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TRADE CREDIT AND PROFITABILITY OF LISTED MANUFACTURING FIRMS IN GHANA

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Declaration

I declare that this work is my own research project undertaken under supervision of Professor Joshua Abor and Dr. Saint Kuttu, and it has not been presented by anyone for any academic award in this or any other university. All references used in the work have been acknowledged.

I bear sole responsibility for any shortcomings.

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Certification

I certify that this thesis was supervised by Professor Joshua Abor and Dr. Saint Kuttu in accordance with procedures laid down by the

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Prof. Joshua Abor

(Lead Supervisor)

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Date

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(Co-Supervisor)

05/10/2020

Date

Dedication

This research work is dedicated to my late parents and the entire family for their moral support throughout the Master of Philosophy programme, and especially, during this research work.

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Abstract

The study investigates the effect of accounts receivable on the profitability (ROA ROE, TQ) of listed manufacturing firms in Ghana over a fourteen-year period. The study also examined the effect of accounts payable on the profitability (ROA ROE, TQ) of listed manufacturing firms in Ghana over the same fourteen-year period. Secondary data was collected from the annual reports and financial statements of thirteen (13) listed manufacturing firms between 2003 and 2016. Random effects panel data estimation technique was employed to explore the link between trade credit (accounts receivable and payable) and profitability (ROA ROE, TQ) of listed manufacturing firms with the aid of an unbalanced panel data. The results showed that accounts receivable has a positive significant effect on firm profitability whereas accounts payable have a negative significant effect on firm profitability. The study also finds a significant positive relationship between control variables (leverage, size and sales growth) and the profitability (ROA, ROE and TQ) of listed manufacturing firms. This suggests that both account receivables and payables play an important role in the profitability of listed manufacturing firms in Ghana. Emphasis should therefore be placed on proficient and effective trade credit management would improve the profitability of listed manufacturing firms in Ghana significantly. Consequently, listed manufacturing firms will be more profitable if their investment in accounts receivable is higher than the average investment of the firms in the industry.

Keywords: *Accounts receivable, accounts payable, Ghana, listed manufacturing firms and profitability.*

CHAPTER ONE

INTRODUCTION

1.1 Research Background

In the twenty-first century, the manufacturing sector remains relevant for developing economies that are trying to catch up with developed economies to provide increasing standards of living for their people. Whereas the need for such industrialization remains, the challenges are more enormous than in the past. For this reason, the emergence of global value chains has affected the nature of intercontinental competition (Naudé & Szirmai, 2011).

In the case of the manufacturing sector, it covers 16 of the 33 sub-sectors in the international standard classification of industries (ISIC). Manufacturing Value Added (MVA) was 5.8% of GDP in 2013. The sector has experienced a sustained decrease in its share of GDP throughout the past decade, losing more than 40 percent of its 2006 share of 10.2 percent. Services and, recently, oil have grown at the expense of manufacturing and agriculture. Average growth rate for the manufacturing sector from 2006 to 2013 was about 2%, leave out a 17% growth rate reported for 2011. In 2013, MVA amounted to US$2,703 million. Ranked by value added, the top five subsectors were food and beverages (30%), paper and paper products (19%), chemicals and chemical products (13%), other non-metallic products (9%), and textiles (9%).

Furthermore, trade credit management has also become a growing and a major source of financial capital in every sector of an economy. “Trade credit is an agreement between a buyer and seller by which the seller allows delayed payment for its products instead of cash payment” (Abiodun & Ivanivna, 2013). Trade credit can be divided into two parts; account receivables and account payables (Raheman & Nasr, 2007). Accounts receivable are amounts, which a firm has the right to collect from its customers. This fact is often referred to as a current asset in the books of the

firm. Accounts payable are amounts which a firm owes its suppliers because of merchandises bought on credit. Accounts payable is one of the main sources of safe interim financing (Ikechukwu & Nwakaego, 2015). Exploiting the value of bond with payee is a worthy objective that should be emphasized as essential as having the optimal level of promotions. Accordingly, strong alliance between firm and its creditors will strategically improve production lines and strengthen credit record for future expansion. Creditor is a vital part of effective cash positive purchasing initiates cash outflows and over-zealous purchasing function can create liquidity problems. They are also called suppliers whose invoice for goods or services has been processed but who have not yet been paid. The higher the value, the longer firms take to settle their payment commitment to their suppliers. Inadequate management of companies' payables can cause problem which may bring disaster to the companies.

Trade credit plays a vital role in financing policy of every firm. For the buyer, it is a source of financing through accounts payable, whereas for the seller, trade credit is an investment in accounts receivable. Trade credit exists because buyers defer their payments to sellers for goods. Nadiri (1969) established that investment in trade credit is similar to capital assets, and they contribute to the firm's value through increasing their share of the market. Firms take full advantage of such trade credit prospects to increase their profitability. Profitability can be defined as the return on funds invested by the owners and which are achieved by the efforts of management. According to Nadiri (1969), there are ensuing benefits of trade credit which includes reduction in operational expenses and increases in sales.

Globally, it is perceived that trade credit offered to customer and gained from suppliers can enhance the growth and profitability in non-financial firms, even though it is associated with risk elements (Raheman & Nasr, 2007). Efficient management of trade credit arguably can improve

firm financial performance as its significance are enormous (Tauringana & Afrifa, 2013; Yazdanfar & Ohman, 2016). It has been proven that trade credit can help firms faced with difficulties in securing adequate funds from internal and external financial sources. Thus, such firms acknowledge trade credit to be best alternative channel of raising funds for running their daily business affairs.

1.2 Problem Statement

The manufacturing industry has been the engine of growth to most developed countries such as the USA, and Japan. In Africa, developing countries such as Zimbabwe have also identified the potential of manufacturing to turn the economy with negative growth to become vibrant ones (Brown, 2007). Therefore, every political administration in developing countries tries to financially support the manufacturing industry either directly or by securing the payment of loans. In countries where financial markets malfunction, contract enforcement is insecure, and information is scarce, unreliable and asymmetric, trade credit is seen as better alternative (Ojenike, Olowoniyi & Asaolu, 2013).

A lack of access to adequate and timely finance is arguably a major obstacle to sustainable investment and economic growth in developing countries. This argument derives from theoretical and empirical studies (Deploy & Jegers, 1999; Fafchamps, 1997). Fisman and Love (2001) postulated that firms in industries with higher rates of trade credit grow faster in countries with relatively weak financial institutions. In the case of Ghana, efficient and effective performance of the financial sector needed for an improved economic well-being of the businesses appear not to be manifesting.

Ghana's manufacturing firms have operated in a difficult business environment during the last few years. The persistent power crisis compels them to use high cost back-up generators to run their production operations. According to the Enterprise Survey, losses from electricity outages amounted to 13% of annual sales for Ghanaian manufacturers, compared to 6% in Kenya and 1.3% in Vietnam. Ghanaian manufacturers generated 10% of their electricity from generators compared to 7% in Kenya and 3% in Vietnam. Capacity utilization in manufacturing is about 65%, compared to 72% in Kenya and 77% in Vietnam. Persistent budget deficits and government's heavy borrowing on domestic financial markets, as well as persistent trade and current account deficits that put pressure on the exchange rate, contribute to chronic macroeconomic instability. On the Global Competitiveness Index (GCI), Ghana ranked 140 and 141, respectively, on government budget balance and inflation. In 2014, the Ghana cedi depreciated against US dollar by 26.5%; Government budget deficit was about 10% of GDP, and inflation was 17% in November.

Offering trade credit is seen as an important element of every business, especially for manufacturing firms, where it might be higher than long-term assets. According to the Association of Ghana Industries Business Barometer 3rd Quarter 2009 Report, cost of trade credit emerged as one of the major challenges facing the manufacturing sector in Ghana. By this argument, it is very evident that the profitability of the manufacturing sector could not be undermined.

The literature discusses the reasons the firms offer and receive trade credit. However, there is little empirical evidence on the relationship between trade credit and profitability of manufacturing firms, especially in developing countries. This study focuses on how trade credit from both the supplier side (account payables) and the demand side (account receivables) influences the profitability of listed manufacturing firms in Ghana.

According to Ojenike & Olowoniyi (2013), in a country where financial markets flop, contract enforcement is uncertain and information is rare, untrustworthy and asymmetric, trade credit becomes more important. For example, Fisman and Love (2001) find that firms in industries with high rate of trade credit grow more rapidly in countries with relatively weak financial institutions.

The manufacturing sector of Ghana is an important part of the economy and it is important that we establish the impact of trade credit on its profitability. There is now a persuasive motivation to also do this because of the difficulties in accessing credit or funding from financial institutions in Ghana amidst high interest rates on loans and high cost of production (electricity, raw material, import duties, etc.). This makes the manufacturing sector less attractive to indigenous investors because the most foreign goods on the market are cheaper than the locally manufactured goods due to the relatively low cost of production in their country of origin.

The question is, why would manufacturing firms extend trade credit when more specialized firms like the banks could provide financial aid? Manufacturing firms would do this because, the performance of Ghana's financial institutions needed for improved economic wellbeing of businesses have not lived up to that expectation.

1.3 Research Objectives

The broad objective of this study is to empirically analyse the effect of trade credit on the profitability of listed manufacturing firms in Ghana. The study, therefore, seeks the following objectives:

(i) To examine the effect of trade credit (account receivables) on the profitability of listed manufacturing firms in Ghana.

(ii) To analyse the effect of trade credit (account payables) on the profitability of listed manufacturing firms in Ghana.

1.4 Research Questions

(i) What is the effect of account receivables on the profitability of manufacturing firms listed in Ghana?

(ii) What is the effect of account payables on the profitability of manufacturing firms listed in Ghana?

1.5 Hypothesis

The specified objectives of this study are reinforced by the ensuing hypotheses:

(i) H_1: Account receivables does not have a significant effect on the profitability of listed manufacturing firms in Ghana.

(ii) H_2: Account payables does not have a significant effect on the profitability of listed manufacturing firms in Ghana.

1.6 Significance of the Study

This study seeks an insight of nature of trade credit business in the manufacturing industry and to help develop best strategies that manufacturing firms in Ghana need to be relevant in the global market. The study also provides empirical evidence on the influence of trade credit on financial performance of manufacturing firms to aid these firms determine the potentials and problems of using trade credit in the manufacturing business. This empirical evidence will provide listed

manufacturing firms in Ghana an insight of how best they can use trade credit to maximize profit. This will also assist listed manufacturing firms to make effective trade credit policies in Ghana. Lastly, the outcomes from this study will be valuable to the Ghanaian economy, particularly the manufacturing sector. This will intend provide guidelines in making the manufacturing sector more reliable and profitable.

1.7 Scope and Limitation of the Study

The scope is on manufacturing firms chosen from the Ghana Stock Exchange (GSE). The study makes use of financial statements of listed manufacturing firms over a fourteen-year period, 2003-2016. Even though the investigation contributes to industry and the scholarly community, there are some difficulties. The quality of the study is dependent on the trustworthiness and precision of the financial figures sourced from the financial statements and annual reports of the listed manufacturing firms in Ghana over the study period.

The study is limited to an examination of the link between trade credit and profitability of listed manufacturing firms in Ghana. Therefore, the study is devoted to setting apart the listed manufacturing firms from other firms in Ghana to see how their trade credit activities affect their profitability.

1.8 Organization of the Study

The study is structured into five key chapters. The first chapter is a background with specific emphasis on the research problem, objectives and questions, significance of the study and how the study is structured. In the second chapter, the study reviews articles and publications in relation to

trade credit and profitability of firms. In line with this subject area, the review covers the theoretical in addition to empirical perspectives of trade credit. In chapter three, the adoption of a suitable research design is stated, the processes through which data is/are collected is well-outlined as well as a presentation of proper econometric regression models to help analyse the variables (dependent and the independent) adopted. Chapter four presents, analyses and discusses results of data acquired from the yearly financial statements and reports of listed manufacturing firms in Ghana. Finally, chapter five provides a summary, conclusion and some recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Literature review of the study focuses on a number of scholarly publications and articles reviewed theoretically and empirically. It is very important to establish what is already known as a result of previous studies and to establish what is relevant to our field of study. This chapter covers the conceptual classification, empirical and theoretical frameworks of trade credit and exactly how it influences the profitability of firms.

2.2 Theoretical Literature and Conceptual Framework

2.2.1 Financing Advantage Theories

These theories focus on the benefit suppliers have over institutional lenders in analysing the credit value of customers. These investigations may provide the supplier a cost benefit over financial firms in offering credit to customer or buyer (Schwartz, 1974). These theories are categorized into three sources of cost advantage which includes:

(i) advantage in Information Acquisition Theory;

(ii) advantage in controlling the buyer Theory;

(iii) advantage in salvaging value from existing assets Theory.

2.2.1.1 Advantage in Information Acquisition Theory

This theory is of the view that suppliers or creditors may visit the workplace of their customers more regularly as compared to financial institutions. In this way, the supplier would be able to understand the business processes of their clients in order to respond to the size and timing of their

orders appropriately. The buyers' failure to take full advantage of timely trade discounts would prompt the creditor of a decline in the buyers' credit worthiness. Even though financial establishments may similarly gather information, the creditors could get it quicker and at a lesser cost because it is acquired in their normal course of trade.

2.2.1.2 Advantage in Controlling the Buyer Theory

Merchandises supplied to buyers may have a few number of reasonably priced substitutes sources other than the creditors (Schwartz, 1974). If so, the creditor can threaten to stop the supplies of goods in situations where the customer show signs of defaulting in the repayment of their debt. Such threats become very credible if the buyer significantly contributes to the supplier's sales. On the other hand, a financial institution may have a more restricted influence over the borrower's business operations in the short run.

2.2.1.3 Advantage in Salvaging Value from Existing Assets Theory

"If the buyer defaults, the supplier can seize the goods that are supplied. The more durable the goods supplied, the better the collateral they provide and the greater the credit the supplier can provide" (Mian & Smith, 1992). Financial institutions can likewise recover the firm's resources for pay off the firm's debt. Nonetheless, if the creditor has readily available channels of distribution, its cost of recovering and resale of the merchandises will be less expensive as compared to the financial institution. The advantage of the creditor over the financial institution varies depending on the kind of products the creditor is selling and how quick they can be transformed. The supplier will have a greater advantage over a financial institution in finding another buyer.

In relation to this study, it can be seen that many manufacturing firms in Ghana indirectly implement this financing advantage theory. This is because the more specialized institutions like banks which could provide financial assistance to customers are not living up to expectation. In order to provide financial aid, manufacturing firms extend trade credit to increase the amount of goods that is supplied to these buyers.

2.2.2. Price Discrimination Theory

Price Discrimination is offering credit to specific customers which may be a way of reducing input price for those particular buyers. This theory postulates that trade credit can be obtained even if the creditor does not have a financing advantage over financial institutions for the reason that the credit may be used (Schwartz & Whitcomb, 1979; Brennan, Maksimovic & Zechner, 1988**;** Mian & Smith, 1992). Because terms and conditions of trade credit are ordinarily dependent on the creditworthiness of the buyer, it lessens the effective price of the good to low grade buyers. In the event that this is the most price elastic segment on the market, then trade credit is an efficient channel of price discrimination. A characteristic motivation behind why this segment's demand might be more price elastic is on the grounds that it is recurrently credit proportioned. Assuming this is the case, trade credit brings down the input cost of the merchandises and grants the permission to direct the demand. Another method is to take note of the fact that businesses with a high difference between sales and variable costs for their goods unsurprisingly have a solid motivating force to make extra sales, yet without pushing the cost to existing clients.

In relation to this study, manufacturing firms in Ghana with an attempt to use the price discrimination strategy in their trade credit activities will lower the price per product for customers who are trustworthy and buy in large quantities on credit. This is because, most manufactured

products are price elastic and buyer will go in for lower priced foreign goods on the market.

2.2.3 Transaction Cost Theory

According to Ferris (1981), trade credit may reduce the costs of transactions especially in the payments of bills. Instead of paying bills every time merchandises are supplied, a buyer may want to accumulate the debt and pay only periodically. In this way, the delivery schedules will then be separated from the payment schedules. The theory of transaction cost has other forms, which includes strong changes in consumption trends for a firm's products. With the purpose of maintaining an even production cycle, firms accumulate huge stocks to meet unexpected high demands of buyers. This is often associated the costs of warehousing the stocks and the costs of financing it. Obviously, the firm could lower prices with aim of boosting timely sales. Other studies which was undertaken by Emery (1987) established that offering trade credit selectively to both over time and cross customers helps the firm to manage its stock positions very well.

In relation to this study, manufacturing firms in Ghana make arrangements with customers to make accumulated payments at a later date instead of paying for goods when they are being supplied to the customers. In the case of this arrangements, manufacturing firms build up huge stock in order to meet the demands of their customers. For example, manufacturing firms lower the price of their goods in other to increase their sales of that period of time.

2.2.4 Theoretical Interpretation of Trade Credit, Sales and Firm Profitability

There exists a strand of literature that focuses on the theory of trade credit. Garcia-Teruel and Martinez-Solano (2014), Kim and Atkins (1978) and Copeland & Khoury (1980) established that the performance of business is affected by the amount of credit they offer to their buyers. Meltzer

(1960) also demonstrated that firms with an upright financial standing prefer to increase their share of the market by offering customers credit, especially customers with high credit rating. Petersen and Rajan (1997) also found that firms take advantage of trade credit as a price discrimination device to boost their sales to buyers in very poor financial standing. As a result, businesses increase the hidden price of the merchandises to those buyers without violating the price discrimination act. Smith (1987) suggested that trade credit can boost sales and financial performance by sinking distorted information between customers and suppliers. Hence, suppliers can offer customers to examine and assess the quality of the goods before payment. Pike, Cheng, Cravens and Lamminmaki (2005), Long, Malitz and Ravid (1993), and Ng, Smith and Smith (1999) also supported the proposition in the literature about product quality. According to their propositions, trade credit helps businesses to generate efficiencies in operations because it divides the process of delivering goods and receiving cash from customers, particularly during irregular demand periods. Theoretically, it is very expensive for businesses to change their production schedules because during low demand period, some operations will be idle, and during high demand period, additional capital assets investments are needed to keep up with the demands of customers. Subsequently, businesses use trade credit to manage demand and reduce instabilities. They will increase trade credit during low demand periods and stiffen trade credit during high demand periods. Along these lines, businesses can balance the production levels and demand (Emery, 1984; Ferris, 1981). Firms benefit from distinguishing the delivery of merchandises and collection of cash from customers at a prearranged date. In some cases, firms are able to sell more to the same group of customers for a very short time. Cheng and Pike (2003) also discovered that the cost reduction from operating overheads encourage firms to prolong trade credit. Besides, trade credit may reduce the account balances held by firms for precautionary measures.

Another proposition by Bougheas, Mateut, and Mizen (2009) contended that accounts receivable is decisive for the efficiency of stock management, whereby firms upturn trade credit when the stock level is high and vice-versa. Hence, stock holding costs, which include warehousing and insurance, would decrease. Likewise, Nadiri (1969) established that trade credit is used as a marketing tool to boost sales. It is customary to find that trade credit policy follows a universal style among other businesses in the same line of business. The competitiveness of other firms in an industry compels supplier to offer their customers the best possible trade credit policy. Along these lines, sales may be affected adversely by industry standards (Paul & Boden, 2008).

2.2.5 Conceptual Model

Based on theoretical expositions, this conceptual framework was constructed to give a comprehensive view of the influence of trade credit on the profitability of firms. The conceptual model for the study was adopted from the works of Petersen and Rajan (1997). This conceptual framework expatiates the modes through which manufacturing firms provide trade credit to their customers.

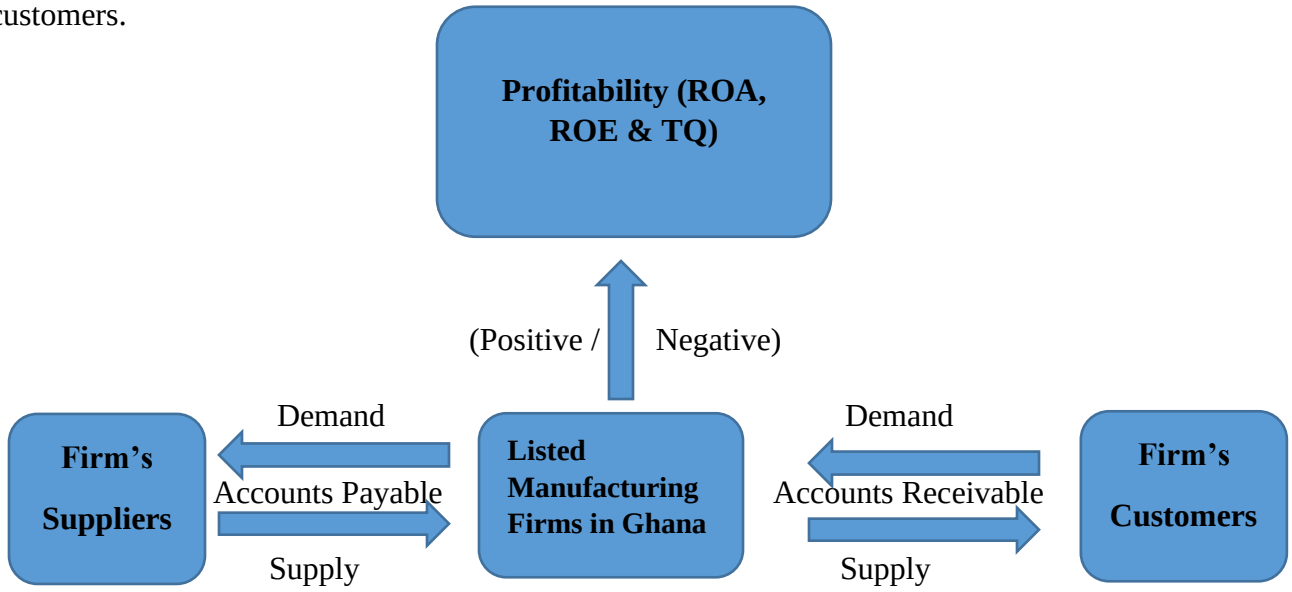

Figure 2. 1: A conceptual framework of how trade credit affects the profitability (ROA, ROE & TQ) of listed firms in Ghana.

Observing the firm as a supplier, its accounts receivables are a proxy for how much it lends to its customers. Viewing the firm as a customer, its accounts payable are its borrowing from the suppliers. Thus we examine both sets of trade credit relationships a firm has and treat the firms as lenders (suppliers) and then borrowers (customers).

2.3 Empirical Literature

2.3.1.2 Cash Conversion Cycle, Inventory Days and Trade Credit

Cash conversion cycle is also known as operating cycle. It is defined as the length of time between a firm's purchase of inventory and the receipt of cash from accounts receivable. Cash conversion cycle measures how long a firm will be deprived of cash if it increases its investment in inventory in order to expand customer sales. Ranchandran and Janakiraman (2009) examined the link between earnings before interest and tax (EBIT) and work efficiency of the paper production firms in Indian capital management. The study discovered that cash conversion cycle and inventory days have an adverse effect on EBIT, whereas accounts payable days and accounts receivable days related positively with EBIT. Grzegoz (2008) examined accounts receivable management using the portfolio management theory to determine the level of firm accounts receivables. The study postulated that there was an upsurge in firm accounts receivable which increases both net working capital and cost of holding.

2.3.1.2 Trade Credit and Firm Profitability

A number of empirical studies have established that trade credit is similar within the same industry but dissimilar in other industries (Ng, Smith & Smith, 1999; Niskanen & Niskanen, 2006; Bougheas, Meteut & Mizen, 2009). Trade credit exists because buyers delay their payments to

suppliers for merchandise. Nadiri (1969) demonstrated that investment in trade credit is similar to capital assets, where both contribute to the firm's value through increasing the market share. Also, granting trade credit may increase firms' sales (Wilson & Summers, 2002). Trade credit is basically in two forms: accounts receivable and accounts payable (Raheman & Nasr, 2007). Account receivables are amounts a firm has the right to collect from its customers. Accounts payable are amounts owed by the firm to its creditors or suppliers. "Accounts payable represents the rates of payable of firms to their suppliers" (Ikechukwu & Nwakaego, 2015). Profitability measures the degree of efficiency and effectiveness of the utilization of available resources to yield acceptable returns. Profitability will be determined using the Return on Assets (ROA) in this study.

In the literature, Raheman and Nasr (2007) focused on the relationship trade credit (accounts receivable and accounts payable) and profitability of firms listed in Pakistan. The results of the study revealed a positive linkage between accounts payable and firm financial performance. It also established that there is no clear relation between accounts receivables and profitability. Ferrando and Mulier (2012) examined how the use of trade credit channel affects industry growth in eight European countries between 1993 and 2009. The investigation postulated that firms use trade credit tool to stimulate growth in such countries. Financial market development was also found to be very essential for the growth of industries. Studies by Laziridis and Tryfonidis (2006), Mathura (2010), Deloof (2003), Samiloglu and Demrigunes (2008) Garcia-Teruel and Martinez-Solano (2007) established a negative relationship between accounts receivable and firm profitability. Furthermore, Sharma and Kumar (2011) found a positive link between accounts receivable and ROA.

Similarly, an empirical study carried out by Isaksson (2002) revealed a positive link between trade credit policies and manufacturing firms in Kenya. Fisman and Love (2003) also investigated

impact of financial institutions on the growth industry growth. They demonstrated that industries with very high dependence on trade credit have high rate of growth in countries with weaker financial institutions. Furthermore, Vaidya (2011) established that manufacturing firms which have unrestricted access to bank loans in India have the capacity to use the dynmics of trade credit by making their trade credit policies attractive to customers. In this manner, such firms are able to provide greater trade credit allowance to customers which increase firm profitability in the long run. According to Jack and Matthew (1994), the simplest means of recovering a firm's accounts receivable is to take active steps to avoid the process entirely. Singh and Randey (2008) documented that receivable turnover ratio had favorable statistically significant impact on firm profitability. Ksenija (2013) also examined how hundred and eight (108) public companies listed firms at the regulated market in Serbia manage their accounts receivable during recession times. The accounts receivables policies were observed in the crisis period of 2008-2011 as well as short-term effects. The studies showed that between accounts receivables and two dependent variables on profitability, return on total asset and operating profit margin, there is a positive but no significant relation. This fact suggested that the effect of receivables on firm's profitability is changing times of crisis.

2.3.1.3 Leverage and Firm Profitability

Empirical evidence on the effect of debt (leverage) on firm profitability has been inconclusive in the literature. Roden and Lewellen (1995) established a significant positive relationship between profitability and leverage as a percentage of the total buyout-financing cluster in their examination on leveraged buyouts. Gleason, Mathur and Mathur (2000) bolstered the existence of a negative impact of debt on the profitability of firm. Majumdar and Chhibber (1999) in their study also found

that leverage has a negative effect on performance in India. On the other hand, Krishnan and Moyer (1997) linked leverage and profitability to the country of origin. According to Maheshwari and Dhankar (2016), firm which has high profitability will not depend excessively on external funding for its development, because profitability has a negative effect on leverage. Shaw (2003) argued that internal funds do not need to bear the issue cost and prevent the double taxation. For these reasons, using internal funds is better than relying on external capital.

2.3.1.4 Firm Size, Leverage and Profitability

Pandey (2004) defines firm size in terms of total assets held by an organization. Dittmar (2004) emphasized that profit interacts with size; large firms are less susceptible to bankruptcy because they tend to be more diversified than smaller companies. Therefore, low levels of bankruptcy enable large firms to take on more debts. The larger firms can reduce the level of information asymmetries in the market and obtain financial resources more easily which in turn leads to financial performance of a firm (Gonenc, 2005).

It is worth noting that larger firms are more diversified than smaller firms. Large firms have higher capacity to meet up with interest payments (Cazorla-Papis, 2001). Such companies are also found to be enjoying higher degree of information disclosure (Rajan & Zingales, 1995), and they have higher collateral values and lesser bankruptcy risks. This creates more opportunities for large firms to qualify for financial leverage as opposed to smaller firms. Large firms supposedly ought to have higher investment opportunities and so they have higher need for cash than smaller firms (Dittmar, 2004). As a firm grows in size, its ability to borrow increases, and so its debt-equity ratio increases concurrently. Within the circuit of small firms, need for funds may be limited by the fact that their scales of operations are also limited. Banks and investors are afraid of committing funds in the

projects of small businesses. Small firms themselves may be indisposed to expose themselves to risks associated with distress and bankruptcy, as well as loss of ownership. The size of the firm is measured using the logarithm of total assets which is fixed assets plus current assets. Asset turnover is also a measure of firm size which is average sales divided by total assets of the firm (Kumar, Rajan & Zingales, 2001).

2.3.1.5 Sales Growth and Firm Profitability

Factors that influence sales growth range from promotion to internal motivation and retaining of talented employees to the implicit opportunities for investments in new technologies and equipment in the production process. In addition, it benefits learning curve and opportunities for economies of scale provided by sales growth. Most literature in market share explores whether underlying market features, such as economies of scale and market share, deliberate competitive advantage (Buzzell, et al., 1975). Kaplan and Norton (1996) claim that to reach their financial objectives effectively, firms must use a wide diversity of goals, including sales growth.

Other studies investigate the relationship between market share growth and profitability. Mancke (1974) suggests the market share benefits may come from unobserved variables that create imitation relation. Jacobson and Aaker (1985) and Jacobson (1988) empirically investigate this probability, statistically control for unobserved features and significantly reduce the estimated correlation between profitability and market share. Sales growth generally utilizes capacity more fully, which spreads fixed costs over more revenue resulting in higher profitability. Audretsch (1995) used a new database to measure company-level innovative activity used for testing firm growth, profitability and size. He found that high growth generates more innovative activity for

firms in low technological- opportunity industries, but not in high-technological opportunity environments.

2.3.2 Overview of Manufacturing in Ghana

Ghana's post-independence modern improvement has developed from an import substitution industrialization system to the present program of private sector driven industrialization. Before Ghana's autonomy in 1957, the manufacturing industry, a result of the provincial financial framework was little. Made up predominantly of the household manufacturing division, it contributed very little to the growth of the economy. The acquired manufacturing industry was immature basically in light of the fact that the colonial rulers had concentrated on the extraction of raw materials from the Gold Coast (Ghana) while in the meantime making a monetary framework heavily reliant on fabricated goods from Britain.

The period from the mid-1960s really experienced an enormous inclusion of the state in the manufacturing sector. The import substitution industrialization system of this period was described by an accentuation on import substitution upheld by large amounts of viable insurance. Protection of household generation, as already publicized, was expected to decrease economic reliance on imports for privately made merchandise. It was also partly a consequence of the balance-of-payment difficulties (Steel, 1972). By the late 1960s, the effective protection, exceeding 100 per cent for almost half of the manufacturing industries, created a strong incentive for a shift from consumer imports to the production of locally made manufactures using imported inputs.

By the beginning of the 1970s, the import substitution industrialization system was facing structural holdups in the context of the shift from a centrally planned to a market-based economy by the Busia government in 1969 (Killick, 2010). The industrial sector growth, however, declined

from the late 1980s to first half of the next decade, recording a period average of 4.10 per cent between 1989 and 1994. Over the 1990s, the share of manufacturing in the industrial sector's contribution to GDP declined significantly, although still remaining the dominant subsector. During the first half of the 2000s, there was a shift in the focus of Ghana's industrialization strategy. The broad policy objective of the government was aimed at creating wealth by transforming the nature of the economy to achieve growth, accelerated poverty reduction and the protection of the vulnerable within a decentralized, democratic environment. Despite improved performance, at the end of 2005, the industrial sector continued to face problems and these were expected to continue to endanger its growth prospects. Costly credit reflecting high lending rates, unreliable power availability, and rising fuel prices compelled many firms, especially those operating in import-dependent manufacturing, to cut production. In addition, liberalization of external trade continued to expose many vulnerable domestic manufacturing firms to unfair competition from imported goods, making the sector less attractive to potential investments. By 2009, the industrial sector's overall growth had dipped to 4.5 per cent. This can be attributable to the negative growth of the manufacturing subsector and the slowing down of the construction and electricity subsectors' momentum in 2009. Unreliable power supplies and rising fuel prices in 2009 contributed significantly to the manufacturing subsector's disappointing development. In 2010, the industrial sector recovered, achieving a growth rate of 6.9 per cent.

In 2011, the increased production of crude oil sparked an enviable 41.1 per cent growth rate for the industrial sector. The production of petroleum from the Jubilee Fields in 2011 explains the 206.5 per cent increase in the growth rate of the mining and quarrying subsector versus the 2010 figure of 18.8 per cent. The manufacturing and construction subsectors also achieved appreciable growth rates (13.0 per cent and 20.0 per cent, respectively) over their 2010 rates. Industry growth dropped from its record high of 41.1 per cent in 2011 to 7.0 per cent by 2012. The declining crude

oil and gas production during 2011 and the first half of 2012 induced largely by the base effect of commercial crude oil production in 2011, and production difficulties in the Jubilee Field, coupled with slow growth in manufacturing and the production and distribution of water, contributed to the drastic reduction in the growth of the sector.

2.4 Chapter Summary

This section of the study delivered a review of articles and publications underlying trade credit, sales growth and firm profitability. The chapter carefully dilated the various theories because different views have been expressed concerning trade credit in numerous scholarly journals. Investigations relating to the impact of trade credit on the performance of firms has been extensive as many studies have found different dimensions to the concept of trade credit. The literature review went on to adopt a conceptual framework from the studies of Petersen and Rajan (1997), in accordance with the objectives of the study. The empirical review of trade credit also suggested that firms are able to boost sales and profitability by offering trade credit to their customers. The chapter concluded by providing a synopsis of the manufacturing industry in Ghana from the post-independence era to date.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter specifically defines the different estimation techniques and statistical tools required to accomplish the goals of the study specified in chapter one. The chapter discusses the data sources and variable description. Thus, the dependent and the independent variables needed for the analysis of the study. This chapter also specifies and explains the econometric model adopted by the study whilst providing the justification for the variables utilized in the model. The chapter also provides a general overview of the panel data estimation technique together with very important post estimation checks.

3.2 Scope and sources of data

The objective of the study is to analyse the link between trade credit (account receivable and payable) and profitability of manufacturing listed on the GSE. The study uses a quantitative approach to investigate the objectives of the study. The variables of interest relating to objectives of the study are sourced from the financial statements and annual reports of manufacturing firms listed on the GSE. The data collected are arranged in panel data. The panel data has observations beginning from 2003 to 2016. The data analysis uses Stata to determine how each variable affects the profitability of manufacturing firms in relation to their trade credit decisions.

This study employs thirteen (13) manufacturing firms listed on the GSE. These include; African Champion Industries, Aluworks, Ayrton Drug Manufacturing, Benso Oil Palm Plantation, Camelot Ghana, Cocoa Processing Company, Fan Milk, Guinness Ghana Breweries, Pioneer Kitchenware, PZ Cussons Ghana, Starwin Products, Unilever Ghana and Golden Web.

3.3 Panel Regression Model

According to Greene (2003) and Baltagi, Jung and Song (2010), panel data regression models is specified with a double subscript (i and t) on the independent variables indicating the cross-sectional (space) and time dimension, respectively. The data can be balanced or unbalanced i.e. a balanced panel data has all entities appearing in all the years considered in a study. One will want to have a balanced dataset but this is not always the case. However, one can still run the model. In order to reap the richness of this dataset, the study will employ one of the following panel data estimation techniques;

3.3.1 Random Effects Model (REM) and Fixed Effects Model (FEM)

The rationale behind the REM is to decompose the error term into two major components: an individual specific effect and idiosyncratic error components. So basically, the REM is used if there is the reason to believe that differences across entities have influence on the dependent variable and that those differences represented in the econometric model as the individual- specific effect (δ_i) are not correlated with the regressors in the model.

FEM is used to explore the correlation between the dependent and the independent variables within an entity (firms, countries etc.). Individual entities may have certain characteristic trait that may possibly or might not affect the independent variables for instance; the commercial practices of a firm may affect its share price etc. FEM is run based on the assumption that something within the individual units may favour either the dependent or independent variables and so has to be controlled. One more important postulation of the FEM is that individual time- invariant variables are explicit to a specific entity and, therefore, would not be correlated with the former individual characteristics. As a result, each cross- sectional unit is not the same and for that reason the cross-

sectional error term and the constant (capturing the individual characteristics) must not be correlated with the others. On the other hand, when error terms are correlated, FEM becomes inappropriate hence REM is to be used instead.

3.3.2 Hausman Test

The choice made between the REM or the FEM is among the very important issues in panel data analysis. In this case, the Hausman test helps to choose between the REM and FEM. When the probability value from the Hausman test is less than 0.05, then the null hypothesis is in favor of the REM.

H_o: REM is preferred

Rejecting the null hypothesis means that the probability value of the Hausman test is greater than 0.05.

3.4 Econometric Specification

In order to address the research objectives outlined in the study, the panel data regression model below is employed:

$$ROA_{it} = \beta_1 REC_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 SG_{it} + \nu_t + \mu_i + e_{it} \quad (3.1)$$

$$ROA_{it} = \alpha_1 PAY_{it} + \alpha_2 LEV_{it} + \alpha_3 SIZE_{it} + \alpha_4 SG_{it} + \lambda_t + q_i + \varepsilon_{it} \quad (3.2)$$

$$ROE_{it} = \mu_1 REC_{it} + \mu_2 LEV_{it} + \mu_3 SIZE_{it} + \mu_4 SG_{it} + \tau_t + \theta_i + \omega_{it} \quad (3.3)$$

$$ROE_{it} = Z_1 PAY_{it} + Z_2 LEV_{it} + Z_3 SIZE_{it} + Z_4 SG_{it} + y_t + \delta_i + \mathbf{f}_{it} \quad (3.4)$$

$$TQ_{it} = \omega_1 REC_{it} + \omega_2 LEV_{it} + \omega_3 SIZE_{it} + \omega_4 SG_{it} + k_t + Q_i + \eta_{it} \quad (3.5)$$

$$TQ_{it} = \pi_1 PAY_{it} + \pi_2 LEV_{it} + n_3 SIZE_{it} + n_4 SG_{it} + C_t + \mathit{Я}_i + \mathcal{L}_{it} \quad (3.6)$$

ROA_{it} = Return on Assets for firm i at time t;

ROE_{it} = Return on Equity for firm i at time t;

TQ_{it} = Tobin's Q for firm i at time t;

REC_{it}= Account Receivables for firm i at time t;

PAY_{it}= Account Payables for firm i at time t;

LEV_{it} = Leverage ratio for firm i at time t;

$SIZE_{it}$ = Firm Size for firm i at time t;

SG_{it} = Firm Sales Growth for firm i at time t;

$\mu_{i,}$ = individual specific effects;

v_t = time specific effects;

e_{it}= error terms at time t.

3.5 Dependent Variable

3.5.1 Profitability

3.5.1.1 Return on Assets (ROA)

Profitability is the ability to make profit from all the business activities of a firm (Penman, 2003). Maheshwari (2001) also defined profitability as the final measure of economic success achieved by a company in relation to the capital invested. ROA is a widely known profitability ratio that measures how much profit firms generate from total assets. It is an indicator of how a firm manages its assets while generating income. The study proxies firm profitability by ROA because it is a

readily available and serves as one of the most desired measure of performance in existing literature (Iannotta, et al., 2007, Dong, Firth, Hou, & Yang, 2014). ROA is measured in different ways in existing literature. To achieve the objective of this study, ROA is measured by the ratio of earnings before interest and taxes (EBIT) over total assets (Lemmon, Roberts, & Zender, 2008).

$$\text{ROA} = \frac{EBIT}{Total\ Assets}$$

3.5.1.2 Returns on Equity (ROE).

Return on equity measures a firm's profitability by revealing how much profit a firm generates from the funds equity holders have invested. ROE offers a valuable signal of the financial achievement because it may indicate whether the firm is growing profits without bringing on board new equity capital into the firm. The strategic profit model is a traditionally acknowledged formula used to split ROE into three significant components. Essentially, ROE will equal the net margin multiplied by asset turnover multiplied by financial leverage. Breaking down ROE into three components makes it easier to comprehend changes in ROE over a period of time. A study by Abor (2005) employed Returns on Equity (ROE) as a measure of profitability in analyzing the effect of capital structure on the profitability of listed firms in Ghana. Returns on Equity (ROE) is financial ratio that shows the proportion of a firm’s earnings in relation to its shareholders’ equity.

$$\text{ROE} = \frac{EBIT}{Total\ Equity}$$

3.5.1.3 Tobin’s Q (TQ)

The Tobin's Q ratio equals the market value of a company divided by its assets' replacement cost. The Tobin's Q ratio is a ratio popularized by James Tobin who hypothesized that the combined market value of all the companies on the stock market should be about equal to their replacement costs. The Tobin’s Q ratio is calculated as the market value of a firm divided by the

replacement value of the firm's assets. While Tobin is often attributed as its creator, this ratio was first proposed in an academic publication (Kaldor, 1966). This shows these percentage changes in the market value of firm to its book value.

$$\text{TQ} = \frac{Market\ Value\ of\ Firm}{Book\ Value\ of\ Firm}$$

3.6 Independent Variables

3.6.1 Accounts Receivable (REC)

Bougheas, Mateut, and Mizen (2009) identified accounts receivable as decisive tool for the efficiency of stock management, whereby firms upturn trade credit when the stock level is high and vice-versa. Account receivables can be defined as amounts a firm has the right to collect from its customers (Raheman & Nasr, 2007). "The amount of trade credit extended between the firm and its customers will appear as accounts receivable on the balance sheet of the firm" (Petersen & Rajan, 1997). Accounts receivable is usually treated as current assets on the statement of financial position and sales is realized only when the invoice is generated. REC is measured in different ways in existing literature. In order to achieve the objectives of the study, REC is measured as the investment in trade credit, thus, the ratio of accounts receivable to total assets (Abuhommous, 2017).

$$\text{REC} = \frac{Account\ Receivable}{Total\ Assets}$$

3.6.2 Account Payables (PAY)

Accounts payable are amounts owed by the firm to its creditors or suppliers (Raheman & Nasr, 2007). "The amount of trade credit extended between the firm and its suppliers will appear as the accounts payable on the balance sheet of the firm" (Petersen & Rajan, 1997). Accounts payable is usually treated as current liabilities on the firm's statement of financial position. PAY is measured in different ways in existing literature. In order to achieve the objectives of the study, PAY is measured as the ratio of accounts payable to cost of sales (see Samiloglu & Demrigunes, 2008; Petersen & Rajan, 1997). Cost of sales can be referred to as the direct costs attributable to the production of goods supplied by firms.

$$\text{PAY} = \frac{Accounts\ Payable}{Cost\ of\ Sales}$$

3.6.3 Leverage (LEV)

Leverage is the amount of debt a firm uses to fund its assets to increase the prospective returns on the capital of the firm. Leverage ratio generally provides a signal of how a firm's assets and operations are financed. Consequently, it also represents the magnitude of how firms utilize their borrowed funds. Leverage is conventionally regarded as arising from financing activities where firms borrow to raise cash for operations (Penman, 2003). LEV is measured in different ways in existing literature. In order to achieve the objectives of the study, LEV is calculated by the ratio of total debt divided by total assets (see Abuhommous, 2017, Abor, 2005).

$$\text{LEV} = \frac{Total\ Debt}{Total\ Assets}$$

3.6.4 Firm Size (SIZE)

Firm size has been measured in diverse ways in existing literature. Studies by Titman and Wessels (1988) and Drobetz and Fix (2003) measured SIZE as the natural logarithm of net sales. Rajan and Zingales (1995) and Chen and Hammes (2003) calculated firm size as the natural logarithm of total turnover. This study uses the natural log of firm total assets (Bhagat, Bolton, & Lu, 2015; Abuhommous, 2017). García-Kuhnert, et al. (2013) also measured firm size taking the natural log of firm total assets which has the advantage of reducing the possibility of homoscedasticity and put off extreme values.

$$SIZE = Ln\ (Total\ Assets)$$

3.6.5 Firm Sales Growth (SG)

Sales growth is the amount a firm makes from current sales as compared to sales from previous periods. Sales growth is a strategic indicator that is employed by executives and the board of directors to formulate and positively influence the cash flows of their firms. In order to achieve the objective of this study, SG is measured by sales in current year minus sales in last year and divided by sales in last year (see Abuhommous, 2017, Abor, 2005).

$$\text{SG} = \frac{Turnover(current\ year) - Turnover\ (previous\ year)}{Turnover\ (previous\ year)}$$

Table 1: Summary of Panel Data Estimation Variables Employed

Variables	Measurement	Expected Sign
Return on Assets (ROA)	Ratio of earnings before interest and taxes (EBIT) over total assets	
Returns on Equity (ROE)	Ratio of earnings before interest and taxes (EBIT) over total equity	
Tobin's Q (TQ)	Ratio of firm market value over firm book value	
Accounts Receivable (REC)	Ratio of accounts receivable to total assets	Positive
Accounts Payable (PAY)	Ratio of accounts payable to cost of sales	Positive/ Negative
Leverage (LEV)	Ratio of total debt divided by total assets	Positive/ Negative
Firm Size (SIZE)	Natural log of total assets	Positive
Firm Sales Growth (SG)	Sales in current year minus sales in previous year and divided by sales in previous year	Positive

3.7 Diagnostic Tests

This segment deals with important post-estimation tests which arise in panel data analysis. The prevalent ones are considered in our analysis, thus, multicollinearity, serial correlation heteroscedasticity, etc.

3.7.1 Multicollinearity, Serial Correlation and Heteroskedasticity

It must be noted that the case of multicollinearity is not as much a problem as its severity (Gujirati, 1995). Variance inflation factor (VIF) is used to examine the multicollinearity among variables with the context of this study. The VIF is used to check the severity of the correlation among the independent variables. Any variable with a VIF exceeding 10 is extremely collinear and hence should be dropped from the model.

The standard error component of a panel model specification shoulders a homoscedastic variance of the disturbance and a constant serial correlation through the random individual specific effects

(Baltagi, et al., 2010). Granger and Newbold (1974) advanced that the presence of serial correlation in a model will render the estimates of the regression coefficients to be inefficient among others. The presence of heteroskedasticity also renders parameter estimates inefficient making inferences based on t and F statistics not reliable any longer (Wooldridge, 2008).

3.8 Chapter Summary

This chapter provided a comprehensive explanation of the econometric models adopted in accomplishing the objectives of this study. This included precision on the design of the research, the sources of financial data and the specification of the econometric model. Further, the chapter offered justification for the variables selected in estimating the effect of trade credit on the profitability of listed manufacturing firms in Ghana. The chapter also provided an overview of the panel data estimation techniques together with very essential post estimation checks.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS DISCUSSION

4.1. Introduction

In this chapter, the results that were obtained from the analysis described in the previous chapter are presented. Each set of results is accompanied by interpretations and discussion of the findings. The discussions are begun with an account of summary statistics. Further, the results of correlation estimation between variables and the diagnostic tests are discussed. Finally, findings of regression results in evaluating the objectives of the study are offered.

4.2. Summary and Descriptive Statistics

Table 2: Summary and Descriptive Statistics (ROA, ROE and TQ)

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	125	0.0628	0.0913	0.0009	0.5947
ROE	125	0.1042	0.2792	-0.0706	2.4352
TQ	125	0.0659	0.0700	-0.9646	0.3585
REC	125	0.1645	0.5570	0.0002	5.7737
PAY	125	0.2109	0.4668	0.0019	3.2828
LEV	125	0.3941	0.9469	0.0004	7.6758
SIZE	125	13.2777	1.1923	10.5229	15.8645
SG	125	0.5609	1.2165	-6.9784	7.3171

ROA has a mean of 6.28% and a standard deviation of 9.13% with a 0.9% minimum and maximum percentage of 54.47%, respectively. In the case of ROE, it shows a mean of 10.42% and a standard

deviation of 2.79% with a -0.7% minimum and maximum percentage of 243.52%, respectively. Tobin's Q over the period also records a mean of 6.58% and a standard deviation of 6.99% with a -96.46% minimum and maximum percentage of 35.84%, respectively. ROA, ROE and TQ as a profitability measures of profitability showed relatively low accounting performance of listed manufacturing firms in Ghana. REC has an average of 16.44% and standard deviation of 55.70%. PAY has an average of 21.06% and standard deviation of 46.66%. LEV has an average of 39.02% and standard deviation of 94.69%. SIZE has an average of 1327.77% and standard deviation of 119.22%. SG has an average of 56.09% and standard deviation of 121.65%. The mean of SIZE (56.09%) indicates that most listed manufacturing firms in Ghana are large firms. REC has minimum value of 0.22% and maximum value of 577.37%. PAY has minimum value of 0.19% and maximum value of 328.27%. LEV has minimum value of 0.42% and maximum value of 767.58%. SIZE has minimum value of 1152.29% and maximum value of 1586.45%. SG has minimum value of -697.84% and maximum value of 731.71%.

4.3 Correlation Matrix

Table 3: Correlation Matrix (ROA)

Variable	ROA	ROE	TQ	REC	PAY	LEV	SIZE	SG
ROA	1							
ROE	0.6421	1						
TQ	0.1264	0.2415	1					
REC	0.1842	0.1223	0.0978	1				
PAY	-0.0968	0.0095	0.0487	-0.0029	1			
LEV	0.2237	0.1589	0.2594	0.1340	0.1084	1		
SIZE	-0.4866	0.1245	0.2317	-0.0238	0.0740	-0.1573	1	
SG	-0.0345	0.0144	0.0198	0.0007	0.2734	0.0524	0.0300	1

The correlation matrix shows the correlation between the dependent (ROA, ROE, TQ) and the independent variables (REC, PAY, LEV, SIZE, SG). The focus here is on the variable of interest. Thus, REC and PAY in relation to ROA. REC showed a positive but weak correlation with ROA, ROE and TQ. PAY also showed a negative but weak correlation with ROA, ROE and TQ.

4.4 Diagnostic Tests

4.4.1 Multicollinearity

A variance inflation factor (VIF) is conducted for the ROA, ROE and Tobin's Q models in order to test the severity of multicollinearity among the variables. From the VIF results above, none of the variables exceeded the threshold of 10 to regard as highly correlational, hence all variables are used in the regression analysis. This indicates that the models specified do not suffer from multicollinearity. This implies that the standard errors of the model estimates are not inflated and are not biased.

4.4.2 Heteroscedasticity

The table shows that there is the presence of heteroskedasticity discerning from the Prob > chi2 values of models 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6. In this case, we reject the null hypothesis of constant variance in models 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6. With the aim of addressing the issue of non-constant variance, the robust command is issued to obtain heteroskedastic robust standard errors.

4.4.3 Serial Correlation

The presence of first order autocorrelation is evident from the Prob> F values for both models 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6. Hence, the assumption of no autocorrelation is violated in both models

(3.1, 3.2, 3.3, 3.4, 3.5 and 3.6). In solving the issue of first order autocorrelation (serial correlation), the robust option is issued in running the random effects regression models (3.1, 3.2, 3.3, 3.4, 3.5 and 3.6) so as to report robust standard errors.

4.5 Empirical results and Discussion

This section presents a comprehensive analysis and discussion of the effect of trade credit (accounts receivable and accounts payable) on the profitability of listed manufacturing firms in Ghana using random effects panel data model.

Table 4: Random Effects Estimation

Variable	Model 3.1 (ROA)	Model 3.2 (ROA)	Model 3.3 (ROE)	Model 3.4 (ROE)	Model 3.5 (TQ)	Model 3.6 (TQ)
CONS	0.7146*** (-0.0842)	0.7823*** (-0.0847)	0.2548*** (-0.0125)	0.3457*** (-0.0245)	0.2547*** (-0.0921)	0.5641*** (-0.0589)
REC	0.0081*** (-0.0102)	-	0.0052** (-0.0020)	-	0.0503* (- 0.0021)	-
PAY	-	-0.0546** (-0.0059)	-	-0.0244* (-0.0047)	-	-0.0238** (-0.0013)
LEV	0.0022 (-0.0067)	0.0029 (-0.0066)	0.0087 (-0.0054)	0.0097 (-0.0009)	0.0055 (-0.0002)	0.0047 (-0.0020)
SIZE	0.0544*** (-0.0059)	0.0183*** (-0.0013)	0.0022* (-0.0005)	0.0024* (-0.2587)	0.0081** (-0.0042)	0.0074*** (-0.0036)
SG	0.0038* (-0.0049)	0.0022** (-0.0049)	0.0036* (-0.0007)	0.0096* (-0.0045)	0.0058** (0.0029)	0.0033** (0.0019)
Observations	125	125	125	125	125	125
Listed Manfc. Firms	13	13	13	13	13	13
Hausman (Prob)	0.7409	0.3884	0.4401	0.3758	0.6124	0.3447
R. Squared	0.4406	0.4418	0.5214	0.4712	0.3915	0.4019
Adjusted R. Squared	0.4187	0.4204	0.4653	0.4093	0.3202	0.3319
Wald Chi2	120.06	122.28	150.12	101.23	140.89	200.39
Prob> Chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Level of Significance).

4.5.1. Results Discussion

Table 4 indicates the summary of regression models 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6. According to the Hausman Test, the probability values were greater than 0.05. A random effects panel data estimation technique was deemed appropriate in analysing the effect of accounts receivable (REC) and accounts payable (PAY) of listed manufacturing firms on their profitability (ROA, ROE and TQ). Leverage (LEV), Firm size (SIZE) and Firm Sales Growth (SG) are the control variables deployed in regression models 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6.

4.5.1.1 The Effect of Accounts Receivable, Leverage, Firm Size and Sales Growth on Profitability (Return on Assets, ROA)

According to the regression results from model 3.1 in Table 4, accounts receivable (REC) had a positive and statistically significant relationship with the dependent variable (ROA). This result shows that profitability (ROA) are positively affected by account receivables (REC) from customers of listed manufacturing firms in Ghana. This also means that listed manufacturing firms in Ghana can increase their profitability (ROA). It can also be discerned that firms in such an industry must offer more trade credit to their customers in order to relish increased profitability. Thus, expect a firm to be more profitable if its investment in accounts receivable is higher than the average investment of the firms in the industry. Holding other variables constant, an increment in account receivables (REC) across time and between listed manufacturing firms by one percentage point will cause ROA to rise by 0.81 percentage points amongst listed manufacturing firms. This result is consistent with that of Abuhommous (2017) and inconsistent with that of Raheman and Nasr (2007) which found no clear relationship between accounts receivable and firm profitability.

Furthermore, the model 3.1 in Table 4 showed that leverage (LEV), size (SIZE) and sales growth (SG) of listed manufacturing firms also had a positive significant impact on the profitability (ROA). This implies that a unit increase in LEV will result in a 0.22 percentage points increase in profitability (ROA). It also suggests that a unit increase in firm size (SIZE) will result in a 5.44 percentage point increase in profitability (ROA). Sales growth (SG) will increase profitability (ROA) by 0.38 percentage points accordingly. This is inconsistent with that of Ikechukwu and Nwakaego (2015) which found a positive and an insignificant effect on profitability of manufacturing firms in Nigeria.

4.5.1.2 The Effect of Accounts Payable, Leverage, Firm Size and Sales Growth on Profitability (Return on Assets, ROA)

According to the regression results from Model 3.2 in Table 7, accounts payable (PAY) had a negative and statistically significant relationship with the dependent variable (ROA). As a result, Profitability (ROA) is adversely affected by account payables (PAY) to suppliers by listed manufacturing firms in Ghana. This means that unit increases in account payables (PAY) will bring about conforming decrease in the profitability (ROA) of listed manufacturing firms in Ghana. Holding other variables constant, an increment in account payables (PAY) across time and between listed manufacturing firms by one percentage point will cause ROA to fall by 5.46% amongst listed manufacturing firms. Firms in such an industry must take less amount of goods from suppliers on credit in order to prevent decreased profitability. Thus, we expect a firm to be less profitable if its liabilities in accounts payable is higher than the average liability of the firms in the industry.

Control variables leverage (LEV), size (SIZE) and sales growth (SG) of listed manufacturing firms also had a positive significant impact on the profitability (ROA). This implies that a unit increase in LEV will result in a 0.29% increase in profitability (ROA). It also suggests that a unit increase in firm size (SIZE) will result in a 1.83% significant increase in profitability (ROA). Sales growth (SG) will also increase profitability (ROA) by 0.22% accordingly.

4.5.1.3 The Effect of Accounts Receivable, Leverage, Firm Size and Sales Growth on Profitability (Returns on Equity, ROE)

Following the regression results from model 3.3, accounts receivable (REC) had a positive and statistically significant relationship with the dependent variable (ROE). This result shows that profitability (ROE) are positively affected by account receivables (REC) from customers of listed manufacturing firms in Ghana. This also means that listed manufacturing firms in Ghana can increase their profitability (ROE). It can also be discerned that firms in such an industry must offer more trade credit to their customers in order to relish increased profitability. Thus, we expect a firm to be more profitable if its investment in accounts receivable is higher than the average investment of the firms in the industry. Holding other variables constant, an increment in account receivables (REC) across time and between listed manufacturing firms by one percentage point will cause ROE to rise by 0.52% among listed manufacturing firms. This result is consistent with that of Abuhommous (2017) and inconsistent with that of Raheman and Nasr (2007) which found no clear relationship between accounts receivable and firm profitability.

Additionally, the model 3.3 showed that leverage (LEV), size (SIZE) and sales growth (SG) of listed manufacturing firms also had a positive significant impact on the profitability (ROA). This implies that a unit increase in LEV will result in a 0.87% increase in profitability (ROA). It also

suggests that a unit increase in firm size (SIZE) will result in a 0.22% significant increase in profitability (ROA). Sales growth (SG) will increase profitability (ROA) by 0.36% accordingly.

4.5.1.4 The Effect of Accounts Payable, Leverage, Firm Size and Sales Growth on Profitability (Returns on Equity, ROE)

According to the regression results from Model 3.4, accounts payable (PAY) had a negative and statistically significant relationship with the dependent variable (ROE). As a result, Profitability (ROA) is adversely affected by account payables (PAY) to suppliers by listed manufacturing firms in Ghana. This means that unit increases in account payables (PAY) will bring about conforming decrease in the profitability (ROE) of listed manufacturing firms in Ghana. Holding other variables constant, an increment in account payables (PAY) across time and between listed manufacturing firms by one percentage point will cause ROE to fall by 2.44% among listed manufacturing firms. Firms in such an industry must take less amount of goods from suppliers on credit in order to prevent decreased profitability. Thus, we expect a firm to be less profitable if its liabilities in accounts payable is higher than the average liability of the firms in the industry.

Control variables leverage (LEV), size (SIZE) and sales growth (SG) of listed manufacturing firms also had a positive significant impact on the profitability (ROA). This implies that a unit increase in LEV will result in a 0.97% increase in profitability (ROA). It also suggests that a unit increase in firm size (SIZE) will result in a 0.24% significant increase in profitability (ROA). Sales growth (SG) will also increase profitability (ROA) by 0.96% accordingly.

4.5.1.5 The effect of Accounts Receivable, Leverage, Firm Size and Sales Growth on Profitability (Tobin's Q, TQ)

Following the regression results from model 3.5, accounts receivable (REC) had a positive and statistically significant relationship with the dependent variable (TQ). This result shows that profitability (TQ) are positively affected by account receivables (REC) from customers of listed manufacturing firms in Ghana. This also means that listed manufacturing firms in Ghana can increase their profitability (TQ). It can also be discerned that firms in such an industry must offer more trade credit to their customers in order to relish increased profitability. Thus, we expect a firm to be more profitable if its investment in accounts receivable is higher than the average investment of the firms in the industry. Holding other variables constant, an increment in account receivables (REC) across time and between listed manufacturing firms by one percentage point will cause TQ to rise by 5.03% amongst listed manufacturing firms. This result is consistent with that of Abuhommous (2017) and inconsistent with that of Raheman and Nasr (2007) which found no clear relationship between accounts receivable and firm profitability. Additionally, the model 3.5 showed that leverage (LEV), size (SIZE) and sales growth (SG) of listed manufacturing firms also had a positive significant impact on the profitability (TQ). This implies that a unit increase in LEV will result in a 0.55% increase in profitability (TQ). It also suggests that a unit increase in firm size (SIZE) will result in a 0.81% significant increase in profitability (TQ). Sales growth (SG) will increase profitability (TQ) by 0.58% accordingly.

4.5.1.6 The Effect of Accounts Payable, Leverage, Firm Size and Sales Growth on Profitability (Tobin's Q, TQ)

According to the regression results from Model 3.6, accounts payable (PAY) had a negative and statistically significant relationship with the dependent variable (TQ). As a result, Profitability

(TQ) is adversely affected by account payables (PAY) to suppliers by listed manufacturing firms in Ghana. Holding other variables constant, an increment in account payables (PAY) across time and between listed manufacturing firms by one percentage point will cause TQ to fall by 2.38% amongst listed manufacturing firms. Firms in such an industry must take less amount of goods from suppliers on credit in order to prevent decreased profitability. Thus, ***we*** expect a firm to be less profitable if its liabilities in accounts payable is higher than the average liability of the firms in the industry.

Control variables leverage (LEV), size (SIZE) and sales growth (SG) of listed manufacturing firms also had a positive significant impact on the profitability (TQ). This implies that a unit increase in LEV will result in a 0.47% increase in profitability (TQ). It also suggests that a unit increase in firm size (SIZE) will result in a 0.74% significant increase in profitability (TQ). Sales growth (SG) will also increase profitability (TQ) by 0.33% accordingly. The result is inconsistent with that of Ikechukwu and Nwakaego (2015) which found a positive and insignificant effect on the profitability of manufacturing firms in Nigeria. On the other hand, it is in consonance with the findings of Abuhommous (2017). Also, trade theory by Meltzer (1960) demonstrated that firms with an upright financial standing prefer to increase their share of the market by offering customers credit, especially customers with high credit rating.

Theoretically, the results are consistent with Trade credit theories propounded by Garcia-Teruel and Martinez- Solano (2014), Kim and Atkins (1978) and Copeland and Khoury (1980). They established that, the performance of firms is affected by the amount of credit they offer to their buyers. Successively, listed manufacturing firms in Ghana can use trade credit to manage demand and reduce instabilities. This will increase trade credit during low demand periods and stiffen trade credit during high demand periods. Along these lines, listed manufacturing firms in Ghana can

balance their production levels and demand (Emery, 1984; Ferris, 1981). In some cases, listed manufacturing firms in Ghana should be able to sell more to the same group of customers with a very short period of time.

Empirically, these results are also consistent with studies by Abuhommous (2017), Hall and Weiss (1967), Serrasqueiro and Maçãs-Nunes (2008) and Lee and Mahmood (2009). On the other hand, they are inconsistent with that of Lang and Stulz (1994) and Martínez-Sola, García-Teruel and Martinez- Solano (2014) because they found a negative nexus between accounts receivable and profitability. However, Meltzer (1960) also discovered that only firms with an upright financial standing prefer to increase their share of the market by offering customers credit, especially customers with high credit rating. As follows, only financially upright listed manufacturing firms in Ghana would be willing to provide trade credit to their customers as a means of increasing their market shares.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the main findings and recommendations grounded from the results of the study. The overall conclusion of the study is also provided in this chapter in accordance with the random effects estimation results.

5.2 Summary

The motivation of the study established that, manufacturing industry of Ghana is an essential part of the economy, and it is very imperative that establish the effect of trade credit on its profitability. The objective of the study was to examine the effect of trade credit (account receivables) and trade credit (account payables) on the profitability (ROA, ROE and TQ) of listed manufacturing firms in Ghana over a fourteen-year period (2003-2016).

The study employed secondary data collected from the annual reports and financial statements of thirteen (13) listed manufacturing firms between 2003 and 2016. A random effects panel data estimation technique was deemed appropriate in analysing the effect of accounts receivable and payable of listed manufacturing firms on their profitability (ROA, ROE and TQ).

In line with the objectives of the study, accounts receivable of listed manufacturing firms in Ghana have a positive significant effect on their profitability (ROA, ROE and TQ). The study rejected the hypothesis of no statistically significant of accounts receivable on the profitability (ROA, ROE and TQ) of listed manufacturing firms in Ghana. The study also established that account payables of listed firms in Ghana have a negative significant effect on their profitability (ROA, ROE and TQ). Furthermore, the study rejected the hypothesis of no statistically significant of accounts

payable on the profitability of listed manufacturing firms in Ghana. Moreover, the study postulated leverage (LEV), size (SIZE) and sales growth (SG) of listed manufacturing firms also have a positive significant impact on the profitability (ROA, ROE and TQ). This suggests that listed manufacturing firms should exploit their debt financing opportunities, expand their lines of production and improve their marketing and sales activities so as to remain profitable.

5.3 Conclusion

The study set out to investigate the effect of trade credit (account receivables and account payables) on the profitability (ROA, ROE and TQ) of listed manufacturing firms in Ghana. The study postulated that; accounts receivable of listed manufacturing firms in Ghana have a positive significant influence on their profitability. The study also postulated that; accounts payable of listed manufacturing firms in Ghana have a negative significant influence on their profitability. Furthermore, the study finds a significant positive relationship between control variables (leverage, size and sales growth) and the profitability (ROA, ROE and TQ) of listed manufacturing firms. This suggests that both account receivables and payables play an important role in the profitability of listed manufacturing firms in Ghana. Emphasis should therefore be placed on proficient and effective trade credit management would improve the profitability of listed manufacturing firms in Ghana significantly.

5.4 Recommendations

The study postulated that accounts receivable of listed manufacturing firms in Ghana have a positive significant effect on their profitability (ROA, ROE and TQ). This, therefore, proposes

that, listed manufacturing firms in Ghana should concentrate on the proper management of their accounts receivable which has a favorable impact on their profitability.

The study also found that accounts payable of listed manufacturing firms in Ghana have a negative significant effect on their profitability (ROA, ROE and TQ). Therefore, this suggests that listed manufacturing firms in Ghana should focus less on their accounts payable and ensure proper accountability of goods from suppliers on credit because it tends to have an unfavorable influence on their profitability.

5.5 Path for Further Research

The study explored the effect of trade credit on the profitability of listed manufacturing firms in Ghana. A comparative analysis of domestic and foreign listed manufacturing firms in Ghana could be an interesting research work. This is because, the findings of such a study will be a source of education to foreign investors who may be interested in the Ghanaian manufacturing industry. Furthermore, future empirical research work should focus on exploring effect of trade credit on the profitability of small and medium manufacturing firms (SMEs) in Ghana dependent on the availability of data.

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Appendices

Appendix A: Multicollinearity

Variable	VIF	1/VIF	Variable	VIF	1/VIF
SIZE	1.28	0.7809	**SIZE**	1.26	0.79461
LEV	1.17	0.85728	**LEV**	1.19	0.84373
SG	1.09	0.91745	**SG**	1.15	0.86617
REC	1.07	0.93753	**PAY**	1.11	0.89937
Mean VIF	1.15		**Mean VIF**	1.17	

Appendix B: Multicollinearity

Variable	VIF	1/VIF	Variable	VIF	1/VIF
SIZE	1.27	0.7812	**SIZE**	1.28	0.7899
LEV	1.16	0.85698	**LEV**	1.19	0.88972
SG	1.11	0.91246	**SG**	1.10	0.91458
REC	1.08	0.931243654	**PAY**	1.06	0.93646
Mean VIF	1.16		**Mean VIF**	1.16	

Appendix C: Multicollinearity

Variable	VIF	1/VIF	Variable	VIF	1/VIF
SIZE	1.25	0.78947	**SIZE**	1.28	0.78451
LEV	1.19	0.85112	**LEV**	1.15	0.85478
SG	1.14	0.91548	**SG**	1.09	0.91246
REC	1.08	0.93454	**PAY**	1.05	0.93564
Mean VIF	1.17		**Mean VIF**	1.14	

Appendix D: Breusch-Pagan Test for Heteroskedasticity H_0: Constant variance

Model	Chi2(1)	Prob > Chi2
3.1(ROA)	110.78	0.0000
3.2(ROA)	109.69	0.0000
3.3(ROE)	105.36	0.0000
3.4(ROE)	108.96	0.0000
3.5(TQ)	120.12	0.0000
3.6(TQ)	132.14	0.0000

Appendix E: Wooldridge test for autocorrelation H0: no first order autocorrelation

Model	F- statistic	Prob > F
3.1(ROA)	47.80432	0.0000
3.2(ROA)	46.85801	0.0000
3.3(ROE)	56.89282	0.0000
3.4(ROE)	41.28787	0.0000
3.5(TQ)	45.12647	0.0000
3.6(TQ)	55.39654	0.0000