsequent discussions on the research topic. It is an approach to research that is informed by multiple research traditions and design strategies (Depoy& Gitlin, 2011).

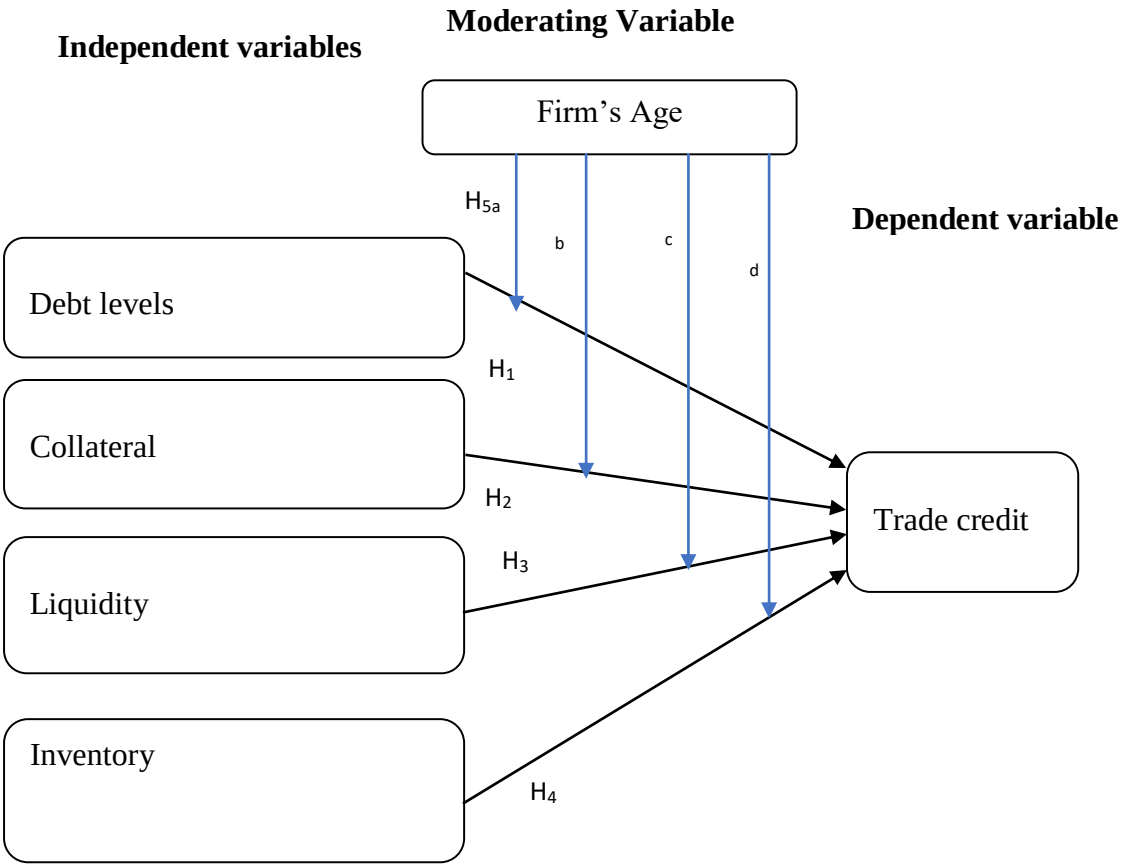

Figure 2.1: Conceptual Framework
Source: Author (2016)

The study independent variables (debt levels, collateral, liquidity and inventory) were assumed to affect the dependent variable (trade credit). Hypothetically, low debt has a negative signal to the banks concerning the amount of trade credit. During periods of low demand, firms have to pay a larger share of their purchases in cash. An increase in promotional expenditures has about the same magnitude of effect as for firm age of demand conditions. The higher skills signal the higher the ability and may, therefore, proxy for lower risk. These results suggest that lower risk has a significantly positive

association with the trade credit amount. Relatively older firms obtain more trade credit, which may be due to a build-up of trust and reputation over time, gained, for instance, by repeated interaction and the fact that they have had time to enlarge and improve their social networks with suppliers. Tangible assets in total assets are negatively related to the amount of trade credit.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter covers all the aspects of the research design and methodology. The content elements for the chapter include; the research philosophy adopted, the research approach to be used, the target population, sample size determination, research instruments to be used in data collection, the data collection procedures and data analysis techniques to be used.

3.2 Research Design

A research design is a general plan of how the researcher will go about answering the research question(s). It contains clear objectives, specifies the data and considers the constraints as well as discussing ethical issues (Saunders *et al.*, 2009). The study adopted an explanatory research design since it attempted to clarify why and how a relationship exists between two or more phenomena. Explanatory research design is a useful educational research method, particularly for gathering and analyzing data at a specific point in time to describe the causative relation among existing conditions, identifying standards against which existing conditions can be compared and determine the relationships that exist between specific events (Manion & Cohen, 1994).

3.3 Target Population

The study was conducted in firms listed on the Nairobi securities exchange for the period 2013 to 2014. These companies must have been trading actively and consistently (not suspended) for at least eight (8) years. Firms in the study only

included companies in 47 MIMS and 13 AIMS arriving at a total population of 60 companies.

Out of the 60 listed companies, the study chose those industries which are goods oriented as opposed to service-oriented. Firms which are goods oriented tend to have stock of inventory which serves as a definitive factor in determining trade credit. Second, the study chose firms that had been consistently trading for the study period from 2006. This was meant to eliminate the problem of missing data which would have violated the precision and completeness principle. Third, the study thus utilized data from 41 companies as the other 14 companies had either been recently listed or had inconsistently traded at the NSE and another five (5) were service-oriented firms. The distribution of the companies utilized for the study was as follows: seven (7) agricultural, seven (7) commercial and services; twelve (12) banking and insurance; five (5) construction and allied; two (2) automobile and accessories; three (3) energy & petroleum and five; and (5) manufacturing and allied.

3.4 Sampling and Sample Size

A sample design is a definite plan for obtaining a sample from the sampling frame and it is a technique or the procedure the researcher adopts in selecting some sampling unit from which inferences about the population is drawn. Sampling design is determined before any data are collected (Mugenda & Mugenda, 1999). Further, Patton (2002) argued that the sample size depends on what one wants to know, the purpose of the inquiry, what is at stake, what is useful, what has credibility and what can be done with available time and resource. The study used sampled firms in those industries which have tangible products which include seven (7) agricultural firms, three (3) firms from the automobile sector, five(5) construction and allied firms, five

(5) firms from the energy sector, ten (10) manufacturing firms, and ten (10) firms from commercial and service sector making up a total of 40 firms.

3.5 Data Collection Instruments and Procedures

3.5.1 Document analysis

Since the nature of the variables in question was secondary in nature, the study used document analysis. Secondary data are often used in research projects and include written materials such as reports to shareholders, and administrative and public records as well as organizations' databases (Saunders *et al.,* 2009). The study reviewed the annual companies' financial summaries and reports in the corresponding years. Some of these summaries and reports were found in the organizational databases and public records as reports to shareholders.

3.5.2 Data collection procedures

The data was collected procedurally in several phases. In the first phase, the researcher obtained clearance from the university which enabled him to proceed to the field for data collection. In the second phase, the researcher sought a research permit from the National Commission for Science Technology and Innovation (NACOSTI). The final phase involved the data mining from the organizational databases which the researcher sought for company's websites with a view of locating financial reports from the site. These data obtained were segregated according to their appropriateness to the research objectives.

3.6 Data Analysis and Presentation

Once data had been coded, the researcher principally analysed through the use of descriptive and inferential statistics. Since the data were in ratio scale, percentages, means and standard deviation were used for the analysis of the data with the results

being presented in a tabular format. The analysis was aided through the software package for social scientists (SPSS). The study used the following inferential statistics to make inferences from the sample: Correlation and regression analysis.

A correlation coefficient is a statistical measure of association between two variables which indicates both the magnitude of the linear relationship and the direction of that relationship. Partial correlation highlights the relationship between two variables while holding the other effects constant (Coopers and Schindler, 2014).

Regression analysis is a general statistical technique used to analyse the relationship between a single dependent variable and several independent variables. There is no single best method (sequential search, stepwise or forward and backward elimination techniques) and the prudency approach calls for the employment of a combination of approaches to capitalize on the strengths of each to reflect the theoretical basis (Hair *et al*, 2010).

3.6.1 Assumptions of the linear regression

Diagnostic tests were carried out before any classical linear regression analysis was conducted. These tests are based on a set of assumptions that are usually made concerning the unobservable error or disturbance terms and the generalizability of the results (Brooks, 2014) and include: the linear relationship between parameters, no perfect collinearity, data independence, normally distributed and homoscedastic (Wooldridge, 2009).

The study used the Shapiro-Wilk (W) test which is used for small and medium samples size where n $\leq$2000 is used to assess the actual degree of departure from normality. However, when the Shapiro-Wilk W- test statistic is significantly smaller than 1, the normality assumption is not met and in such cases, the variable in question

is first transformed by taking, the square root, logarithms, squared or cubed terms or even the inverse of the variable (Garson, 2013).

The test for homoscedasticity is carried out to determine whether the variables display constant variance and is best examined graphically or through the use of Breusch-Pagan-Godfrey test (Garson, 2013). If heteroscedasticity is as a result of non-normality in one of the variables, the remedies include data transformations similar to those of correcting non-normality or through the use of weighted least squares regression in a linear regression context (Hair *et al.,* 2010).

High collinearity or multicollinearity is signalled when inter-correlation among the independents is above 0.9 (Hair *et al.,* 2010). Collinearity is detected when Variance Inflation Factor (VIF) ≥ 10 or a tolerance figure, $T \geq 0.4$ (Sekaran & Bougie, 2010) and in such cases the variable in question is dropped from the analysis(Saunders *et al.,* 2009).

3.6.2 Operationalization and measurement of the variables

Operationalizing is done by looking at the behavioural dimensions, facets, or properties denoted by the concept which are then translated into observable and measurable elements to develop an index of measurement of the concept (Sekaran & Bougie, 2010). The study adopted indicators from earlier studies as shown in table 3.1.

Table 3.1 Operationalization and measurement of variables

Variable	Type	Operationalization	Measurement
Trade credit	Dependent	Trade credit	$\text{Trade credit} = \frac{\text{Trade receivables} - \text{trade payables}}{\text{Assets}}$
Debt levels	Independent	Debt ratio	$\text{Debt ratio} = \frac{\text{Long term debt} + \text{Short term debt}}{\text{Total Assets}}$
Collateral	Independent	Leverage	$\text{Leverage} = \text{total debts/Total equity}$
Liquidity	Independent	Current ratio	$\text{Current ratio} = \text{current assets/Current liabilites}$
Inventory	Independent	Value of inventory	The total value of inventory
Firm's age	Moderating	Time of listing	Number of years listed

Source: Researcher, (2016)

3.6.3 Model specification

Multiple regression model was used to establish the multiple regression coefficients of correlation and difference between extents of determinants of trade credit moderated by firm age. The multiple linear regression models are shown below;

Moderated relationship

The overall regression equation for the moderated effects model is as shown in equation 3.1

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_1Z + \beta_7X_2Z + \beta_8X_3Z + \beta_9X_4Z + \varepsilon_i, \quad (3.1)$$

Where;

Y = Trade credit

X_1 = Debt levels

X_2 = Collateral

X_3 = Liquidity

X_4 = Inventory

Z = Firm's age (Moderator)

X_i = Debt levels, Collateral, Liquidity or inventory (Independent)

ε = the error term

β_0 = Constant (the intercept of the model)

β_i = coefficient relating the independent variable to Y

β_0 = the intercept in the equation, and ε is the residual in the equation.

$\beta_{1...}\ \beta_{4,}$ = Coefficients of the X (independent) variables.

The regression coefficient for the interaction term, $\beta_{i,}$ provides an estimate of the moderation effect. If β_i is statistically different from zero, there is significant moderation of the X-Y relation in the data (Fairchild &Mackinnon, 2009).

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of this study based on the formulated objectives and hypotheses as presented in chapter one. In the first two sections, data description and analysis were presented. The model estimation, interpretation and discussion were then done. Hypotheses were also tested with decision criteria being the significant p values.

4.2 Descriptive Analysis of Sectoral Data

The study captured data from 31 firms and this figure represent 75.70 per cent of the target population. The researcher ignored the ten(10) firms from further analysis due to the incompleteness of the data.

4.2.1 Agricultural sector

The statistics on Table 4.1 show that listed firms in the agricultural sector had a mean figure of 0.0811 which denote a surplus of trade receivables over trade payables, while the firms were 67%(0.67) leveraged with moderately low inventory levels (4.49). The firms had approximately six times (5.7685) the ratio of current assets to current liabilities with debt levels of nearly half (0.4984) the value of total assets. This statistic suggests that firms use less trade credit in that there were surpluses of receivable over payables complemented by moderate leveraging, low inventory levels and higher liquidity levels thus the firms had sufficient cash to cover the cost of all its operations.

Table 4.1 Agricultural Sector

Variable	n	Minimum	Maximum	Mean	Std. Deviation
Debt levels	6	0.1881	1.0000	0.4984	0.3744
Leverage	6	0.2317	1.3697	0.6688	0.4978
Liquidity	6	0.8699	16.8692	5.7685	4.9446
Log Inventory	6	1.5563	5.7894	4.4995	1.4636
Firm's Age	6	20.000	20.000	20.000	0.0000
Trade credit	6	-0.0053	0.3530	0.0811	0.1294

Source (Field Data, 2016)

4.2.2 Automobiles and accessories sector

The figures in Table 4.2 show that listed firms in the automobiles sector had a mean figure of -0.0761 which denotes a deficit of trade payables over trade receivables, while the firms were 109% (1.09) leveraged, with low inventory levels (5.85). The firms had approximately 1.5784 times the ratio of current assets to current liabilities with debt levels of nearly half (0.4818) the value of total assets. These statistics suggest that the firms use more trade credit than bank credit because of the deficits in receivables over payables, low inventory levels, collateral accompanied by less liquidity.

Table 4.2: Automobiles and accessories

Variable	n	Minimum	Maximum	Mean	Std. Deviation
Debt levels	3	0.2696	0.6526	0.4818	0.1560
Leverage	3	0.3690	1.8784	1.0871	0.6301
Liquidity	3	0.5933	3.3740	1.5784	1.1206
Log Inventory	3	4.9527	6.4508	5.8518	0.6848
Firm's Age	3	20.000	20.000	20.000	0.0000
Trade credit	3	-0.3461	0.2013	-0.0761	0.2249

Source (Field Data, 2016)

4.2.3 Commercial and service sector

As depicted in Table 4.3 listed firms in the commercial and services sector had a mean figure of 0.0260 which denote a surplus of trade receivables over trade payables, while the firms were 122%(1.22) leveraged with low inventory levels

(4.38). The firms had approximately 1.2423 times the ratio of current assets to current liabilities with debt levels of nearly half (0.4775) the value of total assets. These statistics suggest that the firms use less trade credit than bank credit because there are surpluses of the trade receivables over trade payables, low inventory levels accompanied by high collateral coupled with low liquidity levels.

Table 4.3 Commercial & Services

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Debt levels	7	0.2659	0.8101	0.4775	0.1674
Leverage	7	0.3622	4.2661	1.2169	1.1079
Liquidity	7	0.4648	2.4602	1.2423	0.8051
Log Inventory	7	2.9752	6.1249	4.3765	1.2554
Firm's Age	7	8.0000	20.000	14.200	5.0199
Trade credit	7	-0.2529	0.2869	0.0260	0.1646

Source (Field Data, 2016)

4.2.4 Construction and allied sector

Study results in Table 4.4 showed that the listed firms in the construction and allied had a mean figure of 0.0160 which denotes a marginal surplus of trade receivables over trade payables, while the firms were 147% (1.47) leveraged with moderate levels of inventory (5.55). The firms had approximately 1.3327 times the ratio of current assets to current liabilities with debt levels of more than half (0.5507) the value of total assets. These statistics suggest that the firms use less trade credit than bank credit because there is a marginal surplus of the trade receivables over trade payables accompanied by high collateral, high debt levels accompanied by low liquidity levels.

Table 4.4 Construction & Allied

Variable	n	Minimum	Maximum	Mean	Std. Deviation
Debt levels	5	0.2675	0.7448	0.5507	0.1598
Leverage	5	0.3652	2.9182	1.4728	0.8243
Liquidity	5	0.4692	2.6768	1.3327	0.6640
Log Inventory	5	3.7289	6.6060	5.5484	1.1439
Firm's Age	5	9.000	20.000	17.250	5.5000
Trade credit	5	-0.1026	0.2458	0.0160	0.1233

Source (Field Data, 2016)

4.2.5 Energy and petroleum sector

In Table 4.5, the statistics show that the listed firms in the energy and petroleum had a mean figure of 0.0520 which denotes a surplus of trade receivables over trade payables, while the firms were 214% (2.14) leveraged with high levels of inventory (6.73). The firms had approximately 1.1464 times the ratio of current assets to current liabilities with debt levels of nearly two thirds (0.6494) the value of total assets. These statistics suggest that firms use less trade credit than bank credit because there are surpluses of the trade receivables over trade payables accompanied by high collateral, high debt levels, high inventory with low liquidity levels.

Table 4.5: Energy & Petroleum

Variable	Statistic	Minimum	Maximum	Mean	Std. Deviation
Debt levels	4	0.4957	0.7629	0.6494	0.0790
Leverage	4	0.9812	3.2185	2.1446	0.7258
Liquidity	4	0.9346	1.4882	1.1464	0.2203
Log Inventory	4	5.8967	7.1752	6.7278	0.5425
Firm's Age	4	11.0000	22.0000	19.2500	5.0920
Trade credit	4	-0.0304	0.1837	0.0520	0.0802

Source (Field Data, 2016)

4.2.6 Manufacturing and allied sector

In Table 4.5, the statistics show that the listed firms in the manufacturing and allied had a mean figure of -0.00675 which denote a deficit of trade receivables over trade payables, while the firms were 164% (1.64) leveraged with high inventory levels (6.02). The firms had approximately 2.4986 times the ratio of current assets to current liabilities with debt levels of nearly two thirds (0.4598) the value of total assets. These statistics suggest that the firms use more trade credit than bank credit because there are deficits of trade receivables over trade payables accompanied by high collateral, low debt levels, high inventory levels with high liquidity levels.

Table 4.6: Manufacturing and Allied

Variable	n	Minimum	Maximum	Mean	Std. Deviation
Debt levels	6	0.1270	0.8684	0.4598	0.2464
Leverage	6	0.1455	6.5962	1.6434	2.1976
Liquidity	6	0.4093	10.0893	2.4986	2.8506
Log Inventory	6	4.5582	6.9869	6.0225	0.8796
Firm's Age	6	20	22.0000	20.6667	0.8945
Trade credit	6	-0.1601	0.0600	-0.0675	0.0675

Source (Field Data, 2016)

4.2.7 All Sectors

In Table 4.7, findings show that the listed firms in sector sampled had a mean figure of 0.0104 which denote a marginal of trade receivables over trade payables, while the firms were 134%(1.34) leveraged with moderate levels of inventory (5.38). The firms had approximately 2.3962 times the ratio of current assets to current liabilities with debt levels of more than half (0.5125) the value of total assets. These statistics suggest that firms use less trade credit than bank credit because there is a marginal surplus of the trade receivables over trade payables accompanied by collateral, low debt levels with high liquidity levels.

Table 4.7 All Sectors

Variable	Firms	Minimum	Maximum	Mean	Std. Deviation
Debt levels	31	0.1270	1.0000	0.5125	0.2288
Leverage	31	0.1455	6.5962	1.3418	1.2549
Liquidity	31	0.4093	16.8692	2.3962	3.0310
Inventory	31	1.5563	7.1752	5.3786	1.3569
Firm's Age	31	11.0000	22.0000	20.4839	3.1868
Trade credit	31	-0.3461	0.3530	0.0104	0.1412

Source (Field Data, 2016)

4.3 Inferential Statistics

4.3.1 Diagnostic statistics

Diagnostic tests are carried out before any classical linear regression analysis is conducted. These tests include the existence of a linear relationship between

parameters, no perfect collinearity, unidimensionality, specification of the relationship between the variables, normally distributed and homoscedastic (Wooldridge, 2009).

Table 4.8: Shapiro Wilk Normality test

Variable	Observation	W	p-value
Liquidity	62	0.59017	0.0672
Collateral	62	0.76241	0.0974
Debt levels	62	1.00000	0.5838
Inventory	62	0.91951	0.2112
Sector	62	0.98548	0.58259

Source (Field Data, 2016)

Since the p-values for the W test were greater than 0.05 the assumption that all the variable data in the model were normally distributed was upheld. It is therefore inferred that data variables in the study were drawn from a normally distributed population.

Test for linearity

The study tested for linearity using the correlation coefficient. This is based on Hair *et al.*, (2010) who affirmed that linearity between two variables is exhibited by a correlation coefficient in that the correlation represents only the linear variables between the variables and thus excludes non-linearity in the data because the non-linearity effects are not represented in the correlation coefficient value. The output for the correlation statistics is indicated by Table 4.10 and indicated that debt-levels, liquidity, and inventory are linearly related.

Test for Homoscedasticity

The study tested for heteroscedasticity using Breusch-Pagan/Cook-Weisberg test for heteroscedasticity indicated that $\chi^2(1) = 1.38$, $p= 0.2408$, indicating that the assumption of homoscedasticity can be upheld.

Table 4.9: Heteroscedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of trade-credit
chi2(1) = 1.38
Prob > χ^2 = 0.2408

Source (Field Data, 2016)

Test for multicollinearity

The test for collinearity for the regression residuals in table 4.9 indicates that all the VIF < 10.00 indicating that multicollinearity wasn't encountered.

Table 4.10: Collinearity test

Variable	**Tolerance**	**VIF**
Liquidity	.597	1.675
Collateral	.391	2.555
Debt levels	.412	2.429
Log inventory	.502	1.990

Source: Field Data (2016)

4.3.2 Correlation Statistics

Table 4.11 represents Pearson correlation results of the study. Findings revealed that liquidity significantly associated with trade credit ($r = 0.461$, $\rho<0.01$) such that when liquidity increased the trade credit also increase. Further, collateral did not correlate ($r = -0.045$, $\rho>0.05$) indicating that collateral does not significantly correlate with trade credit. The debt levels significantly correlated with trade credit ($r = 0.167$, $\rho<0.05$) indicating that an increase in debt levels will result in a corresponding increase in trade credit. Additionally, inventory relates with trade credit ($r = -0.239$, $\rho<0.05$). This implies that liquidity and debt levels are expected to influence trade credit.

Table 4.11: Correlation Results

	Trade credit	Liquidity	Collateral	Debt levels	Inventory	Log Inventory
Trade credit	1					
Liquidity	.461**	1				
Collateral	-.045	-.259	1			
Debt levels	.167*	.091	.706**	1		
Inventory	-.093	-.246	.497**	.318	1	
Log Inventory	-.239*	-.509**	.308	.143	.613**	1

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

Source (Field Data, 2016)

4.3.3 Regression Analysis

The regression results in Table 4.11 shows the ANOVA statistic, $F(8, 53) = 2.65$, $p < 0.05$, which indicate that the regression model was statistically significant in explaining for the variances in trade credit. The $R^2 = 0.5695$ indicating that about 57 per cent of trade credit can be explained by the independent variables which comprise of firm effect.

Table 4.12: Moderating Effect of Firm's Age on Determinants of Trade Credit

	Statistics		
Variable	Beta coefficient	t-statistic	p-value
(Constant)	0.2420	-1.54	0.313
Debt levels	0.5422*	3.37	0.040
Collateral	-0.0275	-1.30	0.972
Liquidity	-0.1363*	-3.11	0.012
Inventory	-0.3399*	-2.97	0.036
Age*Debt level	2.3609*	-3.36	0.046
Age*Collateral	-0.4637	1.30	0.831
Age*Liquidity	-2.4649*	4.21	0.020
Age*Inventory	0.2250	1.10	0.386
Other statistics			
F	2.65		
R Square	0.5695		
Adjusted R Square	0.4793		
Sig.	0.0055[a]		

[a]Dependent Variable: Trade credit, *significance at 0.05

Source: Research Data (2016)

Firm's trade credit = 0.5422 (debt levels), p-value < 0.05 indicate that the coefficient is significant. This indicates that a positive unit change in the debt levels has a 0.5422-unit change decrease in the use of trade credit. This suggests that a rise in the debt levels will always lead to an increase in the use of trade credit.

Firm's trade credit = -0.1363 (liquidity), p-value < 0.05 indicate that the coefficient is significant. This indicates that a positive unit change in the liquidity levels has a 0.1363-unit change decrease in the use of trade credit. This suggests that a rise in the liquidity levels will always lead to a reduction in the use of trade credit.

Firm's trade credit = -0.3399(inventory), p-value < 0.05 indicate that the coefficient is significant. This indicates that a positive unit change in the inventory has a 0.3399-unit change decrease in the use of trade credit. This suggests that a rise in the inventory levels will always lead to a reduction in the use of trade credit.

Firm's trade credit = 2.3609(age*debt levels), p-value < 0.05 indicate that the coefficient is significant. This indicates that yearly progressive unit increases in the firm's debt levels have a 2.3609-unit change increase in the use of trade credit. The indications are that progressive use of debt over a certain period by the firms will always lead to more than two-fold increases (2.3609 times) in the use of trade credit.

Firm's trade credit = - 2.4649 (age*liquidity), p – values < 0.05 indicate that the coefficient is significant. This indicates that yearly progressive unit increases in the firm's liquidity levels have a 2.4649-unit change decrease in the use of trade credit. The indications are that progressive use of debt over a certain period by the firms will always lead to more than a two-fold decrease (2.4649 times) in the use of trade credit.

Overall, the firm's trade credit = 0.5422(debt levels) - 0.1363 (liquidity) - 0.3399(inventory), + 2.3609(age*debt levels) - 2.4649 (age*liquidity) and the p – value < 0.05 indicate that the coefficients are significant.

As hypothesized in the study, the moderating effects between a firm's age on the firm effects explain about 57% of the variation in the firm's trade credit. Thus, the firm's age has a positive and significant effect in that it enhanced the explanatory power of the firm and industry effects by close to 57%(R^2 change = 0.5693). This effect is considered significant and could be attributable to the fact that the more established firms tend to be more liquid than the less established firms.

As indicated in Table 4.12, on the converse the amount of debt level held by the firms ($\beta_1 = 0.5422$, $p < 0.05$), liquidity levels ($\beta_3 = -0.3399$, $p < 0.05$) and inventory levels ($\beta_4 = -0.3399$, $p > 0.05$) are significantly determinants of the use of trade credit.

4.4 Hypothesis Testing

4.4.1 Hypothesis one

H_{01}: Debt levels has no significant effect on firm trade credit

The coefficients for debt levels, $\beta_1 = 0.5422(t = 3.37, p < 0.05)$ indicate that debt level has a significant effect on trade credit. The findings, therefore, reject the null hypothesis that debt levels have no significant effect on firm trade credit. The study concludes that debt levels determine the trade credit of listed firms.

Hypothesis 1 stipulated that debt levels have no significant effect on firm trade credit. Nonetheless, study findings showed that debt levels have a significant effect on firm trade credit. According to Summers and Wilson, (2001), trade credit provides a guarantee of product quality and also builds customer relationship. Thus, a firm's decision to use accounts receivable as collateral can be seen as a means to lower funding costs to offer trade credit at competitive terms. Contrary to the results, Boot and Thakor (2003) suggest that pledging an asset as collateral leads to loss of flexibility, which may represent the other side of its financial advantage. For instance, suppliers benefit when there is interest in relaxing ex-post trade credit terms to help customers overcome temporary financial difficulty, thus protecting the long-term investment. Moreover, sellers and buyers are prevented from renegotiating their contracts since it is the bank and not the seller that collects the receivables. Consequently, whenever customers fail to pay their debts on time, the reputation of the customer and that of the supplier are damaged. From the foregoing, placing account receivable as collateral can be used to lower the probability of default or low payment among the buyers.

4.4.2 Hypothesis two

H_{02}: Collateral has no significant effect on firm trade credit

The beta coefficient for collateral, β_2 = -0.0275 (t = -1.30 p > 0.05) shows that collateral has no significant effect on trade credit. The findings, therefore, fail to reject the null hypothesis that collateral has no significant effect on firm trade credit. The indications are that collateral used by the listed firms does not determine trade credit.

Hypothesis 2 stipulated that collateral has no significant effect on firm trade credit. Nonetheless, study findings showed that collateral has an insignificant effect on firm trade credit. According to Summers and Wilson, (2001), trade credit provides a guarantee of product quality and also builds customer relationship. Thus, a firm's decision to use accounts receivable as collateral can be seen as a means to lower funding costs so as to offer trade credit at competitive terms. Contrary to the results, Boot and Thakor (2003) suggest that pledging an asset as collateral leads to loss of flexibility, which may represent the other side of its financial advantage. Moreover, sellers and buyers are prevented from renegotiating their contracts since it is the bank and not the seller that collects the receivables. Consequently, whenever customers fail to pay their debts on time, the reputation of the customer and that of the supplier are damaged. From the foregoing, placing account receivable as collateral can be used to lower the probability of default or low payment among the buyers.

4.4.3 Hypothesis three

H_{03}: Liquidity has no significant effect on firm trade credit

The beta coefficient for liquidity, β_3 = -0.1363 (t = -3.11, p < 0.05) showing that liquidity has a significant effect on trade credit. The findings, therefore, reject the null hypothesis that liquidity has no significant effect on firm trade credit. This indicates

that the amount of liquidity as measured by the ratio of current assets to current liabilities held by the firm determines trade credit.

According to hypothesis 3, liquidity has no significant effect on firm trade credit. However, study results showed that liquidity has a significant effect on the firm's trade credit. For instance, the matching approach is adopted by firms to finance short term needs with short term finance. In this logic, accounts payable should have a positive relationship with the holding of liquid assets. Contrary to the findings, Vaidya (2011) finds that liquid assets have a significant positive influence on both accounts payable and accounts receivable. From the foregoing, it is evident that a fall in liquid assets leads to a rise in accounts payable.

4.4.4 Hypothesis four

H_{04}: Inventory has no significant effect on firm trade credit

The beta coefficient for inventory, $\beta_4 = -0.3399$ ($t = -2.97$, $p < 0.05$) shows that inventory has a significant effect on trade credit. The study findings, therefore reject the null hypothesis that inventory has a significant effect on firm trade credit. The indications are that amount of inventory used by the listed firms determines trade credit.

Hypothesis 4 stated that inventory has no significant effect on firm trade credit. However, study results showed that inventory has a significant effect on firm trade credit. Bougheas *et.al* (2009) relates inventories to both accounts receivable and accounts payable and find a negative relationship between inventories and accounts receivable. Thus, firms use trade credit (allow buyers to delay payment) to increase sales and reduce inventories. According to Cunat (2007), there is a positive and significant relationship between accounts payable of firms and inventories. This is

because accounts payable are higher for firms with higher inventories since inventories act as collateral.

4.4.5 Hypothesis five

$H_{05i:}$ Firm age has no significant moderating effect on the relationship between debt levels and firm trade credit.

The coefficients for the moderating effect of age (Age*Debt level) $\beta_5 = 2.3609$ ($t = -3.36$, $p < 0.05$) indicating that the coefficients are significant.

The study finding rejects the null hypothesis that a firm's age has no significant moderating effect on the relationship between debt levels and firm trade credit. Therefore, the moderating effects of age on debt levels explain the variations in trade credit. The study concludes that a firm's age has a significant moderating effect on the relationship between the amount of debt and trade credit.

$H_{05ii:}$ Firm age has no significant moderating effect on the relationship between collateral and firm trade credit.

The coefficients for the moderating effect of age (Age*Collateral) $\beta_5 = -0.4637$($t = 1.30$, $p > 0.05$) indicating that the coefficient is not significant.

The study findings, therefore, fail to reject the null hypothesis that a firm's age has no significant moderating effect on the relationship between debt levels and firm trade credit. Therefore, the moderating effects of age on debt levels do not explain the variations in trade credit. The study concludes that a firm's age has no significant moderating effect on the relationship between the amount of debt and trade credit.

$H_{05iii:}$ Firm age has no significant moderating effect on the relationship between liquidity and firm trade credit.

The coefficients for the moderating effect of age (Age*liquidity) $\beta_6 = -2.4649$ ($t = 4.21$, $p < 0.05$) indicating that the coefficient is significant.

The study finding rejects the null hypothesis that a firm's age has no significant moderating effect on the relationship between liquidity and firm trade credit. Therefore, the moderating effects of age on liquidity explains for the variations in trade credit. The study concludes that a firm's age has a significant moderating effect on the relationship between liquidity and trade credit.

$H_{05iv:}$ Firm age has no significant moderating effect on the relationship between inventory and firm trade credit

The coefficients for the moderating effect of age (Age*inventory) $\beta_5 = 0.2250$ ($t= 1.30$, $p > 0.05$) indicating that the coefficient is not significant.

The findings, therefore, fails to reject the null hypothesis that a firm's age has no significant moderating effect on the relationship between inventory and firm trade credit. Therefore, the moderating effects of age on inventory does not explain the variations in trade credit. The study concludes that a firm's age has no significant moderating effect on the relationship between inventory and trade credit.

The characteristics of the firms such as age and size have been highlighted by past studies as having significant correlations with trade credit. However, the study findings show that a firm's age has a significant moderating effect on the determinants of the trade credit in listed firms. Alphonse *et al.,* (2006) indicated that young firms tend to be less capitalized and more indebted than older compatriots, the

firms having similar age characteristics would not display any significant difference in the moderating effects.

4.5 Discussion

Firms in agricultural, commercial and services, construction and allied and energy and petroleum have a surplus of trade receivables over trade payables indicating a probability of higher bank credit with less of trade credit. Thus, according to Blasio (2005), there are wide variations across industries in credit terms, but little variation within industries indicating that credit terms are stable over time.

Regarding the inventory level, both manufacturing and allied and energy and petroleum sectors had high levels of inventories with agricultural and commercial sectors having low levels of inventory. This lends credence to the study by Fisman (2001) which suggested that supplier credit was significant in determining capacity utilization in inventory - intensive industries. Looking at the two sectors mentioned; manufacturing and allied and energy and petroleum their nature of the business operations requires inventory for its operations and in such cases, trade credit would significantly aid them in acquiring the necessary inventory. Furthermore, an inventory financing model predicts the use of trade credit in a wide range of firms (Yang & Birge, 2013). Therefore, when firms are facing demand uncertainty, the trade credit enhances supply chain efficiency by serving as a risk-sharing mechanism and in such cases, the supplier balances its impact on operational profit and costs of financial distress.

The firms in the agricultural sector had high liquidity levels with the ratio of 5.77 with manufacturing and allied sector having a ratio of 2.49 however, all other sectors were of ratio 1:1. Findings by Fabbri & Menichini (2010) indicated that firms with a high

degree of liquidity or a high collateral value are more likely to take trade credit to exploit the liquidation advantage of the supplier, while evidence adduced by (Boissay & Gropp, 2007) show that trade credit allows credit-constrained firms to cope with liquidity shocks. Since the firms in the agricultural and manufacturing and allied sectors are high liquidity in comparison to their peer sectors, there are high chances that they use trade credit since this form of credit accrues them with advantages of exploiting the supplier. On the converse firms with low liquidity levels would likely have a mix of bank and trade credit.

In general, the debt levels across the sectors was more than half the total assets with firms in the energy and petroleum being highly indebted at nearly two thirds the total assets, while manufacturing and allied having the lowest debt levels. The implications are that all firms in these sectors have pledged their assets against the firm's assets and as informed by Giannetti *et al.,* (2011), these firms would prefer trade-credit firms over bank credit due to three reasons: first, their assets have been used to guarantee debt, therefore they cannot access more bank credit, second, the latitude of exploiting trade credit for longer period of time until they are able to repay large amounts of bank credit and third, trade credit serves as an insurance against survival or liquidity shocks.

Virtually all firms used collateral with different ratios but the average collateral for the firms was 1.34 implying that the total debt to total equity ratio was 4:3, however, certain sectors were highly leveraged and this included the manufacturing and allied and energy and petroleum at 1.6: 1 and 2.05: 1 respectively while construction and allied had 1.50:1. The agricultural sector was least collateral at 0.67:1 with the other sectors having a ratio of approximately 1:1. The indications are that firms which are

inventory – based are likely to hold high collateral and thus they are likely to use trade credit more than bank credit thus Bandos & Pindado (2007) assert that the use of collateral depends on the value of a product and as such the more the value and thus the supplier firm may have a cost advantage. Evidence obtained from studies indicates that the more durable the goods, the better collateral it provides and the greater the trade credit being offered.

The results show that liquidity correlates with trade credit signifying that most firms in the country would prefer to hold high liquidity levels in order to protect themselves against shocks that result from economic conditions. This suggests that liquidity determines the use of trade credit among the listed firms in Kenya. Further, trade credit significantly associates with debt levels due to the significant increase in the overall debt held by the firms in the form of trade payables. This result augur with what Alphonse *et al.*, (2006) identified a significant negative relationship between loans and accounts payable, and thus firms that use trade finance would likely increase their overall debt. However, the use of trade credit is related to the firm's growth cycle and as indicated by Klapper *et al.*, (2012) the accounts payable first increase with age and then eventually fall.

Firm's age does have a significant moderating effect on the determinants of the trade credit in listed firms. Although firm's age seems to characterize the financial structure, young firms tend to be less capitalized and more indebted than older compatriots, a fact that is attributed to the use of trade credit (Alphonse *et al.*, 2006). Due to this young firms relying on debt seem to have a higher total asset in comparison. Firm's age seems to characterize firms financial structure such that

young firms are less capitalized and more indebted than older compatriots due to the use of trade credit (Alphonse, Ducret & Séverin, 2006).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The section gives an overview of the summary of the findings, conclusion that the study arrives at, followed by recommendations and implications of the study whether study, managerial, policy and theoretical. The section finalizes with the limitations and recommendations for further studies.

5.2 Summary of Findings

The study findings show that the use of trade credit is not widespread in all sectors in that there was as twice the number of sectors having a surplus in receivables over payables. This illustrates that the usage is restricted to those sectors which are inventory intensive in that its business model revolves around the usage of inventory while allowing for the use of trade credit. In particular, the two sectors using more trade credit were the automobiles and accessories and manufacturing and allied sectors, a fact that is attributable to the intermediate nature of the inventory thus the usage of trade credit would accrue the firm the benefits from the value addition process.

Agriculturally based firms have high liquidity levels while energy and petroleum firms are highly indebted with manufacturing and allied sector being highly leveraged. It indicates that the different sectors hold different approaches to how they run their operations.

Liquidity, inventory and debt levels were significant determinants of trade credit while collateral was not. The findings could be explained by the fact that more firms use more of bank credit than trade credit and thus the effect of these variables on trade

credit would be only significant if all the firms in all sectors held a common view on the issues of trade credit.

5.3 Conclusion

Based on the study findings, the study makes the following conclusions;

The provision of trade credit is associated with default risk or late payment hence it impacts negatively on firm profitability. However, discrimination between buyers through trade credit results in a positive relationship between gross profits and accounts receivable. In this logic, granting trade credit heightens a firm's sales and results in higher profitability.

Based on the findings in the previous chapter, collateral has no significant effect on trade credit. The firms' decision to post accounts receivable as collateral is an indication of lowered funding costs so as to offer trade credit at competitive terms. However, the collection of accounts receivable is disadvantageous in that the bank has exclusive access to a wide array of exclusive information and in the event, such information is disseminated to third parties it can be harmful to both the borrower and the customer (Ruckes and von Rheinbaben 2004). Thus, pledging an asset as collateral leads to loss of flexibility. However, long term investments for suppliers are protected when there is interest in relaxing ex-post trade credit terms to aid customers to meet their financial obligation.

In the same vein, liquidity had a positive and significant effect on trade credit. Specifically, liquid assets have an impact on trade credit. Because firms finance short term needs with short term finance, there is a positive relationship between accounts payable and holding of liquid assets. However, liquid assets have a negative impact on accounts payable. Thus, a decline in liquid assets is accompanied by a rise in

accounts payable. Thus, firms need to ensure there is appropriate liquidity which will lower account payable.

Further, the study indicated that inventory has a significant effect on trade credit. The accounts payable are higher for firms with higher inventories since inventories act as collateral. However, whenever firms use trade credit to increase sales inventories are reduced. This implies that the amount of inventory is not always totally controlled by company management because it is affected by sales, production, and economic conditions.

5.4 Recommendations

There is evidence from the study results that debt levels have a positive effect on trade credit. As a result, firms need to establish a well-defined trade-credit granting criteria to assess the creditworthiness of the buyers to avoid default risk or late payment by buyers.

Similarly, liquidity has a positive and significant effect on firm trade credit. Therefore, firms with a high share of short-term assets tend to use more trade credit as a form of short-term financing. There is a need for firms to mitigate the effects of firms' financial constraints through trade credit. Also, firms should hold liquid assets so that they can be able to meet their financial obligations. Moreover, through trade credit, credit-constrained firms can afford to insure their customers, an extension of reciprocity of insurance from their suppliers.

5.4.1 Policy Recommendations

Since collateral has some significant effects on trade credit, regulatory agencies should propose legislation governing trade financing in the industry. This would promote the use of trade financing and thus reduce dependence on bank credit which

sometimes require collaterals. However, the recent advances in laws governing credit availability (capping of interest rate) may spur the use of credit within the industry, but also complicate the conduct of the monetary policy which at times result in perverse outcomes.

The sectoral differences in the use of trade credit have a beneficial effect reducing the cost of credit. The firm that tends to substitute bank credit for trade credit is, therefore, reducing the cost of transactions and therefore the policymakers should develop regulations governing the use of trade credit within the different sectors. In doing so, the industry will stand to gain from regulations through the evening out of obstacles governing the use of trade credit.

Age is a significant determinant in the use of trade credit in that well-established firms tend to hold high debt levels and more liquid than relatively younger firms. The use of trade credit then is pegged on the age of the firm signifying that other extraneous variables are influencing the use of trade credit. Thus, any policy framework on trade credit should aid in promoting the use of trade credit among newly established firms.

5.4.2 Recommendation for further studies

This study has looked at the moderating effect of age of firm on determinants of trade credit in firms in Nairobi Securities Exchange. This study recommends that another study be done to augment finding in this study; it, therefore, recommends a study be done to establish the reason as to why firms that face liquidity shocks prefer trade credit rather than bank loans. The findings were also limited to debt levels, collateral, liquidity and inventory. There could be other factors that could influence trade credit. For instance, the volume of purchases, frequency of transactions and product

characteristics. With these considerations, there will be conclusive results on the effect of age of firm on determinants of trade credit.

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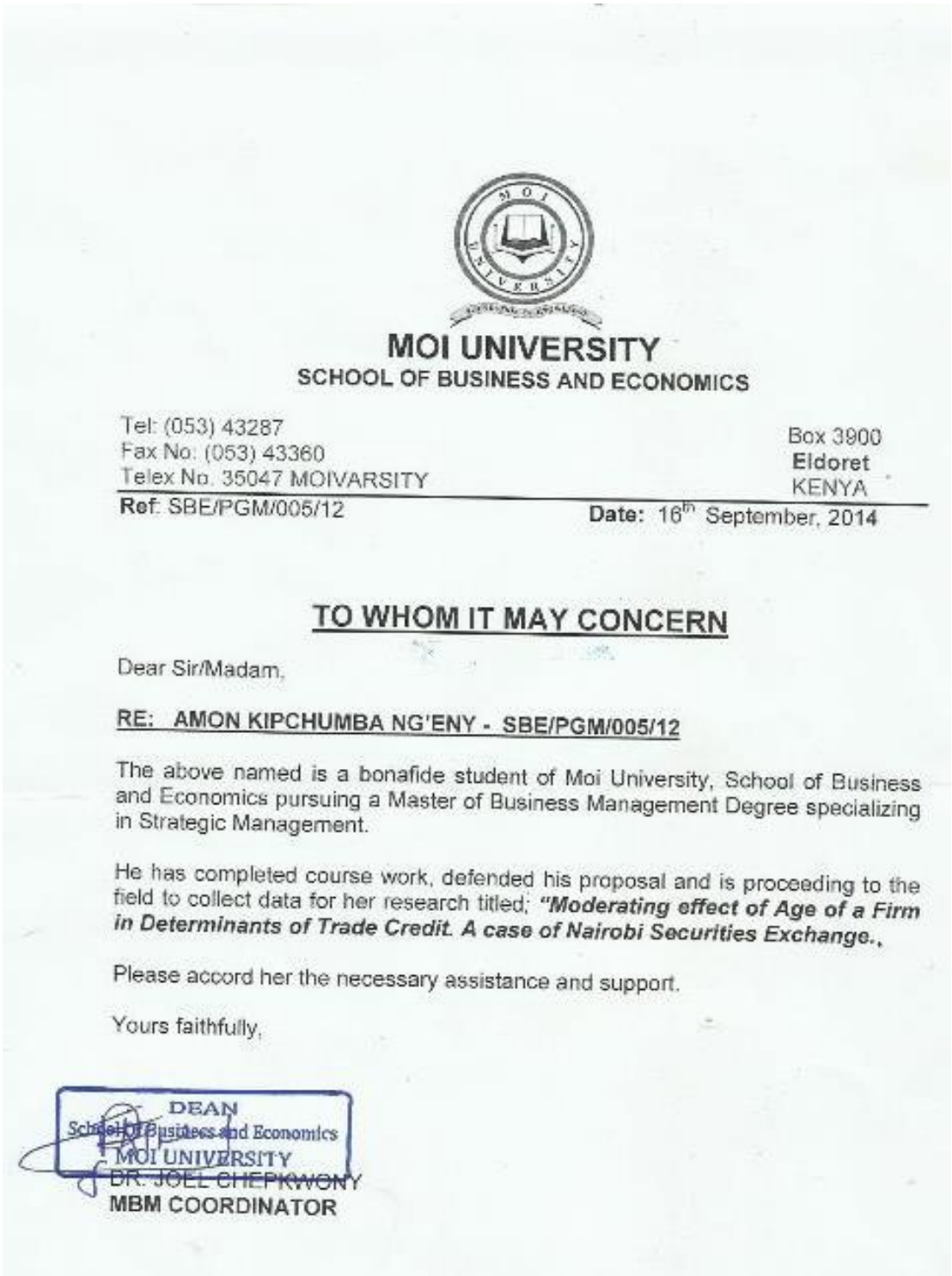
APPENDICES

Appendix I: Authorization Letter



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Ref: SBE/PGM/005/12

Date: 16th September, 2014

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: AMON KIPCHUMBA NG'ENY - SBE/PGM/005/12

The above named is a bonafide student of Moi University, School of Business and Economics pursuing a Master of Business Management Degree specializing in Strategic Management.

He has completed course work, defended his proposal and is proceeding to the field to collect data for her research titled; ***"Moderating effect of Age of a Firm in Determinants of Trade Credit. A case of Nairobi Securities Exchange.,***

Please accord her the necessary assistance and support.

Yours faithfully,

DEAN
School of Business and Economics
MOI UNIVERSITY
DR. JOEL CHEPKWONY
MBM COORDINATOR

Appendix II: Listing of Companies at NSE

AGRICULTURAL
Eaagads Ltd
Kapchorua Tea Co. Ltd
Kakuzi
Limuru Tea Co. Ltd
Rea Vipingo Plantations Ltd
Sasini Ltd
Williamson Tea Kenya Ltd
AUTOMOBILES AND ACCESSORIES
Car and General (K) Ltd
Sameer Africa Ltd
Marshalls (E.A.) Ltd

BANKING
Barclays Bank Ltd
CFC Stanbic Holdings Ltd
I&M Holdings Ltd
Diamond Trust Bank Kenya Ltd
Housing Finance Co Ltd
Kenya Commercial Bank Ltd
National Bank of Kenya Ltd
NIC Bank Ltd
Standard Chartered Bank Ltd
Equity Bank Ltd
The Co-operative Bank of Kenya Ltd
COMMERCIAL AND SERVICES
Express Ltd
Kenya Airways Ltd
Nation Media Group
Standard Group Ltd
TPS Eastern Africa (Serena) Ltd
Scangroup Ltd
Uchumi Supermarket Ltd
Hutchings Biemer Ltd

Longhorn Kenya Ltd
Atlas Development and Support Services
CONSTRUCTION AND ALLIED
Athi River Mining
Bamburi Cement Ltd
Crown Berger Ltd
E.A.Cables Ltd
E.A.Portland Cement Ltd

ENERGY AND PETROLEUM
KenolKobil Ltd
Total Kenya Ltd
KenGen Ltd
Kenya Power & Lighting Co Ltd
Umeme Ltd
INSURANCE
Jubilee Holdings Ltd
Pan Africa Insurance Holdings Ltd
Kenya Re-Insurance Corporation Ltd
Liberty Kenya Holdings Ltd
British-American Investments Company (Kenya) Ltd
CIC Insurance Group Ltd
INVESTMENT
Olympia Capital Holdings ltd
Centum Investment Co Ltd
Trans-Century Ltd
Home Afrika Ltd
Kurwitu Ventures
INVESTMENT SERVICES
Nairobi Securities Exchange Ltd
MANUFACTURING AND ALLIED
B.O.C Kenya Ltd
British American Tobacco Kenya Ltd
Carbacid Investments Ltd
East African Breweries Ltd
Mumias Sugar Co. Ltd
Unga Group Ltd
Eveready East Africa Ltd
Kenya Orchards Ltd
A.Baumann CO Ltd
Flame Tree Group Holdings Ltd
TELECOMMUNICATION AND TECHNOLOGY
Safaricom Ltd
REAL ESTATE INVESTMENT TRUST
Stanlib Fahari I-REIT