EFFECTS OF WORKING CAPITAL MANAGEMENT ON THE PROFITABILITY OF NIGERIAN MANUFACTURING FIRMS

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&

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Abstract
There have been cases of working capital management problem in some Nigerian corporate firms especially in the manufacturing sector, which have resulted in corporate distress. This brought to the fore the need to provide empirical evidence on the effect of working capital management on the profitability of Nigerian quoted manufacturing firms. Six manufacturing firms listed in the Nigerian stock market were selected for this study using the simple random probability sampling technique. Data for the study were from the secondary sources, extracted from the audited annual reports of the selected firms for the five years covering 2006 to 2010 financial years. Preliminary analysis was conducted using descriptive statistics of mean and standard deviation, meanwhile, the main analysis was carried out using correlation co-efficient. The findings from the review of related literature and data analysis revealed that there is a negative correlation between working capital management and profitability of the firms, using cash conversion cycle and average profitability as measures of working capital management and profitability respectively. It was recommended to the management of the firms to strive to reduce their cash conversion cycles so as to enhance profitability and improve shareholders’ value.

Key Words: Profitability, Cash Conversion Cycle, Working Capital Management
INTRODUCTION

Working capital refers to the firm’s investment in short-term assets. Oye (2003) defined working capital as the excess of current assets over current liabilities. Moreover, according to Osisioma (1997), working capital management is the regulation, adjustment and control of the balance of current assets and current liabilities of a firm such that maturing obligations are met, and the fixed assets are properly serviced. Padachi (2006) emphasized that the management of working capital is important to the financial health of business of all sizes. This importance is hinged on many reasons, first, the amounts invested in working capital are often high in proportion to the total assets employed and so it is vital that these amounts are used in an efficient way. Secondly, the management of working capital directly affects the liquidity and the profitability of the corporate firm and consequently corporate net worth (Smith, 1980). Working capital management therefore aims at maintaining a balance between liquidity and profitability while conducting the day-to-day operations of a business concern.

STATEMENT OF RESEARCH PROBLEM

There have been cases of working capital management problem in some Nigerian corporate organizations, according to Oluboyede (2007). Situations exist where some promising investments with high rate of return had turned out to be failures and the companies became distressed because of inadequacy of working capital. Although the effects of working capital management on corporate performance have been a focus of substantial amount of empirical research for many years (Shin and Soenen, 1998; Deloof, 2003; Lazaridis and Tryfonidis, 2006; Filbeck and Krueger, 2005), these studies have concentrated on large firms operating within well developed money and capital markets of developed economies. Findings from these studies have become difficult to generalize for relatively small sized firms in Nigeria.
that operates within rather rudimentary financial markets, where firms mostly rely heavily on owner financing, trade credit and short term bank loans to finance their needed investment in working capital (Chittenden et al., 1998; Saccurato, 1994). Specific research studies exclusively on the impact of working capital management on corporate profitability in developing countries, especially in poor Sub Saharan African (SSA) countries remained altogether an ignored area of empirical research. All these brought to the fore the need to examine the subject matter of this paper, which is to provide empirical evidence on the effect of working capital management on the profitability of Nigerian Manufacturing Firms.

**RESEARCH OBJECTIVE**

This study examined the effect of working capital management on the profitability of Nigerian firms. The objective of this study is to provide empirical evidence on the effect which working capital management has on corporate profitability. Specifically, the study seeks to:

(1). Determine whether or not, there is any relationship between working capital management and profitability;

(2). Determine the nature of such relationship between working capital management and profitability (if any).

**RESEARCH QUESTION**

The research question which this study is set to answer is: What is the nature of the relationship (if any) between efficient working capital management and profitability of Nigerian manufacturing firms?
RESEARCH METHODOLOGY

This study is based on secondary data extracted from the audited financial statements of the selected firms for the study period of 2006-2010 financial years. Six manufacturing firms listed in the Nigerian stock market were selected for this study using the simple random probability sampling technique. The preliminary analysis was done using descriptive statistic while the main data analysis was carried out using correlation co-efficient so as to determine the nature of relationship between measures of working capital management and profitability.

REVIEW OF RELATED LITERATURE

Oye (2003), Beaumont and Begemann (1997) emphasized that the major concepts of the working capital management are profitability and liquidity. They point out that there exists a trade-off between profitability and liquidity. Thus, the relationship between profitability and working capital helps understand the relationship between profitability and liquidity, the dual goals of the working capital management. Although, there seems to be that the scholars who have written on this relationship have not completely synthesized their various hunches into a theory, there is noticeable consistency in the use of few guiding concepts in working capital management literature. Let us consider some of these concepts.

The operating cycle theory looks explicitly at one side of working capital; that of current asset accounts and therefore gives income statement measures of firm’s operating activities, that is, about production, distribution and collection. Receivables, for instance, are directly affected by the credit collection policy of the firm and the frequency of converting these receivables into cash matters in the working capital management. By granting the customers more liberal credit policy, the profitability will be increased but at the same time liquidity
will be sacrificed. The same analysis goes for other components of current asset account. However, the operating cycle theory tends to be deceptive in that it suggests that current liabilities are not important in the course of firm’s operation. Our understanding of payables as the sources of financing the firm’s activities can be assailed as a result. Given this inadequacy of the operating cycle theory, it is essential to infuse current liabilities in the picture to enhance our analysis and understanding.

It is the cash conversion cycle theory that has achieved this for us. The theory integrates both sides of working capital. In their seminal paper, Richards and Laughlin (1980) devised this method of working capital as part of a broader framework of analysis known as the working capital cycle. It claims that the method is superior to other forms of working capital analysis that rely on ratio analysis or a decomposition of working capital as claimed above. The CCC is calculated by subtracting the payables deferral period (360/annual payables turnover) from the sum of the inventory conversion period (360/annual inventory turnover) and the receivables conversion period (360/annual receivables turnover). More recently, the number of days per year that appears in the denominator as 360 has been replaced by 365 to improve accuracy. Since, each of these three components is denominated by some number of days; the CCC is also expressed as a number of days. It has been interpreted as a time interval between the cash outlays that arise during the production of output and the cash inflows that result from the sale of the output and the collection of the accounts receivable.

Van Horne (1977) described working capital management as the administration of current assets in the name of cash, marketable securities, receivables and inventories. Working capital management is important because of its effects on the firm’s profitability and risk and consequently its value (Smith, 1980). Granting trade credit favours the firm’s sales in various ways. Trade credit can act as an effective price cut (Petersen and Rajan, 1997). It is an
incentive for customers to acquire merchandise at times of low demand (Emery, 1984). It allows customers to check that the merchandise they receive is as agreed (quantity and quality) and to ensure that the services contracted are carried out (Smith, 1980).

However, firms that invest heavily in inventory and trade credit can suffer reduced profitability. In addition, larger inventory reduces the risk of a stock-out. Trade credit may stimulate sales because it allows customers to assess product quality before paying (Michael et al., 1993; Deloof and Jegers, 1996). Because suppliers may have significant cost advantages over financial institutions in providing credit to their customers, it can also be an inexpensive source of credit for customers (Petersen and Rajan, 1997). Another component of working capital is accounts payable. Delaying payments to suppliers allows a firm to assess the quality of the products bought and can be an inexpensive and flexible source of financing for the firm.

On the other hand, trade credit is a spontaneous source of financing that reduces the amount required to finance the sums tied up in the inventory and customer accounts. But we should bear in mind that financing from suppliers can have a very high implicit cost if early payment discounts are available. In fact the opportunity cost may exceed 20%, depending on the discount percentage and the discount period granted (Wilner, 2000). Since, money is also locked up in working capital, the greater the investment in current assets, the lower the risk, but also the lower the profitability obtained. In this respect, previous studies have analyzed the high cost of trade credit and found that firms finance themselves with seller credit when they do not have other more economic sources of financing available (Petersen and Rajan, 1997).
Many researchers have studied working capital from different views and in different environments. The following ones were very interesting and useful for our research: (Eljelly, 2004) elucidated that efficient liquidity management involves planning and controlling of current assets and current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets. The relation between profitability and liquidity was examined, as measured by current ratio and cash gap (cash conversion cycle) on a sample of joint stock companies in Saudi Arabia using correlation and regression analysis. The study found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that affects profitability.

Deloof (2003) investigated the relationship between working capital management and corporate profitability for a sample of 1,009 large Belgian non-financial firms for the 1992-1996 periods. The result from analysis showed that there was a negative correlation between profitability that was measured by gross operating income and cash conversion cycle as well as number of day’s accounts receivable and inventories. He suggested that managers can increase corporate profitability by reducing the number of day’s accounts receivable and inventories. Less profitable firms waited longer to pay their bills.

Shin and Soenen (1998) highlighted that efficient working capital management was very important for creating value for the shareholders. The way working capital was managed had a significant impact on both profitability and liquidity. The relationship between the length of net trading cycle, corporate profitability and risk adjusted stock return was examined using correlation and regression analysis, by industry and capital intensity. They found a strong negative relationship between lengths of the firm’s net-trading cycle and its profitability. In addition, shorter net trade cycles were associated with higher risk adjusted stock returns.
Other studies such as Singh and Pandey (2008), Raheman and Nasr, (2007) Lazaridis and Tryfonidis (2006), Smith and Begemann (1997) and Afza and Nazir (2009) showed that there was a negative relationship between variables of working capital management including the average collection period, inventory turnover in days, cash conversion cycle and profitability.

DATA PRESENTATION AND ANALYSIS

Table 1: 5-Year Means and Standard Deviation for the Variables

<table>
<thead>
<tr>
<th>Firms</th>
<th>Operating Income to Total Assets (AP)</th>
<th>Cash Conversion Cycle (CCCS)</th>
<th>Sales Growth (SG)</th>
<th>Debt Ratio (DR)</th>
<th>Current Ratio (CR)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std</td>
<td>Mean</td>
<td>Std</td>
<td>Mean</td>
</tr>
<tr>
<td>A</td>
<td>0.0354</td>
<td>0.0718</td>
<td>3.1723</td>
<td>4.0622</td>
<td>0.1670</td>
</tr>
<tr>
<td>B</td>
<td>0.0750</td>
<td>0.1003</td>
<td>1.0810</td>
<td>1.8611</td>
<td>0.0999</td>
</tr>
<tr>
<td>C</td>
<td>0.0524</td>
<td>0.1077</td>
<td>3.037</td>
<td>2.4948</td>
<td>0.1520</td>
</tr>
<tr>
<td>D</td>
<td>0.0615</td>
<td>0.0680</td>
<td>0.6768</td>
<td>3.4416</td>
<td>0.2091</td>
</tr>
<tr>
<td>E</td>
<td>0.0307</td>
<td>0.0720</td>
<td>4.5501</td>
<td>6.9127</td>
<td>0.1460</td>
</tr>
<tr>
<td>F</td>
<td>0.0779</td>
<td>0.0767</td>
<td>1.2082</td>
<td>2.6265</td>
<td>0.1840</td>
</tr>
<tr>
<td>ALL</td>
<td>0.0612</td>
<td>0.0912</td>
<td>1.5136</td>
<td>3.2603</td>
<td>0.1582</td>
</tr>
</tbody>
</table>

Source: Audited Financial Reports of the Selected Firms for the various years.

Table 1 gives the descriptive statistics for variables used in this study. The average profitability (AP) is the ratio of operating income to total assets, which for the whole sample gives 6.12% with Company F having the highest profit of 7.79% while the lowest is Company E with 3.07%. CCCS represents the cash conversion cycle divide by 100 which on the average give 151 days. Company D has the lowest CCCS with 67 days and 344 days standard deviation, meanwhile, the firm with the highest CCCS is Company E with 455 days.

The average debt for the whole sample is 31%, the highest going to Company A with 39% while the least goes to Company D with 18% debt. The average sales growth rate for the sample is 16%, with Company D having the highest growth rate of 21%, while Company B has the least growth rate of 10%. The average overall current ratio for the sample is 2.1, with Company D having the highest current ratio of 3.5 while the lowest belongs to Company A with 1.7.
The relationship is examined between cash conversion period and firm profitability. Spearman’s Correlation analysis is used to determine the relationship between working capital management and profitability of the selected firms. If efficient working capital management increases profitability, one should expect a negative relationship between the measures of working capital management and profitability variable.

Table 2: Spearman Correlation Coefficients among the Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>AP</th>
<th>CCCS</th>
<th>CR</th>
<th>DR</th>
<th>SG</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP</td>
<td>1.000</td>
<td>-0.2721</td>
<td>0.3003</td>
<td>-0.2879</td>
<td>0.2437</td>
</tr>
<tr>
<td>CCCS</td>
<td>1.0000</td>
<td>0.0566</td>
<td>-0.6544</td>
<td>0.0667</td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>1.0000</td>
<td>-0.6544</td>
<td>0.0667</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>1.0000</td>
<td>-0.0817</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows the result of correlation coefficients among the variables of the study. The result shows a negative relationship between CCCS (cash conversion cycle) and AP (average profitability) with the value of -0.2721. The result indicates that longer cash conversion cycles decreases profitability, while shorter cash conversion cycle increases profitability. This result supports the expectation that shorter cash conversion cycle (CCCS) is associated with higher profitability. Furthermore, the correlation between DR (debt ratio) and AP (average profitability) also indicates a negative relationship with the value of -0.2879. This means the lower the debt ratio a firm has the higher its profitability.

However, there is a positive correlation between AP (average profitability) and CR (current ratio). This indicates that the cash conversion cycle is a better measure of corporate liquidity than the conventional current ratio. Generally, traditional liquidity ratios such as current ratio have been understood to have deficiency in measuring the efficiency of the firm's working capital management. For instance, current ratio incorporates assets that are not readily convertible into cash and ignore the timing of cash conversion. This view is supported by.
Shin and Soenen, (1998). Finally, the result of the correlation between SG (sales growth) and AP (average profitability) indicate a positive relationship. This means that higher sales growth enhances profitability.

CONCLUSION AND RECOMMENDATION

Working capital management is an important part in firms’ financial management decision. The ability of the firm to operate continuously and for a long period depends on how it deals with investment in working capital. The purpose of this study is to investigate the relationship between working capital management and profitability of manufacturing firms in Nigeria. Cash conversion cycle is used as a measure of working capital management while operating income to total assets ratio is used as a measure of profitability. The findings, from the reviewed literature and data analysis indicate that there is a negative relationship between cash conversion cycle (a measure of working capital) and average profitability. Similarly, there is a negative relationship between debt ratio and average profitability.

However, the study revealed that there is positive relationship between average profitability and current ratio. There is also a positive relationship between average profitability and sales growth.

The major recommendation to the management of manufacturing firms is to be concerned with how to reduce cash conversion period so as to enhance profitability and improve shareholders’ value.
REFERENCES


