The Impact of Working Capital Management on the Profitability of Smart Bags Limited Manufacturing Firm in Zimbabwe

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Authors' contributions

This work was carried out in collaboration between all authors. Author FG carried out the study, and wrote the first draft of the manuscript. Author LN supervised the study, conducted all the revisions and carried out all the review processes as required by the numerous journal's reviewers. Author NJ provided guidance and necessary expertise. From time to time, author NJ conducted a proof reading of the entire work. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Since the adoption of the multiple currencies, the Zimbabwean economy has been on a growth path, however liquidity challenges have been stifling further growth prompting most businesses to reposition themselves. With the liquidity situation worsening, it has become important for businesses to understand how working capital management, as a key business driver, is impacting performance of their businesses. This research project seeks to critically examine the impact of working capital management on the profitability of manufacturing firms in the multi currency environment in Zimbabwe using the case of Smart Bags (Pvt) Ltd. The paper makes an attempt to study the relationship between measures of working capital management efficiency and profitability.

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The study is based on secondary data collected from [1,2]. The study was conducted using descriptive statistics and correlation analysis specifically Pearson's correlation coefficient to measure the pair-wise association between dependent and independent variables. The study outlined the significant and non significant of the relationship between the dependent variable (profitability) and the independent ones. It was found that there is a weak negative correlation between Average Collection Period and profitability as well as between the Cash Conversion Cycle and profitability. It was also revealed that there is a weak positive relationship between Average Payment Period and profitability. According to the findings it was revealed that there is a strong positive relationship between Inventory Turnover Ratio and profitability as well as between a company's liquidity and profitability. The study also revealed that there is a strong negative relationship between the debt ratio and profitability and also between a company's aggressiveness of working capital financing policy and its profitability.

1. INTRODUCTION

Over the last two decades the Zimbabwean economy has gone through a lot of changes. There was an economic boom which was experienced in the early to late 90s which was then followed by an unprecedented economic meltdown at the turn of the century up to early 2009 when the local Zimbabwe Dollar became dysfunctional due to hyperinflation. In a bid to stabilise the economy, the government adopted a basket of foreign currencies in February 2009. Since the adoption of multi foreign currencies in Zimbabwe in 2009 the economy has been on a steady recovery path, registering growth rates of 7.2 % in 2009, 8.4% in 2010 and 9.2% in 2011 [3]. Whilst the adoption of multiple currencies brought in stability in the economy, it also brought in serious liquidity challenges as the monetary authorities are no longer able to influence money supply. The serious liquidity challenges have been stifling further growth resulting in a slowdown in economic growth and the forecast for 2012 being downgraded from 9.8% to 5.4% with the manufacturing sector being the hardest hit. Over the same period manufacturing firms have experienced improvements in capacity utilization from as low as 12% in 2009 to 57% by the end of 2011 but this has stagnated at the same levels up to mid 2012 [3].

With the liquidity situation worsening and the economy further decelerating it has become important for Smart Bags to understand how working capital management is impacting its performance. This research therefore attempts to critically examine the impact of working capital management on profitability of manufacturing firms in Zimbabwe since the adoption of multiple currencies using the case of Smart Bags (Pvt) Ltd. Smart Bags was chosen because it is one of the researcher's place of employment, hence data collection would be done without difficulties.

2. OBJECTIVES OF THE STUDY

- To assess and evaluate the efficiency of the working capital management strategies that Smart Bags was employing.
- To establish the relationship between working capital management and business profitability for Smart Bags during the period of 2009 to 2012.

3. LITERATURE REVIEW

3.1 Working Capital

Working Capital is the total of the amounts invested in current assets of the company. Net working capital results from the deduction of current liabilities from current assets [4]. Traditionally, working capital has been defined as the firm's investment in current assets. Working capital represents the total of all current assets. It is also known as circulating capital or current capital, for current assets are rotating in their nature. Where current liabilities and provisions exceed assets, the difference is referred to as negative working capital. [5] define working capital as another part of the capital which is needed for meeting day to day requirements of the business concern like payment of creditors, salaries paid to workers, purchase of raw materials. [6] defines working capital as the arithmetic difference between two balance-sheet-aggregated accounts: current assets and current

liabilities. Working capital can also refer to the cash a company requires in order to finance its day-to-day business operations, or the amount of capital which is readily available to an organization [7] as highlighted by Fig. 1.

3.1.1 Types of working capital

Working capital may be classified into three types on the basis of time and these are permanent working capital, temporary working capital and semi variable working capital [5]

3.1.1.1 Permanent working capital

[8] define permanent working capital as the minimum investment in all current assets which is regarded at all times to carry minimum level of business activities. The operating cycle is a continuous process and therefore, the need for current assets, but the magnitude of the current assets increase and decrease over time.
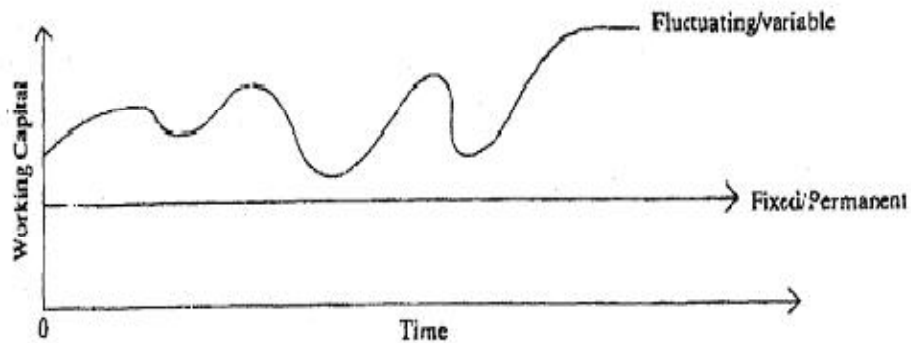
3.1.1.2 Temporary working capital

This is also called the fluctuating or variable working capital. The amount of temporary working capital keeps on changing depending upon the changes in production and sales. The extra working capital required to support the changing production and sales activities is known as temporary working capital [8]. The diagram below depicts how temporary working capital varies with sales over a period of time as shown by Fig. 2.

3.1.2 The Need for Working Capital

Working capital is needed mainly because the production takes place first and then comes the sales. The objective of financial management is to maximise the shareholders' wealth. There is invariably a time lag between sales of goods and receipt of cash. There is, therefore, a need for working capital in the form of current assets to deal with the problem arising out of the lack of immediate realisation of cash against goods sold. Thus, sufficient working capital is necessary to sustain sales activities. Technically this is referred to as the operating cycle or cash cycle [9].

Fig. 1. Variation of permanent working capital with sales
Sources: Adapted from [5]
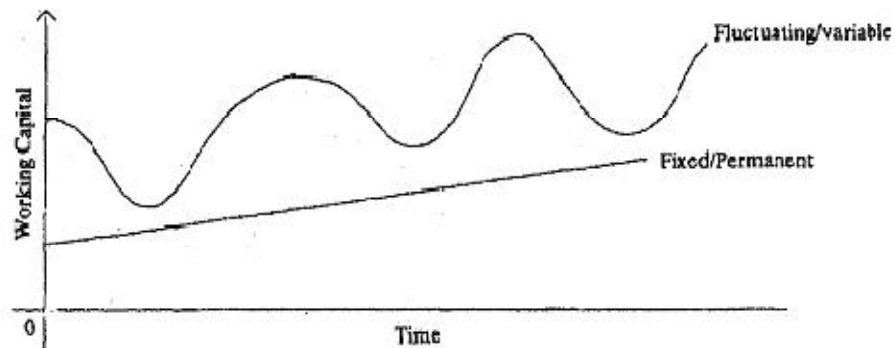
Fig. 2. Variation of temporary working capital with sales
Source: Adapted from [5]

3.2 Empirical Studies

[10] studied the relationship between working capital management and corporate profitability for listed companies on Tehran Stock Exchange using a sample of 101 firms during the period of 2004-2008. Results confirm an inverse yet significant relationship between the cash conversion cycle, debt settlement period and the period of collection of receivables with profitability. Even though a significant relationship between the average period of inventory retention and profitability was not confirmed, yet the confirmation of the three independent subsidiary hypotheses leads to confirming the relationship between working capital management and company profitability.

[11] made an attempt to investigate the traditional relationship between working capital management policies and a firm's profitability for a sample of 204 non-financial firms listed on Karachi Stock Exchange (KSE) in Pakistan for the period 1998-2005. The study found significant differences among their working capital requirements and financing policies across different industries. Moreover, regression results found a negative relationship between the profitability of firms and degree of aggressiveness of working capital investment and financing policies.

In their study, [12] established the relationship between working capital management and profitability for a sample of 88 American firms listed on New York Stock Exchange for a period of 3 years from 2005 to 2007 found that statistically there is a significant relationship between the cash conversion cycle and profitability, measured through gross operating profit. The findings indicate that slow collection of accounts receivables is correlated with low profitability. Managers can improve profitability by reducing the credit period granted to their customers.

[13] used a sample of 1,009 large Belgian non-financial firms for a period of 1992-1996. By using correlation and regression tests, he found significant negative relationship between gross operating income and the number of days accounts receivable, inventories, and accounts payable of Belgian firms. Based on the study results, he suggests that managers can increase corporate profitability by reducing the number of day's accounts receivable and inventories.

[14] made a number of observations. They observed that the level of investment in total current assets has a negative correlation with the profitability with a coefficient of -0.81. It concludes the theory that the excess of investment in working capital has adverse effect on profitability. Also levels of inventory have a strong negative correlation with profitability as evident from the observation with a correlation coefficient of -0.83. It concludes that excess of investment in inventory results in low profitability. Investment in advances also has a negative correlation with profitability with a coefficient of -0.64. One of the reasons could be that the advances might be fetching lesser returns than the cost of funds. Current Ratio has a strong negative correlation with profitability with a coefficient of -0.68. It means that current ratio has adverse impact on profitability.

[15], using panel data analysis for a sample of 131 corporations listed in Athens Stock Exchange investigated the traditional relationship between firm profitability and working capital management. The results revealed a significant relationship between firms' profitability and the cash conversion cycle. They also suggest that keeping the cash conversion cycle at the optimal level positively affect the shareholders wealth.

4. RESEARCH METHODOLOGY

4.1 Research Design

In this study a case study approach is used. A case study is defined as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context" [16]. Thus, the case study strategy is most often employed in explanatory and exploratory research [17]. The researchers use both qualitative and quantitative data. Questionnaires are used to obtain quantitative data which is subjected to descriptive statistics and the Pearson's correlation coefficient to analyze the obtained data.

4.2 Definition of Research Variables

This study identified a total of eight (8) variables which include one dependent and seven independent variables based on the previous studies on similar topics by [13,18,19] and these are discussed as follows:

Gross Operating Profitability (GOP) is a measure of profitability of a firm and is used as dependent variable. It is measured by the Gross

Profit Margin (GPM) and Return on Capital Employed calculated as;
Gross Profit Margin = (Sales-Cost of Goods Sold)/ Sales x 100

Return on Assets = Net Profit/ Total Assets x 100

A number of previous studies have measured Gross Operating Profitability as sales minus cost of goods sold, and divided by total assets minus financial assets. When the financial assets are a main part of total assets, the operating activities will contribute little to overall return on assets. However in the case of Smart Bags, it has no financial assets hence Gross Profit Margin and Return on Assets are excellent measures of operating profitability.

Average Collection Period (ACP) is used as a proxy for the collection policy and is an independent variable. It is calculated as (Average Accounts Receivable x 365)/ Credit Sales.

Average Payment Period (APP) is used as a proxy for the payment policy and is an independent variable. It is calculated as (Average Accounts Payable x 365)/ Credit Purchases.

Inventory Turnover Ratio in Days (ITR) is used as a proxy for the inventory policy and is an independent variable. It is calculated as (Average Inventories x 365)/ Cost of Goods Sold.

The Cash Conversion Cycle (CCC) is used as a comprehensive measure of working capital management and is an independent variable. It is calculated as (Average Collection Period + Inventory Turnover Ratio – Average Payment Period).

Current Ratio (CR) is used as a traditional measure of a firm's liquidity and as an independent variable and is calculated as (Current Assets/Current Liabilities).

Debt ratio (DR) is also used as a proxy for leverage and used as an independent variable and is computed as (Total debt/ total Assets).

Aggressiveness of Financing Policy (AFP) is used as a measure of the firm's financing policy and an independent variable. It is calculated as (Total Current Liabilities/Total Assets)

Using the variables specified above a general model to explain the relationship between independent variables and the dependent variables is specified as follows;

$$GPM_t \Big/ ROA_t = \beta + \sum_{i=1}^{4} \beta_i X_{it} + \varepsilon$$

Where:

GPM_t = Gross Profit Margin
$ROA\ t$ = Return on Assets at time t;
β = The intercept of equation
βi = Coefficient of X t variables
$X i$ = The different independent variables for working capital management at time t.
t = Time from 1, 2,…, 4 years and
ε = Error term

Finally, the above general least squares model is converted into specified variables as follows:

GPM t / ROA $t = \beta 0 + \beta 1$ (ACP t) + β_2 (APP t) + $\beta 3$ (ITR t) + β_4 (CCC t) + β5 (CR t) + β6 (DR t) + β7 (AFP t) + ε

5. DATA PRESENTATION

Data collected from the balance sheets and the income statements for the year 2008 to 2012 is summarised in the table below. Table 1 presents the summarised income statements [1]. Table 2 presents the summarised balance sheets for Smart Bags from 2009 up to 2012. Components of working capital are summarised in Table 3 and Table 4 presents the average values of the components of working capital.

Where:

EBITDA = Earnings Before Tax Interest Depreciation and Amortisation
PBT = Profit Before Tax
PAT = Profit After Tax

Table 1 below presents summarised statements of comprehensive income for Smart Bags from 2009 to 2012.

Where:

CL = Current Liabilities
LTL = Long Term Liabilities
GWC = Gross Working Capital
NWC = Net Working Capital

Table 2 above presents a summary of the statements of financial position for Smart Bags for the period 2009 to 2012. This information has been obtained from the Smart Bags financial statements.

Table 1. Statements of comprehensive income in US$ (2009 – 2012)

	2009	2010	2011	2012
Turnover	1,094,891.39	1,206,072.32	1,135,218.40	789,243.61
Cost of Sales	738,203.55	990,212.86	1,042,572.43	912,921.87
Gross Profit	356,678.84	215,859.46	92,665.21	(123,678.27)
Operating Profit	(54,707.86)	(178,591.02)	(279,992.59)	(515,840.02)
EBITDA	(54,707.86)	(178,591.02)	(279,992.59)	(515,840.02)
PBT	(127,377.05)	(272,847.94)	(403,405.64)	(624.251.95)
Tax	896.33	-	-	-
PAT	(128,273.38)	(272,847.94)	(403,405.64)	(624.251.95)

Source: Smart Bags Financial Statements 2009 – 2012

Table 2. Statements of Financial Position in US$ (2009 – 2012)

	2009	2010	2011	2012
Fixed Assets	269,574.06	197,401.92	131,853.99	83,270.41
Current Assets	177,091.08	92,983.30	158,382.52	65,137.91
Total Assets	445,665.15	290,385.23	290,239.52	148,408.32
CL	356,961.03	620,449.71	995,438.89	1,467,770.44
LTL	-	-	-	-
GWC	177,091.08	92,983.30	158,382.52	65,137.91
NWC	(179,869.95)	(527,466.41)	(837,056.37)	(1,402.632.53)
Total Equity	88,704.12	(330,064.47)	(944,509.94)	(1,558.672.69)

Source: Smart Bags Financial Statements (2009 -2012)

5.1 Methods of Data Analysis

5.1.1 Statistical Analysis

The study used linear correlation analysis, specifically Pearson's correlation coefficient to measure the pair wise association between dependent and independent variables under consideration using statistical calculations as done by [14,18]. The general regression model developed previously is reduced to the simple regression model given as;

$$Y = \beta + \beta_0 X$$

The relationship between X and Y is tested using the following least squares regression equation given below.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Where,

r = Pearson's coefficient
X = The independent variable
Y = the dependent variable
N = number of observed years

The dependent variables are Gross Profit Margin and Return on Assets and the independent variables are the Average Collection Period, Average Payment Period, Inventory Turnover Ratio in Days, Cash Conversion Cycle, the Current Ratio, Debt Ratio and the Aggressiveness of Financing Policy. Here the computation for the relationship between Average Collection Period and Gross Profit Margin and Return on Assets are presented.

Table 3. Relationship between ACP (x) and Gross Profit Margin (y)

Year	X	Y	Xy	x^2	y^2
2009	22	32.6	717.2	484	1062.76
2010	18	17.9	322.2	324	320.41
2011	28	8.2	229.6	784	67.24
2012	24	-15.7	-376.8	576	246.49
N = 4	$\sum x = 92$	$\sum y = 43$	$\sum xy = 892.2$	$\sum x^2 = 2168$	$\sum y^2 = 1696.9$

Source: Calculations in Appendix III

Therefore Pearson's Correlation Coefficient between Average Collection Period and Gross Profit Margin is given as;

$$r = \frac{4(892.20) - (92)(43)}{\sqrt{[4(2168) - (92)^2] [4(1696.9) - (43)^2]}}$$

$$= -0.382$$

Table 4. Relationship between ACP (x) and Return on Assets (y)

Year	X	Y	Xy	x^2	y^2
2009	22	32.6	717.2	484	1062.76
2010	18	17.9	322.2	324	320.41
2011	28	8.2	229.6	784	67.24
2012	24	-15.7	-376.8	576	246.49
N = 4	∑x = 92	∑y = -681.8	∑xy = -16297.6	∑x^2 = 2168	∑y^2 = 205386.44

Source: Calculations in Appendix III

Therefore Pearson's Correlation Coefficient between Average Collection Period and Gross Profit Margin is given as;

$$r = \frac{4(-16297.7) - (92)(-681.8)}{\sqrt{[4(2168) - (92)^2] [4(205386.44) - (-681.8)^2]}}$$

$$= -0.286$$

5.2 Regression Analysis

The pair wise relationship between the independent variables and the dependent variable is analysed using the Pearson's correlation coefficient as discussed. The results obtained from the calculations are presented in the Tables 5 and 6 below. An analysis of the results in Tables 5 and 6 are presented in detail below.

The results of correlation analysis in Table 5 show a negative coefficient of –0.38. They show a weak negative relationship between ACP and Smart Bags' profitability from a gross profit margin point of view. The results mean that as Smart Bags took longer to collect payments for goods supplied its profit levels went down.

Table 5. Pearson's coefficient between independent variables and GPM

Independent variable	Pearson's correlation coefficient, r
Average collection period	-0.38
Average payment period	0.23
Inventory turnover ratio	0.70
Cash conversion cycle	-0.19
Current ratio	0.87
Debt ratio	-0.97
Aggressiveness of financing policy	-0.97

Source: Computed from raw data

The Pearson's correlation coefficient between Average Payment Period (APP) and GPM is 0.23 which indicates that there is a weak positive relationship between APP and profitability as measured by the Gross Profit Margin. The results mean that as Smart Bags took longer to pay its creditors its profit levels went up though not significantly. This is in line with theoretical literature where if a firm enjoys longer credit days it is expected that its profit levels should go up.

Results of the correlation coefficient between Inventory Turnover Ratio (ITR) and Gross Profit Margin show a value of 0.70. This shows a strong positive relationship between ITR and GPM meaning that as Smart Bags took shorter periods to process its inventory, its profit levels also went down significantly. This is in contrast to theoretical literature where it is expected that as the time taken to process inventory goes down, then the company's profit should rise as a result of the efficiency in processing inventory. The most probable explanation will be lack of adequate inventory which meant that the company was operating below breakeven thereby incurring losses.

The negative correlation between Cash Conversion Cycle (CCC) and Gross Profit Margin with a correlation coefficient of -0.19 means that as the company's operating cycle became shorter its profit went up though not significantly.

The results also show that Current Ratio (CR) has a strong positive relationship with profitability as measured by Gross Profit Margin. The correlation coefficient between CR and GPM is 0.87 showing that as the company's liquidity drastically went down the profitability of the company as measured by the gross profit margin also went down drastically. This is in line with literature which points that a company has to maintain a certain level of liquidity in order for it to be able to operate profitably. Very low levels of liquidity will affect the operations of the business in financing its current obligations which may eventually affect profitability.

The correlation coefficient between Debt Ratio (DR) and the Gross Profit Margin shows a very strong negative relationship. The correlation coefficient between DR and GPM is –0.97 which means that as the company's levels of debt significantly went up, the company's profitability went down significantly. As a company's levels of debt go up, it means that the cost of debt also goes up which effectively has an impact on the profitability of the company.

The correlation coefficient between Aggressiveness of Financing Policy (AFP) and Return on Assets shows a very strong negative relationship. The correlation coefficient between AFP and GPM is –0.97 which means that as the company financed all its working capital with short term funds, its profitability went down.

Table 6. Correlation coefficient between independent variables and ROA

Independent variable	Pearson's correlation coefficient, r
Average collection period	-0.29
Average payment period	0.38
Inventory turnover ratio	0.82
Cash conversion cycle	-0.33
Current ratio	0.75
Debt ratio	-0.99
Aggressiveness of financing policy	-0.99

Source: Source: Computed from raw data

The correlation results in Table 6 above for Average Collection Period and Return on Assets show a negative coefficient of -0.29 which means that there is a weak negative relationship between ACP and Smart Bags' profitability. The results mean that as Smart Bags took longer to collect payments for goods supplied its profit levels went down. This is in line with theoretical literature where if a firm takes longer to collect payments its profit levels go down as it fails to make use of the cash that it should have collected.

The correlation between Average Payment Period and Return on Assets is 0.38 indicating that there is a weak positive relationship between APP and profitability as measured by ROA hence as Smart Bags took longer to pay its creditors its Return on Assets went up though not significantly. This is in line with theoretical literature where if a firm enjoys longer credit days it is expected that its profit levels should go up as it will be using creditors to finance its business as a cheap source of financing.

Results of the correlation coefficient between Inventory Turnover Ratio (ITR) and Return on Assets from Table 6 above show a value 0.82. This shows a strong positive relationship between ITR and ROA which means that as Smart Bags took shorter periods to process its inventory its profit as measured by return on assets went down significantly. This is in contrast to theoretical literature where it is expected that as the time taken to process inventory goes down, then the company's profit should rise as a result of the efficiency in processing inventory. The most probable explanation will be a lack of adequate inventory which meant that the company was operating below break-even thereby incurring losses.

A weak negative correlation between CCC and ROA of a coefficient -0.33 means that as the company's operating cycle became shorter its return on assets went up insignificantly.

The Current Ratio (CR) has a strong positive relationship with profitability as measured by Return on Assets. The correlation coefficient between CR and ROA is 0.75. These results indicate that as the company's liquidity drastically went down, the profitability of the company also went down drastically. This is also in line with literature which points that a company has to maintain a certain level of liquidity in order for it to be able to operate profitably. Very low levels of liquidity will affect the operations of the business in financing its current obligations which may eventually affect profitability but also very high levels of liquidity may reduce profitability as the resources trapped in current assets could also be invested somewhere to bring some return.

The correlation coefficient between Debt Ratio (DR) and Return on Assets in Table 6 above shows a very strong negative relationship. The correlation coefficient between DR and ROA is -0.99 meaning that as the company's levels of debt significantly went up, the company's return on assets went down significantly. As a company's levels of debt goes up, it means that the cost of debt also goes up which effectively has an impact on the profitability of the company.

The correlation coefficient between Aggressiveness of Financing Policy (AFP) and Return on Assets of -0.99 shows a very strong negative relationship. This means that as the company increased its levels of short term funding to finance its working capital its profitability as measured by return on assets went down significantly.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The correlation coefficient between CCC and Gross Profit Margin was -0.19 and the coefficient between CCC and Return on Assets was -0.33. These findings indicate that as the company's operating cycle went down, that is as its working capital management efficiency improved its profit levels went up.

The correlation coefficient between Aggressiveness of Financing Policy and Gross Profit Margin was found to be -0.97 and the coefficient between AFP and Return on Assets was found to be -0.99, that is as the company used mostly short term sources of funding to finance its working capital its profitability went down drastically.

6.2 Recommendation

The company should invest fresh capital into the business so that it has a positive net working capital position. A positive net working capital position will allow the company to run its operations smoothly as working capital is required to oil the operations of the business.

The company should restructure its balance sheet by bringing the levels of debt down through investing fresh permanent capital into the business. The recommended debt ratio should be below 0.4 or 40%. This can be achieved by

having the current shareholders put fresh funding into the business or by inviting external partners to invest into the business if the current shareholders do not have the resources.

The company should restructure its debt by balancing short term debt and long term debt so that short term debt does not constitute more that 60% of the company's total debt. The company should seek for long term funds from financial institutions. If financial institutions cannot provide the funding given the liquidity situation in the country the company can go the route of debentures or preference shares.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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