DETERMINANTS OF TRADE CREDIT IN MANUFACTURING FIRMS IN NIGERIA

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Abstract

The study investigated the determinants of trade credit in manufacturing firms in Nigeria. Specifically, the study examined the effect of Firm Sales, Debt Financing and Cash Flow on Account Payable of manufacturing firms in Nigeria. The sample comprised of 17 manufacturing firms listed on the Nigeria Exchange Group during 2012-2023 periods. The time series data obtained from the annual reports and financial statements of the selected firms were analyzed using Panel Least Square Regression Analysis. Research results suggest that Firm Sales positively and significantly determine account payable of manufacturing firms in Nigeria {FSLS: Coeff. 0.161352, (P-value 0.0000 <0.05)}. Results also show that Debt Financing positively and significantly determine Account Payable of the firms {DETF: Coeff. 0.131480, (P-value 0.0187<0.05)}. It was further found that Cash Flow positively and significantly determines Account Payable of the firms {CSFL: Coeff. 1.075769, (P-value 0.0000<0.05)}. The implication of these findings is that Account Payable will increase as Firm Sales, Debt Financing and Cash Flow are increased. Based on these findings, the study recommends that the manufacturing firm managers should formulate trade credit policies that will enable them increase the use of trade credit to increase firm sales, firm profitability and firm value. The study also recommends that debt financing should be used to fund long term investment while trade credit should be used to finance short term credit needs of the manufacturing firms. Thus, both debt financing and trade credit are complementary as indicated from the findings of the study. Lastly, the firms should increase its cash flow in order to properly manage their account payable. An increase in cash flow will enable the firms settle their trade payable as and when due, this will increase the credit rating of the firms and further boast its ability to obtain funding from other sources.

Key Words: Trade Credit, Account Payable, Firm Sales, Debt Financing, Cash Flow, Manufacturing Firms.

1 INTRODUCTION

1.1 Background of The Study

Finance is the life wire of every organization. Therefore,firms seek funding from various sources to fund their plants and machineries, inventories and other short term financial needs [1].However, information asymmetries, agency and high flotation costs resulting from undeveloped financial system lead to limitations in accessing bank loans and equity funding. Thiscompels firms to seek for alternative sources of funding.One of such alternative sources of funding that resolves the problem of information asymmetry together with costs of funding is trade credit [2].Thus, one of the most viable alternative sources of finance for firms in an undeveloped financial system is trade credit which also constitutes a substantial component of

firms' assets and liabilities as well as a reliable source of funds for small and medium scale firms in developed economies [3].

Dary and Harvey [4] described trade credit as a relationship between a supplier and a buyer when the supplier sells goods or services to a buyer and no immediate cash payment is received. To the supplier, the trade credit is account accounts receivable and to the buyer, it is account payable.Different studies identify different determinants of trade credit. For example, Demirguc-Kunt and Maksimovic [5] stated that the use of trade credit is influenced by the development of a country's legal and financial system. Therefore,in a country with imperfect financial system, firms can suffer financial access limitation, compelling firms to shift their source of funds to suppliers who are non-financial institutions. Olusola and Olusola [3] stated that depreciation provision, sales value, institutional loan, tangibility and current assets are the determinants of trade credit in non-financial firms in Nigeria. Kim [6] identifies, firm size, high leverage and higher profits as the determinants of trade credit in Korean firms. This study examined, firm sales, debt financing and cash flowas possible determinants oftrade credit in manufacturing firms in Nigeria.

Hart [7]defined firm sales as the amount realized by a firm from the sale of goods or services rendered in the ordinary course of its business. Sales or turnover are words that describe the amount of income that a firm receives from selling products from its normal business activities. Abosede [8] defined debt financing as the extent to which a firm or investor is using the borrowed money to finance their business operations, being it long term, shot term or total debts.Hayes, et al. [9] stated that cash flow is the net cash and cash equivalents transferred in and out of a company. Cash received represents inflows, while money spent represents outflows. A company creates value for shareholders through its ability to generate positive cash flows and maximize long-term free cash flow. Coleman [10] defines account payable as goods or services purchased on credit terms which needs to be paid back in a short period of time at agreed terms and conditions.

1.2 Statement of the Problem

Finance is the life wire of every organization without which many firms will find it difficult to achieve its primary objective of profit maximization and wealth creation for the shareholders of the firm. From Packing Order Theory, firms in an attempt to obtain funding at minimal cost and also to preserve its internal information prefer internal source of funding to finance its growth and expansion. Where internal source is not available, debt financing is the next option before equity funding which isconsidered as a last option. Some of the advantages of debt financing include, ownership is not diluted as current management retains full control of the firm, interest payments are tax deductible, thus it taxes lower interest rate, it improves business credit score among others.However, due to undeveloped financial system in developing economies especially in Nigeria, financial institutions, particularly banks, give stringent conditions for granting loan facilities to manufacturing firms. Some of such stringent conditions include, request by the financial institutions for collateral to back-up the loan request, disclosure of critical internal information of the firms to the financial institution. Firms are as result of this forced to look for alternative sources of debt financing. One of such alternative sources of debt financing is trade credit. The importance of trade credit as an alternative source of debt financing prompted this study to investigate the determinants of trade credit in manufacturing firms in Nigeria.

1.3Objectives of the study

The main objective of this study is toinvestigatethe determinants of trade credit in manufacturing firms in Nigeria. The specific objectives are to:

i. Ascertain iffirm sales determine account payable in manufacturingfirms in Nigeria.
ii. Investigate ifdebt financing determines account payablein manufacturing firms in Nigeria.
iii. Ascertain if cash flow determines account payable in manufacturing firms in Nigeria.

1.4 Research Questions

The following research questions are in line with the specific objectives of the study:

i. To what extentdoesfirm sales determineaccount payablein manufacturing firms in Nigeria?
ii. To what degree does debt financing determineaccount payable in manufacturing firms in Nigeria?
iii. To what magnitude doescash flow determine account payable in manufacturing firms in Nigeria?

1.5 Statement ofthe Hypotheses

The following hypotheses formulated in the null forms are in line with the specific objectives of the study:

i. Firms sales does not significantly determine account payable in manufacturingfirmsin Nigeria.
ii. Debt financing does not significantly determine account payable in manufacturing firms in Nigeria.
iii. Cash flow does not significantly determine account payable in manufacturing firms in Nigeria.

1.6 Limitation of the Study

The only limitation encountered in the course of the study was that most of the manufacturing firms listed on Nigeria Exchange Group did not use debt financing consistently during the period. Consequently, the sampleof the study was limited to only the seventeen manufacturing firms thatused debt financing consistently during the period.

2 REVIEW OF RELATED LITERATURE
2.1Conceptual Framework
2.1.1FirmSales

Brown [11] described sales or turnover as the amount of income or revenue realized by a firm from selling its products or services to clients from its normal business activities.Keythman [12] stated that the amount of a firm's total sales is the total money it earns from providing its products or services to customers before paying any expenses. In accounting, a firm's revenues can be cash sales or sales for which customers pay at a later date. Hart[7] noted that firm sales could be gross sales or net sales. Grosssales encompasses all receipts from the sale of goods or services by the firm and does not consider any subtractions for sales returns and allowances made to customers. Net sales on the other hand, subtracts sales returns and allowances made to customers from the gross sales revenue figure. Gross sales represent the actual amount of sales that the firm realized during the period.

Ghozali, et al. [13] stated thatfirms need to grow its sales to improves its financial performance. Sales growth represents an increase in sales from one year to the next. Firm's sales growth is influenced by both internal and external factors. The internal factors are those factorsthat comes

from within the firm that can affect the performance of the firm and which can be controlled by the firm's management. They include, management decisions to increase firm's capital, the addition of labor, mergers, acquisitions and so on. The external factors on the other hand, are those factors outside the firm that cannot be controlled by the firm management such as; raw material prices, competitors' behavior, macroeconomic and political conditions, lending rates and son.Hand [14] noted that the importance of sales revenue in any firm cannot be over emphasized because sales revenue is the main business channel through which a firm's asset and growth opportunities are converted into cash.Kennon [15] also stated that sales revenue is important because a business must bring in money to make profit. If a firm has less revenue, all things being equal, it is going to make less profit. For start-up firms that have not yet made a profit, revenue can sometimes serve as a gauge of potential profitability in the future.

2.1.2Debt Financing

Cheong [16] defined debt financing as the borrowing of money from financial institution or other firms to support a business operation. The loan principal is repaid   at a later point in time, with some interest expenses being paid before the debt maturity. Debts could be long term or short term. Debts that are repaid within twelve months' se short term debts while debts whose repayment exceeds twelve months or one business operating cycle is referred to as long term debts. Long-term debt, or long term-loans are used to finance long-term assets, such as the purchase of land and construction of a building, build a new plant, invest in research and development, or adopt a new technology while short term loans are used for working capital needs of the firm. Schwab [17] noted that debt financing occurs when a firm raises money for working capital or capital expenditures by borrowing from banks and individuals and/or institutional investors.Goswami and Shrikhande [18] said that the majority of corporations looking for external financing options used debt financing rather than equity financing.

Onoja and Ovayioza [19] suggested that in selection of debt as a source of financing, it should be done in line with the costs benefits associated with the use of debts. Thus, costs, such as interest charges, bankruptcy cost and agency cost should be weighed against the tax benefits of debt. O'Brien and David [20] identifies the advantages and disadvantages of debt financing on the growth of firms and for its strategic investments. The benefits or advantages of debt financing include, the tax deductibility of interest and the reduction of free cash flow problems, while the costs of debt financing include potential bankruptcy costs and agency conflicts between stockholders and debt holders. Nwaolisa and Chinjindu [21] state that the major challenge with debt financing are the agreement that the firm have to pay back the debt as well as the interest charges and thus subjecting the firm to financial bankruptcy or distress This is especially as a proportion of the firm's cash flow must be dedicated to debt servicing.

2.1.6 Cash Flow

Wingerard, et al [22]describe cash flow as the inflow of cash to the business as well as the outflow of cash from the business.Albrecht [23] opines that cash flow is an index of the money that is actually received by or paid out by a firm for certain time period. This index is not inclusive of non-cash accounting charges such as depreciation. Bhandari and Iyer [24] stated that cash flows create value. In addition, they are regarded as a real resource for company expenditures. In this respect, cash can be used for transactions such as the payment of wages, salaries and debt, acquisition of inventory or goods as well as the distribution of profits. Adelegan [25] suggests that cash flows are more direct measure of liquidity and a contributing factor in corporate performance. Duhovnik [26] noted that accounting flows do not assure

adequate information about the liquidity of a firm. While profit may be recognized in the income statement, the statement of cash flows may express negative net cash flow. Since the liquidity problems are not recognized in the income statement, the income statement cannot be a good indicator of liquidity of a firm.

Turcas [27]explained that the fact that a firm is profitable does not mean that it is also solvent. The profit is not cash. The solvency, flexibility and the financial performance of the firm are set on the firm's ability to generate positive cash flows from its operating, investing and financing activities. Faulkenberry[28] equally stated that cash flow is a better metric than profits for evaluating the health of a company's operations because accounting earnings are affected by non-cash items such as depreciation or amortization. In other words, capital intensive companies would be apt to have large non-cash depreciation expenses that would lower earnings. Therefore, cash flow provides a more accurate metric than accounting earnings for evaluating the true contribution or worth of core business operations. Chen, et al. [29] asserts that the statement of cash flow complements the statement of financial position and statement of profit or loss by providing additional information concerning an organization's ability to operate efficiently, to finance growth, and to pay its obligations. Cash flow statement classifies all cash flows into one of three categories: operating activities, investing activities, and financing activities.

2.1.7 Trade Credit

Carvalho and Schiozer [30] defined trade credit as a contractual arrangement in which, as part of a transaction, a buyer and a supplier agree that payment may be deferred until a predetermined date following the physical delivery of goods or services. To the buyer, the trade credit is account payable and to the supplier, it is account receivable. It is a business-to-business financial arrangement where a supplier allows a customer to purchase goods or services and pay for them at a later date. Thankur and Vaigya[31] equally described trade credit as the credit which is extended to a buyer of the goods or services by the suppliers whereby the supplier allows the customer to take delivery of the goods or services on account without upfront payment. The due money can be paid at a later date as agreed in the term of sale between the parties involved.Thus, trade credit occurs any time a customer take delivery of materials, equipment or other valuables without paying cash on the spot. Fernando and Mulier [32] stated that trade credit is an important source of finance for firms, especially when firms find it difficult to obtain external funding from financial institutions. In general, the flows of trade credit have remained a stable source of finance for firms but tended to decline when bank credit was becoming easily accessible.

Henricks[33]opined that trade credit is essentially a short-term loan without interest. When discounts for faster payment and penalties for late payments are taken into consideration, however, trade credit can still cost the buyer more than other kinds of financing.McGuinness and Hogan [34] argued that trade credit offers much more benefit to corporations during periods of increased financial downturns and financial constraints. If this suggestion is conceivable, we expect increased financial downturns and financial constraints to affect trade credit on firm growth significantly.Ying; et al.[35] noted that trade credits are available as an effective alternative mechanism for bank credits to ease financial constraints in developing countries whose financial development is suppressed. It is a common credit relationship formed in the normal business activities when payment is deferred for supplies provided to clients' organization.Casey and O'Toole [36] equally noted that trade credit becomes a meaningful substitute for bank credit during a financial downturn and an essential finance source for growth among financially constrained corporations. Wenfeng, et al. [37] stated that one of the

advantages of using trade credit is that the buyer need not pay for goods on delivery and can enjoy a short deferment period before payment is due.

2.1.8 Account Payable

Kappel [38] defined accounts payable as a liability due to a particular creditor when it orders goods or services without paying immediate cash. Account payable is a liability which must be recorded under the current liabilities in the statement of financial position.The phrases "accounts payable" and "trade payables" are used interchangeably in business cycle, but they are not exactly the same thing. Trade payables constitute the money a firm owes its vendors for inventory-related goods, such as business supplies or materials that are part of the inventory of the firm. Accounts payable on the other hand include all of the firm's short-term debts or business obligations whether they are related to the firm's inventory or not.Zipporah [39]stated that accounts payable as a source of free credit, since either goods have been supplied or services rendered but payment will be made on later date. Where organizations have financial constrains to procure raw material or pay business services, accounts payable can be utilized as an external source of finance to improve production line.

Tuovila[40]opined that accounts payable is an account within the general ledger that represents a firm's obligation to pay off a short-term debt to its creditors or suppliers. They are amounts due to suppliers for goods or services received that have not yet been paid for. The sum of all outstanding amounts owed to the suppliers is shown as the accounts payable balance on the firm's statement of financial position. The increase or decrease in total a firm's account payable from the prior period appears on the statement of cash flow. Firm management has the discretionto pay its outstanding bills as close to their due dates as possible in order to improve firm cash flow. Okpe and and Duru [41] noted that accounts payable are debts that must be paid off within a short period to avoid default. If a firm's account payable increases over a prior period, it implies that the firm is buying more goods or services on credit terms, than it is paying cash. On the other hand, if a firm's account payable decreases, it indicates that the firm is paying on its prior period debts at a faster rate than it is purchasing new items on credit terms. Thus, accounts payable management is critical in managing a business's cash flow.

Fig 2.1: Conceptual Framework
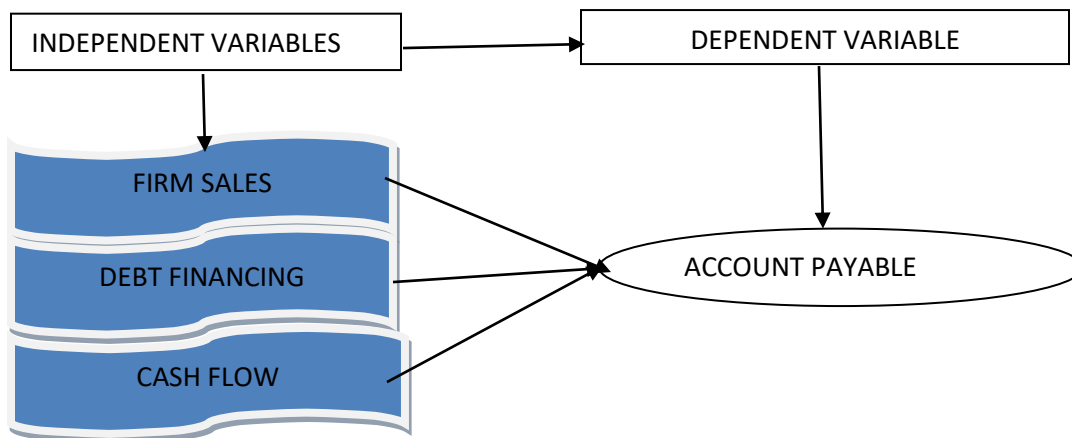
Source: Author's Compilation 2024

2.2 Theoretical Framework
2.2.1 Pecking Order Theory

The Pecking Order Hypothesis was developed by Myers and Majluf in 1984. The theory explains why firms with higher profitability have smaller debts. Specifically, firms have a sequence of preferences in the use of funding sources, starting from low-cost funds to high-cost funds. Financing comes from three sources, internal fund (retained earnings) and external funds made up of debt and new equity. Firms prioritize their sources of financing, first preferring internal financing, and then debt, lastly new equity as a last resort. Donaldson (1961) stated that the choice of internal funding sources (retained earnings) is because the firm wants to avoid floatation costs that usually come with external funding. This is supported by Myers and Majluf (1984). Myers and Majluf [42] asserted that firms prioritize their sources of financing (from internal financing to equity) in accordance with the cost of funds. Firms only prefer to raise equity as a last resort, where other funding sources are not available. Though, the net benefits from financing obtained through the use of external financing sources are likely to be greater than the floatation cost, the use of internal funding sources is to maximize the wealth of existing shareholders. This is because sale of new shares may not be attractive to current shareholders as the sale can lead to a decline in the share price of the firm and also dilution of their share holdings. However, in reality, some firms meet their funding needs not following the sequence scenario mentioned in the Pecking Order Theory.

2.2.2 Liquidity Preference Theory

John Maynard Keynes developed the liquidity preference theory in 1936. Keynes [43] stated that individuals and firms hold money for three motives, the transactions-motive, the precautionary-motive and the speculative-motive. The transactions motive refers to preference for liquidity to guarantee sufficient cash for basic transactions because income is not always readily available. With this motive, the level of income determines that amount of liquidity will be demanded; higher income levels mean that more cash will be needed to accommodate increased spending. The precautionary motive is related to preference for liquidity as additional security in the event that an unexpected occasion or problem arises that requires a substantial outlay of cash. Individuals may also have a speculative motive, based on the belief that bond prices may begin to significantly decrease, thus offering the investor the opportunity to use liquid funds to make an investment offering a more attractive rate of return. Since its birth, liquidity preference theory has been the subject of many articles without any apparent consensus on its foundations and meaning. Liquidity preference has evolved like an ice-barrier constituted of various layers of ice, each contribution adding its own explanation without removing the others. In this kind of situation, we usually go back to the original text by reading what the creator of the concept has written and try to guess how it could help to provide a solution to modern analytical ambiguities. In this case, this strategy is unfruitful. Keynes presents personal ideas which matured during many years and were the result of many personal syntheses and revisions. The definition of liquidity preference in the General Theory is a good illustration of such a process.

2.3 Empirical Review
2.3.1 Firm Sales and Trade Credit

Tingbani; et al. [44] investigated the relationship between trade credit and corporate growth of non-financial firms in the United Kingdom. The sample consists of 23,023 panel data of non-

financial companies from the United Kingdom,taken from the AMADEUS database over a period10-year period (2005-2014).Descriptive statics, correlation and panel data regression analysis were used to conduct the study. Evidence from the study reveals a non-linear (concave) relation between trade credit and corporate growth: positive for low trade credit received and negative for high credit received. The study also shows that trade credit to be sensitive to financial crisis, financial constraints and growth strategy. The predictability is stronger during a financial crisis, among financially constrained corporations and corporations pursuing an aggressive growth strategy. Finding also reveal that growth is higher in firms that move closer to achieving an optimal credit level. This relationship holds for both the above and below-optimal deviations. Al-Eitan; et al. [45] examined trade credit management and profitability of Jordanian manufacturing firms. The study focused on 38 SMEs listed in Amman Stock Exchange (ASE) during the period from 2009 to 2021. Descriptive Statistics and Panel Data Regression analysis were sued to examine the data. Findings reveal that a positive relationship exists between accounts payable and profitability, which indicates that SMEs should establish long-term relationships with their suppliers to maintain credit. However, no clear relationship was found between accounts receivable and profitability, surrogated with return on equity and return on assets. Furthermore, financial leverage and size were revealed to impact the profitability of SMEs. NasiruKaoje and Auwal [46] investigated the effect of sales and firm size on sustainability reporting of oil and gas companies in Nigeria during the period from 2004-2018. The population consists of 24 oil and gas firms playing a major role in the upstream, midstream and downstream of the Nigerian oil and gas sector. Six (6) of the companies were selected for the study. Panel data regression analysis was utilized to analyzed data obtained from annual accounts and stand-alone reports of the sample companies. The results suggest that firm characteristics proxied by sales growth and leverage exerts a negative significant effect, whereas, firm size exert a positive significant effect on sustainability reporting and profitability of oil and gas companies in Nigeria.

Kumar; et al. [47] conducted a study to analyze trade credit behaviour of Indian firm during the period 2006-2018 periods. The study carries out trade credit analysis for an emerging economy, namely Indian corporate sector employing rich information dataset covering multiple industries such as manufacturing, services, construction and others. The study covered the period of financial crisis including both firm specific and macro-economic factors. Applying dynamic panel framework. Findings show that the inventory management and macro indicators are significant in determining trade credit for Indian firms. While trade payable is mainly driven by raw material inventory, firms having reasonable stock of raw or finished goods inventory are less likely to offer trade credit. Large-sized firms are found to be both leading consumers and suppliers of the trade credit. The pecking order theory is clearly validated with retained earnings being preferred over the trade credit that is a more expensive source of finance. Credit from formal financial sources is found to act as a substitute to trade credit borrowing.Huang; et al. [48] studied the relationship between trade credit financing and firm-level sustainable growth in China. The study was conducted using financial data of 20,089 Chinese A-share listed firms over 2003-2017 periods. Cross-section regression method was employed to conduct the study, together with two-stage instrumental-variable regression method in the endogeneity test. Results of analysis show that trade credit has an overall positive and significant impact on the sustainable growth of Chinese firms, especially for firms with higher internal control ability, trade credit financing contributes more to sustainable growth, and the same way with private enterprises, whose growth depends more on trade credit compared to state-owned firms. The study further

indicates that the link between trade credit financing and sustainable growth of a firm is stronger in areas with lower access to finance, suggesting that firms with higher dependence on trade credit financing exhibit higher rates of sustainable growth in areas with weaker financial institutions.

2.3.2 Debt Financing and Trade Credit

Mahmud; et al. [50] conducted a study to ascertain if trade credit financing affect firm performance in an emerging market. The study specifically examined the association between interim financing and firm performance in an emerging economy. A total of 1002 firm-year data observations was used to conduct the study. Panel data regression, fixed effects model was adopted for the study. Findings indicate that trade credit may not be attractive to external debt financing as trade credit may not contribute to business growth while external debt financing does. The findings suggest a negative relationship between trade credit and firm performance. To check and control endogeneity and reverse causality issues we use instrumental variable approach (i.e., Heckman two-stage least squares regression). The results remain robust through different measures of firm performance and trade credit. Gopalan and Reddy [51] examined the link between the heterogeneity of firms and their probability in obtaining interfirm trade credit in Asia, with a specific focus on the Association of Southeast Asian Nations (ASEAN) bloc of economies. The study covered the period from 2009 to 2018. Survey method was used to gather primary data which were examined using descriptive statistics, correlation and regression analysis. Findings indicate that Trade credit remains a dependable and crucial source of financing for many firms, especially SMEs. Other findings include: (i) firm productivity matters in securing trade credit, highlighting the importance of productivity gains. (ii) trade credit and traditional bank credit tend to be substitutes, highlighting the need for countries in the region to focus on developing their financial sectors in a way that would allow a more complementary relationship between different forms of financing. (iii), neither the size nor the age of a firm turns out to be as important as assumed in the literature on trade credit in the ASEAN context. (iv) Fourth, exporting firms tend to have greater success in obtaining trade credit than non-exporting firms.

Abuhommous and Almanaseer [52] evaluated the impact of financial and trade credit on firms' market value. The study employed data from CRSP/Compustat files covering the period from 2003 to 2017. Panel data regression analysis was used to analysis the data. Findings show that there is a positive relationship between trade credit and the firm's market value. Results also show a negative relationship between financial credit and the firm's market value. These results have direct policy implications for investors, the firm's management, and financial strategy. The implication of the study is that using trade credit as a source of financing may give a positive signal of the firm's creditworthiness and increase the firm's market value. Results equally show that the benefits of trade credit may outperform the cost of using it as a source of finance.Farooq, et al. [53] investigated the impact of trade credit on non-financial-sector firm's financial performance in Asian and how this effect diversifies when enterprises acquire bank loans to finance the trade credit channel. The study employed the data of 6,654 non-financial-sector firms from 12 Asian economies and apply fixed-effects model to estimate the regression. Findings provides consistent evidence that the firms that adjust their trade credit activities through bank financing perform better financially. Acquisition of bank loans to expand the trade credit activities is a healthy financial activity because it provides financial setbacks in case of any fluctuation in trade credit. However, acquiring bank loans when firms have no operational need for such types of funds can disturb their financial health. Briefly, the analysis provides novel

evidence that efficient usage of bank loans into physical business activities can intensify financial efficiency of corporate firms.

Phuong; et al. [54] evaluated the relationship between trade credit and bank credit of companies listed on the HSX stock exchange in Vietnam during 2008-2019 periods. The sample consists of 167 with 2004 data observations from non-financial firms with continuous operations and which are continuously listed on the Ho Chi Minh City Stock Exchange, Ho Chi Minh City (HOSE). Trade credit was proxied with accounts receivable, payables, and net trade credit. Descriptive statistics, correlation and multiple regression analysis were used to test the relationship among variables. Results reveal that bank credit has an alternative relationship to firms' commercial credit. However, during periods of great global economic upheaval, such as the global financial crisis or the US-China trade war, this relationship changed a lot. Specifically, during a global financial crisis, bank credit had a reciprocal relationship with the expansion of commercial credit for its customers, but an alternative relationship in the use of trade credit of the business itself with suppliers. During the US-China trade war, bank credit did not affect the credit policy expansion for suppliers but had a reciprocal relationship with the demand for commercial credit.Rahman, et al. [55] investigated whether bank finance is a substitute or complementary to trade credit for small and medium-sized enterprises (SMEs) in the Region of the Visegrad Group. The countries of the Region that were investigated are, Czech Republic, Poland, Hungary, and the Slovak Republic. The total sample consists of 1,140 firms, of which, 254 firms were selected from the Czech Republic, 310 from Hungary, 542 from Poland, and 268 from the Slovak Republic. Data set provided by the Business Environment and Enterprise Performance Survey conducted by the European Bank for Reconstruction and Development and the World Bank during 2012 to 2014 were used. Ordinary least squares regression model was used to conduct the analysis. Findings indicate that firms having an overdraft facility from banks use more trade credit. Results also suggest that firms that are younger, innovative, risky, with a concentrated ownership structure and operated by an experienced manager use more trade credit to purchase their material inputs and services. Results also reveal that service-oriented firms use less trade credit than manufacturing firms.

2.3.6 Cash Flow and Trade Credit

Ningsih and Soesetio [56] investigated the effect of free cash flow and dividend policy with various measures of stock return and announcements for three days. The study targeted all the firms listed on Indonesia Stock Exchange during the period from 2013-2015 that consistently declared dividend for the three years'period of the study. Out of this population a ample of 285 firms was selected using the dividend payment as a criteria for the selection. Multiple regression analysis was employed to analyze the time series data extracted from the annual report and financial statements of the sampled firms. Findings from the study suggest that free cash flow significantly affect stock returns of the firms. Additionally, the dividend policy that is issued by the issuers shows the weak governance of the firm, government ownership, and dividend signals also affect stock returns of the firms. Odo and Ohazuluike [57] investigated the effect of cash flow on financial performance of food and beverage firms in Nigeria during 2010-2019 periods. Panel data was used to examine the data obtained from the firms. Findings show that cash from operating activities significantly affect profit for the year of food and beverage firms in Nigeria. Cash from financing activities has significant effect on profit for the year of food and beverage firms in Nigeria and cash from investment activities significantly affect profit for the year of food and beverage firms in Nigeria.

Rahman and Sharma [58] studied the impact of operating cash flows on the companies' financial performance in the manufacturing and insurance sectors listed on the Tadawul, Saudi Arabia during 2015–2018 for insurance companies, and 2014–2018 for manufacturing companies. The sample consists of five (5) companies from each sector totaling 10. The sample size of the current study depends upon the availability of financial data. The regression results show a positive and significant association between financial performance (ROA and ROE) and operating cash flows (CFOs), and a negative association for SIZE and LEV. Aniefor and Onatuyeh [59] studied the effect of debt financing on the corporate performance using listed consumer goods firms in Nigeria as evidence. A total of 15 consumer goods firms listed on the Nigerian Stock Exchange for the period 2006 to 2017 were sampled for the study. Secondary data were collected from the annual financial report of the selected firms and analyzed using panel data regression analysis. Findings revealed that total debt, long-term debt and short-term debt positively affect the performance of consumer goods firms in Nigeria.

3 METHODOLOGY

3.1 Research Design

The study adopted *ex-post facto* research design. This implies that the data for the study were already in existence before the study was conducted. Thus, the data for the study were collected from the annual reports and financial statement of the selected listed manufacturing firm during 2012-2023 periods.

3.2 Area of Study and Sources of Data

This study was conducted on the manufacturing firms listed on Nigeria Exchange Group during 2012-2023 periods. Secondary data were obtained from the annual reports and financial statements of the selected manufacturing firms listed in the Nigeria Exchange Group during the periods.

3.3 Population and Sample Size Determination

The population of the study is the thirty-four (34) manufacturing firms listed on the Nigeria Exchange Group during 2012-2023 periods. Manufacturing sector is the preferred sector for the study because trade credit is the hallmark of manufacturing firms. Thus, trade payable and trade receivable are associated with manufacturing firms more than any other economy sector. Purposive sampling method was used to select seventeen (17), out of the thirty-four (34) manufacturing firms listed on the Nigeria Exchange Group during the periods. Only the manufacturing firms that used debts financing consistently in their capital structure during the period were considered in the sample.

3.4 Model Specification

The following multiple regression model was developed in line with the variables of the study:

$$Y = b_0 + b_1X_1 + b_2X_2 + \ldots\ldots\ldots\ldots\ldots\ldots + b_n X_n + e$$

Where:
Y: Dependent Variable,
b_0: Constant Coefficient,
b_n: Regression Coefficient,
X_n: Independent Variables,
e: Error Value.

We obtained the following multiple regression equation when the variables of the study were introduced into the above model.

$$ACCP = \beta_0 + \beta_1 FSLS + \beta_2 DETF + \beta_5 CSFL + \varepsilon$$

Where:

ACCP = Account Payable

FSLS = Firm Sales

DETF = Debt Financing

CSFL = Cash Flow

β = Beta

ε = error term

3.4 Description of Variables

Variable	Label	Variable Description	Measurement	A prior Expectation
Account Payable	ACCP	Accounts payable is an accounting term used to describe the money owed to vendors or suppliers for goods or services purchased on credit terms.Accounts payable is a current liability account where a firm records the amounts it owes to suppliers or vendors for goods or services received on credit terms.	Account Payable = Total value of inventory received on credit terms from suppliers.	
Firm Sales	FSLS	Sales or turnover is the amount of income that a business receives from selling products or services from its normal business activity.Sales is one of the most critical function of a business because it drives the revenue.	Firm Sales = Total number of units sold multiply by the price per unit.	(+)
Debts Financing	DETF	Debt financing arise when a firm raises money for working capital or capital expenditures by selling debt instruments to individuals and/or institutional investors. The individuals or institutions become creditors to the firm and receive a promise that the principal and interest on the debt will be repaid at agreed date(s).	Debt Financing = Short Term Debts + Long Term Debts	(+)
Cash Flow	CSFL	Cash flow is an index of the cash or money that is actually received or paid out by a firm during a certain time period. The period could be one month, one quarter or one year.It is the increase or decrease in the amount of money a business, institution, or individual has. It is used to describe the amount of cash that is generated or consumed in a given time period.	Net Cash Flow from Operating Activities + Net Cash Flow from Investing Activities + Net Cash Flow from Financing Activities	(+)

Source: Author's Compilation 2024.

3.8 Method of Data Analysis

Descriptive Statistics, Unit Root Test and Correlation Analysisare used as the diagnostics tests to prepare the data set for regression analysis while the main statistics toolisPanel Least Square Regression Analysis. The Panel Least SquareRegression Model was used to test the three null hypotheses formulated for the study. Unit Root Test was used to verifying the stationarity properties of the data series while Jaque-Bera Statistic, Skewness and Kurtosis tests were used to test the normal distribution of the data set. Adjusted Coefficient of Determination (R^2) and F-Statistics were used to test the predictive power of the model while Durbin-Watson Statistics was used to test for the presence of autocorrelation in the model of the study. Firm Sales, Debt Financing and Cash Flow are the independent variables while Account Payable is the dependent variable and proxy for trade credit.

4 DATA PRESENTATION AND ANALYSIS

4.1 Data Presentation

The study analyzed the determinants of trade credit in manufacturing firms in Nigeria during 2012 to 2023 periods. Seventeen (17) manufacturing firms listed on the Nigeria Exchange Group during the period were sampled for the study. The raw data obtained from the annual reports and financial statement of the selected firms were logged using natural logarithm, and used to conduct the study.

4.2 Data Analysis

The obtained for the study were analyzed using various statisticaltools, including, Descriptive Statistics, Levin, Lin & Chu t* Unit Root test, Pearson's Correlation Matrix and Panel Least Square Regression Analysis. The Panel Least Square Regression Analysis isthe main statistical tool of analysis which was used to test the three (3) null hypotheses formulated for the study. The results of the data analysis are presented in tables 4.2.1 to 4.2.4.

Table 4:2.1: Descriptive Statistics

	ACCP	FSLS	DETF	CSFL
Mean	51773363	1.58E+08	38504252	20001728
Median	25530503	90771306	6722787.	7403773.
Maximum	4.88E+08	1.54E+09	4.02E+08	2.05E+08
Minimum	87058.00	827599.0	0.000000	79223.00
Std. Dev.	74812241	2.12E+08	75790501	32990577
Skewness	2.817169	3.180701	2.899156	3.143660
Kurtosis	13.06679	17.62749	11.75740	14.76155
Jarque-Bera	792.9709	1515.983	657.2786	1059.776
Probability	0.000000	0.000000	0.000000	0.000000
Sum	7.40E+09	2.26E+10	5.51E+09	2.86E+09
Sum Sq. Dev.	7.95E+17	6.39E+18	8.16E+17	1.55E+17
Observations	143	143	143	143

Source: Eview11.0 Output

Table 4.2.1 presents the Descriptive Statistics of all the variables used to for the study. The variables are: Account Payable (ACCP), Firm Sales (FSLS), Debt Financing (DETF) and Cash Flow (CSFL). Results from the table indicate that the mean values of the variables are:51773363, 1.58E+08, 38504252 and 20001728 for ACCP, FSLS, DETFand CSFL while the Standard Deviations are: 74812241, 2.12E+08, 75790501and 32990577 for ACCP, FSLS, DETF and CSFL reactively. Observations from these results show that the standard deviations of all the variables are greater thantheir mean values. This result suggest that the variables used for the study were volatility during the period.

Jarque-Bera Statistics, Skewness and Kurtosis tests were used to test the time series data for normal distribution. It was observed from the table that the p-values of Jarque-Bera Statistics for all the variables are 0.000000, which are less than 0.05 (P<0.05). Therefore, we conclude that the data set used for the study arenormally distributed. This result was corroborated by the Skewness and Kurtosis tests. The table show that the Skewness Coefficient of all the variable are greater than the benchmark rate 1, likewise the Kurtosis Coefficient are all greater than the standard rate of 3. These results confirmed that the data set used for the study are normally distributed.

Table 4.2.2: Levin, Lin & Chu t* Unit Root Test

Null Hypothesis: Unit root (common unit root process)
Series: D(ACCP)
Date: 08/05/24   Time: 18:40
Sample: 2012 2023
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Total number of observations: 104
Cross-sections included: 12

Method	Statistic	Prob.**
	-	
Levin, Lin & Chu t*	8.41518	0.0000

** Probabilities are computed assuming asympotic normality

Intermediate results on D(ACCP)

Cross section	2nd Stage Coefficient	Variance of Reg	HAC of Dep.	Lag	Max Lag	Band-width	Obs
1	0.04639	1.E+14	1.E+14	1	1	1.0	9
2	-1.26495	3.E+15	7.E+14	1	1	8.0	9
3	-1.30828	5.E+14	1.E+14	1	1	8.0	9
4	-0.85206	3.E+14	4.E+13	1	1	9.0	9
5	-2.91679	4.E+12	7.E+13	1	1	6.0	5
6	2.22837	2.E+15	2.E+15	1	1	0.0	9
7	-0.39472	7.E+12	1.E+12	1	1	9.0	9
8	-1.07804	5.E+12	1.E+13	1	1	0.0	9
9	-0.42832	2.E+13	3.E+12	1	1	7.0	9
10	0.58591	1.E+15	1.E+15	1	1	2.0	9
11	-1.27208	3.E+10	5.E+10	1	1	9.0	9
12	-1.85527	9.E+11	2.E+11	1	1	9.0	9

	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-1.85607	-12.019	1.427	-0.554	0.919		104

Source: Eview11.0 Output

The results of Levin, Lin & Chu t* Unit Root test is presented in table 4.2.2. The essence of the test is its importance in detecting the presence of unit root in a data set, which could lead to spurious regression in a time series data. Results from the table indicates that the variables used for the study are integration of order 1(1) with p-value = 0.0000. This result implies that all the variables used to conduct the study have unit root, but all attained stationary at first difference. The variables are, therefore, integrated in the same order, signifying a co-integration among the variables under study.

Table 4.2.3: Pearson's Correlation Matrix

Covariance Analysis: Ordinary
Date: 6/21/24   Time: 15:34
Sample: 2013 2022
Included observations: 110
Balanced sample (listwise missing value deletion)

Correlation t-Statistic Probability	ACCP	FSLS	DETF	CSFL
ACCP	1.000000			

FSLS	0.736018	1.000000		
	0.0000	-----		
DETF	0.574635	0.643742	1.000000	
	0.0475	0.0097	-----	
CSFL	0.701444	0.406049	0.309512	1.000000
	0.0000	0.0102	0.2823	-----

Source: Eview11.0 Output

Presented in table 4.2.2 is the Correlation Matrix of the four variables of the study. Results from the matrix show that the correlation coefficient of Firm Sales (FSLS) is positive at 0.736018 and also greater than 50% (0.707683>0.5). Hence, we conclude that FSLS positively and strongly relates with Account Payable (ACCP) of manufacturing firms in Nigeria. Results equally indicates that correlation coefficient of Debt Financing (DETF) is positive at 0.574635. This value is also greater than 50% (0.574635<0.5). Therefore, we state that DETF positively and strongly relates with Account Payable (ACCP) of the firms. It was further found that the correlation coefficient of Cash Flow (CSFL) is positive at 0.701444, which is greater than 50% (0.701444>0.5). Thus, we postulate that CSFL positively and strongly relates with Account Payable (ACCP) of the firms.

Table 4.2.4: Panel Least Square Regression Analysis

Dependent Variable: ACCP
Method: Panel Least Squares
Date: 08/05/24   Time: 18:35

Sample: 2012 2023
Periods included: 12
Cross-sections included: 12
Total panel (unbalanced) observations: 143

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FSLS	0.161352	0.020537	7.856829	0.0000
DETF	0.131480	0.055256	2.379450	0.0187
CSFL	1.075769	0.106300	10.12016	0.0000
C	-309063.7	4117522.	-0.075061	0.9403

R-squared	0.746135	Mean dependent var		51773363
Adjusted R-squared	0.740656	S.D. dependent var		74812241
S.E. of regression	38098725	Akaike info criterion		37.77683
Sum squared resid	2.02E+17	Schwarz criterion		37.85971
Log likelihood	-2697.044	Hannan-Quinn criter.		37.81051
F-statistic	136.1787	Durbin-Watson stat		1.728931
Prob(F-statistic)	0.000000			

Source: Eview11.0 Output

Table 4.2.4 presents the Panel Least Square Regression Model of the seventeen (17) manufacturing firms selected for the study. From the model, the R is 0.746135 while R^2 is 0.740656. This suggests that 74% of the variations in Account Payableis explained by the independent variables comprising of: Firm Sales, Debt Financing and Cash Flow while the remaining 26% is explained by other variables not included in the model of the study.

Results of the F-Statistics, further indicate that the entire model is positive and strong in predicting Account Payable of the selected manufacturing firms in Nigeria during the period. This finding was observed from the Coefficient of the F-Statistics in the regression model which is, 136.1787, and the P-values of 0.000000, which are less than 0.05(0.000000<0.05). Results from the modelalso indicates that Durbin Watson Statistics Coefficient is 1.728931, which is not within the acceptable range of 2-4. However, since the value is close to the lower limit of 2, we approximate it to 2 and rely on this to conclude that there is no autocorrelation in the model of the study.

4.4 Discussion of Findings
4.4.1 Firm Sales and Account Payable
The regression model in table 4.2.4 shows that the coefficient of Firm Sales is 0.161352, which is positive, while the P-value is 0.0000, which is less than 0.05. {FSLS: Coeff. 0.161352, (P-value 0.0000<0.05)}. In view of this, we conclude that Firm Sales positively and significantly determines Account Payable of manufacturing firms in Nigeria.The result is consistent with: Carvalho and Schiozer [30] who found that the proportion of credit sales, the days' sales outstanding measure and sales growth are positively related to the amount of trade credit demanded. Ahmed, et al (2014) who observed that in Pakistan, firm size, liquidity, product quality, price discrimination, inventory and sales growth are positive and significantly related to trade credit. Nguyen [60]who concluded that the impact of trade credit provision on firm sales growth is stronger for young firms than it is for old firms in Vietnamese. Afrifa and Gyapong, [61] who found that in UK, higher operating cash flow, annual sales growth, export propensity, access to bank credit and larger firms lead to higher investment in trade credit. The study is

inconsistent with: Tingbani; et al. [44] who observed a non-linear (concave) relationbetween trade credit and corporate growth of non-financial firms in UK.

4.4. 2 Debt Financing and Account Payable

The regression model equally indicates that the coefficient of Debt Financing is 0.131480, which is positive, while the P-value is 0.0187, which is less than 0.05. {DETF: Coeffi. 0.131480, (P-value 0.0187<0.05)}. Therefore, we stated that Debt Financing positively andsignificantly determines Account Payable of manufacturing firms in Nigeria. This result is consistent with Pecking Order Hypothesis developed by Myers and Majluf in 1984. Myers and Majluf [42] stated that firms have a sequence of preferences in the use of funding sources, starting from low-cost funds to high-cost funds. Firms prefer internal financing (retained earnings) first, and then debt financing, lastly new equity. The firms prefer internal funding (retained earnings) first because it wants to avoid floatation costs that usually comes with issuing of new stocks.

This result is also in line with: Couppey-Soubeyran and H´ericourt [62] who found that in Egypt, Lebanon and Morocco, the difficulty of gaining access to bank credit positively influences the use of trade credit, and thus demonstrate the substitutability of bank credit and trade credit. Yang [65]who ascertained that short-term loan is positively related to trade credit, while long-term loan is negatively related to trade credit in China. Saito and Bandeira [63] who observed that Brazilian listed firms do use bank debt and trade credit as two complementary sources of financing. Lin and Chou [64] who concluded a substitution and complementary effect of trade credit and bank credit. Yang (2019) who found that that trade credit is positively related to external funds rather than internal funds in China.

4.4.3 Cash Flow and Account Payable

The regression model furtherreveals that the coefficient of Cash Flow 1.075769, which is positive, while the P-value is 0.0000, which is less than 0.05. {CSFL: Coeff. 1.075769, (P-value 0.0000<0.05)}. Based on these, we postulate that Cash Flow positively and significantly determines Account Payable of manufacturing firms in Nigeria. This result is consistent with Liquidity Preference Theory developed by John Maynard Keynes in 1936. Keynes [43] argued that individuals and firms hold money for three motives, the transactions-motive, the precautionary-motive and the speculative-motive. The transactions motive is to guarantee sufficient cash for basic transactions. The precautionary motive is additional security in the event that an unexpected occasion or problem arises that requires a substantial outlay of cash. The speculative motive is to use investment opportunity with more attractive rate of return.

The result is also in agreement with: Deari [66] who in Macedonian found that more profitable firms with high current assets and cash ratio have positive relationship with trade credit. Vaidya (2011) whoobserved that holdings of liquid assets have a positive influence on both accounts receivable and accounts payable in Indian manufacturing firms. Kapkiyai and Mugo [67] who insisted that trade credit positively affected liquidity, profit margin and return on assets of the SMEs in Eldoret Town, Kenya. Deari, and Bărbuță-Mişu [68] who found that cash ratio and short-term financing were found to be statistically significant determinants of trade credit obtained as more profitable firms and with higher level of cash have provided more trade credit then counterparties. Achode and Rotich [69] who found that a direct positive relationship exists between accounts payable and profitability and liquidity of firms in Kenya. Afrifa and Gyapong, [70] who asserted that higher operating cash flow, annual sales growth, export propensity, access to bank credit and larger firms lead to higher investment in trade credit in Kenya. Wenfeng, et al.

[71] who in China observed that there is asymmetric effect of trade payables and receivables on cash holdings.

5 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS
5.1 Summary of Findings
Based the test of hypotheses results and the discussions that ensued, we summarize the major findings of the study as follows:

i.   Firm sales positively and significantly determineaccount payable of manufacturing firms in Nigeria. {FSLS: Coeff. 0.161352, (P-value 0.0000<0.05)}.

ii.   Debt financing positivelyand significantly determine account payable of manufacturing firms in Nigeria. {DETF: Coeff. 0.131480, (P-value 0.0187<0.05)}.

iii. Cash flow positively and significantly determines account payable of manufacturing firms in Nigeria. {CSFL: Coeff. 1075769, (P-value 0.0000<0.05)}.

5.2 Conclusion
The studyempirically examined the determinants of trade credit in manufacturing firms in Nigeria. The sample consists of seventeen (17) manufacturing firms listed on the Nigeria Exchange Group during 2012-2023 periods. Secondary data were obtained from the annual reports and financial statements of the selected firms and analyzed using Panel Least Square Regression Analysis. Based on the research results, we conclude that at 0.05 level of significance, the independent variables comprising, Firm Sales, Debt Financing and Cash Flow significantly explained account payable of manufacturing firms in Nigeria during the period. The study also concludes that, the predictive variables, namely, Firm Sales, Debt Financing and Cash Flow positively and significantly determine Account Payable of manufacturing firms in Nigeriaduring the period.

5.3 Recommendations
The study suggests the following recommendations for the firm managers of manufacturing firms in Nigeria in the light of the findings:

i.   The firm managers should increase their firm sales through the use of trade credit channels. Strict cash sales can only limit the number and amount of firm sales by the firms. In view of this, the manufacturing firm managers should formulate trade credit policiesthat will enable them increase the use of trade credit to increase firm sales, firm profitability and firm value.

ii.   The firms should use trade credit rating to access debts financing from formal financial institutions. Debt financing when accessed should be used to fund long term investment while trade credit should be used to finance short term credit needs of the manufacturing firms. Thus, both debt financing and trade credit are complementary as indicated from the findings of the study.

iii. The firms should also increase its cash flow in order to properly managetheir account payable. An increase in cash flow will enable the firms settle their trade payable as and when due, this will increase the credit rating of the firms and further boast its ability to obtain funding from other sources.

5.4 Suggestion for Further Research

The study suggests the following areas for further studies so as to enrich and extend frontier of knowledge in this area of study: (i) Effect of trade credit on firm value of manufacturing firms in Nigeria (ii) Determinants of trade credit in oil and gas sector in Nigeria (iii) Effect of trade credit on profitability of healthcare sector in Nigeria.

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