UNIVERSITY OF GHANA BUSINESS SCHOOL (UGBS)
Department of Finance

THE DETERMINANTS OF TRADE CREDITS AMONG LISTED FIRMS IN GHANA

IVY-KING AFENUVOR

10194605

SUPERVISOR
DR. VERA FIADOR

DECLARATION

I hereby declare that this study is my original work and that it has not been submitted for award in the University of Ghana or any other tertiary institution.

I bear sole responsibility for any shortcomings.

……	……..
IVY-KING AFENUVOR	DATE
10194605	(03/08/2019)

CERTIFICATION

I certify that this long essay was supervised in accordance with the regulations set by the University of Ghana.

Dr. Vera Fiador	.....	.....
(Supervisor)	(Signature)	(Date)

DEDICATION

Now unto HIM that is able to do exceeding abundantly above all that we ask or think, according to the power that worketh in us – Ephesians 3:20

ACKNOWLEDGEMENTS

My heartfelt thanks and appreciation to Dr. Vera Fiador for her immense guidance and encouragement during this research. Her contributions have been invaluable to the final output of this work.

To Mr. David Jones Amoah, for being the voice of reason when all felt sometimes overwhelming.

ABSTRACT

The research is geared towards identifying the factors of trade credits amongst listed firms in Ghana. The data used was in panel form from twenty (20) non-financial firms that are listed on the Ghana Stock Exchange between 2006 and 2012 to examine the drivers of trade credits. The three panel regression models used - Pooled Panel Corrected Least Squares model, Random Effects Model and Prais-Winsten Model - produced results which suggested that size and leverage were the two main determinants of trade credits extended and trade credits received, while net trade credit was found to decrease with profitability. The paper recommended that firms must be cautious in extending trade credits to their customers since high default rates by customers could affect the short-term solvency of the firm. Also, profitable firms should consider taking trade credits in order to ease their financial burden in the short term. The lack of trade credit literature and data limited the paper to the Ghanaian context, thus, generalizing the findings to the West African sub-region is not possible. The paper, therefore, suggests that a primary study could be conducted in the future to further understand factors determining trade credits of firms listed and also SMEs that are in West Africa.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

APA	American Psychology Association
ACCA	Association of Certified Chattered Accountants
B2B	Business-to-business
GSE	Ghana Stock Exchange
IMF	International Monetary Fund
NPV	Net Present Value
R&D	Research and Development
SMEs	Small and Medium-Scale Enterprises
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 Background to Study

In the aftermath of the global financial crisis in 2008, financial assets experienced a steep decline in prices while financial institutions were plagued with a high level of insolvency. The accompanying credit crunch meant that financial institutions became disinclined to advance credit to even high-quality (low-risk) firms (Love, 2010). As levels of financial insolvency grew severe, firms began to cut back on capital, research and development investments, thereby causing the firms to forfeit investment options with relatively high positive net present values (NPVs) (Almeida, Campello, Laranjeira & Weisbenner, 2009).

These developments led to the popularization of trade credit as an alternative source of finance provided by suppliers of stock, raw materials and other inputs. In the post-global financial crisis era, trade credit has not only become an alternative to bank credit but an important source of finance to firms plagued with liquidity problems mainly because suppliers are deemed as better equipped to surmount challenges relating to information asymmetry and contract enforcement (Love, 2010). This advantage has made suppliers more copious than banks in advancing credits to firms, a phenomenon that existed in the post-recession era and still persists.

Extant literature, apart from the credit crunch, also highlights moral hazards as the main reasons for increase in trade credit volumes. Broer (2007), in the paper, "Emerging Market Lending: Is Moral Hazard Endogenous?" highlights how information asymmetry in developing countries leads to moral hazards. As an emerging market, Ghana's economy is no stranger to the widespread use

of trade credit. Moral hazard is chief among the determinants of credit to emerging markets. Over the past couple of decades, the International Monetary Fund (IMF) has been the lender of last resort for most countries, especially those immensely hit by the financial crises. However, the IMF put various measures in place to check threats of moral hazards through strategies such as requiring borrowers to meet specific conditions and have defined financial goals (Gross, 2010qq).

Current research indicates that the IMF has seen competitors such as the US and China in the area of lending to states in financial distress where these economic powerhouses have been at the forefront of lending to emerging markets. Chinese financing into emerging markets now rivals the IMF in size and encompasses export credit agency-type lending, bilateral lending secured by physical commodities, and bilateral currency swap arrangements at the central bank level. Broer (2002) alludes to the fact that the effects of moral hazards lead to high levels of rationing of profitable projects and capital flights from developing countries triggering an increase in trade credit over bank credit. The increase in trade credit over the years in countries such as Ghana makes it important to investigate the factors that determine the adoption of trade credit by Ghanaian companies.

1.2 Research Problem

The ultimate goal of corporate institutions is to maximize shareholder value either through dividends or capital gains (Braeley & Myers, 2013). To achieve their objective, managers of corporate organizations have to go through a number of key decision-making processes. On a daily basis, officials of corporate organizations take decisions for firms bothering on ownership structure, financial decisions, and institutional setting (López-Iturriaga & Rodríguez-Sanz, 2012).

The decisions individually and collectively lead to the achievement of the objective of the firm and, therefore, should be taken with the utmost level of importance. Corporate finance decisions can be classified into long-term and short-term financial planning decisions (Braeley, Myers & Mohanty 2007). Long-term financial plans are strategic in nature and relate to the mission and vision of the firm (Rhyne, 1986) while short-term financial plans are operational and relate to the day-to-day activities of the firm (Lee, Herold & Yu, 2016). Though short-term financial planning decisions seem irrelevant because they are operational in nature, they are the more important decisions a firm makes as short-term decisions drive the achievement of the long-term goals of the firm (Pogue & Bussard, 1971). There is extant literature to prove that long-term survival is not possible without profitability of financial performance in the short run (Kim & Yoo, 2019). Firms must, therefore, pay attention to short-term financial decisions since the firms' long-term survival depends on the short-term decisions. Short-term financial decisions focus on working capital policies aimed at managing current assets (Ek & Guerin, 2011). Some key working capital decisions firms take on a regular basis are cash management, inventory management, accounts receivable and accounts payable management, and debt management (Braeley & Myers, 2013).

The concept of a trade credit involves business to business (B2B) arrangements where products and services are acquired on a business customer's account of which payments to supplier is made on another day (mostly 30 days or more). It is interesting to know that trade credit has two main constituents, namely accounts receivable and accounts payable which also form part of the constituents of the working capital of the firm.

1.3 Research Objectives

The objectives of the study are to:

1. Investigate the determinants of Trade Credit extended (Accounts Receivable) among listed firms in Ghana.
2. Investigate the determinants of Trade Credit received (Accounts Payable) among listed firms in Ghana.
3. Investigate the determinants of Net Trade Credit among listed firms in Ghana.

1.4 Research Questions

The questions this study sought to answer are:

1. What are the determinants of Trade Credit extended (Accounts Receivable) among listed firms in Ghana?
2. What are the determinants of Trade Credit received (Accounts Payable) among listed firms in Ghana?
3. What are the determinants of Net Trade Credit among listed firms in Ghana?

1.5 Significance of Research

The study will contribute to literature on trade credit of emerging economies like Ghana. The study will bring to the fore factors that determine the volume of trade that firms are likely to take on. Both listed and unlisted firms will be privy to the factors of trade credits other firms use in the working capital mix. Based on the information provided, firms will be effective in their working capital management while planning short-term success. More so, banks and other financial institutions will be enlightened on the reasons listed firms prefer trade credits to bank credits and apply the necessary measures to convince firms to reconsider short-term financing methods.

1.6 Scope of Study

The study used 20 listed firms on the Ghana Stock Exchange for analysis. The findings from the study are related to most emerging economies since Ghana is a representation of most emerging economies considering that Ghana shares similar macroeconomic characteristics with the other emerging economies. Since no sampling technique was used, only firms that are listed on the Ghana Stock Exchange between 2003 and 2013 were included in the study.

1.7 Limitations of study

The main limitation of the study was the unavailability of high frequency and quality data. Trade Credit is a fairly green area, especially in an emerging economy like Ghana and, therefore, data on Trade Credit was unobtainable. The lack of records from firms prevented access to firm-specific data on Trade Credit factors and this was a limitation of the study. The availability of high frequency data would have resulted in the application of a time series regression technique to arrive at more robust findings as compared to those obtained from the panel regression estimation technique.

1.8 Chapter Outline

The study is laid out in five chapters. Chapter one introduces the subject matter and summarizes what the study is about. The Chapter details the research background, the research objectives and questions, significance of the study, the scope and limitations of the study and concludes with the organization of the study.

Chapter two provides a review and synthesis of relevant literature related to Trade Credit. The chapter highlights parts of extant literature that define Trade Credit and other related concepts such as working capital management.

Chapter three explains the methodology of the study. It discusses the various econometric techniques used to arrive at the results and the tests used to confirm the robustness of the results.

In chapter four, the results and findings of the study are discussed. Further, the chapter discusses whether the findings of the study address the objectives of the study.

Chapter five presents the conclusion, summary, and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The literature review section is organized into two main categories - Theoretical Literature and Empirical Literature - that have strong correlation with trade credit and working capital management. The chapter reviews, analyzes and synthesizes other works on the topic.

2.1 Theoretical Literature

2.1.1 Definitions and theories of Trade Credit

Association for Certified Chattered Accountants (ACCA) defines trade credit as an arrangement to buy goods and/or services on account without making immediate cash or cheque payments (ACCA, 2013). This has become one of the simplest but popular definitions of trade credit in extant literature. However, online finance education platform, Investopedia, gives a more elaborate definition as a B2B business to business arrangements where products and services are acquired on a business customer's account of which payments to supplier is made on another day, mostly 30 days, 60 or 90 days (Investopedia, 2018). Chan, Chee, Chen Chong, Lee, Looi and Yong (2002) define trade credit as, "credit created whenever a supplier offers terms that allow the buyer to delay payment".

Chan et al (2002) detail the two types of trade credit that firms engage in: net terms and two-part term. The net term type of trade credit is straightforward in nature, indicating that payments must be made in full within a specified period of time after goods have been delivered. For instance, an indication of "net 60" means that the customer must make full payment 60 days after the invoice date. The second type of trade credit according to Chee et al (2002) is a relatively more complex form referred to as the two-part terms. The two-part term trade credit has three facets: the discount period, the discount percentage and the effective interest rate. A typical example of a two-part

term 2/10 n/30, a combination which is explained as a 2% discount if payment is made within 10 days after delivery or the net amount is due within 30 days with an implicit interest rate of 43.9%. The implicit rate is defined as the opportunity cost to the customer if the customer opts to forgo the trade credit in exchange for 20 days of financing. One condition similar to both net terms and two-part term is that failure to make payment by the end of the net period means the customer is in default (Chee et al, 2002).

There are several theories in literature that explain why suppliers give trade credit to customers. According to Fisman and Love (2003), most theories of trade credit relate to specific areas of market structure and product uniqueness and they posit that some industries may be better at utilizing trade credit than others. Fisman and Love argue that most trade credit theories are propounded to address each issue amongst the following: (1) comparative advantage in liquidation, (2) price discrimination by suppliers, (3) warranty for product quality, and (4) customized products.

2.1.2 Comparative Advantage in Liquidation

Most theories of trade credit point to the fact that suppliers' ease of allowing trade credits to business customers depends on the nature of product or service in question. Mian and Smith (1992) explain this and say suppliers will be more willing to give out trade credits when the goods being traded can be resold easily so that in cases of default, the supplier can retake possession of the goods and resell them (also see: Frank and Maksimovic, 1998). According to the authors, the quality of an input to be resold easily hinges on certain characteristics among which are firm-specificity, inventory stock and depreciation. The end result of the theory suggests that industries that require undifferentiated raw materials for production and are also required to keep huge stock

of raw materials rather than stock of finished goods are better able to attract trade credit from suppliers.

2.1.3 Price Discrimination

Price discrimination is another theory found to influence the provision of trade credit to firms by suppliers. Brennan, Maksimovics and Zechner (1988) state that industries that are characterized by little or no competition among suppliers are likely to have suppliers discriminate among cash and credit customers. The authors claim the discrimination is the case if the demand elasticity of credit customers exceeds the demand elasticity of cash customers, and also, if there is adverse selection in the credit market. Brennan et al (1988) further argue that some industries are more susceptible to price discrimination by suppliers due to competition in the input market. For instance, industries that have firms demanding similar inputs will have access to trade credit from suppliers, a theory which is supported by an earlier study by Pryor (1972).

2.1.4 Warranty for product quality

In some industries trade credit is used as a good predictor of product quality. Long, Malitz and Ravid, (1993) in the paper, "Trade credit, quality guarantees, and product marketability", find that suppliers are more open to advancing trade credits to clients in order to grant the clients ample time to assess the quality of the products. Emery and Nayar (1998) allude to the assertion that the length of time a supplier provides for a trade credit is a good indicator of product quality since suppliers are not likely to give long terms of payment to customers if the suppliers doubt the quality of products (also see: Lee and Stowe, 1993).

2.1.5 Customized Products

In reference to a model designed by Cunat (2000), supplier-customer relationships based on tailor-made products and customized products often give rise to surpluses that lead to long-standing business relationships between the two parties. When such a relationship exists between businesses, it is easier for suppliers to extend trade credits to customers than in instances where the business relationship is new.

2.2 Trade credit trends

In recent times, trade credit has become a viable financing option for businesses, especially those with limited financing options. The post-financial crisis era has been characterized by limited availability of traditional financing typologies such as debt financing and financing through capital markets. The upsurge in other financing typologies such as crowd funding and peer-to-peer lending is testament change in financing options following the 2008 global financial crisis. There is evidence in literature that about 20% of external financing for firms outside the United States are in the form of trade credits making trade credit the next most important financing typology after bank credits among the countries considered for the study.

Similar studies conducted by the Federal Reserve Bank in the United States alludes to the importance of trade credit when the study finds that about 60% of small-scale businesses in the United States benefit from trade credits making trade credits the next most important form of financing behind debt financing from banks and other financial institutions. Trade credit is basically a short-term indirect loan, thus, in a situation where a supplier delivers goods to a client and agrees to deferred payment, the supplier is deemed to be financing the purchases made by the

client. Trade credit can also be classified as interest-free loan. Trade credit has two components, namely accounts receivable and accounts payable.

2.3 Accounts Receivable

Accounts receivable is the amounts or balance of money owed a firm for goods or services delivered to or used by customers (Investopedia, 2018). Accounts receivables are categorized under the current assets of a firm and are managed as part of the working capital of the firm. Account receivables are a key component of the current assets of a firm and should, therefore, be managed effectively since it is key to the realization of the basic financial purpose of the firm (Michalski, 2012). In the paper titled, "Accounts Receivable Management Policy: Theory and Evidence", Mian and Smith (1992) seek to explain the reason behind choice of accounts receivable management policies firms use. They find that firm-specific factors like size, concentration, and credit standing of the firm's traded debt and commercial paper are key reasons why firms prefer options including factoring, accounts receivable secured debt, captive finance subsidiaries, and general corporate credit. Many businesses use accounts receivables as a measure of firm performance. When conducting fundamental analysis, most businesses use accounts receivables as a measure of a company's liquidity and ability to meet their short-term financial obligations. Accounts receivable turnover ratio is one of the key ratios firms use to measure the frequency with which the firm has been able to collect its receivables in an accounting year.

2.4 Accounts Payable

On the other side of accounts receivable is accounts payable, which represent a cardinal aspect of firms' fundamental analysis. Accounts payable are current liabilities that the firm must pay off within a specified period to avoid the consequences of being in default. In other words, accounts payable refer to short-term debt payments to suppliers for goods delivered on credit. It is important to note that even though a slight difference exists between accounts payable and trade payables, they are similar in meaning. Trade payables refer to credits given to firms by suppliers for inventory-related business inputs or supplies whereas accounts payable encapsulates all short-term debts that the firm must pay within a specific accounting period.

2.5 Determinants of Trade Credit

The main objective of the study is to investigate the determinants of trade credit among listed firms in Ghana. Though the topic of trade credit is fairly new in Ghana, the study makes an effort to relate the determinants of trade credit in other countries, especially emerging economies to that of Ghana. In an article authored by Nadiri (1969) titled, "The Determinants of Trade Credit in the U.S. Total Manufacturing Sector", the author derives a number of determinants of trade credit from a profit maximization model in which the price, volume of output, and the selling costs are found to determine trade credit among US manufacturing firms. Nadiri (1969) highlights four features of trade credit in the US economy which are explained by the determinants.

First of the four features is that the growth rate of trade credit in the US is high. Secondly, the author identifies considerable uniformity in the terms and methods of evaluating trade credit in each industry. Also, payment periods assigned to trade credits in the US are short, therefore, the

high velocity of trade credit is likely to impact monetary policy immensely. Finally, the author finds a strong correlation between trade credit and business activity. The most notable among all the findings of Nadiri's (1969) study is that there is no strong evidence to prove that the tightening of monetary policy in the US led to an increase in net trade credit though there is substantial evidence in literature to the contrary (see: Meltzer, 1960; Brechling & Lipsey, 1963, and Junk, 1964).

In a relatively more recent study by García-Teruel and Martínez-Solano (2010), determinants for trade credit was assessed in 47,197 small- and medium-scale enterprises in Europe between 1996 and 2002. The findings from the study indicate strong uniformity among the factors that determine trade credit among EU member states. The results point to the fact that enterprises with the ability to raise funds through the capital markets at lower rates extend more trade credit to customers. García-Teruel and Martínez-Solano's (2010) results appear to support the Price Discrimination Theory which suggests that industries that are characterized by little or no competition among suppliers are likely to have suppliers discriminate among cash and credit customers.

Another interesting finding is that firms sometimes increase credits to customers in periods of low sales. More so, larger enterprises with better growth capacities and substantial investments in current assets tend to receive more credit from suppliers, whereas those with numerous options for credits are less likely to go with the option of vendor or supplier financing as a result of substitution effect. From the foregoing, it is imperative to find out if the assertions made hold in the Ghanaian context. There is no known study on the determinants of trade credit in the Ghanaian context, hence, the study and those conducted in other emerging markets could be deemed as indicative of

what the case may be in the Ghanaian context since emerging market economies share some features.

One of such studies was conducted by Vaidya (2012) on the determinants of trade credit among manufacturing firms in India. The empirical results obtained by Vaidya (2011) suggest that trade credit exists for the purpose of inventory management. More so, the author states that more profitable firms in India are found to extend more trade credit and receive trade credit from their suppliers. The results further show that firms that have easy access to credit from banks and other financial institutions extend less trade credit to their customers. On the contrary, firms with higher bank loans receive more trade credit. A positive correlation was also found between liquidity and trade credit, thus, firms with more liquid assets are able to attract more trade credits than firms with less liquidity.

2.6 Trade Finance and Growth

Extant literature contains a number of studies that seek to establish a relationship between trade credit and size of firms (see: Vaidya, (2011); Delannay & Weill, (2004) and García-Teruel & Martínez-Solano, (2010)). However, some studies highlight the role of growth in trade credit adoption among firms (Ozili, 2015). Ozili (2015) posits that suppliers seem to benefit from extending credit to growing firms, especially if such firms have poor credit quality. Ozili (2015) gives three reasons for this position; firstly, the author argues that though such firms currently have poor credit quality, they may have potential for growth in future; therefore, suppliers are keen on capturing such businesses and provide credits to them when many other suppliers may be unwilling to do so. Secondly, suppliers are able to reduce information asymmetry since they are able to obtain

more credible information from businesses than financial institutions. Finally, suppliers appear to rely on their ability to repossess and sell the goods against which credit has been granted. Peterson (2015) uses the above reasons to explain why small firms with growth potential are able to attract more trade credit than relatively large firms.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section of the study discusses the methodologies used, processes and procedures employed to achieve the purpose and objectives of the study. The chapter further, explains the reasons and justifications for the methods, processes and procedures employed. The chapter has the following subheadings - research design, data analysis technique and empirical model.

3.2 Research Design

The study used the quantitative research design to estimate the trade credit determinants among non-financial firms listed on the Ghana Stock Exchange Market between 2006 and 2012. For the purpose of establishing the drivers of trade credit (see Gupta & Wilson, 2014; Saunders, Lewis & Thornhill, 2012), it is argued that quantitative research design is better than qualitative design as it offers more accurate, reliable and objective results of effect of one variable on the other. Thus, quantitative research design is assumed to be free from research biases, involves rigorous analytical processes and processes which make results and findings generally acceptable.

3.3 Data Analysis Technique

This study obtained data on twenty (20) non-financial companies listed on the Ghana Stock Exchange market between 2006 and 2012 in order to examine the drivers of trade credits. The data obtained from the companies is arranged in a panel form. Brooks (2008) and Baltagi (2008) advance that panel data technique provides more efficient, reliable, and accurate findings than the traditional time series and cross-sectional data techniques because the panel data strategy corrects

the weakness in both time series and cross-sectional data strategies. The data for the study is obtained from the annual statements of twenty non-financial companies listed on the GSE between 2006 and 2012; hence secondary data is employed to achieve the purpose of the study.

3.4 Empirical Model

In an attempt to investigate the drivers of trade credit for non-financial companies listed on the GSE, regression analyses were employed to this effect. Thus, investigating the drivers of trade receivables, payable and net trade credit, regression analyses were employed. However, the study follows and modifies the model adopted by Delannay and Weill (2004) to investigate the drivers of trade credit among listed firms from nine (9) Central and Eastern Europe countries. Delannay and Weill's (2004) model is expressed mathematically as:

$$TRADECREDIT_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 PROFIT_{it} + \beta_3 GROWTH_{it} + \beta_4 LEVERAGE_{it} + \beta_5 TREND_{it} + \mu_{it}$$

where ***TRADECREDIT*** *represents trade credit;* ***SIZE*** *represents size of listed company;* ***PROFIT*** *represents profit of listed company;* ***GROWTH*** *represents growth opportunities;* ***LEVERAGE*** *represents usage of debt financing by listed company;* ***TREND*** *represents econometric method used to capture the effect of technological changes and year specific effects.*

3.5 Variable Selection and Description

3.5.1 Trade Credit (TRADECREDIT)

Trade credit is employed as the dependent variable for the model to be estimated. Following Delannay and Weill (2004), trade credit is measured in three ways. Thus, trade credit is proxied as account payable to total assets, accounts receivable to total sales and net trade credit (difference in account receivable and payable). While accounts payable and accounts receivable are trade credit

received and extended to others, net trade credit is the trade-off between accounts receivable and payable respectively.

3.5.2 Size (SIZE)

Size of a listed company is one of the explanatory variables for trade credit. Following Delannay and Weill (2004), size is used as a proxy for reputation and measured as natural log of total assets. Thus, large listed companies may be considered less risky and, hence, increase creditor confidence in large companies. Creditor confidence increases payable ratios leading to a positive relation between size and trade credit. On the contrary, in terms of trade receivables, it is expected that size, which is a proxy for reputation, will pressure trade debtors to honor their obligations with large companies leading to negative relation between size and trade receivables.

3.5.3 Profits (PROFIT)

Profitability is measured profit before tax and interest to total sales. In view of the effect of profitability on trade credit, there are two opposing views. First, profitable companies have the guarantee to receive trade credit a positive relationship with account payable. That is, profitability reduces risk of default and leads to increased access to trade credit. Second, profitability reduces accounts receivable as increased profitability depicts improved recovery of accounts receivables.

3.5.4 Growth (GROWTH)

Growth is measured as the year-on-year change in sales. In a similar line of argument as in the case of size and profitability, companies with higher growth potentials are more likely to receive trade credit in the form of accounts payable. However, the effect of growth on accounts receivable is expected to be negative. Thus, an increase in growth implies higher ability to recover trade receivables and hence reduces account receivables.

3.5.5 Leverage (LEVERAGE)

Leverage measures the usage of debts by listed companies. Leverage is measured as total debts to total assets. There is the argument that a negative relationship may exist between leverage and trade payable. Thus, use of debt financing increases the risk of default and liquidation making it difficult for advance credit to leveraged companies.

3.5.6 Trend (TREND)

Trend is an econometric technique used to capture technological changes across the years and year-specific effects. This enabled the study to flash out the effect of technological and year-specific trends in order to ascertain the true effect of the variable employed.

Table 3.1 Summary and Definition of Variables

Symbol	Measurement	Expected Sign
TRADECREDIT_EXTENDED	account receivable to total sales	
TRADECREDIT_RECEIVED	account payable to total assets	
TRADECREDIT_NET	difference in accounts receivable and payable	
SIZE	natural log assets	+/-
PROFIT	profit before interest and tax to total assets	+/-
GROWTH	year-on-year changes in sales	+/-
LEVERAGE	total liabilities to total assets	+/-
TREND	econometric strategy to capture year specific effects	

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

The chapter presents the results and findings of the study. First, the chapter reports on the standard procedures and processes used to arrive at the results and findings. Furthermore, the chapter interprets the results and findings in relation to extant literature. The chapter discusses content under the following subheadings - data analysis and presentation, empirical results, and discussions.

4.2 Data Analysis and Presentation

This section of the chapter reports on the summary statistics (Table 4.1), Pearson's Correlation (Table 4.2), Shapiro Wilk Normality (Appendix 1), and Variance Inflation Factor (VIF) (Appendix 2). While the summary statistics report on the nature of the variables employed in order to screen for outliers, Pearson's Correlation aids in identifying the existence of multi-collinearity within the independent variables. Similarly, while Shapiro Wilk Normality test is used to test for normality of the variables as a key assumption, Variance Inflation Factor is employed to support Pearson's Correlation in an attempt to justify the acceptability of each of the independent variables used in the study. The procedures discussed above are pre-estimation processes aimed at ensuring that the results and findings obtained from the study are reliable, accurate, and consistent.

Table 4.1 reports the summary statistics of all the variables of the study. It is observed that there are no outliers evaluating the mean, minimum, maximum and standard deviation values of the variables. Thus, observing the minimum and maximum ranges of the variables, none of the variables exceeded the threshold of 100%, implying that variables are within their range. Similarly,

observing the standard deviation of the variables, it is observed that the variables of the firms across the years under study are moderately low indicating that the dispersion of the variables is low and closely distributed. Hence, the ability of an outlier to impact the accuracy and reliability of the results and findings of the study is low. More so, the study tests the normality of the variables using the Shapiro Wilk Normality test (see Appendix 1). From the results of the Shapiro Wilk Normality test, all the variables are reported to be normally distributed around their means under 1% significance level. This implies that normality, a key assumption under regression analysis has been observed; hence, making the results and findings of the study consistent and reliable. Also, ensuring that multi-collinearity is checked and controlled, the Pearson's Correlation and Variance Inflation Factor values are employed. Following Kennedy (2008) who maintains that the threshold of multi-collinearity should be 0.7, there is no evidence of multi-collinearity given that none of the correlation values between the independent variables exceeded the threshold advanced by Kennedy (2008). Similarly, Variance Inflation Factor which indicates the level of acceptability of each of the variables (Appendix 2) shows that all the variables are accepted in the model given that the least acceptable variable which is Leverage reported a 93.5% level of acceptance as shown in Appendix 2.

Table 4.1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TRADECREDIT_EXT	135	.166	.149	0	.666
TRADECREDIT_REC	132	.227	.176	0	.969
NET_TRADECREDIT	133	.067	.243	-.51	.936
SIZE	137	14.242	2.646	9.411	19.483
PROFIT	137	.285	.199	-.073	.924
GROWTH	110	.115	.354	-.897	.975
LEVERAGE	137	.736	1.787	.017	.817

Table 4.2: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) TRADECREDIT_EXT	1.000						
(2) TRADECREDIT_REC	0.003	1.000					
(3) NET_TRADECREDIT	-0.631*	0.758*	1.000				
(4) SIZE	0.145*	-0.021	-0.136	1.000			
(5) PROFIT	0.236*	-0.252*	-0.348*	-0.117	1.000		
(6) GROWTH	-0.126	-0.032	0.059	0.039	-0.098	1.000	
(7) LEVERAGE	-0.066	0.376*	0.389*	-0.082	0.029	-0.226*	1.000

* *shows significance at the .1 level*

From the summary statistics, trade credit extended to other entities by listed firms employed in the study accounts for 16.6% of total sales on average. However, it is interesting to note that while a firm included in the study reported the lowest trade credit extended of 0% of total sales in a given year, another firm reported the highest trade credit extended of 66.6% of total sales in a given year. It is observed that trade credit received by firms amounted to 22.7% of total assets. This is an indication that listed firms, on average, received more trade credit than what they extended to other entities. However, it is worthwhile to note that while a firm reported the lowest trade credit receipt of 17.6% of total assets in a given year, another firm reported the highest trade credit receipt of 96.9% of total assets in a given year. Net trade credit is the difference between trade credit received and trade credit extended and, hence, amounts to 6.7% on average given the periods under review. Size is a logged value and, hence, difficult to ascribe any meaningful interpretation to it. Profit measures as return on assets is averagely 28.5% of total assets over the periods under review. Remarkably, while a firm reported the lowest profitability of 19.9% of total assets in a given year, another firm reported the highest profitability of 92.4% of total assets in another given year. Growth in sales for the period is averagely 11.5%, implying that sales of the firms increased by 11.5% over the periods under review. Strangely, while a firm reported the lowest sale growth -

89.7% of total assets in a given year, another firm reported the highest sale growth of 97.5% of total assets in another given year. In terms of debt financing usage, it is reported that the firms heavily rely on debt financing as a period average of 73.6% of financing comes through debt financing. The firm with lowest debt financing usage reported 1.7% of total financing while the firm with highest debt financing usage reported 81.7% of total financing. The financing values reported above are indicative of the fact that firms are highly leveraged.

4.3 Empirical Results and Discussion

In this section, the study reports the findings based on the objectives and discusses the results and findings while considering the findings of prior studies. First, the section provides insights into the findings by reporting the results and discussing them based on the objectives. That is, the determinants of trade credit extended by listed firms in Ghana are reported first, followed by the determinants of trade credit received and followed by the determinants of net trade credit between trade credit received and extended respectively. For each objective, three (3) panel models are estimated, namely Pooled Panel Corrected Least Square model, Random Effect models and Prais-Winsten models. Following the Hausman test (see Appendix 3 and 4) which provides evidence in favor of the estimation of Random Effect model ahead of the Fixed Effect model, the Random Effect model is estimated. However, given issues of heteroscedasticity (see Appendix 3), the Prais-Winsten Model which affords the opportunity to control both heteroscedasticity and autocorrelation is employed and used as the preferred models for all three objectives.

4.3.1 Trade Credit Extended Determinants

Table 4.3 presents the determinants of trade credit extended by listed non-financial firms on the Ghana Stock Exchange market between 2006 and 2012. The table reports results of Pooled Panel Corrected Least Square (Model 1), Random Effect (Model 2) and Prais-Winsten model (Model 3) and the study relies on the Prais-Winsten model as the preferred model. That is, given the heteroscedasticity and autocorrelation problems, the Prais-Winsten model is employed to provide the opportunity for correcting the problems and attaining reliable and robust results and findings.

Table 4.3 shows the determinants of trade credit extended by listed non-financial firms on Ghana Stock Exchange between 2006 and 2016 and the Prais-Winsten Model shows a positive significant relationship between size of listed non-financial firms and trade credit extended. That is, a unit increase in the size of listed non-financial firms in Ghana leads to a 0.0154-unit increase in trade credit extended. This implies that larger listed non-financial firms in Ghana provided more trade credit facilities to their clients. This is so because, larger firms have the resilience to resist liquidity pressures and, hence, can grant more trade credit facilities (see Delanney & Weill, 2004).

Moreover, Prais-Winsten model reports a 10% significant level relationship between trade credit extended and use of debt (leverage). That is, a unit rise in leverage or debt usage leads to a 0.0632-unit increase in trade credit extended. This implies that as listed non-financial firm increase their debt usage in financing their operations, they extended more trade credits to their clients. That is, debt usage allows firms the breathing space to increase their ability to extend trade credit to boost trade debt servicing by the business client.

On a whole, the results on the determinants of trade credit extended by listed non-financial firms on Ghana Stock Exchange market shows that size and leverage are the only significant determinants of trade credit extended between 2006 and 2012. That is, both size and leverage increase trade credit extended by listed non-financial firms in Ghana.

Table 4.3: Determinants of Trade Credit Extended

	Model 1	**Model 2**	**Model 3**
VARIABLES	**POOLED-EXT**	**RANDOM-EXT**	**PRAIS-WIN-EXT**
SIZE	0.0104**	0.00676	0.0154**
	(0.00508)	(0.0106)	(0.00762)
PROFIT	0.142*	0.0385	0.0193
	(0.0792)	(0.0667)	(0.0486)
GROWTH	-0.0541	-0.0268	-0.0277
	(0.0429)	(0.0229)	(0.0198)
LEVERAGE	0.0412	0.0792	0.0632*
	(0.0419)	(0.0535)	(0.0360)
TREND	-0.000823	0.00745	0.00344
	(0.00805)	(0.00850)	(0.00594)
Constant	-0.0350	-0.0309	-0.104
	(0.103)	(0.162)	(0.0984)
Observations	109	109	109
R-squared	0.101		0.345
Number of fcode	20	20	20

*Significant Level - *** p<0.01, ** p<0.05, * p<0.1 - Robust standard errors in parentheses*

4.3.2 Trade Credit Received Determinants

Table 4.3 presents the determinants of trade credit received by listed non-financial firms on the Ghana Stock Exchange market between 2006 and 2012. The table reports results of Pooled Panel

Corrected Least Square (Model 4), Random Effect (Model 5) and Prais-Winsten (Model 6) and the study relies on the Prais-Winsten model as the preferred model. That is, given that heteroscedasticity and autocorrelation problems exist in the Random Effect Model although the Hausman test favors the use of Random Effect Models, the Prais-Winsten model is employed to provide the opportunity for correcting the problems and attaining reliable and robust results and findings.

From the results in Table 4.4 which shows the determinants of trade credit received by listed non-financial firms on Ghana Stock Exchange between 2006 and 2012, it is observed that the Prais-Winsten (Model 6) shows a negative significant relationship between profitability of listed non-financial firms and trade credit received. That is, a unit increase in the profitability of listed non-financial firms in Ghana leads to a 0.215-unit decrease in trade credit received. This implies that profitability listed firms in Ghana received less trade credit facilities. This is so because, profitable firms are financially strong and resilient and, hence, require trade credits leading to a reducing effect of profitability on trade credit received. That is, profitability signals stronger ability to pay and, hence, requires less creditor trade credits. This finding is in line with prior studies that investigated profitability and trade credit.

Additionally, the preferred model reports a 5% significant level relationship between trade credit received and use of debt (leverage). That is, a unit increase in leverage or debt usage leads to a 0.152-unit increase in trade credit received. This implies that as listed non-financial firms increase their debt usage in financing their operations, they receive more trade credits from the clients. That

is, debt usage increases the interest burden of firms and, hence, such firms require more trade credit receipts in order to meet the demands of their operations.

In summary, the results on the determinants of trade credit received by non-financial listed firms on Ghana Stock Exchange market show that profitability and leverage are the only significant determinants of trade credit extended between 2006 and 2012. That is, while profitability decreases trade credit received by listed non-financial firms in Ghana, leverage (use of debt) increases trade credit received by listed non-financial firms in Ghana.

Table 4.4: Determinants of Trade Credit Received

	Model 4	**Model 5**	**Model 6**
VARIABLES	OLS-REC	RANDOM-REC	PRAIS-WIN-REC
SIZE	-0.00514	-0.0327*	-0.00234
	(0.00708)	(0.0186)	(0.0125)
PROFIT	-0.285***	-0.141*	-0.215***
	(0.103)	(0.0754)	(0.0717)
GROWTH	-0.0214	-0.00557	0.0165
	(0.0508)	(0.0259)	(0.0259)
LEVERAGE	0.108	0.160**	0.152**
	(0.0894)	(0.0809)	(0.0763)
TREND	0.00164	0.0148	0.0109
	(0.00953)	(0.0104)	(0.00720)
Constant	0.319**	0.551**	0.211
	(0.124)	(0.240)	(0.196)
Observations	107	107	107
R-squared	0.100		0.373
Number of firms	20	20	20

*Significant Level - *** p<0.01, ** p<0.05, * p<0.1 - Robust standard errors in parentheses*

4.3.3 Net Trade Credit Determinants

Table 4.3 presents the determinants of net trade credit (trade credit received minus trade credit extended) by listed non-financial firms on the Ghana Stock Exchange market between 2006 and 2012. The table reports results of Pooled Ordinary Least Squares (Model 1), Random Effect (Model 2) and Prais-Winsten (Model 3) and the study relies on the Prais-Winsten model as the preferred model. That is, given that heteroscedasticity and autocorrelation problems exist in the Random Effect model, although the Hausman test favors the use of random effect models, the Prais-Winsten model is employed to provide the opportunity for correcting the problems and attaining reliable and robust results and findings.

Table 4.5: Determinants of Net Trade Credit

	Model 7	Model 8	Model 9
VARIABLES	**OLS-NET**	**RANDOM-NET**	**PRAIS-WIN-NET**
SIZE	-0.0147*	-0.0253*	-0.0217
	(0.00812)	(0.0147)	(0.0206)
PROFIT	-0.416***	-0.174	-0.193**
	(0.120)	(0.128)	(0.0962)
GROWTH	0.0329	0.0160	0.0385
	(0.0693)	(0.0438)	(0.0348)
LEVERAGE	0.0431	0.00532	0.105
	(0.124)	(0.138)	(0.0886)
TREND	0.00206	0.00438	0.00366
	(0.0124)	(0.0129)	(0.00932)
Constant	0.351**	0.432*	0.379
	(0.136)	(0.237)	(0.304)
Observations	107	107	107
R-squared	0.156		0.111
Number of fcode	20	20	20

*Significant Level - *** p<0.01,** p<0.05, * p<0.1 - Robust standard errors in parentheses*

From the results in Table 4.4 which shows the determinants of net trade credit by listed non-financial firms on Ghana Stock Exchange between 2006 and 2012, it is observed that the preferred model (Model 6) shows a negative significant relationship between profitability of listed non-financial firms and net trade credit. That is, a unit increase in the profitability of listed non-financial firms in Ghana leads to 0.215 unit decrease in net trade credit. Following the computation of net trade credit, the result implies that when trade credit received dominates trade credit extended, a negative nexus may exist between profitability and trade credit received. This is so because, profitable firms are financially strong and resilience and hence require trade credits leading to a reducing effect of profitability on trade credit received. That is, profitability signals stronger ability to pay and hence requires or needs less creditor trade credits. This finding is in line with prior studies that investigate profitability and trade credit.

In summary, the results on the determinants of net trade credit by non-financial listed firms on Ghana Stock Exchange market show that profitability is the only significant determinant of net trade credit extended between 2006 and 2012. That is, profitability decreases net trade credit when dominated by trade credit received by listed non-financial firms.

CHAPTER FIVE

SUMMARY, CONCLUSION & RECOMMENDATIONS

5.1 Introduction

The underlining aim of this project was to investigate the factors that determine extended trade credit, received trade credit and net trade credit "Ghana Stock Exchange". The chapter explains the key findings of the study and how the findings help to answer the research questions. This chapter concludes the entire study by making recommendations and suggestions for further studies.

5.2 Summary of findings

This section gives a synopsis of the major findings that were produced by the study. Before the study was conducted, extant literature could not provide enough information on the determinants of trade credit among listed firms in Ghana. More so, the determinants of the subcomponents of trade credit in Ghana were not obvious. Thus, as far as the author was concerned, there was no study that highlighted the determining factors of inhibiting factors of accounts payable, accounts receivable and net trade. The study used 20 listed firms in Ghana between years 2006 and 2012 in the analysis. The analysis showed that the main factors that influenced the level of trade credit obtained by listed firms in Ghana were size and leverage.

A similar analysis was conducted with a focus on accounts payable (trade credits received) in order to prove whether or not determinants were different for that component of trade credit. The analysis was conducted using Model 6 in the previous chapter. The results obtained showed that a negative relationship existed between profitability and accounts payable of non-financial firms listed on the GSE. Thus, the more profitable non-financial firms listed on the GSE are less likely to receive trade credits from their suppliers, an assertion which is confirmed in extant literature.

Another finding produced by the study suggested a positive relationship between accounts payable (trade credit received) and use of debt (leverage) by listed firms. This means that trade credits received by firms were expected to increase as the firms took on more debts.

In assessing the determinants of net trade credit, Model 6, found a similar negative relationship as that which was found between trade credits received and profitability. However, the negative relationship existed when there was excess trade credits received over trade credit extended. The finding was supported by earlier studies conducted on the same topic howbeit in other contexts.

5.3 Conclusions

The main objective of the research was to find the factors that determined trade credits among listed firms in Ghana. Essentially, the findings from the study showed that size and leverage were the two main determinants of trade credits extended and trade credits received, while net trade credit was found to decrease with profitability.

5.4 Recommendations

This section makes recommendations to all stakeholders who may be affected either primarily or remotely by trade credit practices. Managers of all the listed firms included in the study are primarily affected by trade credit practices, policy makers, auditors, suppliers and customers, banks and other financial institutions, academics, and researchers are all part of an endless list of stakeholders who may be remotely affected by trade credit practices, it is to these groups of people that the recommendations are addressed.

- Suppliers must conduct thorough credit-worthy assessments on companies they wish to extend trade credits to. Size was found to have a direct correlation with trade credit

extended because larger firms have the resilience to resist liquidity pressures, hence, are able to grant more trade credit facilities to their customers. However, firms must be cautious in extending trade credits to their customers since high default rates by customers could affect the short-term solvency of firms.

- Profitable firms willing to take trade credits to ease financial burdens in the short term should be given ample time to settle current liabilities.

5.5 Suggestions for further research

The lack of data for the study limited the scope of the study to determinants of trade credit of listed firms in Ghana. Even though listed firms play a significant role in the economy of Ghana, it is mainly the small- and medium-scale enterprises (SMEs) that drive the economy of Ghana. It is suggested that future studies should be widened to include other countries in the West African sub-region in order to highlight the different factors that determine trade credit extended, trade credit received and net trade credit among SMEs and listed firms in the West African sub-region.

References

ACCA (2013). Protecting Stakeholder Interests in SME Companies. Accessed 1 July 2013.

Almeida, H., Campello, M., Laranjeira, B., & Weisbenner, S. (2009). *Corporate debt maturity and the real effects of the 2007 credit crisis* (No. w14990). National Bureau of Economic Research.

Baltagi, B. (2008). *Econometric analysis of panel data*. John Wiley & Sons.

Brealey, R. A., & Myers, S. C., Allen, F., & Mohanty, P. (2007). Principles of Corporate Finance.

Brechling, F. P., & Lipsey, R. G. (1963). Trade credit and monetary policy. *The Economic Journal*, *73*(292), 618-641.

Brennan, M. J., Maksimovics, V., & Zechner, J. (1988). Vendor financing. *The journal of finance*, *43*(5), 1127-1141.

Broer, T. (2007). Emerging Market Lending: Is Moral Hazard Endogenous?. *Journal of Economic Development*, *32*(2), 41-67.

Brooks, C. (2008). Introductory Econometrics for Finance, 2008.

Chan, H., Chee, H., Chen, K., Chong, Y., Lee, K., Looi, Y., & Yong, P. (2002). *U.S. Patent Application No. 09/864,743*.

Cunat, V. (2006). Trade credit: suppliers as debt collectors and insurance providers. *The Review of Financial Studies*, *20*(2), 491-527.

Delannay, A. F., & Weill, L. (2004). The determinants of trade credit in transition countries. *Economics of Planning*, *37*(3-4), 173-193.

Ek, R., & Guerin, S. (2011). Is there a right level of working capital?. Journal of Corporate Treasury Management, 4(2).

Emery, G., & Nayar, N. (1998). Product quality and payment policy. *Review of Quantitative Finance and accounting*, *10*(3), 269-284.

Fisman, R., & Love, I. (2003). Trade credit, financial intermediary development, and industry growth. *The Journal of finance*, *58*(1), 353-374.

Frank, M., & Maksimovic, V. (1998). Trade credit, collateral, and adverse selection. *Unpublished manuscript, University of Maryland*.

García-Teruel, P. J., & Martinez-Solano, P. (2010). Determinants of trade credit: A comparative study of European SMEs. *International Small Business Journal*, *28*(3), 215-233.

Gross, B. (2010). Privates Eye. *Pimco Investment Outlook*.

Gupta, J., Wilson, N., Gregoriou, A., & Healy, J. (2014). The value of operating cash flow in modelling credit risk for SMEs. *Applied Financial Economics*, *24*(9), 649-660.

Junk, P. E. (1964). Monetary policy and the extension of trade credit. *Southern Economic Journal*, 274-277.

Kim, B., Pae, J., & Yoo, C. Y. (2019). Business groups and tunneling: Evidence from corporate charitable contributions by Korean companies. Journal of Business Ethics, 154(3), 643-666.

Lee, K. H., Herold, D. M., & Yu, A. L. (2016). Small and medium enterprises and corporate social responsibility practice: A Swedish perspective. *Corporate Social Responsibility and Environmental Management*, *23*(2), 88-99.

Lee, Y. W., & Stowe, J. D. (1993). Product risk, asymmetric information, and trade credit. *Journal of Financial and Quantitative analysis*, *28*(2), 285-300.

Long, M. S., Malitz, I. B., & Ravid, S. A. (1993). Trade credit, quality guarantees, and product marketability. *Financial management*, 117-127.

López-Iturriaga, F. J., & Rodríguez-Sanz, J. A. (2012). Ownership structure, financial decisions, and institutional setting: an international analysis through simultaneous equations. *Economics Research International*, *2012*.

Love, I. (2010). Corporate governance and performance around the world: What we know and what we don't. *The World Bank Research Observer*, *26*(1), 42-70.

Meltzer, A. H. (1960). Mercantile credit, monetary policy, and size of firms. *The Review of Economics and Statistics*, 429-437.

Mian, S. L., & Smith Jr, C. W. (1992). Accounts receivable management policy: theory and evidence. *The Journal of Finance*, *47*(1), 169-200.

Michalski, G. (2012). Efficiency of accounts receivable management in Polish institutions. *European Financial Systems*.

Nadiri, M. I. (1969). The determinants of trade credit in the US total manufacturing sector. *Econometrica: Journal of the Econometric Society*, 408-423.

Ozili, P. K. (2015). How bank managers anticipate non-performing loans. Evidence from Europe, US, Asia and Africa. *Evidence from Europe, US, Asia and Africa*, 73-80.

Pogue, G. A., & Bussard, R. N. (1971). A linear programming model for short term financial planning under uncertainty.

Pryor, F. L. (1972). An international comparison of concentration ratios. *The review of economics and statistics*, 130-140.

Rhyne, L. C. (1986). The relationship of strategic planning to financial performance. Strategic Management Journal, 7(5), 423-436.

Saunders, M., Lewis, P., & Thornhill, A. (2012). Research methods for business students (6. utg.). *Harlow: Pearson*.

Vaidya, R. R. (2011). The Determinants of Trade Credit: Evidence from Indian Manufacturing Firms. Modern Economy, 2, 707-716.

APPENDIX

Appendix 1: Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
tradecredi~t	135	0.883	12.400	5.676	0.000
tradecredi~c	132	0.908	9.638	5.102	0.000
nettradecr~t	133	0.972	2.902	2.400	0.008
size	137	0.958	4.539	3.413	0.000
profit	137	0.965	3.805	3.015	0.001
growth	110	0.969	2.771	2.273	0.012
leverage	137	0.225	83.443	9.982	0.000

Appendix 2: Variance inflation factor

	VIF	1/VIF

leverage	1.07	.935
profit	1.068	.937
size	1.015	.985
growth	1.005	.995
Mean VIF	1.04	.

Appendix 3: Breusch-Pagan / Cook-Weisberg test for heteroskedasticity Ho: Constant variance chi2(1) = 3.77 Prob > chi2 = 0.0522

Appendix 4: Hausman (1978) specification test

	Coef.
Chi-square test value	6.464
P-value	.167

Appendix 5: Hausman (1978) specification test

	Coef.
Chi-square test value	7.627
P-value	.106