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# Account Receivables' Management and Performance of Manufacturing Firms

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**Abstract:** *This study examined account receivable management and performance of manufacturing firms in Nigeria. Specifically, the study analyzed the effect of book value of accounts receivable on return on capital employed of manufacturing firms in Nigeria examined the effect of anticipated bad debt on profitability of manufacturing firms in Nigeria, and also analyzed the effect of sales growth on return on capital employed of manufacturing firms in Nigeria. The study sampled 10 manufacturing firms from the Nigerian Stock Exchange covering a period of 10 years spanning from 2007 to 2016. The study made use of secondary data, which were collected from the annual reports of the sampled firms. The study made use of panel based estimation techniques such as pooled OLS estimation, fixed effect estimation, and random effect estimation. The most consistent and efficient estimation result for the study revealed that: book value of account receivable exert significant negative impact on return on capital employed, with reported coefficient estimate of  $-0.0003067(p=0.000 < 0.05)$  while, anticipated bad debt exerts insignificant positive impact on return on capital employed of firms sampled in this study, with coefficient estimate of  $0.0130079(p=0.817 > 0.05)$  and sales growth exert insignificant positive impact on performance of firms measured in terms of return on capital employed, with coefficient estimate of  $0.0210516(p=0.816 > 0.05)$ . The study concluded that, accounts receivable has the capacity to significantly impede the level of performance of manufacturing firms in Nigeria, especially when measured in terms of return on capital employed. Also, increase in the anticipated bad debt does not significantly contribute to improved performance of manufacturing firms in Nigeria. Finally, the study established that though sales growth has positive impact on performance of manufacturing firms, such positive impact is not a significant guaranty for improved return on capital employed. The study recommended that, manufacturing firms should device a management strategy and operation framework that will keep the book value of account receivable below the threshold where it can trigger significant negative impact on their return on capital employed and/or other performance measures..*

**Keywords:** *Accounts receivables, Management, Performance & Manufacturing firms.*

## 1. INTRODUCTION

Many organizations have fallen victim of premature death, as a result of inadequate attention paid to receivables. Receivables' management is very important for all businesses be it small or large. Accounts receivables' management is a dynamic financial management process and its effectiveness is directly correlated with a firm's ability to realize its mission, goals and objectives (Sherman, 2010). Despite the role cash flow management plays, many firms have not implemented effective cash flow management practices and the results can be dire, (Ahmet,2012). Even profitable firms can go into liquidation if they fail to manage their accounts receivable effectively, particularly, if they operate in rapid-growth or seasonal industries (Prere, 2010). For a credit policy to be effective it should not be static but requires review periodically to incorporate changes in a firm's strategic direction and risk tolerance as well as to ensure that the firm operate in line with competition to ensure sales and credit departments are benefiting (Eliots 2009). Szabo (2012) note that due to the speed in which technology is changing and the dynamics in business caused by changes in the internal and external environment, the ways in which businesses are conducted today differ significantly from yester years.

Firms who pursue an increase in the accounts receivable to an optimal level increase their profitability resulting from the increased sales and market share. The extent by which firms manage their receivables go a long way in determining their profits. Accounts receivable is money owed to a firm when it sells its products or services on credit and it does not receive cash immediately (Pandey, 2004). The primary goal of accounts receivable management is to maximize the value of the enterprise by striking a balance between liquidity, risk and profitability (Hrishikes, 2002). Profit may only be called real profit after the receivables are turned into cash. The management of accounts receivable is largely influenced by the credit policy and collection procedure, in many organizations the growth in access to credit has led to a rising level of consumer indebtedness which is having a significant impact on business profitability. Accounts receivable as a component of cash flow has a direct effect on the profitability of a business. Accounts receivable management should not be limited to customers who are unable to pay; the key is for organizations to use early identification of accounts at risk to enable proactive management of a customer before they become bankrupt. Management of accounts receivable which aims at maintaining an optimal balance between each of the accounts receivables component, due to frequency failure in Nigeria owed to improper management of accounts receivable.

The management of accounts receivable is largely influenced by the credit policy and collection procedure, in many organizations the growth in access to credit has led to a rising level of consumer indebtedness which is having a significant impact on business profitability. Accounts receivables management is an issue for every institution offering credit to its customers and the challenge for organizations is to protect profit margins by reducing write-offs, cutting the cost to collect and maximizing the cash collected.

The manufacturing industry has huge accounts receivables and would have been more profitable if they were to be reduced significantly and the funds applied towards other cash flow requirements. Owolabi and Obida (2012) noted that credit sale is a sign that firm is able to maximize its sales and improve its financial performance. In the work of Anastasia (2014), the study revealed that accounts receivables had negative and non-significant relationship with profitability of food and beverages manufacturing firms in Nigeria, furthermore, he posited that sale growth also had positive and non-significant relationship with profitability of food and beverages manufacturing firms in Nigeria. This study analyzed the effect of book value of accounts receivable on return on capital employed of manufacturing firms in Nigeria, examined the effect of anticipated bad debt on profitability of manufacturing firms in Nigeria and analyzed the effect of sales growth on return on capital employed of manufacturing firms in Nigeria.

## 2. LITERATURE REVIEW

### 2.1 Accounts Receivables

When goods and services are sold under an agreement permitting the customer to pay for them at a later date, the amount due from the customer is recorded as accounts receivables; so, receivables are assets accounts representing amounts owed to the firm as a result of the credit sale of goods and services in the ordinary course of business. The value of these claims is carried on to the assets side of

the statement of financial position under titles such as accounts receivable, trade receivables or customer receivables. The 'receivables' is being defined by (Joy, 1978) "debt owed to the firm by customers arising from sale of goods or services in ordinary course of business." According to Robert N. Anthony, "Accounts receivables are amounts owed to the business enterprise, usually by its customers. Sometimes it is broken down into trade accounts receivables; the former refers to amounts owed by customers, and the latter refers to amounts owed by employees and others".

Generally, when a concern does not receive cash payment in respect of ordinary sale of its products or services immediately in order to allow them a reasonable period of time to pay for the goods they have received. The firm is said to have granted trade credit. Trade credit thus, gives rise to certain receivables or book debts expected to be collected by the firm in the near future. In other words, sale of goods on credit converts finished goods of a selling firm into receivables or book debts, on their maturity these receivables are realized and cash is generated.

The book debts or receivable arising out of credit has three dimensions, It involves an element of risk which should be carefully assessed; It is based on economics value; It implies futurity, as the payment for the goods and services received by the buyer is made by him to the firm on a future date. The customer who represent the firm's claim or assets, from whom receivables or book-debts are to be collected in the near future, are known as debtors or trade debtors. A receivable originally comes into existence at the very instance when the sale is affected, but the funds generated as a result of these sales can be of no use until the receivables are actually collected in the normal course of the business. Receivables may be represented by acceptance; bills or notes and the like due from others at an assignable date in the due course of the business. As sale of goods is a contract, receivables too get affected in accordance with the law of contract e.g. Both the parties (buyer and seller) must have the capacity to contract, proper consideration and mutual assent must be present to pass the title of goods and above all contract of sale to be enforceable must be in writing. Moreover, extensive care is needed to be exercised for differentiating true sales form what may appear to be as sales like bailment, sales contracts, consignments etc. Receivables, as are forms of investment in any enterprise manufacturing and selling goods on credit basis, large sums of funds are tied up in trade debtors. Hence, a great deal of careful analysis and proper management is exercised for effective and efficient management of Receivables to ensure a positive contribution towards increase in turnover and profits.

## **2.2 Account Receivables Management**

Having accounts receivables is both good and bad. It is good because it means that you have sales and customers. It is bad because it is cash that you don't have now, and there is always a possibility that you won't collect. When you offer credit terms to your customers, it is extremely important to have a system in place to manage your accounts receivable. The function of accounts receivable management emanates from its goals which is stated simply as setting out credit terms, selecting the customers, installing appropriate collection and monitoring system and financing receivables for maximizing the value of the firm (Hrishikes 2002). The first issue for the management of trade debtors is to decide whether to grant credit at all (Arnold, 2005). Although accounts receivable is short term in nature the policy decisions that create them often have a long-term impact on the organization and its financial structure because, once a receivables policy is determined it is difficult to come out of it except at the cost of adverse market reactions. Credit policy decisions are part of an integrated approach, and interface actively with production, marketing and finance functions of an enterprise (Hrishikes, 2002).

## **2.3 Financial Performance**

For a long time, financial performance has been perceived only through its ability to obtain profits. This has changed over time. Further, also act as a restrain in financial performance, since it does not contribute to return on equity (Rafuse, 1996). A well designed and implemented financial management is expected to contribute positively to the creation of a firm's value (Padachi, 2006). Dilemma in financial management is to achieve desired trade- off between liquidity, solvency and profitability (Lazaridis, 2006). The subject of financial performance has received significant attention from scholars in the various areas of business and strategic management. It has also been the primary



concern of business practitioners in all types of organizations since financial performance has implications to organization 's health and ultimately its survival. A firm can be categorized as global performance if it can satisfy the interests of all stakeholders: managers are interested in the welfare and to obtain profit, because their work is appreciated accordingly; owners want to maximize their wealth by increasing the company's market value (this objective can only be based on profit); current and potential shareholders perceive performance as the company's ability to distribute dividends for capital investment, given the risks they take; commercial partners look for the solvency and stability of the company; credit institutions want to be sure that the company has the necessary capacity to repay loans on time (solvency); employees want a stable job and to obtain high material benefits; the state seeks a company to be efficient, to pay its taxes, to help creating new jobs, (Valentin, 2013)

### **3. THEORETICAL FRAMEWORK**

The theory upon which this study is based is operating cycle theory and the theory was developed by E.W Walker in 1964. The justification for the theory is that, the theory deals with the average period of time required for a business to make an initial outlay of cash to produce goods, sell the goods and receive cash from customers in exchange for the goods. This is useful for estimating the amount of working capital that a firm will need in order to maintain or grow its business. This theory can be extending the static balance sheet analysis of potential liquidation value coverage to include income statement measures of a firm's operating activity. In particular, incorporating accounts receivable and inventory turnover measures into an operating cycle concept provides a more appropriate view of liquidity management than does reliance on the current and acid-test ratio indicators of solvency. These additional liquidity measures explicitly recognize that the life expectancies of some accounts receivable components depend" upon the extent to which three basic activities- production, distribution (sales), and collection - are non-instantaneous and un-synchronized (Weston, 1979). Changes in credit and collection policy have a direct impact on the average outstanding accounts receivable balance maintained relative to a firm's annual sales. Granting more liberal terms to a firm's customers creates a larger, and potentially less liquid, current investment in receivables. Unless sales increases at least proportionately to the increase in receivables, this potential deterioration in liquidity will be reflected in a lower receivables turnover and a more extended receivables collection period. Decisions that commit a firm to maintaining larger average receivables investments over a longer time period will inevitably result in higher current and acid-test ratios (Richards, 1980).

### **4. EMPIRICAL REVIEW**

Lazaridis and Tryfonidis (2006) analyzed the relationship between accounts receivables management and corporate profitability for the firms listed in Athens Stock Exchange for a sample of 131 listed companies. The researcher used the company financials from 2001-2004 for the study. The results of the study of regression analysis showed that there was a statistically significant relationship between gross operating profit, a measure of profitability and the cash conversion cycle. He suggested that by optimizing the cash conversion cycle the managers could create value for the shareholders. Results of empirical analysis show that there is statistical evidence for a strong relationship between the firm's profitability and its receivables management efficiency. Huynh and Jhy-tay (2010) based their study on secondary data collected from listed firms in Vietnam Stock market for the period 2006-2008. Their finding showed that there is a strong negative relationship between profitability, measured through gross operating profit and the cash conversion cycle. This means that as the cash conversion increases, it will lead to a decline in profitability of a firm. They further stated that the managers can create a positive value for the shareholders by handling the adequate cash conversion cycle and keeping each different component to an optimal level.

In a study by Sharma and Kumar (2011) the sample consisted of 263 companies, all from Bombay Stock Exchange (BSE) 500, broad market indices of the Indian capital market. The BSE 500 index represented nearly 93 per cent of the total market capitalization on BSE. The Index covered 20 major industries of the economy and was launched on 9 August 1999. The sample companies consisted of 15 industries with full annual data of eight variables during the period 2000-08. A positive

relationship was found between profitability and number of days of accounts receivables. In ksenija (2013), he investigated how public companies listed at the regulated market in the republic of Serbia manage their accounts receivable during recession times. A sample of 108 firms is used. The accounts receivable polices are examined in the crisis period of 2008-2011. The short-term effects are tested and the study shows that between accounts receivables and two dependent variables on profitability, return on total asset and operating profit margin, there is a positive but no significant relation.

Similarly, Abdulrasheed, Khadijat, Sulu and Olanrewaju (2011) assessed inventory management in selected small businesses in Kwara State, Nigeria. Using a regression model to explain the effect of inventory value on performance proxy by profit over a period of ten years, the study revealed that a Naira change in stock would cause almost a Naira (92 Kobo) change in profitability of selected businesses. This result indicated a strong positive relationship between inventory and profitability of small businesses in Kwara State of Nigeria. They thus concluded that small businesses are likely to generate higher profit if an effective inventory management is put in place.

Anastasia (2014) carried out a research on the impact of receivables management on profitability of food and beverages manufacturing companies in Nigeria. Secondary sources of data were used for the period 2000-2011 of some selected firms. The hypotheses were analyzed using the multiple regression analytical tools. The findings show that accounts receivable had negative and non-significant relationship with profitability, while debt had positive but non-significant relationship with profitability of food and beverages manufacturing companies in Nigeria. Finally, sales growth also had positive and non-significant relationship with profitability. However, in other to cover this gap in the literature, the study tends to use Return on Capital Employed (ROCE) as a measure of firms' performance, while book value of Account receivables, Loss of interest and anticipated bad debt will be used to measure Accounts Receivable Management from the selected quoted manufacturing firms in Nigeria.

## 5. RESEARCH METHOD

The paper specifically focused on effect of accounts receivable management on the performance of manufacturing firms in Nigeria. To this end, this paper will concentrate on ten (10) selected food and beverage firms operating within Nigeria, the firms which are: Flour Mills Nig Plc, Dangote Sugar Plc, Nestle Nig. Plc, Dangote flour Nig. Plc, Unilever Nig Plc, PZ Cusson, Nigerian Breweries, 7UP, Guinness, and Nascon Allied Industries Plc, covering a period of ten (10) years (that is, from 2007 to 2016). This study made use of secondary data sourced from Annual Reports of selected firms. Panel Data analytical technique was employed to analyses the data. The adopted model for this paper was specified according Anastasia (2014) in a study of the impact of receivables management on profitability. It is stated in functional form as:

$$PAT = f(BVAR, ITR, BDT) \dots\dots\dots (3.1)$$

The model in (3.1) can be written as:

$$PAT = \alpha_0 + \alpha_1 BVAR + \alpha_2 ITR + \alpha_3 BDT + U_t \dots\dots\dots (3.2)$$

Thus, the model for this study is stated in panel functional and linear forms as:

$$ROCE_{it} = f(BVAR_{it}, BDT_{it}, SG_{it}) \dots\dots\dots (3.3)$$

Mathematically presented as:

$$ROCE_{it} = \alpha_0 + \alpha_1 BVAR_{it} + \alpha_2 BDT_{it} + \alpha_3 SG_{it} + \mu_{it} \dots\dots\dots (3.4)$$

Where:

ROCE = Return on capital employed which will be used to measure the profitability

BVAR = Book value of account receivable

BDT = Anticipated bad debt

SG=Sales Growth

$\mu_{it}$  = Stochastic error terms

t = time period

i = cross section unit

## 6. RESULT AND DISCUSSION

### 6.1 Descriptive Analysis

**Table 4.1:** Descriptive Statistics of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
ROCE	100	31.50009	17.30336	-10.03514	74.09336
BVAR	100	14677.38	17635.05	111.422	93826
BDT	100	38.99998	24.70779	10.48544	94.97145
SG	100	10.62815	13.91679	-22.80223	41.72477

*Note:* ROCE= Return on Capital Employed (%), BVAR= Book Value of Account Receivable (million naira), BDT= bad Debt (% of debt), SG= Sales Growth (%)

*Source:* Author's Computation, (2019)

Table 4.1 presents descriptive statistics of observation pooled from 10 manufacturing firms over the period of ten years. The table reported average return on capital employed of 31.5%, with minimum and maximum values of -10% and 74% respectively. Average book value of account receivable stood at 14677.38 million naira, with minimum and maximum values of 111.422 million and 93826 million naira respectively. Average values reported in table 4.1 for anticipated bad debt and sales growth stood at 38.9% and 10.6% respectively, with minimum and maximum values of 10.5% and 94.9% for anticipated bad debt and -22.8% and 41.7% for sales growth respectively.

### 6.2 Correlation Analysis

**Table 4.2:** Correlation Statistics

	ROCE	BVAR	BDT	SG
ROCE	1.0000			
BVAR	-0.2045	1.0000		
BDT	0.0452	0.0010	1.0000	
SG	0.1520	-0.1070	0.2365	1.0000

*Source:* Author's Computation, (2019)

Correlation result presented in table 4.2 reported existence of negative correlation between return on capital employed and book value of account receivable with correlation statistic of -0.2045. On the hand correlation result presented in table 4.2 reported existence of positive correlation between return on capital employed and both anticipated bad debt and sales growth with correlation statistics of 0.0452 and 0.1520 respectively. Correlation result reflect that performance of manufacturing firms measured in terms of return on capital employed move in opposite direction with book value of account receivable, but move in the direction with both anticipated bad debt and sales growth of the sampled firms. Correlation statistic reported for other pairs of variables used in the study stood at 0.0010, -0.1070 and 0.2365 for BVAR and BDT, BVAR and SG, BDT and SG respectively.

### 6.3 Analysis of the Impact of Book Value of Account Receivable, Anticipated Bad Debt, and Sales Growth on Return on Capital Employed of Manufacturing Firms in Nigeria

This section presents analysis of the impact of book value of account receivable, anticipated bad debt and sales growth on performance of manufacturing firms measured in terms of return on capital employed. Result of estimations presented in this section included Pooled OLS estimation result, fixed effect estimation result (cross sectional and period specific), and random effect estimation results, while evaluation for consistency and efficiency was done using restricted f-test and Hausman post estimation test.

6.1.1 Pooled OLS Analysis

Table 4.3.1 Pooled OLS Estimation Result  
Series: ROCE BVAR BDT SG

Variable	Coefficient	Std Error	T-Test	Probability
C	32.1443	3.600578	8.93	0.000
BVAR	-0.0001873	0.0000977	-1.92	0.058
BDT	0.0105893	0.0713798	0.15	0.882
SG	0.1591237	0.1274585	1.25	0.215

R-square= 0.5592, Adjusted R-square= 0.5298, F-statistics=12.01, Prob(F-stat)=0.0073

(\*) connotes significance at 5% level of significance.

Source: Author's Computation, (2019)

Table 4.3.1, revealed the impact of book value of account receivable, anticipated bad debt and sales growth on return on capital employed when observation across sampled firms were pooled and analysed without consideration of the heterogeneity effects across firms. As reported in table 4.3 book value of account receivable exerts insignificant negative impact on return on capital employed with coefficient estimate of -0.0001873 ( $p=0.058 > 0.05$ ). Anticipated bad debt exert insignificant positive impact on return on capital employed with reported coefficient estimate of 0.0105893 ( $p=0.882 > 0.05$ ). Sales growth also exert insignificant positive impact on return on capital employed, with coefficient estimate of 0.1591237( $p=0.215 > 0.05$ ). Reported R-square value stood at 0.5592, which implies that about 56% of the systematic variation in return on capital employed of the sampled manufacturing firms can be explained by the explanatory variables when no consideration is given to cross sectional or period effects.

6.1.2 Fixed Effect Estimation

Table 4.3.2: Fixed Effects Estimates (Cross-sectional and Period specific)  
Series: ROCE BVAR BDT SG

CROSS-SECTIONAL SPECIFIC EFFECT			TIME SPECIFIC EFFECT		
Variables	Coefficients	Prob	Variables	Coefficients	Prob
C	33.08515	0.000	C	29.09846	0.000
BVAR	-0.000323	0.000	BVAR	-.0001508	0.185
BDT	0.0127332	0.823	BDT	.0098384	0.897
SG	0.0086656	0.924	SG	.1828651	0.204
<b>Effects</b>			<b>Effects</b>		
DANGSUGAR	10.96529	0.048	2008	3.128759	0.694
NESTLE	21.80301	0.000	2009	6.289026	0.434
DANGFLOUR	-9.999944	0.106	2010	5.658342	0.484
UNILEVER	17.25639	0.003	2011	.7974976	0.920
PZ	-16.98585	0.006	2012	4.771491	0.564
NB	9.12615	0.130	2013	3.783381	0.644
7UPS	-18.22178	0.004	2014	2.064297	0.799
GUINNESS	5.318907	0.348	2015	-1.095569	0.895
NASCON	6.40300	0.298	2016	-2.526214	0.765
R-square= 0.6029			R-square= 0.5841		
Adjusted R-square= 0.5481			Adjusted R-square= -0.5422		
F-statistics= 11.01			F-statistics=10.67		
Prob(F-stat)= 0.0000			Prob(F-stat)= 0.0094		

Sources: Author's Computation, (2019)

Table 4.3.2, showed that when heterogeneity effect across manufacturing firms sampled in the study is incorporated into the model in form of intercept term, book value of account receivable exert significant negative impact on return on capital employed, with reported coefficient estimate of -



0.000323 ( $p=0.000 < 0.05$ ). Anticipated bad debt exert insignificant positive impact on return on capital employed, with reported coefficient estimate of 0.0127332 ( $p=0.823 > 0.05$ ). Sales growth exert insignificant positive impact on return on capital employed with coefficient estimates of 0.0086656 ( $p=0.924 > 0.05$ ). R-square value reported for cross-sectional specific estimation presented in table 4.4 stood at 0.6029, which reflect that about 61% of the systematic variation in return on capital employed can be explained jointly by the explanatory variables, when heterogeneity effect across sampled firms is incorporated into the model as intercept terms.

Result of fixed effect period-specific estimation presented in table 4.3.2, showed that when heterogeneity effect over time was incorporated into the model as intercept term, book value of account receivable exert insignificant negative impact on return on capital employed on sampled firms with coefficient estimate of -0.0001508 ( $p=0.185 > 0.05$ ). Both anticipated bad debt and sales growth exert insignificant positive impact on return on capital employed with coefficient estimates of 0.0098384 ( $p=0.897 > 0.05$ ) and 0.1828651 ( $p=0.204 > 0.05$ ) respectively. Reported R-square statistics showed that about 58% of the systematic variation in return capital employed can be jointly explained by the explanatory variables when heterogeneity effects over the period covered in the study was incorporated into the model as intercept terms

Deviation from the intercept term (33.08515) corresponding to the reference manufacturing firm (Flour Mills Plc) stood at 10.96529, 21.80301, -9.999944, 17.25639, -16.98585, 9.12615, -18.22178, 5.318907, and 6.40300 for Dangote Sugar Plc, Nestle Nig. Plc, Dangote flour Nig. Plc, Unilever Nig Plc, PZ Cusson, Nigerian Breweries, 7UP, Guinness, and Nascon Allied Industries Plc. Also deviation from the intercept term (29.09846) of the reference period (2007) stood at 3.128759, 6.289026, 5.658342, 0.7974976, 4.771491, 3.783381, 2.064297, -1.095569 and -2.526214 for 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015 and 2016 respectively.

### 6.1.3 Random effect estimation

**Table 4.4 Random Effect Estimation**

*Series: ROCE BVAR BDT SG*

Variable	Coefficient	Standard Error	Z-Test Values	Probability
C	35.27039	5.042516	6.99	0.000
BVAR	-0.0003067	.0000858	-3.58	0.000
BDT	0.0130079	.0561532	0.23	0.817
SG	0.0210516	.0907043	0.23	0.816

R-square= 0.6455

Wald chi2 (5)= 13.53

Prob > chi2 = 0.0036

Random effect estimation result presented in table 4.5 revealed that when heterogeneity effect across sampled manufacturing firms and over time period covered was incorporated into the model via the error term, book value of account receivable exerts significant negative impact on return on capital employed with coefficient estimate of -0.0003067 ( $p=0.000 < 0.05$ ). On the other hand anticipated bad debt and sales growth exert insignificant positive impact on return on capital employed with respective coefficient estimates of 0.0130079 ( $p=0.817 > 0.05$ ) and 0.0210516 ( $p=0.816 > 0.05$ ). Reported R-square for random effect estimation presented in table 4.5 stood at 0.6455 which implies that about 65% of the systematic variation in return on capital employed can be explained jointly by the explanatory variable, when heterogeneity effect is subsumed into the random term.

### 6.1.4 Post estimation Test

**Table 4.4.1: Restricted F Test of Heterogeneity (Cross-Sectional and Time Specific)**

	F-statistics	Probability
<b>Cross sectional</b>	13.24	0.0000
<b>Time specific</b>	0.26	0.9827

*Source: Author's Computation, (2019)*



F-statistics reported in table 4.4.1 stood at 13.24 and 0.26 with probability values of 0.0000, and 0.9827 for cross sectional and period specific effect respectively. Result showed that there is enough evidence to reject the null hypothesis that differential intercept corresponding to each cross sectional specific units (manufacturing firm) is equal to zero, but otherwise for the period specific intercepts. This implies that there is significant cross-sectional heterogeneity effect across manufacturing firms sampled in the study, thus invalidating the restriction of pooled OLS estimation in favour of cross-sectional fixed effect estimation.

**Table 4.5 Hausman Test**

<b>Null hypothesis</b>	<b>Chi-square stat</b>	<b>Probability</b>
<b>Difference in coefficient not systematic</b>	3.09	0.3775

*Source: Author's Computation, (2019)*

Table 4.5 reported chi-square statistic of 3.09 and probability value of 0.3775. The result revealed that there is no enough evidence to reject the null hypothesis that differences in coefficients of fixed effect estimation and random effect estimation is not significant. Therefore, the most consistent and efficient estimation for analyzing the impact of book value of account receivable, anticipated bad debt and sales growth on performance of manufacturing firms measured in terms of return on capital employed is the random effect estimation.

## 7. CONCLUSION AND RECOMMENDATION

Based on the findings the study concluded that, account receivable has the capacity to significantly impede the level of performance of manufacturing firms in Nigeria, especially when measured in terms of return on capital employed. Also, sales growth has positive impact on performance of manufacturing firms, such positive impact is not a significant guaranty for improved return on capital employed. It was recommended that, manufacturing firms should device a management strategy and operation framework that will keep the book value of account receivable below the threshold where it can trigger significant negative impact on their return on capital employed and/or other performance measures. Also, firms should ensure that anticipated bad debt is keep at a reasonable level through the years, so as not to trigger misalignment in their account receivable framework.

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