

## **EFFECT OF GREEN WORKING CAPITAL FINANCING ON THE PERFORMANCE OF MANUFACTURING FIRMS IN SOUTHEAST NIGERIA.**

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### **Abstract**

*The study examined the effect of Green Working Capital Financing on the Performance of Manufacturing Firms in Southeast Nigeria. The specific objectives are to examine the effect of trade receivables and to evaluate the effect of trade payables on the profitability of manufacturing firms in southeast Nigeria. A descriptive cross-sectional research design was used for the study where a questionnaire was used to obtain primary data. The data were analyzed using SPSS 28.0 and simple linear regression. The result revealed that trade receivable has a significant positive effect on the profit with a coefficient (of 12.7%;  $P < 0.001$ ). while trade payable has a significant negative effect on the profit of the firm with a coefficient of (-28.5%;  $P = 0.001$ ). We, therefore, conclude that green working capital has (both positive and negative) significant effects on the performance of the manufacturing firm in southeast Nigeria. We recommended that a manufacturing firm in southeast Nigeria should endeavor to adopt green working capital financing to enable them to seek more green financing.*

**Keywords:** Effect, Financing, Green, Working Capital, Performance

### **1.0 Introduction**

Working capital (WC) is a financial metric representing operating liquidity available to a business, organization, or entity, including governmental entities. Working capital is part of operating capital and fixed assets such as plants and equipment. When a business needs money to cover expenses such as day-to-day operations, Purchase of raw materials, wages, electricity bill payment, payroll, etc., rather than the purchase of equipment or machinery, such financing is known as Working capital financing. This is a very common type of financing for businesses which do not have a consistent cash flow and for companies that are in a growing stage and are taking up larger projects than usual. Working capital is a difference between current assets and current liabilities. If the difference is positive or if current assets are more than current liabilities, then there is a need for the firm to finance its positive working capital requirement. However, the way firm finance its working capital and produces a positive effect on its performance in a way that it bears the environmental outcome at the most difficult time is what we refer to as green working capital financing (Baños-Caballero et al., 2016). Firms may either adopt a conservative working capital management strategy by investing larger amounts in current assets that are financed by utilizing a low proportion of short-term sources of funds.

This strategy allows a firm to reduce both the refinancing and interest risk at the same time this approach might force a firm to bear the high cost of liquidity. Conversely, a firm may adopt an aggressive working capital management strategy by investing smaller amounts in current assets that are financed by utilizing

a high proportion of short-term sources of funds. This strategy might allow a firm to reduce its financing costs and mitigate agency costs, however, this approach might push the firm to bear the high cost of illiquidity. At its simplest, green finance is any structured financial activity – a product or service – that's been created to ensure a better environmental outcome. It includes an array of loans, debt mechanisms, and investments that are used to encourage the development of green projects or minimize the impact on the climate of more regular projects. Or a combination of both. A company can be endowed with assets and profitability but may fall short of liquidity if its assets cannot be readily converted into cash. Green working capital which might also be referred to as Positive working capital is required to ensure that a firm is able to continue its operations and that it has sufficient funds to satisfy both maturing short-term debt and upcoming operational expenses.

### **1.1 Statement of the problem**

Working capital financing is a significant constituent in business finance as it directly affects the company's profitability and liquidity. The tradeoff theory supports that the tradeoff between liquidity and profitability is important since companies are likely to fail and go bankrupt if the financing of working capital is not properly considered. Firm financial managers must make sure that the firm trade receivables are more than the trades payable.

### **1.2 Objective of the study**

The main objective of this study is to examine the effect of Green Working Capital Financing on the Performance of Manufacturing Firms in Southeast Nigeria. The specific objectives are.

- i. To examine the effect of trade receivables on the profitability of manufacturing firms in southeast Nigeria.
- ii. To evaluate the effect of trade payables on the profitability of manufacturing firms in southeast Nigeria.

### **1.3 Hypotheses of the study**

- i. Trade receivables have no significant positive effect on the profitability of manufacturing firms in southeast Nigeria.
- ii. Trade payables have no significant positive effect on the profitability of manufacturing firms in southeast Nigeria.

## **2.0 Related Literature Reviewed**

### **2.1 Conceptual Reviewed**

#### **Working Capital**

Working Capital Various authors have defined the phrase “working capital” several times. The term working capital was coined by an old American peddler who would load his wagon with goods and then rush out to exchange them. The goods were referred to as “working capital” since they were what he had sold or “turned over” to make money. According to Mbella (2018), Working capital is utilized to measure a company’s potency as well as its short-term economic health. It meets the short-term financial needs of a company (Song, Yang & Yu, 2020).

**The Concept of Working Capital:** There are two concepts of working capital.

- i. Gross Working Capital
- ii. Net Working Capital

#### **Gross Working Capital**

Gross working capital refers to the entire amount of cash available to fund current assets. Cash, inventories, debts, and any other short-term assets that can be easily converted to cash within a year are considered current assets. Debt financing might have been used to obtain current assets, so gross working capital does not reflect a company’s true financial condition. So, as current assets are increasing, current liabilities are on the increase as well. Gross capital is indicated as total current assets (Vanessa & Cordelia 2021).

#### **Net Working Capital**

The difference between current assets and current liabilities is known as net working capital. Working capital is the term used to describe this situation. Bills payable, accumulated expenses, creditors, and any other short-term liabilities due within a year are all examples of current liabilities. When the value of current assets rises with little or no increase in current liabilities, net working capital rises. Working capital that is positive shows that the firm can fulfill its short-term obligations, but negative working capital denotes that short-term obligations would not be met and could eventually affect long-term obligations (Vanessa & Cordelia 2021).

#### **Types of Working Capital**

- i. Temporary Working Capital
- ii. Permanent Working Capital

#### **Temporary Working Capital**

This is the amount of capital used to finance and support changes in production. It is the additional capital needed to cover demand for seasonal products and other unpredictable occurrences. Temporary working capital can be financed using both short and long-term funds and its form is constantly changing. It is also referred to as fluctuating or variable working capital. It is defined as the difference between net working capital and permanent working capital (Vanessa & Cordelia 2021).

### **Permanent Working Capital**

This is also known as fixed working capital. This is the amount that must remain invested in the business to facilitate its daily running and operations. It is the minimum amount that must remain in the business despite any fluctuations. It is financed through long-term funds (Vanessa & Cordelia 2021).

### **Working Capital Financing and Firm Performance**

A firm's working capital requirements need to be financed, hence, the greater the requirement more capital needs to be financed. In addition, a firm may either finance its working capital with short-term or long-term sources of finance. Each source of financing has its own costs and benefits attached to it. Thus, the way working capital is financed affects the performance of an organization (Baños-Caballero et al., 2016; Bei & Wijewardana, 2012; Al-Shubiri, 2011). An attempt to decide about the level of investment and sources of financing working capital is known as the working capital policy. The prior literature asserts that firms can either be aggressive or conservative in their approach while financing working capital (Altaf & Shah, 2017; Baños-Caballero et al., 2016; Temtime, 2016; Nyabuti & Alala, 2014; Sabri, 2012; Nazir & Afza, 2009). However, being aggressive or conservative is contingent upon the level of internal resources that a firm generates (Baños-Caballero et al., 2016); capital market access (Kaddumi & Ramadan, 2012); and the volatility of the market in which it operates, nature of the internal operation and external market conditions (Kaddumi & Ramadan, 2012).

### **Green Working Capital Financing**

Green working capital financing refers to an environmentally eco-friendly system where a corporate organization can successfully carry out financial metrics representing operating liquidity. In this regard, the firm seeks green finance which is the acquisition and utilization of funds for activities that protect the environment and deliver a fair return to investors or lenders (Berensmann & Lindenberg, 2019; Ozili, 2021). The objective of green finance is to increase the level of financial flows from financial institutions to economic agents involved in projects and activities that preserve the environment towards achieving

sustainable development goals (Lee & Baral, 2017; Force, 2015). Green finance is a recent innovation that offers an alternative financing pathway to individuals, corporations, and governments willing to fund and invest in green activities or low-carbon activities (Huang et al, 2019). The benefits of green finance include the distribution of funds to preserve the environment (Wang & Zhi, 2016), the flow of funds to sustainable trade and investment activities (Eyraud et al, 2013), low-risk financing (Taghizadeh-Hesary & Yoshino, 2019), and the development of green investment and financing instruments (Sachs et al, 2019). Despite these benefits of green finance, it is important to understand that green finance is only one aspect of sustainable finance for sustainable development. Apart from green finance, there are other sustainable finance options such as social finance, blue finance, and digital finance, among others (Ozili, 2021).

### **Trade Receivables**

Trade Receivables form a significant part of the current asset and, therefore, working capital. It also includes the amount due to the bills of exchange receivable. These are the amounts in which the business is owned by its customers. A crafted receivables management policy goes a long way in ensuring timely collection and avoiding bad debts, if any, for the business. Each industry has a specific trade cycle, and businesses must keep their trade receivable cycle in line with the industry. A more extended trade receivable period will result in a delayed collection of cash, impacting the cash conversion cycle of the business. The importance of trade receivables is equally reinforced by most analysts while evaluating a business check receivables turnover ratio to understand the working capital management efficiency in collecting payments for credit sales undertaken by the business and to derive bad debts incurred by the business.

### **Trade Payables**

Trade Payables form a significant part of current liabilities. It also includes the amount due to the bills of exchange payable. These are the amounts the business must pay for credit purchases made by it. A crafted payables management policy goes a long way in ensuring timely payment and cordial business relations with vendors and creditors. Each industry has a specific trade cycle, and businesses must keep their trade payable cycle in line with the industry. Also, if a business has a shortened trade payable cycle, it will have to keep more cash in hand, resulting in longer trade cash conversion cycles and more interest costs. A more extended trade payable period will make businesses make payments to their vendors after long periods. However, suppose the business can keep a short trade receivable period. In that case, such a scenario improves the business cash conversion cycle and results in the less working capital

requirement, ultimately boosting profits. Further, the importance of trade payables is equally reinforced by most analysts while evaluating a business check payables turnover ratio to understand the working capital management efficiency and timely payments to honor its obligation to its creditors. A high trade payables turnover ratio shows that creditors are being paid promptly by the business, enhancing the creditworthiness of the business. However, a very favorable ratio compared to industry practice shows that the business is not taking full advantage of credit facilities allowed by the creditors resulting in more cash requirements.

### **Profitability**

Every company's principal goal is to be profitable. The business will not survive in the long run if it is not profitable. Otekunrin, et al (2021) noted that profit maximization is the organization's driving factor. Every company's skill is its profitability (Agha, 2014). As a result, assessing current and previous profitability and forecasting future profitability is essential. One of the most crucial objectives for business managers is to increase profitability. Managers are continuously looking for methods to boost profitability by changing the business (Vanessa & Cordelia 2021). Ratios such as Return on Equity, Return on Assets, and Net Interest Margin are used to calculate and measure profitability. The ratio of net revenue after taxes to total equity capital is known as return on equity (ROE). It is the rate of return on investment earned by the organization's stockholders. Return on assets is another key statistic for assessing a company's profitability (ROA). It is a percentage of total assets divided by total revenue. It evaluates a company's ability to generate money via the use of its available assets (Vanessa & Cordelia 2021).

## **2.2 Theoretical Review**

### **Trade-off Theory**

This theory was initiated by Modigliani and Miller (1958), and it says that companies should borrow funds to the point where the tax benefit from debt is balanced with the bankruptcy cost. This means that debt financing should be employed. The amount borrowed should increase to a level where the tax benefit, in whichever form, is either more significant than or equal to the cost that can be occurred through bankruptcy.

### **Pecking Order Theory**

Myers (1984) explained that firms most likely prefer to finance new investments first with internally raised funds, i.e; retained earnings, then with debt and issue equity as a final resort. Pecking order theory is believed to be an alternate theory to trade-off theory where the firm has a perfect hierarchy of financing

decisions. Pecking order theory elucidates that the firm tries to utilize its internal financing sources first i.e; retained earnings then issues debt and then would issue equity as a last result. Joseph, Willy, and Patrick (2016) suggested that firms should use shareholders' funds to finance business operation activities before resorting to borrowing. The study further recommends that internal and external business environmental factors should be considered before a choice of business financing is chosen. Summarily, this study is anchored on the pecking order theory as it is directly promoting effective management of working capital and is the least risky.

### **2.3 Empirical Review**

Akoto, Awunyo-Vitor, and Angmor (2013) analyzed the relationship between working capital management practices and the profitability of listed manufacturing firms in Ghana. The study used data collected from annual reports of all the 13 listed manufacturing firms in Ghana covering the period from 2005-2009. Using panel data methodology and regression analysis, the study found a significant negative relationship between Profitability and Accounts Receivable Days. However, the firms' Cash Conversion Cycle, Current Asset Ratio, Size, and Current Asset Turnover significantly positively influence profitability. The study suggests that managers can create value for their shareholders by creating incentives to reduce their accounts receivable to 30 days. It is further recommended that enactments of local laws that protect indigenous firms and restrict the activities of importers are eminent to promote increased demand for locally manufactured goods both in the short and long runs in Ghana.

Ogbuji and Ogunyomi (2014) on working capital management policy and financial performance in the Nigerian foods and beverage industry, where Nestle Nigeria Plc was the case study which covered a period of five (5) years, 2008 to 2012. Working capital management was measured by the cash conversion cycle and financial performance was measured by return on assets. The results revealed that a negative significant relationship existed between working capital management and profitability performance and at the same time a negative insignificant relationship does subsist between working capital management and liquidity performance.

Osundina (2014) examined the relationship between working capital management and profitability and focused on the quoted food and beverages manufacturing firms in Nigeria. Working capital management was measured by an aggressive investment policy, account collection policy, cash conversion cycle, and net operating profit employed to measure profitability. The study made use of primary data and the results

of the analysis revealed that working capital management had a significant positive relationship with profitability.

Salman, Oyetayo, and Oriowo (2014) investigated the relationship between working capital management on organizational profitability in Nigeria. Data were collected from audited financial statements of 20 manufacturing companies quoted in the Nigerian Stock Exchange between 2005 to 2013. Return on Assets (ROA) and Return on Equity (ROE) were used as proxies for the measurement of profitability while Panel data methodology was employed, and Pearson correlation moment coefficient and multiple regressions and the method of estimation is Ordinary Least Squares (OLS). The result revealed that working capital has a negative and significant relationship with Return on Assets (ROA) and Return on Equity (ROE) and this showed that firms' performance increases if Cash Conversion Cycle reduces.

Kazi (2015) on the working capital management of diverse industries along with their solvency in Bangladesh. The components of working capital management employed are average collection period, inventory turnover, current asset to total asset, current liabilities to total asset, and current ratio while return on assets and return on equity were used as proxies to measure profitability. Secondary data which is the annual reports of the companies in Bangladesh is used for the study. The study cut across almost all sectors of the economy. The study reports that failure to manage working capital will eventually lead to insolvency thereby resulting in bankruptcy, hence there is a relationship between working capital management and the profitability of the industry.

Francis (2015) conducted a study on the relationship between working capital and profitability of cement companies in Kenya for five years period from 2006 to 2010, operating income is used as a proxy for profitability while working capital management was measured by cash conversion cycle and spearman's correlation analysis together with a multivariate regression model were employed to observe the relationship between working capital management and profitability. The findings revealed that efficient working capital management increases profitability.

### **3.0 Methodology**

A descriptive cross-sectional research design was used for this study. The respondents were drawn from the various departments of the manufacturing company, which included the finance and audit department, the procurement department, and operations/marketing. The study used purposive sampling to select



these business organizations. The questionnaire results were analyzed in SPSS 28.0 using simple linear regression analysis. The study aimed to investigate the effect of green working capital on the performance of manufacturing firms in Southeast Nigeria.

**Model Specification**

The model specification used in this research work is simple linear regression analysis, which is defined as follows based on the relationship between predictors and dependent variables:

$$Y = \alpha_0 + \alpha_1x_1 + \mu \dots \dots \dots (1)$$

$$Y = f(X)$$

Where Y=Dependent variable represented by profitability

$x_1$ = Predictors variable;  $\alpha_0$ = Slope or intercept;  $\alpha_1$ = Regression coefficients;  $\mu$ = Error term

Therefore, to examine the effect of green working capital on the performance of manufacturing firms in Southeast Nigeria. The model can be stated in the econometric model form below as in equation 3 below.

$$PRF = \beta_0 + \beta_1(TRR) + \beta_2(TRP) + \mu \dots \dots \dots (3)$$

Where: TRR= Trade receivable; TRP= Trade payable; PRF= Profitability

**4.0 Data Analysis and Interpretation**

The section contains the presentation, analysis, and interpretation of data gathered from respondents in the various firms studied. The responses were categorized by coding them in a Likert scale format to achieve our objective for this study. The analysis of the structured questionnaire was done using a statistical package for social science (SPSS version 28.0).

Table 1: Response Rate

	Frequency	Percentage	Cumulative Percent
Returned	129	83.23	83.23
Unreturned	26	16.77	100
Total	155	100	

Source: Field Work 20223

The above table 1 shows that one hundred and seventy (155) copies of the questionnaire were distributed but only one hundred and fifty-two (129) were returned, while the remaining were not returned. The unreturned amounted to twenty-one (26). The reason for the unreturned includes the following:

- Some survey participants misplaced their survey.
- Finally, a small number of respondents regrettably chose not to complete the survey, and this was noted as a void to prevent erroneous interpretations.

Table 2: Demographic Data Presentation (n=129)

	Frequency	Percentage
Gender		
Male	89	69%
Female	40	31%
Marital Status		
Single	43	33%
Married	69	54%
Divorced/Widowed	17	13%
Age		
20-29 years	32	25%
30-39 years	43	33%
40-49 years	33	26%
>50 years	21	16%
Working Experience		
< 5 years	34	27%
5-10 years	59	45%
11-20 years	21	16%
>20 years	17	13%
Department		
Operations/Marketing	88	68%
Finance and Auditors	19	15%
Procurement	22	17%
Qualification of Respondents		
Bachelor's Degree	71	55%
Master's degree	22	17%
PhD	8	6.0%
Professional Certificates	28	22%

Source: Field work 2023

Table 2 is the demographic profile of the respondents, 69% of the respondents are male while 31% of the respondents are female. Marital status showed that married people responded more to the questionnaire with 54% response rate followed by single with 33% response rate. In terms of age, most of the respondents are within the age bracket of 30-39 years, while the least response was 50 years and above.

Majority of the respondents have a working experience between 5-10 years which recorded a response rate of 45%, while the least working experience is >20 years. In terms of professional category most of the respondents of this questionnaire were in operation/marketing department with 68% response rate followed by procurement with 17% response rate. Lastly when considering the academic qualification of the respondents most of them are bachelor's degree holders with 55% response rate, followed by master

degree holders with 17% response rate, professional certificate and PhD with 22% and 6% response rate respectively.

Table 3: Spearman’s Correlation of the variables

	Profitability	Trade Receivables	Trade Payable
Profitability	1		
Trade Receivables	0.672[0.002]*	1	
Trade Payable	-0.581[0.009]*	0.617[0.201]	1

[ ] represent the probability value; \* represent a significant correlation.

Table 3 represents the correlation analysis, the variables are found to be strongly and positively and negatively correlated with the dependent variable respectively, the probability value < 0.05 indicates that the relationship did not occur by chance otherwise they did not occur by chance.

Table 4: Estimation of Result and Interpretation

Variables	Coefficients	T-Statistic	P-value	Std. Error	95% Confidence Interval	
					Lower	Upper
Constant	25.311	1.250	0.239	20.30	[-19.38771]	[70.01048]
Trade Rec.	0.127	9.769	0.000	0.013	[-0.561327]	[0.967521]
Trade payable	-0.285	9.827	0.001	0.029	[-0.138771]	[0.519869]
R <sup>2</sup>	0.695					
Adjusted R <sup>2</sup>	0.647					
F-stat	103.57					
Prob of (F-stat)	0.0001					

Computed with E, Compiled by the Author

The Adjusted R<sup>2</sup> is 0.6472 which means that approximately 65% of the variations in the dependent variable are explained by the predictor variables. The F-stat result is significantly higher at 103.57, showing that the predictor variables jointly explain the variations in the model. We discovered that all the predictor variables are statistically significant at the 5% level of significance using the t-stat values. At a 5% threshold of significance, the trade receivables are positive and statistically significant. A unit change in the trade receivables will result in 12.7% change in the profitability of manufacturing firms in southeast Nigeria, assuming all other factors remain constant. At a 5% level of significance, trade payable is negative and statistically significant. Holding other variables constant, a percentage change in the trade payable will lead to 28.5% change in the profitability of the manufacturing firm in southeast Nigeria.

### **Hypothesis Testing**

H<sub>01</sub>: Trade receivables have no significant positive effect on the profitability of manufacturing firms in southeast Nigeria.

H<sub>02</sub>: Trade payable has no significant positive effect on the profitability of manufacturing firms in southeast Nigeria.

### **Decision**

The result of the regression analysis for each hypothesis indicates that at 5% level of significance, H<sub>01</sub> and H<sub>02</sub> are to be rejected because the probability value is <0.05 as shown in table 4 above. Hence, we conclude that trade receivable and trade payable have a significant effect on the profitability of the manufacturing firms in southeast Nigeria.

### **Discussion of Results**

The study focuses on examining the effect of Green Working Capital Financing on the Performance of Manufacturing Firms in Southeast Nigeria. A cross-sectional survey was adopted for the study and a well-structured questionnaire was distributed to the manufacturing firms within the southeastern part of Nigeria. Out of 155 distributed questionnaires 129 responded and returned the questionnaire, the result obtained from this study are purely from the opinion of the respondents.

Results, as obtained from table 3, indicate that trade receivable and trade payable were found to be positive and negative, and statistically significant at 5% level of significance. This implies that a unit increase in the trade receivable variable will cause a corresponding unit to increase in the profitability of the manufacturing firm in southeast Nigeria given that the coefficient of trade receivable is (12.7%; P<0.001). Whereas a unit increase in the trade payable variable will cause a corresponding unit to decrease in the profitability of the manufacturing firm in southeast Nigeria given that the coefficient of trade payable is (-28.5%; P=0.001).

### **5. Conclusion**

Based on the result trade receivable has a significant positive effect on the profit of manufacturing firms in southeast, Nigeria. While trade payable has a significant negative effect on the profit of the manufacturing firm in southeast Nigeria. We, therefore, conclude that green working capital has (both positive and negative) significant effects on the performance of the manufacturing firm in southeast Nigeria.

### **Recommendation**

A manufacturing firm in southeast Nigeria should endeavor to adopt green working capital financing to enable them to seek more of green financing.

We recommend the following,

- i. Manufacturing firms should endeavor to increase trade receivables since a unit increase adds value to the profit of the firm.
- ii. The manufacturing firm should endeavor to reduce trade payable since a unit increase reduces the profit of the firm.

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