INTRODUCTION

Working capital management, which deals with the management of current assets and current liabilities, is very important in corporate finance because it directly affects the liquidity and profitability of a firm (Appuhami, 2008; Rehaman and Nazir, 2007; Deloof, 2003). Researches have shown that current assets of a typical manufacturing firm or even a distribution firm, account for more than half of the firm’s total assets. Deloof (2003) holds the same proposition that Accounts Receivables and Inventories comprise a substantial percentage of the total assets of the firm. Firms with too few current assets may incur shortages and difficulties in maintaining smooth operations (Van Horne and Wachowicz, 2005). Efficient working capital management involves planning and controlling the current assets and current liabilities in a manner that eliminates the risk of inability of a firm to meet due short-term obligations and to avoid excessive investment in these assets on the other hand (Eljelly, 2004). The way in which working capital is managed can have a significant impact on both the liquidity and profitability of the firm (Deloof, 2003). The profitability liquidity trade off is important because if working capital management is not given due considerations, then the firms are likely to fail and face bankruptcy (Kargar and Blumenthal, 1994). Working capital is known as life-giving force for any economic unit and its management is considered among the most important functions of corporate management. All forms of businesses have either products or services to sell to the customers with the aim of maximizing their sales. In order to increase the level of their sales, they use policies to attract customers and one of such policies is offering a trade credit. This means a company is selling its products now as to receive payment at a specified date in future. Hill and Satoris (2005) found that one sixth of total assets for manufacturing corporations consist of accounts receivable and due to its huge proportion in the total assets, it can become a problem for the organization in a way that it may require more financing for the period for which payment is due from the customers. Accounts receivables also have opportunity cost associated with them because a company cannot invest this money elsewhere until and unless it collects its receivables. More account receivables can raise the profit by increasing the sales but it is also possible that because of high opportunity cost of invested money in accounts receivables and bad debts, the effect of this change might turn difficult to realize. On the other hand, if a company adopts a policy to have a low level of account receivables, then it can reduce its profitability by reducing the sales but it can contribute to the profit by reducing the risk of bad debts and reducing investment in the receivables. Companies want to have a level of account receivables which maximizes the profitability. The level of accounts receivables is largely influenced by the credit policy offered by the company to creditors. Strict policy will reduce the collection period and account receivables while a relaxed policy will raise the level of accounts receivable.

Accounts receivable are debts owed a company by her valuable customers who are trushted with the goods and services, taking into consideration the character and integrity of the customer. Account receivables represent the amount a firm expects to receive from its debtors in payment for goods and services delivered or rendered by the firm. Therefore, it is
the duty of the financial manager to make decisions regarding the policy to be adopted in extending credit facilities to customers due to the problem of default. It is believed that longer period of collection of account receivables could result into higher sales, and more sales bring more profit into the business. Therefore there could exist a relationship between accounts receivables and profitability of the firm. When there is a build-up of receivables, funds are unavailable to have been put into efficient use within the firm as to earn profit. Credit sales will be a costly exercise to the seller if necessary steps are not taken by the firm before handing over the goods to the buyer. Credit control is therefore an important aspect of working capital management (Yadav et al., 2009). The next section presents the literature review. Methodology, data and variable issues are discussed in chapter three, while sections four and five discuss the results, conclusion and recommendation of the study.

LITERATURE REVIEW

Samilogu and Demirgunes (2008) worked on the effects of working capital management on firm profitability in Turkey for the period 1998-2007. The findings showed that account receivable period and inventory period have significantly negative effects on firm profitability. This means that while these variables lengthen in periods, profitability decreases, or vice versa. Padachi (2006) examined the trend in working capital needs and profitability of firms to identify the causes for any significant differences between the industries. Return on Assets was used as a measure of profitability and the relation between WCM and corporate profitability for a sample of 58 small manufacturing firms, using panel data analysis for the period 1998-2003. Results showed that high investments in inventories and receivables are associated with lower profitability. Mathura (2009) investigated on influence of WCM components on corporate profitability using a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the periods 1993-2008. The study used the Pooled OLS and the fixed effects regression model and found that there exists a highly significant negative relationship between when it takes a firm to collect cash from their customers and profitability, and a highly significant relationship between conversion of inventories into sales and profitability. This means that firms which maintain sufficiently high inventory level reduce costs of business interruption in the product process and loss of business due to scarcity of products. This reduces the firm’s supply costs and protects them against price fluctuations. Long, et al. (1993) developed a model of trade credit in which asymmetric information leads goods firm to extend trade credit for the buyer to verify product quality before payment. Their sample contained all industrial (SIC 2000 through 3999) firms with data available from COMPUSAT for the three year period ending 1987 and used regression analysis. They defined trade credit policy as the average time receivables are outstanding and measured this variable by computing each firm’s Days of Sales Outstanding (DSO), as accounts receivable per dollar of daily sales. To reduce variability, they averaged DSO and all other measures over a three year period. They found evidence consistent with the model. The findings suggest that producers may increase the implicit cost of extending trade credit by financing their receivables through payables and short-term borrowing.

Investigating the Effect of Account Receivable and Delivery Delay on the profitability of a Medical Department, Soydan and Yusuf (2010) focused on the problem of getting accounts receivable and delivery products/systems on time for the medical department of Siemens Turkey. The Balanced Score approach was used as a base platform which served as a decomplexifying element for the modeling tangle. In the department, there were sales people who do the sales via monthly visits to customers. After collecting the orders, they followed some processes, and when order is delivered, the payment does not occur immediately, mostly for the state customers and there exist an oscillating delivery time. This simulation model achieves giving the knowledge and ability to the managers to make plans accordingly. Having seen the outputs, they organized their pre-active, but not reactive in the long term. The project had one more tenet which is launching the system dynamics approach internally and making managers use it as their regular thinking style.

Deloof (2003) discussed that most firms had a large amount of cash invested in working capital. Using correlation and regression tests, he found a significant negative relationship between gross operating income and the number of days accounts receivable, inventories and accounts payable of Belgium firms. It can therefore be expected that the way in which working capital is managed will have a significant impact on profitability of these firms. He suggested that managers could create value for their shareholders by reducing the numbers of days’ accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts receivable and profitability is consistent with the view that less profitable firms wait longer to pay their bills. Rehman (2006) investigated the impact of working capital management on the profitability of 94 Pakistani firms listed at Istanabed Stock Exchange (ISE) for the period of 1999-2004. He studied the impact of the different variables of WCM including average collection period, inventory turnover in days, average payment period and cash conversion cycle on the net operating profitability of firms. He concluded that there is a strong negative relationship between working capital ratios and profitability of firms. Furthermore, managers can create more value for their shareholders by reducing the cash conversion cycle up to an optimal level. Working on the relationship between working capital management and profitability, 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.

Luo, Jiung – Yee and Hwang (2009) in their study on how working efficiency affects firms’ performance and value, used panel data for the period 1980-2006. The results showed that the whole supply chain of goods experienced a significant improvement on WCM during the sample period. Both the efficiency level of WCM and improvement in WCM had
significant effects on future operating earnings. Their results suggested extending more trade credit to buying firms, leads to higher future performance as well. They further highlighted the significance of WCM which is consistent with the recently observed firm hardship caused by working capital shortage during the recent credit crises. Alipour (2011) studied on the relationship between WCM and profitability in Iran. Cash conversion cycle was used to calculate the efficiency of working capital management for the period 2001-2006 for companies listed Tehran Stock Exchange. He selected 1063 out of 2628 companies using the multiple regression and Pearson correlation to test the hypothesis. The result showed that there was a negative significant relationship between accounts receivable and profitability, same with inventory and accounts payable with profitability. The study stated that managers can create value for shareholders by means of decreasing receivables and inventory.

**METHODOLOGY**

Historic accounting data collected from the financial statements and accounts of 46 quoted firms listed on the Nigerian Stock Exchange (NSE) from 2000-2009 were used for this study. *Ex-post facto* research design was adopted in the study. Data generated was being employed to run both cross-sectional and time-series regression. The sub-sectors excluded financial institutions like banks, insurance, etc. due to the nature of their business and financial reports. The multiple regression technique was used in analyzing the models stated. The ideas behind regression analysis is the statistical dependence of one variable, the dependent variable in this case, return on assets (ROA), on one or more variables, the independent or explanatory variables. Two control variables were also included in the model. These are Size and Growth. The general form for a multiple regression analysis is given in the form below:

\[ Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots \ldots + b_n X_n + e \]  

Where:

- **Y** = Dependent variable
- **a** = Constant of the equation
- **b** = Coefficient of independent variables
- **X** = Independent variables
- **e** = Error Term

In the above equation, the constants \( b_1, b_2, b_3, \ldots b_n \) determine the slope or gradient of the line and the constant term ‘a’ determines the point at which the line crosses the Y-axis (see Gujarati, 1995).

In order to test our hypothesis in this study which states as follows: Accounts Receivable does not have a negative significant effect on Return on Assets of Nigerian firms, the model could be written as follows:

\[ \text{ROA} = a + b \text{ACCTR} + \log \text{Size} + \log \text{Growth} + e \]  

Where:

- **ROA** = Return on Assets
- **a** = Constant of the equation
- **ACCTR** = Accounts Receivable
- **log Size** = Size (in logarithm)
- **log Growth** = Growth (in logarithm)
- **b** = Coefficient of the independent variables
- **e** = Error Term.

The dependent variable for this study is the Return on Assets (ROA) while the independent variable is Accounts Receivable. The control variables are Size and Growth of the firms respectively. Return on Assets (ROA) is used as a measure of firm’s profitability (Nazir and Afza, 2009). In other words ROA is a measure of overall effectiveness of the firm in generating profit with available assets (Van Horne and Wachowicz, 2005). It is equivalent to Return on Investment (ROI), but more appropriate measure of the profitability efficiency of a firm (Pandey, 2005). Though there exist various measures of the variable in empirical profitability studies, the most often used in the literature is the Return on Assets being defined as:

\[ \text{Net Income After Taxes} \]  

**Average Book Value of Assets**

This variable has been used by Samilogu and Demirgunes (2008), Falope and Ajilore (2009), Nazir and Afza (2009) and a lot of others. Accounts Receivable is used as the independent variable. These are customers who are yet to make payment for the goods and services. It is calculated thus:

\[ \text{AR} = \frac{\text{Accounts Receivable}}{\text{Sales}} \times 365 \]  

This variable is in line with studies by Karaduman, et al. (2010), Alipour (2011) Mamoun (2011) and Mathura (2009). The control variables are size of the firm and growth in sales. Size captures economies of scale and it is believed that as a company becomes larger, it is better placed to reap economies of scale. The study measured size as the logarithm of total assets as follows:

\[ \text{Size} = \log \text{total assets} \]  

This variable has been used by Gill, et al. (2010); Padachi (2006); Alipour (2011). Growth of a firm is measured by variation in its annual sales value with reference to previous year’s sales. This ratio is fairly straightforward as follows:

\[ \text{Growth} = \frac{\text{Sales}_1 - \text{Sales}_0}{\text{Sales}_0} \]  

where \( \text{Sales}_1 \) = this year’s sales and \( \text{Sales}_0 \) = previous year’s sales. (Falope and Ajilore, 2009; García – Teruel and Solano, 2007).

**Results, interpretation and implication**

From the Table 1 above, Return on Assets, being a direct measure of profitability and used as the dependent variable in the study, had a profit growth of 11% in 2000 and reduced to 9% in 2002 and 12% in 2003. The profit rose to 14% in 2004 and drastically rose in subsequent years to 49% in 2008 and rose to 73% in 2009. Accounts Receivable stood at 87.15% in 2000 and reduced to 52.71% in 2009. The percentage changes for years 2001-2009 stood at 44.03, 1.73, 1.57, -16.26, -1.57, -16.26, -16.26, -15.47, -37.32, 3.53, -8.51 and – 9.48 respectively. Furthermore, there was an average growth of 26% of Return on Assets (ROA) and – 4.02% on Accounts
Receivable. The negative average growth of – 4.02% could be as a result of most firms receiving payments for sale of their products at a shorter period, thereby contributing to their making profits. Growth which stood at 52% in 2000 sharply dropped to 4% in 2003 with a sudden increase to 91% in 2004 with a tremendous increase to 219% in 2009 respectively. Finally there was a steady and impressive increase in size of firms from 7.28 in 2000 to 9.83 in 2009 accordingly. Table 2 presents a descriptive statistics of the study for 46 firms (2000-2009) with a total observation of 460 years.

Table 1. Summary of variables and their percentage change for the period 2000 – 2009

<table>
<thead>
<tr>
<th>Years</th>
<th>Age</th>
<th>%Δ</th>
<th>Liquidity</th>
<th>%Δ</th>
<th>Leverage</th>
<th>%Δ</th>
<th>Growth</th>
<th>%Δ</th>
<th>ROA</th>
<th>%Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>38.76</td>
<td>1.39</td>
<td>47.74</td>
<td>0.28</td>
<td>52.96</td>
<td>0.28</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
<td>0.11</td>
</tr>
<tr>
<td>2001</td>
<td>39.76</td>
<td>1.17</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
<td>0.11</td>
</tr>
<tr>
<td>2002</td>
<td>40.76</td>
<td>1.14</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
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<tr>
<td>2003</td>
<td>41.76</td>
<td>1.44</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
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<tr>
<td>2004</td>
<td>42.76</td>
<td>0.81</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
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<tr>
<td>2005</td>
<td>43.76</td>
<td>0.79</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
<td>0.11</td>
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<tr>
<td>2006</td>
<td>44.76</td>
<td>0.29</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
<td>0.11</td>
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<tr>
<td>2007</td>
<td>45.76</td>
<td>0.85</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
<td>0.11</td>
</tr>
<tr>
<td>2008</td>
<td>46.76</td>
<td>0.88</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
<td>0.11</td>
</tr>
<tr>
<td>2009</td>
<td>47.74</td>
<td>1.16</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
<td>0.11</td>
</tr>
<tr>
<td>Average</td>
<td>46.76</td>
<td>0.68</td>
<td>47.74</td>
<td>0.21</td>
<td>52.96</td>
<td>0.21</td>
<td>59.62</td>
<td>0.13</td>
<td>81.75</td>
<td>0.11</td>
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</table>

The main variables for this study are the ROA (which is the dependent variable), Accounts Receivable (the independent variable) and the control variables are made up of Size and Growth respectively. All variables were calculated using the balance sheet (book) values. The measurement of profitability could only be based on income statement values, and not on so-called market values. When market values are considered in studies, there is always rather legitimate question of the date for which the ‘market value’ refer. Hence the study relied on ‘book-values’ as at the date of the financial report. From the Table, the 46 firms observed have a mean Accounts Receivable (AR) of 89.3 days with Std. Deviation of 31.3, while Growth and Size have a mean of 1.5 and 7.9 with Std. Deviation of 3.1 and .50 respectively. Return on Assets (ROA) has a mean of 0.895, Accounts Receivable, Growth and Size have a minimum 52.71, - .04, and 7.28 and a maximum of 127.69, 9.19 and 8.53 respectively. The mean of ROA (0.0895) shows that Nigerian companies, by considering inflation rate, have poor performance over the study period of 2000-2009.

Table 3 displays Pearson Correlation Matrix among the variables concentrating on the relationship between dependent and independent variables. Correlation explains how two different variables react to each other, eg. what change will occur in one variable with the change in other variable. From the table, Accounts Receivable(ACCTR) related negatively with Return on Assets(ROA) showing that less collection period will lead to increase in profitability (measured by ROA), while Size and Growth related positively with ROA. This shows that the larger the size and the higher the growth in firms, all will lead to higher profitability. As earlier stated, the hypothesis for this study is: Accounts Receivable does not have a significant negative effect on Return on Assets of Nigerian firms. To test this hypothesis, it is re-stated in null and alternative forms as:

Ho : Accounts Receivable does not have a negative significant effect on return on assets of Nigerian firms.

Hi : Accounts Receivable have a negative significant effect on Return on Assets of Nigerian firms. The Decision Rule is that :

1. Accept Ho and reject Hi if the variable of Accounts Receivable has a positive coefficient sign, p < 0.05.
2. Accept Hi and reject Ho if the variable of Accounts Receivable has a negative coefficient sign, p <0.05. Based on the data for the test and the computer results shown in the table, we proceed with the test.
The linear regression result shows that the coefficient of determination, $R^2$ (91%) indicates that almost all the variation that exists in the independent variable is explained by the model. The significant value of the F-statistics is less than 0.05, which means that the variation explained by the model is not due to chance ($f=13.82; p=0.014; P<0.05$). The independent variable (Accounts Receivable) has a negative significant impact on ROA, ($\text{Coefficient of Accounts Receivable} = -0.45; t=5.81; p=0.014; P<0.05$). This implies that a unit change in accounts receivable will result into a 2.8% increase in Return on Assets (ROA). The moderator variable size has no significant impact on ROA, ($\text{Coefficient of size} = -0.44; t=-1.29; p=0.27; P>0.05$) while growth have a significant positive impact ($\text{Coefficient of growth} =0.46; t=5.66; p=0.005; P<0.05$). The Durbin – Watson (DW) statistics shows 2.29 indicating absence of autocorrelation.

### DISCUSSION

Since the coefficient of Accounts Receivable has a negative sign (-0.44602), we accept the alternative hypothesis and reject the null hypothesis. The multiple regression model becomes: $\text{ROA} = 0.71 -0.45 \text{AR} -0.44 \text{Size} + 0.46 \text{Growth}$. We can then say that Accounts Receivable has a significant effect on Return on Assets of Nigerian firms. The implication of the result which showed a negative impact on Return on Assets of Nigerian firms indicates that the shorter the number of days it

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**Table 3. Correlations**

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<td>ROA</td>
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<tr>
<td>SIZE</td>
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<td>LIQUIDITY</td>
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<td>LEVERAGE</td>
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<td>INVENTORY</td>
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<td>GROWTH</td>
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<td>CCC</td>
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<td>AGE</td>
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<td>ACCTR</td>
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<tr>
<td>ACCP</td>
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**Table 4.** Dependent Variable: LOG(ROA)

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>-0.44602</td>
<td>0.007924</td>
<td>5.807959</td>
<td>0.0144</td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.462823</td>
<td>0.081713</td>
<td>5.664019</td>
<td>0.0048</td>
<td></td>
</tr>
<tr>
<td>ACCTR</td>
<td>0.912022</td>
<td></td>
<td>Mean dependent var</td>
<td>2.779884</td>
<td></td>
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<tr>
<td>ACCP</td>
<td>0.729719</td>
<td></td>
<td>Schwarz criterion</td>
<td>1.483060</td>
<td></td>
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<tr>
<td>Log likelihood</td>
<td>-1.773358</td>
<td></td>
<td>F-statistic</td>
<td>13.82191</td>
<td></td>
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<tr>
<td>Durbin-Watson stat</td>
<td>2.288661</td>
<td>Probit(F-statistic)</td>
<td>0.014080</td>
<td></td>
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</tbody>
</table>
takes a firm to be paid for sales made, the more profit it is expected to make. This agrees with the findings of Deloof (2003), Reheman and Nazir (2007), Shin and Soenen (1998), Garcia–Teruel and Martinez–Solano (2007) and Lazaridis and Tryfonidis (2006). The result can also be interpreted as the less the time taken for customers to pay their bills, the more the cash is available to replenish inventory, hence the higher the sales realized leading to higher profitability of the firm. In summary, a more restrictive credit policy such as giving customers less time to make their payments, improves performance.

Recommendations and Conclusion

From the above results, this study recommends that managers can create value for their shareholders by reducing the number of days accounts receivable and inventories to a reasonable minimum. Credit terms are a function of the competitive environment as well as of a careful assessment of the nature and credit worthiness of the customers. Extending normal credit to marginal customers need to be carefully assessed in terms of risk of delayed payments or default, compared with contribution from sales gained. Sound management of suppliers’ credit, thus requires current up-to-date information on accounts receivable and aging of payables to ensure proper payments. Furthermore, the study could be further improved with more sample size, different variables for working capital practices and also other external variables which might provide a strong relationship between the variables and help to uncover the better firm’s performance in Nigerian perspective. Thus this study is left for the future to be further explored. In conclusion, this study sets out to provide empirical evidence about the effect of account receivable and its effect on profitability (measured by return on assets) for a sample of 46 Nigerian quoted firms for the period 2000 -2009. Multiple regression and correlation analysis was applied in testing the hypothesis. The result showed that account receivable had a negative and significant relationship with return on assets. This finding was in line with most studies in the literature review for other countries.

REFERENCES


