Credit Management and Profitability Growth in Nigerian Manufacturing Firms

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Abstract: Aim: This study aims to examine the effect of credit management on the profitability growth of manufacturing firms in Nigeria from 2007 to 2016. **Methodology:** Panel data regression technique was used. **Result:** the study reveals that cash conversion cycle and collection period were positively related with the manufacturing firms growth and a negative relationship was discovered between the payment period. Also, the manufacturing firms' growth credit management positively influenced the growth of Dangote Cement Plc, Guinness Nigeria Plc and Nestle Plc while, the adopted credit management hindered the growth of Cadbury Plc and Leventis Plc. **Conclusion:** The study concludes that the non-compliance of the manufacturing firms to credit management had hampered their growth and sustainability; the cash conversion cycle had great influence thereby enhanced the growth of manufacturing firms in Nigeria. **Recommendation:** The study recommends that manufacturing firms should establish and continuously update their credit policies that clearly outlined the management's view of the organization growth priorities; the manufacturing firms should engaged competent and qualified personnel in other to ensure optimal decision and enshrined strict adherence to collection and payment period.

Keywords: Credit management; Manufacturing firms; Growth; Profitability; Panel data regression

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1. Introduction

Manufacturing sector is essential for determining the stability and overall outcome of any economy and its failure can disrupt all other sectors of a country's economic development. Manufacturing is a vital sector of the economy which performs positive role in ensuring economic development. It serves as a catalyst for employment generation, production of goods and services require for human consumption and development and it contribution to the healthy growth of the economy cannot be overemphasized. Manufacturing firm growth and performance

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are boosted by their involvement in trade credit. The zest for continuous growth thus leads to trade credit that can enhance sale volume of products and services.

Credit is a crucial element in business life and for the manufacturing firms all over the World. Trade credit is an arrangement between a buyer and a seller by which the seller allows delayed payment for its products instead of immediate cash payment with stringent macroeconomic implication. It was noted that in an economic system where financial markets are not predictable, contract enforcement is insecure, information is scarce and unreliable. Thus, the needs for effective credit management that can enhance the manufacturing firm growth and survival. Also, firms with higher rates of trade credit grow faster but the efficient and effective performance of Nigeria's manufacturing firm trade credit need to be improved as the economic well-being of the country is weak and need to be strengthened.

Credit management as a written guidelines set the terms and conditions for the supply of goods on credit, customer qualification criteria, procedure for making collections and steps to be taken in case of customer delinquency. According to Pandey (2004), it was believed that credit is a marketing tool for expanding sales and credit sales to customers which must be well monitored regardless of a firms' share of the market and the demand for a product. It was further noted that if there are no measures put in place to regulate sales made to customers on credit, there could be liquidity problems that can pose a negative effect on firms' growth. A company highly rich in fixed assets may still be short of cash and therefore have difficulty in meeting current financial obligations. Credit management is an important area in any business organization, manufacturing firms inclusive, since most business operations are based on agreed credit terms by both seller and buyers. The fact is, without a proper management of firm's credit components, smooth and effective operation of the firms will be hindered. Thus, according to Brigham & Houston (2003), it was affirmed that about 60 percent of a typical financial manager's time is devoted in managing the firm's credit affairs and allocations. Thus, an efficient allocation of resources tends to influence favourably the firm profitability and as a result enhance growth.

According to Ifurueze (2013) it was asserted that the growth in economic activities as currently witnessed in Nigeria under the present democratic government with attendant limited financial resources available to the operators of the market has no doubt brought about increase in credit transaction, the impact of this depends on the skill and valour with which the companies manage their trade credit. Hence, proper management of credit in manufacturing firms is of high importance and cannot be over emphasized due to its ability to affect financial performance, existence and the entire growth and sustainability of the firms. Thus, this study quests to empirically investigate the effect of effective credit management on the profitability of manufacturing firms in Nigeria.

Nigerian manufacturing sector has been challenge by the economic situation of the country because of their failure to properly manage trade credit effectively. There was no adequate cover for the firms against possible losses due to credit risk and there were increases in debt obligations towards the customer that cannot be settled in a timely manner. In a study carried out by Pandey (2004) it was revealed that bad debt or losses arise when the firm is unable to collect its accounts receivable due to the improper management of trade credit. The size of bad debt or losses depends on the quality of accounts accepted by the firm. Hence, trade credit would be a necessary and sufficient condition for the growth of the businesses if it was properly managed. It is obvious that when a firm sells its products or services without receiving any cash, the firm is said to have granted trade credit to its customers and as such allows the creation of accounts receivables which the firm is expected to collect in future. Accounts receivables are executed by generating an invoice which is delivered to the customer who in turn must pay within a stipulated time and with the agreed terms.

Investment in account receivables takes a big chunk of organization's assets. These assets are highly vulnerable to bad debts and losses and therefore, the need to properly manage the accounts receivables must be accorded a high priority. It must be noted that as long as there is a competition in the industry, selling on credit becomes inevitable. A business enterprise will lose its customers to competitors if it does not extend credit to them. Thus, investment in accounts receivables is not be a matter of choice for the firms in Nigeria but a matter of survival. In addition, management of accounts receivables is important without which receivables will build up to excessive levels leading to a decline of cash flows. Poor management of account receivables will definitely resulted to bad debts that can reduces the business enterprises profitability level. According to Brownbridge and Harvey (1998) and Onuora and Ifeacho (2017), it was observed that despite all the merits attached to trade credit, firms involved in credit sales both in advanced and developing economies have been battling with continuous problem of ineffective credit risk management that served as a major hindrance to the profitability of the manufacturing firms. Therefore, since investment in credit management has both benefits and costs it becomes imperative to observe the profitability as benefit and as such, this study was sought to investigate the relationship between credit management and the profitability of manufacturing firms in Nigeria.

2. Literature Review

Garcia-Teruel and Martinez-Solano (2010) investigated trade credit and firm age on one hand and sale growth on the other hand based on European data using the same approach. A contrary result was obtained. From the study it was revealed that older firms have more reputation among business partners, there is no need to grant trade credit to attract business partners; this is also the reason for the opposite results of

the relationship between sales growth and trade credit. Hill, Kelly, Lockhart and Washam (2012) examined shareholder returns from supplying trade credit and the study was carried out to examine shareholder wealth implications of supplying financing to customers. The data used was collected from a large sample of US firms between the periods of 1971-2006. A descriptive and regression analysis technique was adopted for the study and the revealed that return and trade received are directly related. Thus, the study established that trade credit as an effective instrument of checking financial frictions hindered sales growth. Rajendra (2011) investigated the determinants of trade credit: evidence from Indian manufacturing firms. The study adopted descriptive analysis and chi-square and result revealed that there was strong evidence that exists in support of an inventory management motive for the existence of trade credit. Highly profitable firms are found to both give and receive less trade credit. Firms with greater access to bank credit offer less trade credit to their customers. On the other hand, firms with higher bank loans receive more trade credit. Holdings of liquid assets have a positive influence on both accounts receivable and accounts payable. Highly profitable firms were found to give on both net and gross basis and receive less trade credit. Philip (2012) investigated the effect of liquidity risk and credit in the financial crisis in San Francisco, the study was conducted on sampled 55 banks between the periods of 2007-2008, a descriptive research survey was adopted and data were analyzed using panel analysis and the results of the analysis revealed that credit fell, with banks hit hardest by liquidity pressures cutting back most sharply. Central bank emergency lending programs probably mitigated the decline. Ongoing efforts to regulate bank liquidity may strengthen the financial system and make credit less vulnerable to liquidity shocks.

Acharya and Nada (2013) investigated the relationship between the two major sources of bank default risk: liquidity risk and credit risk. A sample of virtually all U.S. commercial banks was considered for the study during the period 1998-2010 by using regression analysis technique to establish the relationship between these two risk sources on the bank institutional-level and how this relationship influences banks' probabilities of default. The results showed that both risks separately increase the personal default, the influence of their interaction depends on the overall level of bank risk and can either aggravate or mitigate default risk. These results provide new insights into the understanding of bank risk, as developed by the body of literature on bank stability risk in general and credit and liquidity risk in particular.

Ngugi (2012) examined the impact of credit information sharing on credit risk for commercial banks of Kenya. The information shared by banks in Kenya is both positive and negative. Non-performing loan is used as a proxy to credit risk. The population of the study consisted of all 44 banking institutions registered and operational in Kenya under the banking Act. The study utilized both secondary and primary data. Quantitative data on credit risk for commercial banks was extracted from annual reports, profit and loss accounts, balance sheets and cash flow

statements. Data on credit information sharing was obtained through the use of questionnaires that were directed to commercial banks in Kenya. Chi-Square test was used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories. The study revealed that credit information sharing has a positive although is not statistically significant impact on credit risk.

Muasya (2013) empirically study the relationship between credit risk management practices and loans losses by commercial banks in Kenya. Descriptive research design was utilized in this study as it aimed to see if there is a relationship between credit risk management practices and loan portfolio losses in commercial banks in Kenya. The data was analyzed using descriptive analysis including frequencies, mean and percentages. The results revealed that credit risk management practices are common among most of the commercial banks in Kenya and that management of these commercial banks appreciated government legislation relating to credit risk management through the introduction of the credit sharing information Act; there is a significant negative relationship between credit risk management practices and loans losses in commercial banks in Kenya.

Gul, Khan, Rehman, Khan, Khan and Khan (2013) examined the contribution of credit management on performance of small medium enterprises in Pakistan. The study used regression analysis technique to model the collected data and establish the relationship that exists between credit management and performance of SMEs in Pakistan. The results revealed that number of days account, growth and firm size are directly related with profitability whereas number of days account receivable, number of day's inventory, cash conversion cycle and debit ratio have and inverse relation with profitability. Sharma & Kumar (2011) investigated the effect of trade credit on profitability of Indian firms. The data gathered were analysed using correlation analysis technique and results revealed that trade credit and profitability is positively correlated in Indian companies. Thus, as the trade credit of the firms are increasing the firms profitability are also increasing and vice visa.

Mathuva (2010) studied the influence of trade credit on corporate profitability of manufacturing firms in Nairobi. The analysis done using regression showed that a highly significant negative relationship exists between the time taking by the firms to collect cash from their customers and profitability. Gatuhu (2013) studied was focused on the impact of credit management on the financial performance of microfinance institutions in Kenya. The study was carried out using descriptive analysis and the result showed that formulation of collection policies was a challenge in credit management with recovery loans advanced being expensive. It was further discovered from the study that stringent credit policy is more effective in debt recovery than a lenient policy with credit policies been regularly review to improve credit management. Thus, a strong relationship exists between financial performance

of microfinance institutions, credit risk control and credit policy; optimal credit policy that maximize profitability and at the same time minimizing costs of advancing credit was observed.

Omesa, Maniagi, Musiega and Makori (2013) studied the relationships between credit management and corporate performance of manufacturing firms listed on the Nairobi securities exchange using a sample of 20 companies with five years data. A principal components analysis was used due to its simplicity and its capacity of extracting relevant information from confusing data sets. From the results using principal components analysis and multiple regression technique, credit management captured by cash conversion cycle, average collection period and control variables current liabilities, net working capital, turnover ratio and fixed financial ratio were statistically significant in determining the corporate performance of manufacturing firms measured by return on equity.

Kithinji (2010) assessed the effect of credit risk management on the profitability of commercial banks in Kenya. Data on the amount of credit, level of non-performing loans and profits were collected for the period 2004 to 2008 and was analysed using regression technique. The findings revealed that the bulk of the profits of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other variables other than credit and non-performing loans impact on profits. Conclusively, Mokaya (2011) carried out a study on the relationship between credit card default risk and cardholders' characteristics, credit card characteristics, behavioral scoring process among commercial banks in Kenya and how they mitigate against credit card default risk. A descriptive analysis was to analyse the data and the results of the analysis showed that commercial banks that implemented credit risk assessment had lesser loan defaults. Commercial Banks issuing credit cards and any entering the credit card business should develop proper and accredited credit risk management methods which will assist in coming up with sound credit policies which to a large extent will reduce the high levels of bad loans as a result of credit card default.

3. Research Method

This research was an explanatory design focusing on the effect of credit management on the profitability as a driver for the growth manufacturing firms in Nigeria. The researcher was carried out on randomly selected manufacturing firms quoted on the Nigeria stock exchange based on the availability of complete and required information on the variables under consideration in this study. The data secondary used were sourced from financial statement and annual financial report of the listed manufacturing firms on the Nigeria stock exchange. The data comprises of both cross sectional and time series were extracted from five (5) manufacturing firms covering

the period 2007-2016. These firms includes: Guinness Nigeria Plc, Cadbury Nigeria Plc, Dangote Cement Plc, Nestle Plc and A. G. Leventis.

Model Specification

This work adopted the model stated by Onuora and Ifeacho (2017) which showed the relationship between credit management captured by credit policy, liquidity management and debtors turnover while profitability of manufacturing firms was captured by return on asset. It is stated in functional form in (1) as:

$$ROA_t = f(CEPOY_t, LIQM_t, DEBTR_t) \tag{1}$$

In an explicit form, this model can be written in (2) as:

$$ROA_{it} = \alpha_0 + \beta_1 CEPOY_t + \beta_2 LIQM_t + \beta_3 DEBTR_t + u_t \tag{2}$$

Where; ROA = Profitability which is measured by return on asset; CEPOY = credit policy

LIQM = liquidity management ; DEBTR = Debtors turnover

u = Error term; i = sample of cross sectional variables; β_i = parameter to be estimated

However, in this paper, the modified model was stated in functional and mathematical form as given in equation (3) and (4) respectively. The profitability growth was captured by growth in return on investments (GROI) while credit management an explanatory variables in the model were captured by cash conversion cycle (CCC), average collection period (ACP), average payment period (APP) and debt ratio (DER).

$$GROI_{it} = f(CCC_{it}, ACP_{it}, APP_{it}, DER_{it}) \tag{3}$$

$$GROI_{it} = \alpha_0 + \alpha_1 CCC_{it} + \alpha_2 ACP_{it} + \alpha_3 APP_{it} + \alpha_3 DER_{it} + U_{it} \tag{4}$$

GROI = Growth in Return on Investments which is the ratio of change in return on investment at period t and t-1 to return in investment at period t.

CCC = Cash conversion cycle

ACP = Average collection period

APP = Average payment period

DER = Debt ratio

U_{it} = Stochastic error terms

t = time period

i = cross section unit

Estimation and Diagnostic Techniques

The estimation technique used in this study was descriptive analysis and panel data regression technique which consists of pooled effect panel and fixed effect panel. The diagnostics test that was carried out are: test for coefficient of determination, test for the significant of the estimated parameters using standard error, T-test, probability test and F-test.

4. Result and Discussions

Table 1. Descriptive Analysis

	GROI	CCC	APP	ACP
Mean	10315454	34487126	140.9105	9.106000
Median	8456058.	24760492	141.2763	8.470000
Maximum	30660730	93620923	158.2074	12.63000
Minimum	-5762809.	4825268.	118.2097	6.300000
Std. Dev.	9449854.	24561957	14.51805	2.272341
Skewness	0.344015	0.647352	-0.097790	0.440306
Kurtosis	2.159014	2.216788	1.404805	1.662351
Jarque-Bera	2.459674	4.770162	5.381037	5.343296
Probability	0.292340	0.092082	0.067846	0.069138
Observations	50	50	50	50
Cross sections	5	5	5	5

Source: Researchers' Computation, 2018

The Table 1 showed the descriptive results of credit management and the growth of manufacturing firm in Nigeria for the period 2007-2016. The credit management measured by cash conversion cycle, average payment period and average collection period and the growth of the manufacturing firms was captured by return investment. The result revealed that the average return on investment, cash conversion cycle, average payment period and average collection period in manufacturing firms in Nigeria are 10315454, 34487126, 140.91 and 9.11 respectively. The maximum and the minimum return on investment, cash conversion cycle, average payment period and average collection period are 30660730 & -5762809, 93620923 & 4825268, 158.2074 & 118.2097 and 12.630 & 6.300 respectively. The standard deviation values of 9449854, 24561957, 14.518 and 2.272 revealed the rate at which the return on investment, cash conversion cycle, average payment period and average collection period for the manufacturing firms in Nigeria are been deviated from their respective average or expected value. Also, it was discovered that the return on investment, cash conversion cycle and average collection period were positively skewed. However, it was showed from the result that average payment period is negatively skewed. The Jarque-Bera and probability values revealed that the adopted credit management had a statistical and significance impact in determining the return on investment of manufacturing firms in Nigeria.

Table 2. Pooled Least Square Panel Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6982220.	10961848	0.636956	0.5273
CCC?	0.347549	0.035592	9.764705	0.0000
APP?	-87535.34	65282.61	-1.340868	0.1865
ACP?	404340.3	395499.0	1.022355	0.3120
R-Squared = 0.69 Adj. R-Squared = 0.67 F-Stat. = 34.22 Prob.(F-Stat.) = 0.000				

Source: Researcher's Computation, 2018

Table 2 shows the result of the pooled panel regression output. It was discovered from the result that linear relationship exists between the credit management and the growth of the manufacturing firms in Nigeria. Specifically, the result showed that cash conversion cycle and average collection period were positively related with growth of the manufacturing firm captured by profitability growth while a negative relation was discovered between the average payment period and the profitability growth which measured the manufacturing firms' growth in Nigeria. This result further revealed that the compliance of the manufacturing firms to credit management such as timely response to cash conversion cycle and average collection period will lead to the growth of the manufacturing firm by increasing the return on investment by 0.347549 and 404340.3 respectively. The average payment period value of -87535.34 implies that the payment period adopted as credit management by the manufacturing firms in Nigeria has limits their growth by 87535.34 during the period under investigation. The probability values of 0.000 revealed that the estimated parameter for cash conversion cycle in the model was statistically significant in assessing and determining the growth of the manufacturing firm. However, the probability values of 0.1865 and 0.312 respectively revealed the statistical insignificant of credit payment and collection in examining the manufacturing firms' growth through profitability growth. The adjusted R-squared of 0.67 showed the proportion of variations or improvement in the growth of manufacturing firms in Nigeria as shown in the level of profitability growth can be explained by the credit management. Thus, it implies the relevance and the importance of credit management in enhancing the survival and growth of the manufacturing firms in Nigeria. Above all, the probability of the F- statistics 0.000 < 0.05 showed that the pooled panel regression fitted is valid, reliable, appropriate and acceptable for determining the effect of credit management on the return on investment of manufacturing firms in Nigeria.

Table 3. Fixed Panel Regression Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CCC?	0.230701	0.069829	3.303800	0.0020
APP?	-13665.67	70736.17	-0.193192	0.8477
ACP?	220956.2	369739.2	0.597600	0.5533
Fixed Effects (Cross)				
DANG--C	3736883.			
CADB--C	-2926987.			
GINP--C	6711107.			
LEVT--C	-1031134.			
NEST--C	4874352.			
R-Squared = 0.77 Adj. R-Squared = 0.73 F-Stat. = 70.378 Prob.(F-Stat.) = 0.000				

Source: Researchers' Computation, 2018

In Table 3, the result of the fixed effect panel regression model on the effect of credit management on growth of manufacturing firms was presented and it was discovered that positive relationship exists between cash conversion cycle, average collection period and return on investment a measure of manufacturing growth. It was also discovered that a negative relationship exist between the average payment period and the return on investment. The result further showed that the cash conversion cycle and the average collection period improve the growth of the manufacturing firms in Nigeria by 0.230701 and 220956.2 respectively. Credit management through payment period reduces the return on investment of the manufacturing firms by 13665.67. Thus, adopted payment period hindered the growth of the manufacturing firm in Nigeria. The test for the statistical significance of these estimated parameters using the standard error test and the probability value revealed that the cash conversion cycle of the manufacturing firms in Nigeria had greatly influence the return on investment and thereby enhance the survival and growth of the manufacturing firms in Nigeria. A thorough examination of the result on the selected firms individually showed that credit management positively influence the growth Dangote Cement Plc, Guinness Nigeria Plc and Nestle Plc by 3736883, 6711107 and 4874352 respectively. Meanwhile, the result revealed that the adopted credit management hindered the growth of Cadbury Plc and A. G Leventis Plc by 2926987 and 1031134 respectively in Nigeria. The proportion of variation and improvement in the growth of manufacturing firms in Nigeria that can be explained by the influence of credit management employed by the selected manufacturing firms was 73 percent. The probability of F-statistics and the F-statistics value revealed that fixed effect panel regression model was statistically significance and thus valid, reliable, appropriate and acceptable for this study. In comparing the pooled panel regression model with the fixed effect panel regression model used for this study, it was discovered that fixed effect panel regression model is more efficient, consistent, sufficient and unbiased for determining the effect of credit management on the return on investment of manufacturing firms in Nigeria based.

5. Conclusion

An examination of the credit management on the profitability of manufacturing firms revealed that cash conversion cycle and average collection period were positively related with return on investment which measured the profitability of manufacturing firms in Nigeria. Thus, it can be concluded that the compliance of the manufacturing firms to credit management such as timely response to cash conversion cycle and average collection period enhances the growth of the manufacturing firms by increasing the return on investment. The study revealed the negative relation between the average payment period and return on investment which measured the growth of manufacturing firms in Nigeria. Hence, payment period adopted by the manufacturing firms in Nigeria has hampered their growth and sustainability. The test for the statistical significance of the estimated parameters using the standard error test and the probability value revealed that the cash conversion cycle greatly influence the return on investment and thereby enhance the survival and growth of the manufacturing firms in Nigeria. The heterogeneity study of the selected firms established that credit management influence the growth Dangote Cement Plc, Guinness Nigeria Plc and Nestle Plc on one hand and on the other hand hindered the growth of Cadbury Plc and A. G Leventis Plc in Nigeria. Therefore, based on the findings and the conclusion drawn, the study recommends that manufacturing firms should adopt a credit management grading system. The system should ensure the capability of customers for prompt payment. This should be done to maintain a sensible payment period even as the manufacturing firms try to satisfy all their customer needs. The manufacturing firms particularly Cadbury Plc and A. G Leventis Plc should establish credit policies that clearly outline the management's view of organization priorities on profitability. The credit policies should be continuously updated to reflect changes in the economic outlook of the customers to ascertain their adherence to payment. The firms need to engage competent and qualified personnel in other to ensure optimal decision and enshrine strict adherence to collection and payment period.

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