
Benson O. Apuoyo
Kenyatta University, Nairobi Kenya

Jagongo Ambrose (PhD)
Kenyatta University, Nairobi Kenya


Abstract

Working capital management is of particular importance to listed companies at Nairobi Securities Exchange. With limited access to long – term capital markets, these firms tend to rely more heavily on equity financing, trade credit and short term bank loans to finance their needed investment in cash, accounts receivable and inventory. However the impact of the working capital management policies on a firm’s profitability has varying views among financial managers. The objective of this research study was to establish whether there is any relationship between working capital management policies and profitability of companies quoted at the NSE. The population of interest for the study was all public companies listed at the NSE. These companies were fifty five as at 31st December, 2009. Proportionate random stratified sampling was used. The classification of the companies was based on sector categorization as adopted by the NSE. Secondary data for the research were extracted from the audited financial statements of the companies sampled. For each firm sampled, annual data on the assets, liabilities, total shareholder equity and the profit after tax were collected for a period of five years from 2005 up to 2009. The data collected were analyzed to determine the individual company’s annual working capital policy as measured by the long – term financing of current assets and also the profitability of the company. The annual working capital management policy and profitability were averaged using the simple arithmetic mean to get the five year average for each of the company in the sample. The companies were then grouped into three categories of aggressive, moderate and conservative depending on their working capital management policy .The statistical significance of 95% was used to analyze the differences between the three working management policies using the student ‘t’ statistic. Multiple regression analysis was done to establish the relationship between the working capital management policy and the return on total assets which was used as
a measure of profitability. The results of multiple regression analysis showed that a firm’s profitability as measured by ROTA increases with firm’s size, gross working capital efficiency and with a lesser aggressiveness of the asset management. Thus, contrary to the traditional theory of asset management, where a conservative policy is expected to sacrifice profitability at the expense of liquidity, the research study found out that there is a positive relationship between a conservative working capital management policy and the profitability of the companies quoted at the NSE. The findings of the research also showed that there are significant differences between the working capital management policies across the five sectors.

**Keywords:** Working capital, Working capital management policies, Performance, Profitability and Liquidity.

1.1 Background to the Study

A well designed and implemented working capital management policy is expected to contribute positively to the creation of a firm’s value through profit generation. The trend in working capital needs and profitability of firm could be examined to identify the causes of significant relationships and or differences between working capital policies and a firm’s profitability. For a long period, firms listed at the Nairobi Securities Exchange (NSE) have ignored the impact of working capital policies. Firms experiencing poor returns on their assets have responded either operationally by making changes in top management (Mwangi, 2003) or in an organizational strategy and structure (Weinraub & Visscher, 1998) or financially through debt restructuring and bankruptcy filings (Peel et al, 1990). According to Chimnoy and Rendall (1991) typical responses to poor performance by quoted companies include asset restructuring, employees lay-offs and management replacement. Over the years, capital markets have remained and will continue to be an important segment of the Kenya’s economy. In most developing countries, listed firms play the most fundamental role in facilitating transactions in capital markets. Of the main role of listed companies is providing economic returns to the investors. For a firm to be in a position to do so, it must be profitable and also exhibit a healthy liquidity position (Weston & Copeland, 1988). Lamberson (1992) notes that a firm would make just enough investment in current assets if it were possible to arbitrarily choose the right working capital management policy that would guarantee maximum profitability. He further observes that a large investment in current assets would mean a low rate of return on investment for the firm as excess investment in current assets will not earn enough return to generate profit. A smaller investment in current assets, on the other hand, he observes, would mean interrupted production and sales because of frequent stock-outs and inability to pay creditors in time due to restrictive policy. Nyaga (2007) observes that one of the two most important requirements of liquidity is profitability. Liquidity is the availability of funds to honour a firm’s cash-flow commitment including off-balance sheet items as they fall due (Ross et al, 1988). Another requirement is to make payments to creditors. Therefore, when managing a quoted firm at the Nairobi Securities Exchange (NSE), financial manager should always ensure the firm is able to meet their financial obligations as they fall due. By enabling the quoted firms to meet their financial obligans promptly, Emery (1998) argues that a good measure of profitability instills a sense of confidence to the investors and thus wins their loyalty.
According to Nyaga (2007) working capital management policies are crucial instruments of success factors. He notes that it is only when a firm is profitable that it will see the light of market growth, market share and progress through product and industry life cycles. Ochieng (2007) observes that managing portfolios, firms have two main aims that may conflict; maintenance of stock of liquid asset incase their cash is under pressure and the wish to earn high rate of return on their assets in order to maximize profits. High-risk borrowers and long – term investments tend to earn firms high returns while low- risk and short- term investors may earn firms low returns. However, such high return assets could turn to be illiquid.

Subsequently, in pursuits of profit maximization firms would wish to hold a small portion of assets as possible in liquid form. At the same time, financial prudence would require that listed companies at NSE hold adequate cash and other liquid assets (working capital) to meet their obligations as they fall due. The firms are therefore faced with a conflict of choice between short-term and long- term loans of financing the working capital. Nyakundi (2003) says high rate of return with reference to the choice of working capital financing is associated with low liquidity. Hence, he notes that low profitability expected would be associated with high liquidity. In the event of low or no profitability NSE listed firms’ investors would lose confidence and may engage in a run the firm. This eventually results to failures since inappropriate working capital management policy would further result to; inability to take advantage of favourable discounted loans and other opportunities, lower profitability, delay in collection of interest and principal payments for creditor and damage to customer relationships.

According to Padachi (2006) a company’s ability to remain profitable is a function of their working capital management policies: aggressive policy, moderate policy, conservative policy and also corporate governance structure. Ross et al (2004) argue that the deregulation and globalization of financial markets have made liquidity risk management, credit risk and market risk more diverse and complex because quoted firms have to succumb to the existing market forces that are typical of market kind of an economy. Mureithi (2003) finds evidence that provides strong support for the hypothesis that growth options, size and cash flows of firms exert a positive impact on a firm’s liquidity holding decisions and that firms with other liquid assets tend to hold less cash. However, there is less support for the view that firms use high debt capacity as a substitute for liquidity. Further, he finds that maturity structure of debt does not play a significant role in firm’s liquidity decisions where as source of debt matters. Finally, he suggests that unobserved firms’ heterogeneity and endogeneity problems are crucial in analyzing firms’ profitability and liquidity decisions.

As it is not possible to estimate working capital needs accurately, the firm must decide about levels of current assets to be carried. The current assets holding of the firm will depend upon its working capital policy. It may follow a conservative or an aggressive policy. These policies have different risk-return implications (Belkaoni, 1992). A conservative policy would lead to lower return and risk while an aggressive policy produces higher returns and risk. Started in 1954 as an
overseas stock exchange while Kenya was still a British colony, Nairobi Securities Exchange (NSE) is the principal stock exchange of Kenya. The Nairobi Securities Exchange (NSE) had fifty five listed public companies as at 31st December, 2009. The NSE is a 20 – share index. This means the NSE 20 share index which has been in use since 1964 measures the performance of twenty blue – chip companies with strong fundamentals and which have consistently returned positive financial results. This index primarily focuses on price changes for the twenty companies.

In 2008, the Nairobi Securities Exchange All Share Index (NASI) was introduced as alternative performance. The index incorporates all the traded shares of the day. Its attention is therefore on the overall market capitalization rather than the price movement of select counters. Firms listed at the Nairobi Securities Exchange (NSE) are divided into five main investment segments. These include Agricultural, Commercial and Services, Finance and Investment, Industrial and Allied and the Alternative Market Segment. The two important aims of working capital management are: profitability and solvency. Solvency used in the technical term, refers to the firm’s continuous ability to meet maturing obligations (Krishman, 1969). To have higher profitability, the firm may sacrifice solvency and maintain a relatively low level of current assets. When the firm does so, its profitability will improve as less funds are tied up in idle assets but its solvency would be threatened and would be exposed to greater risk of cash shortage and stock–outs. Although Nyakundi (2003) notes that there is no any significant difference between working capital management policies across the five sectors listed at the Nairobi Securities Exchange, and agrees that there is yet to be documented working capital management policy among the public companies in Kenya. Yet, under an aggressive policy, a firm finances a part of its permanent current assets with short term financing. In fact some extremely aggressive firms even finance a part of their fixed assets with short-term financing (Nyakundi, 1992).

The relatively more use of short-term financing makes the firm risky (Kessen, 2006). It therefore means that there could be some working capital management policies that are popular with the public firms in Kenya. More over short-term finance is frequently repayable on demand by the lender and renewal or “roll over” of short term finance. Gitman (1997) finds that on occasions, short term financing as practiced under the aggressive policy may only be possible at the expense of accepting higher interest rates and tougher borrowing conditions. All these factors increase the variability associated with short-term financing and increase the firms’ risk of experiencing liquidity difficulties. All firms require resources in order to produce goods and services for sales to customers. These resources are the assets of the firm. These assets are further divided into two classes; the current assets and the fixed assets. The current assets are cash and other assets that are expected to convert to cash within one year (Pandey, 1993). Copeland et al (2005) note that current assets are presented on the balance sheet in order of their liquidity - the ease with which they can be converted to cash and the time it takes to convert them. Four of the most important terms found in the current asset section of a balance sheet are cash and cash equivalents, marketable securities, accounts receivables and inventories.
On the other hand fixed assets are the resources of the firm that are not expected to be converted to cash within one year. Examples of fixed assets are plant and machinery, land and buildings, motor vehicles, equipment and furniture and fittings. Therefore, fixed assets do not form part of working capital of a firm. Current assets, often short–term financial management is called working capital management (Ross et al, 2004). The need for working capital to run the day to day business activities is paramount. Indeed, firms differ in their requirements of the working capital. According to Pandey (1993) working capital management is the process of planning and controlling the level and mix of the current assets of the company as well as financing these assets. Specifically, working capital management requires financial managers to decide what quantities of cash, other liquid assets, accounts receivables and inventories the company will hold at any point in time that enhance the profitability of the firm. In addition, financial managers must decide how these current assets are to be financed. The study shall specifically analyze the effects of the following variables on profitability: aggressive policy, moderate policy and conservative policy.

1.1.1 Conservative policy

A conservative policy implies relatively high investment in current assets in relation to sales, the current assets to sales ratio will be comparatively high and asset turnover ratios will be low. In a conservative approach, stock and cash levels will generally be kept high to avoid stock - out and illiquidity costs. There is also likely to be a sizeable investment in short-term bank deposits and other short term liquid investment (Donaldson, 1961). At one extreme, a company may finance its entire current asset requirement with long-term funds including its peak temporary requirements. In operating conservative policy, short-term funding may only be called upon as a fallback or emergency source of funding notes Nyakundi (2003). The investment in current assets is divided into permanent current assets and temporary current assets. The investment in permanent current assets represents the core, or minimum level of investment in current assets required on a continual basis. In addition to permanent current assets, the business may need to invest in temporary assets, to accommodate fluctuations in its business (Brealey & Myers, 1991). Weston and Copeland (1998) however find that at its most extreme, the conservative working capital policy assumes somewhat unrealistically the absence of any spontaneous funding from current liabilities such as trade creditor. Spontaneous funding is the type of funding which occurs virtually automatically when a firm acquires goods and services from its suppliers on credit (Weston and Copeland, 1998). Weston and Copeland (1998) further observe that as the conservative policy relies on long-term financing, this also makes it a more expensive policy to follow than one which follows short-term financing. However, they say it is also the low risk working capital policy as the company is not dependent upon access to short term funds and is not therefore exposed to the volatility of short-term interest rates or to unexpected changes in general economic conditions.
 std

In contrast, long-term financing although generally expensive, is more certain and stable with regards to the term of finance, its costs and its conditions. The firm pays a price for certainty and stability. Long-term sources of finance such as equity and long term loans are more certain and stable and consequently they tend to be more expensive (McMenamin, 1999). Moreover a short-term finance is frequently repayable on demand by the lender and renewal or “roll over” of short-term financing is by no means guaranteed. In fact on some occasions, Gitman (1997) notes that it may only be possible at the expense of accepting higher interest rates and tougher borrowing conditions.

1.1.2 An Aggressive Working Capital Policy

An aggressive capital policy relies on minimum investment in current assets and is highly dependent on access to short-term financing. With an aggressive policy total investment in current assets is kept to a minimum. The current assets to sales ratio will be much higher and the current turnover rates much higher in comparison to a conservative policy. In terms of financing, McMenamin (1999) says that a company following an aggressive working capital policy will use long-term finance to fund its investment in permanent fixed assets and also a substantial part of its permanent current assets. Short term financing will be used to fund temporary current assets needs and also part of the permanent current assets requirements.

Source: McMenamin (1999)
Figure 2: Aggressive working capital policy

Compared with conservative and moderate policies, an aggressive working capital policy will achieve higher returns but will also carry high risk due to its higher dependency on short term finance (McMenamin, 1999).
1.1.3 Moderate Working Capital Policy

A moderate or balanced working capital policy falls midway between the aggressive and conservative working capital policies. With a moderate policy, the level of investment in current assets is neither lean nor excessive. Following a moderate policy, long-term funds are used to finance the investment in fixed asset and permanent components of current assets investments. Temporary or seasonal current assets are financed by short term sources of finance.

Figure 3: Moderate working capital policy
The moderate policy is less risky than the aggressive but more risky than the conservative policy. The company only resorts to short-term financing when seasonal and other temporary demand requires it (Gitman, 1997). Returns under a moderate policy are correspondingly higher than under a conservative but lower than under an aggressive policy. For purpose of this study firms whose long-term funding of working capital is more than forty percent but less than seventy percent will be classified as following moderate working capital management policy.

1.2 Statement of the Problem

A firm is required to maintain a balance between liquidity and profitability while conducting its day to day operations. Liquidity is a precondition to ensure that firms are able to meet its short-term obligations and its continued flow can be guaranteed from a profitable venture. The importance of cash as an indicator of continuing financial health should not be surprising in view of its crucial role within the business. This requires that business must be run both efficiently and profitably. In the process, an asset-liability mismatch may occur which may increase firm’s profitability in the short run but at a risk of its insolvency. On the other hand, too much focus on liquidity will be at the expense of profitability and it is common to find finance textbooks (for example Gitman, 1994 and Bhattacharya, 2001) begin their working capital sections with a discussion of the risk and return tradeoffs inherent in alternative working capital policies. Thus, the manager of a business entity is in a dilemma of achieving desired tradeoff between liquidity and profitability in order to maximize the value of a firm. There have been documented determinants of a firm’s profitability and these include cost of capital, sources of funds, management style, availability of resources and the macro environment (Opondo, 2004). Liquidity is an important determinant of financial distress and financial distress is an indication of lack of profit accruing to a firm notes Weinraub (1985). However, Dunn and Cheatham (1993) observe that being too liquid is costly yet having too little liquidity is also risky, calling for a need for listed firms to have a trade-off between liquidity and profitability. The objectivity of a good working capital management policy is to ensure an optimum level of current assets so that the wealth of the shareholders is maximized. Conventionally, it is evident that if a company desires to take a greater risk of bigger profits and losses, it reduces the size of its working capital. However, this policy is likely to result in a reduction of the sales volume, and therefore of profitability. Hence, a company should strike a balance between liquidity and profitability. Specific research studies exclusively on the impact of working capital management on corporate profitability of the quoted companies are scanty, especially for the case of Kenya. The relationship, if any, between working capital management policies and profitability of firms quoted in developing countries and in particular, Kenya, has not been empirically documented. Keeping this in view and the wider recognition of the potential contribution of the Capital Markets sector to the economy of developing countries, this study is a modest attempt to measure and analyze the trend of working capital investment and diverse working capital needs of listed firms at NSE. This study, therefore, proposes to close the knowledge gap on the impact of working capital management policies on profitability of listed companies and its results are expected to contribute to the existing literature on working capital management policies and profitability.
The objectives of the study were to determine the relationship between various capital management policies and a firm’s profitability and the relationship between the firm’s working capital structure and its performance among the companies quoted at the Nairobi Securities Exchange, Kenya.

1.3 Research design and Methodology

The study used survey research design. This involves collection of data from only a portion of population of interest in order to determine the current status of the population with respect to one or more variables through observation of conditions, events, people or processes or, by questioning people about various issues (Cooper & Emory, 1995). The research survey was appropriate since it offered the researcher dual opportunities of observing and analyzing the historical statistical data of the financial statements of the listed sampled companies. The sample survey employed the use of analytical secondary data. Secondary source of data were readily available in the form of balance sheets and profit and loss accounts as contained in annual financial statements of public companies listed at the Nairobi Securities Exchange, over a period of five years. The analytical survey deployed the use of facts or information that was already available in order to make a critical evaluation of the historical data in the financial statements. The study was based on all public companies listed at the Nairobi Securities Exchange These formed population of interest and they were fifty five as at 31st December, 2009. The sample was drawn from the population listing frame from the records of the Nairobi Securities Exchange. The sample was drawn using stratified sampling method. This ensured all the five main investment segments at the Nairobi Securities Exchange are represented. The sectors represented were Agricultural, Commercial and Services, Finance and Investment, Industrial and Allied and the Alternative Investment Market Segment. The sample size was nineteen companies. Proportionate stratified sampling design was used. The sampling fraction was the same for each of the five stratams that formed the sample size of nineteen elements. This ensured that all the investment segments at the Nairobi Securities Exchange were represented in the sample size in the proportions in which they occurred in the total population. Since the total population was fifty five and the sample size nineteen elements, the uniform sampling fraction for all the sectors was 19/55 or 36%. Thus the proportionate stratified sample size was as calculated in the table below.
Table 1: Sampling Technique

<table>
<thead>
<tr>
<th>Sector</th>
<th>No of elements</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Commercial &amp; Services</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Finance &amp; Investment</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Industrial &amp; Allied</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Alternate Market Segment</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>

Table 1 above gives the descriptive statistics for the main variables used in this study. Return on total assets is on average 5.6% with Finance and Investment sector having the highest return of 11%. The Agriculture sector reported a negative operating profit margin, which could be explained by their high foreign exchange risk exposure and high labour costs.

Two types of financial information were used. These were audited balance sheet and profit and loss accounts showing annual financial statements of the sampled companies. These data were collected for a period of five years. The period of the data collection was from the years 2005 to 2009. The specific data collected covering this five-year period were in the form of annual profits before tax, sales turnover, current assets, current liabilities, fixed assets as well as the financing aspects including the long term debt and equity for each year of financial statement of the sampled firms.

The data were also collected to show the breakdown of the financing of current assets into long-term financing and short-term financing. This is because the nature of the data collected made it possible to compute performance measures that were used in statistical analysis. Data for efficiency ratios, namely accounts receivable, inventory, and accounts payable were also collected for analysis.

1.4 Data Analysis

The data were analyzed with the aim of determining the impact of working capital policy on profitability among publicly listed companies in Kenya. This was achieved by developing a similar empirical framework first used by Shin and Soenen (1998) and the subsequent work of Deloof (2003). The study was extended further by analyzing the trends in working capital needs...
of the listed firms and to examine the possible causes for any significant differences between the five sectors. First, the cumulative capital requirement for each of the firms in the sample was computed as the total current assets and total fixed assets. The working capital management policy for each of the firms in the sample was determined by computing the portion of current assets that was financed using long-term funds. The computations were done for the explanatory variables using formulae for financial ratios shown in the appendix 1.

A simple arithmetic mean was used to come up with each firm’s working capital management policy for the five year period. The companies in the sample were then grouped according to the type of working capital management policy based on the percentage of financing of current assets broken into three categories as shown below.

i. **Conservative working capital management policy**: All companies whose average long-term financing of current assets was at least 70%

ii. **Moderate working capital management policy**: All companies listed at the Nairobi Securities Exchange whose long-term financing of current was more than 40% but less than 70%.

iii. **Aggressive working capital management policy**: All companies listed at the Nairobi Securities Exchange whose average long-term financing of current assets was 40% and below.

1.4.1 Computation of profitability measure

The next classification of the companies was based on profitability and the various working capital management policies. The average working capital policy and return on total asset for each company was computed. Return on Total Asset (ROTA) which is defined as profit before interest and tax divided by total assets was the preferred measure of profitability in this study. Most of these firms characterized by low fixed assets base rely to a large extent on accounts payable to fund their gross working capital. Thus, a comprehensive measure of profitability was best captured by computing the return on assets. In order to account for firm’s size and other variables that may influence profits, the gearing ratio (financial debt/ total asset), the gross working capital turnover ratio (sales/current assets) and the ratio of current assets to total assets were included as control variables in regressions. The regressions also included the ratio of current liabilities to total assets to measure the degree of aggressive financing policy, with a high ratio being relatively more aggressive.

1.4.2 Test of significance

To test for statistical significance the student ‘t’ statistic was used. The test of significant was done at the individual company level and then compared for all the companies in the sample. The research study used 95 percent significance level. The 95% confidence level was used since it is the generally accepted conventional level in social sciences research. A multiple regression
analysis was then applied to find out if there was a relationship between the long-term financing of current assets and the return on total assets for the firms in the sample. Multiple regression analysis is a suitable model in this study because it predicts values for a criterion variable (DV) from the values for several predictor variables (IV). A descriptive application as in this study calls for controlling of confounding variables to better evaluate the contribution of other variables hence the suitability of the choice of multiple regression analysis. The strength of the relationship was measured using the generated $r^2$.

The variables

The efficiency ratios, namely accounts receivable, inventory and accounts payable have been computed using formulas as listed in Appendix 1. The cash conversion cycle (CCC) is used as a comprehensive measure of working capital as it allows the time lag between expenditure for the purchases of raw materials and the collection of sales of finished goods. The longer the cycle, the large the funds blocked in working capital. The return on assets is a better measure since it relates profitability to the business to the asset base. In order to account for firm’s size and the other variables that may influence profitability, sales a proxy for size (the natural logarithm of sales) and, the gearing ratio (financial debt/total assets), the gross working capital turnover ratio (sales /current assets) and the ratio of current assets to total assets are included as control variables in the regressions. The regressions also include the ratio of current liabilities to the total assets to measure the degree of aggressive financing policy with a high ratio being relatively more aggressive.

The majority of the sectors have relied mostly on short term financing with Industrial and Allied sector more aggressive, with an average of 82%. On average firms collect their receivables after 65 days while they take on average 116 days to pay supplies. The average cash conversion cycle (CCC) is 105 days, implying that typical to the firms listed at the NSE turnover their stocks on an average of 3.3 times a year. This shows the influence of Commercial and Services, Financial and Investment, and Industrial and Allied sectors holding inventories for more than 150 days, with a maximum value of 1688 days.
Mean sales value for the sample companies is Kshs. 10 billion, with only Finance and Investment and Industrial and Allied sectors having values twice the amount. On average about 22% of all assets are financed with financial debt. It is also noteworthy that the average firm in the sample has a gross working capital turnover ratio of 3.1, thus indicating a lower operational efficiency.

The major components of gross working capital include stocks, debtors, cash and bank balances. The composition of working capital depends on a multiple of factors such as operating level, level of operational efficiency, inventory policies book debt policies, technology used and nature of the sector. While inter sector variation is expected to be high, the degree of variation is expected to be low for firms within the sector.

A comparison of inventory composition of sectors over the years shows only slight improvement for the Alternative Investment Market Segment (AIMS) and the Agriculture sectors. It is interesting to note the consistent improvement in trade debtors share of current assets in all the sectors and except for the Agriculture; it represents more than 30% of total assets. Thus it can be deduced that the listed companies have monitored the accounts receivable reasonably well and this could be partly due to their need for generating funds from the operating activities instead of relying from outside funds (borrowed funds).

Except for the AIMS, the other four sectors have great reliance on short term funds and this is even more in 2008. The Industrial and Allied sector is financing 85% of its assets out of current liabilities and this over reliance may be a threat to the sector’s survival. In terms of liquidity, all the four sectors, Agriculture, Commercial and Services, Finance and Investment and Industrial and Allied sectors are having less liquid assets to meet their current obligations and if this becomes permanent, it may affect supplies of materials and thus production. The proportion of liquid assets to total assets is 70% for the Industrial and Allied and AIMS sectors indicating a low fixed asset base. This implies that these two sectors can operate with a relatively low investment in fixed assets as compared to the other sectors like Commercial and Service and Finance and Investment where the production tends to be heavily automated.

**Empirical Analysis**

The analyses were to determine the relationship between various capital management policies and a firm’s profitability and to find the relationship between the firm’s working capital structure and its performance among the companies quoted at the Nairobi Securities Exchange, Kenya.

Table 2 below presents Pearson correlation coefficients for the variables used to assess the impact of working capital management on profitability measured by return on total assets. ROTA is significantly positively correlated with Operating Profits Margin (OPM) and capital – turnover ratio, but negatively correlated with the measures of WCM, except for the cash conversion cycle. The positive relation for CCC is consistent with the view that resources are blocked at the different stage of the supply chain, thus prolonging the operating cycle. This might increase profits due to increased sales, especially where the costs of tied up capital is lower than the benefits of holding more inventories and granting more trade credit to customers. Also the listed
companies at NSE may be able to obtain trade credit from suppliers and this is supported by the higher proportion of current liabilities to total assets for all the sectors except the Agriculture. The main empirical analysis in this study is derived from appropriate multivariate models, estimated using fixed effects and pooled OLS.

Table 2: Pearson Correlation Coefficients
Nineteen listed companies at the NSE, 2005-2009: Five-year observations

<table>
<thead>
<tr>
<th>OPM</th>
<th>A TURN</th>
<th>GEAR</th>
<th>CA/TA</th>
<th>SK/CA</th>
<th>TD/CA</th>
<th>CL/TA</th>
<th>INV days</th>
<th>AR days</th>
<th>AP days</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.751</td>
<td>-0.29</td>
<td>0.054</td>
<td>0.124</td>
<td>0.054</td>
<td>-0.056</td>
<td>-0.119</td>
<td>-0.104</td>
<td>-0.192</td>
<td>0.035</td>
</tr>
<tr>
<td>0.143</td>
<td>-0.307</td>
<td>0.053</td>
<td>0.052</td>
<td>0.108</td>
<td>-0.12</td>
<td>-0.023</td>
<td>-0.382</td>
<td>-0.382</td>
<td>0.039</td>
</tr>
<tr>
<td>-0.182</td>
<td>0.09</td>
<td>0.138</td>
<td>0.024</td>
<td>0.218</td>
<td>-0.444</td>
<td>-0.192</td>
<td>-0.238</td>
<td>-0.239</td>
<td>0.146</td>
</tr>
<tr>
<td>-0.153</td>
<td>0.293</td>
<td>0.014</td>
<td>-0.092</td>
<td>0.172</td>
<td>-0.065</td>
<td>-0.079</td>
<td>0.176</td>
<td>-0.0319</td>
<td></td>
</tr>
<tr>
<td>0.166</td>
<td>-0.038</td>
<td>0.199</td>
<td>0.243</td>
<td>0.032</td>
<td>0.029</td>
<td>0.187</td>
<td>0.045</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.143</td>
<td>0.003</td>
<td>0.579</td>
<td>-0.244</td>
<td>-0.149</td>
<td>0.449</td>
<td>-0.168</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.133</td>
<td>-0.135</td>
<td>0.024</td>
<td>-0.006</td>
<td>-0.084</td>
<td>0.008</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.052</td>
<td>0.071</td>
<td>0.252</td>
<td>-0.26</td>
<td>0.0634</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.0502</td>
<td>0.049</td>
<td>0.712</td>
<td>-0.173</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.754</td>
<td>-0.126</td>
<td>-0.196</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.485</td>
<td>-0.262</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: (study research)

Notes: The variables definition are given in appendix iii

Table 3 below gives the results of the fixed effects estimations (regressions 1 to 4) and for the pooled OLS (regressions 5 to 8). In all regressions, standard errors are calculated using White’s correction for heteroscedasticity. The OLS regressions were calculated for sector and year statistics.
Table 3: Regression of Profitability on Working capital variables of the listed 19 companies at the NSE, 2005-2009 for five-year observations

<table>
<thead>
<tr>
<th>Dependent variable regression model</th>
<th>Fixed Assets</th>
<th>Return on Total Assets</th>
<th>Pooled OLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Ln− Sales</td>
<td>0.1562</td>
<td>0.1084</td>
<td>0.0926</td>
</tr>
<tr>
<td>Gearing</td>
<td>-0.01979</td>
<td>-0.2065</td>
<td>-0.1951</td>
</tr>
<tr>
<td>CA/TA</td>
<td>0.2656</td>
<td>-0.2574</td>
<td>0.2234</td>
</tr>
<tr>
<td>CL/TA</td>
<td>-0.0133</td>
<td>-0.0828</td>
<td>-0.0596</td>
</tr>
<tr>
<td>CA_TURN</td>
<td>0.0165</td>
<td>0.0131</td>
<td>0.0131</td>
</tr>
<tr>
<td>INV_DAYS</td>
<td>0.0002</td>
<td>-0.0004</td>
<td>-0.0002</td>
</tr>
<tr>
<td>AR_DAYS</td>
<td>0.36</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td>AP_DAYS</td>
<td>0.38</td>
<td>0.13</td>
<td>0.14</td>
</tr>
<tr>
<td>CCC Adjusted R²</td>
<td></td>
<td>0.00008</td>
<td>0.00011</td>
</tr>
</tbody>
</table>

Notes: P-values (robust for heteroscedasticity) in parentheses. OLS-regression includes 5 sector dummies and 5 year dummies (results not reported). Variables are defined as in Appendix iii

A classical test for panel data is of the Fixed Effects Model (FEM) versus Random Effect Model (REM). In REM, it is assumed that there is a single common intercept term, but that the intercepts for individual firms vary from this common intercept in a random manner. To determine which of these estimators are more appropriate to use, both fixed effects and random effects estimators were used to estimate the coefficient models in 1 to 4. The Hausman test, which is a test for the null hypothesis of no correlation, rejects this null hypothesis and so the decision is taken to employ a fixed effects framework. The first half of table 4 represents the results of regression 1 to 4; apply for fixed effects methodology, where intercept term is allowed to vary across firms. It is immediately obvious from the adjusted R-squared values that the use of a firm specific intercept improves the explanatory power of these models. In regression 5, the adjusted R-squared explains...
14% of the variation in profitability under OLS but within a fixed effects framework the model’s explanatory power increases to 36%.

While the coefficient of inventories variable is positive in regression 1, it has the expected sign in the OLS regression 5, but the coefficient is not significantly different from zero. The coefficients of the other variables included in the model are significant, except for financial debt and working capital financing. The firms’ profitability as measures by ROTA increased with the firms’ size, gross working capital efficiency and with a lesser aggressiveness of asset management. This is contrary to the traditional theory of asset management, where a conservative policy is expected to sacrifice profitability at the expense of liquidity. This could be explained by the fact that firms listed at the NSE tend to have a lower fixed assets base and thus rely mostly on the turnover of current assets to generate more profits. This was observed consistently in the regression results, with a p-values ranging from 0.02 to 0.05. As revealed by the study of Deloof (2003), the capital structure has a negative impact on profitability; except for the findings of this study the coefficient of financial debt is insignificant for the FEM, but is significant for the pooled regressions at 1.0 level. The aggressive financing policies observed for the sample listed firms at the NSE, which is expected to contribute positively to profitability have revealed otherwise. But however, the results are not significantly different from zero (P-values ranges from 0.133 to 0.497). This is a commonly observed feature of the listed companies at the NSE and this has the tendency of increasing the risk of a short-term liquidity problem.

In regression 2, a highly significant relation is found between ROTA and number of days account receivable (P-value = 0.032), which implies that an increase in the number of days accounts receivable by 1 day is associated with a decrease in profitability by 0.04%. The coefficient for accounts payable days is negative and confirms the negative correlation between profitability and the number of day’s accounts payable. Unlike the previous work of Deloof (2003), the result is not significant for FEM, but is significant at 0.1 level for the pooled OLS. This would imply that less profitable firms listed at the NSE take longer to settle payment to creditors. So when the profitability falls, less cash is generated from operations and firms are able to survive by postponing payment to suppliers. Trade credit received from other firms in particular supplier of goods represent a major source of working capital financing. Therefore, when the prospects of profitability are poor, the listed firms at the NSE are able to seek an extension on the credit period from the suppliers. This is usually acceptable by the supplier as an element of trust is built based on the repeated orders placed by the firms.

In regression 5 to 8 the determinants of ROTA are estimated using pooled OLS instead of the FEM and include 5 years dummies and 5 sector dummies as independent variables. OLS estimation ignores firm specific differences in profitability. The results confirm the relationship between profitability and the working capital measurement. Except for inventory days, the coefficient of accounts receivable, accounts payable and CCC are significant. One significant difference between the FEM and the OLS estimation is that in regression (8) profitability...
decreases with the cash conversion cycle, which would imply that financial managers can increase profits by shortening their working capital cycle.

1.6 Conclusion and recommendation

The different analyses have identified critical working capital management policies and practices of the listed firms at the NSE and are expected to assist financial managers in identifying areas where they might improve the financial performance of their operations. The results provide the managers with information regarding the basic working capital practices used at the NSE. The working capital needs of a firm change over times as does its internal cash generation rate. As such, the listed firms at the NSE should ensure a good synchronization of its assets and liabilities.

This study has shown that the Financial and Investment sector has been able to achieve high scores on the various components of working capital and this has positively impacted on its profitability. On this premise, this sector may be referred as the ‘icon’ and could thus be used as best practice among firms listed at the NSE. Thus, contrary to the traditional theory of asset management, where a conservative policy is expected to sacrifice profitability at the expense of liquidity, the research study found out that there is a positive relationship between a conservative working capital management policy and the profitability of the companies quoted at the NSE. The findings of the research also showed that there are significant differences between the working capital management policies across the five sectors.

This study has been constrained by the use of only observing published financial statements that could have been inadequate, as interactive interviews with the chief executive officers could have probably affected the results.

Appendix 1: Five Year Means and Standard Deviations for the Variables

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>SECTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=348)</td>
</tr>
<tr>
<td>ROTA</td>
<td>0.0563</td>
</tr>
</tbody>
</table>
Appendix 11: Components of Current Assets and Liquidity Ratios

<table>
<thead>
<tr>
<th>Industry</th>
<th>CR</th>
<th>QAR</th>
<th>SK/CA</th>
<th>TD/CA</th>
<th>CA/TA</th>
<th>CL/TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB</td>
<td>1.24</td>
<td>1.07</td>
<td>0.56</td>
<td>0.70</td>
<td>0.59</td>
<td>0.50</td>
</tr>
<tr>
<td>LG</td>
<td>1.08</td>
<td>1.38</td>
<td>0.51</td>
<td>0.55</td>
<td>0.51</td>
<td>0.58</td>
</tr>
<tr>
<td>PMP</td>
<td>0.97</td>
<td>1.80</td>
<td>0.59</td>
<td>0.85</td>
<td>0.45</td>
<td>0.59</td>
</tr>
<tr>
<td>PP</td>
<td>2.24</td>
<td>2.13</td>
<td>1.05</td>
<td>1.56</td>
<td>0.39</td>
<td>0.36</td>
</tr>
<tr>
<td>WF</td>
<td>1.74</td>
<td>1.52</td>
<td>1.03</td>
<td>0.97</td>
<td>0.46</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Appendix111: Independent (explanatory) variable – Financial Ratios

<table>
<thead>
<tr>
<th>VARIABLE NAME</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROTA</td>
<td>Return on total assets is PBIT/Total Assets</td>
</tr>
<tr>
<td>A_TURN</td>
<td>Assets turn is Sales/Total Assets</td>
</tr>
</tbody>
</table>

http://www.ijsse.org
GEAR  Gearing is Total Debt/Total Assets
CR  Current Ratio is Current Assets/Current Liabilities
QAR  Quick Asset Ratio is (Current Asset- Stock)/Current Liabilities
CA/TA  Current Assets to Total Assets
CL/TA  Current Liabilities to Total Assets
OPM  Operating profit margin is PBIT/ Sales
SK/CA  Stocks to Current Assets
TD/CA  Trade Debtors to Current Assets
INV_ DAYS  Number of Inventory days is (Stocks*365)/ Cost of Sales
AR_DAYS  No of days Accounts Receivable is (Accounts Receivable * 365) / Sales
AP_DAYS  No of days Accounts Payable is (Accounts Payable * 365) Cost of Sales
CCC  Cash Conversion Cycle is (INV_ days + AR_ days – AP_ days)
CA_TURN  Current Assets Turnover is Sales/ Current Assets
LN_ Sales  LN_ Sales is the natural logarithm of sales

REFERENCES


