

Working capital management and its impact on profitability: A study of selected listed manufacturing companies in Sri Lanka

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Abstract: Main purpose of the study is to identify the impact of working capital management on profitability of selected listed manufacturing companies from financial year 2003-2007. Correlation and regression analysis were performed. Results reveals that cash conversion cycle (CCC) and return on assets (ROA) are negatively correlated the value of -0.127 which is highly significant at 1 percent level of significance, which means that as the cash conversion cycle increases ROA decreases.

In addition inventory conversion period (ICP) is highly significant at 1 percent level. It indicates that with increasing level of ICP, ROA will be increased -0.065 levels. Further the coefficient of the CCC variable is negative at a value of -0.0503 and p value is 0.006. This implies that an increase in the number of day's cash conversion cycle by 1 day is associated with a decline in ROA by 5.03%. The results suggest that managers can increase profitability of manufacturing firms by reducing the number of day's inventories and accounts receivable.

Keywords: Working Capital Management (WCM); Profitability and Manufacturing Companies

1. Theoretical background

Most firms have a large amount of cash invested in working capital, as well as substantial amounts of short-term payables as a course of financing. Firms have an optimal level of working capital that maximizes their

value. On the one hand, large inventory and a generous trade credit policy may lead to higher sales. Larger inventory reduces the risk of a stock-out. Trade credit may stimulate sales because it allows customers to assess product quality before paying (Long, Malitz & Ravid, 1993; and Deloof & 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 & Rajan, 1997).

Decisions relating to working capital and short term financing are referred to as working capital management (WCM). WCM ensures a company has sufficient cash flow in order to meet its short-term debt obligations and operating expenses. These involve managing the relationship between a firm's short-term assets and its short-term liabilities. The goal of WCM is to ensure that the firm is able to continue its operations and that it has sufficient cash flow to satisfy both maturing short-term debt and upcoming operational expenses.

The management of working capital involves managing inventories, accounts receivable and payable, and cash. Implementing an effective working capital management system is an excellent way for many companies to improve their earnings. The two main aspects of WCM are ratio analysis and management of individual components of working capital.

A few key performance ratios of a working capital management system are the working capital ratio, inventory turnover and the collection ratio. Ratio analysis will lead management to identify areas of focus such as inventory management, cash management, accounts receivable and payable management.

Guthmann & Dougall (1948) defined working capital as excess of current assets over current liabilities. This view was elaborated by Park & Gladson (1963) when they defined working capital as the excess of current assets of a business (for example cash, accounts receivables, inventories).

Over current items owed to employees and other (i.e., salaries and wages payable, accounts payable, taxes owed to government). Gole (1959) also held more or less the same view. This concept of working capital, as has been commonly understood by the accountants, is more particularly understood as net working capital to distinguish it from gross working capital.

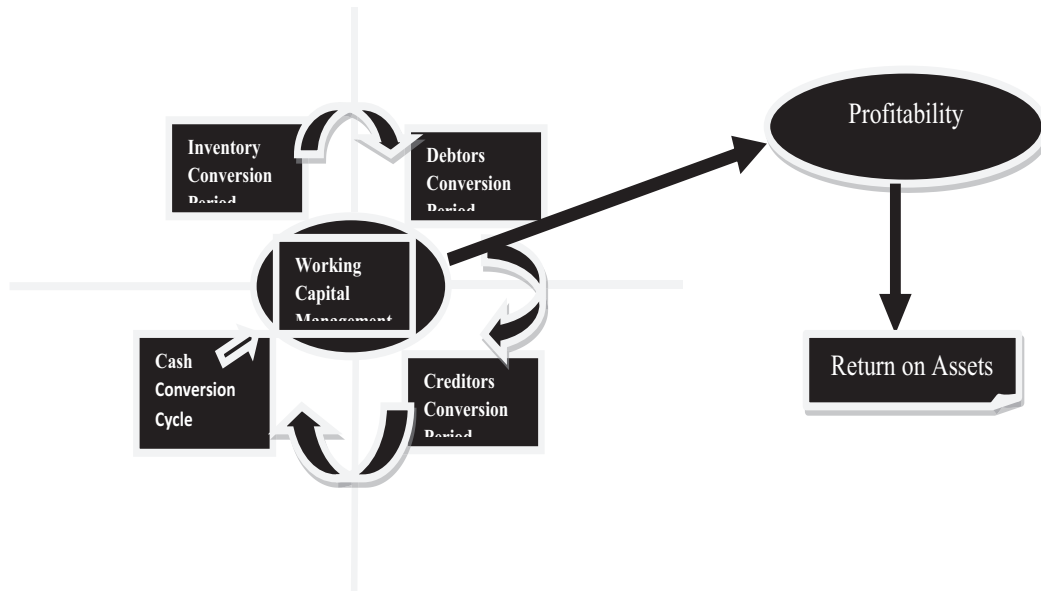
Michael (1997) stated that firms will optimally select a low dividend yield and low asset volatility over a greater range of firm asset values the shorter is the maturity of the firm's debt. Kesseven (2006) stated that high investment in investors and receivables was associated with lower profitability and a strong significant relationship WCM and profitability. Shin & Soenen (1998) investigated the relation between a measure of the cash conversion cycle and corporate profitability.

For a large sample of listed American firms for the 1975-1994 periods, they find a strong negative relation. This result indicates that managers can create value for their shareholders by reducing the cash conversion cycle to a reasonable minimum. Based on previous studies we can say that there are no sufficient studies on working capital management in listed companies in Sri Lanka. Hence, the present study is initiated on working capital management practices: a case study of listed manufacturing companies.

2. Research Model

Based upon related literatures, the research model is shown, which outlines the way in which examining WCM and its impact on profitability in listed manufacturing companies have provided the basis of study.

Figure-1: Research Model



3. Objectives

Following objectives are taken for the study.

- 1) To identify the relationship between WCM and Profitability.
- 2) To recognise the profitability

4. Hypotheses

H_1 : The WCM significantly impact on ROA of the manufacturing companies.

H_{1a} : ICP has impact on ROA of Manufacturing industries.

H_{1b} :DCP has impact on ROA of Manufacturing industries.

H_{1c} :CCP has impact on ROA of Manufacturing industries

5. Material and Methods

This section is divided into five sub-sections. The first sub-section presents the scope. The sub-second section discusses the

period of the study. In the sub-third section, data sources are discussed. The sub-fourth section illustrates the reliability and validity whereas the last sub-section highlights the types of statistical techniques employed to test the hypotheses.

5.1 Scope

The scope of the study is listed manufacturing companies in Sri Lanka. Thirty one companies are listed under manufacturing sectors in Colombo Stock Exchange (CSE). Hence, out of thirty one, only ten companies were selected for the study purpose as a random sampling. These companies include (1) Abans Electricals Limited (ABAN); (2) ACL Cables (ACL) Limited; (3) ACME Printers and Package Limited (ACME); (4) Associated Electrical Corporation Limited (AEC); (5) BOGALA Graphite Lanka Limited (BOGA); (6) Central Industries Limited (CIND); (7) Ceylon Glass Company PLC (GLAS); (8) Dipped Products PLC (DIPP) Limited; (9) Kelani Cables Limited (KCAB); (10) Lanka Aluminium Industries Limited (LALU).

5.2 Period of the Study

The period of the study was five years from 2003 to 2007 financial year.

5.3 Data Sources

In order to meet the objectives and hypotheses of the study, data were collected from secondary sources mainly from financial report of the selected companies, which were published by CSE.

5.4 Reliability and Validity

Secondary data for the study were drawn from audited accounts (i.e., income statement and balance sheet) of the concerned companies as fairly accurate and reliable. Therefore, these data may be considered reliable for the study. Necessary checking and cross checking were done while scanning information and data from the secondary sources. All

these efforts were made in order to generate validity data for the present study. Hence, researcher satisfied content validity.

5.5 Types of Statistical Techniques

In the present study, we analyze our data by employing correlation and Regression. For the study, entire analysis is done by personal computer. A well known statistical package like ‘Statistical Package for Social Sciences’ (SPSS) 13.0 Version was used in order to analyze the data. There are several tools to measure the efficiency of the company in managing working capital. The powerful indices, most commonly used, are ratio of inventory conversion period, debtors’ conversion period, creditors’ conversion period and cash conversion cycles which are discussed briefly below in table -1.

Type of Ratios	Explanations	Calculation
Working Capital Ratio		
The Inventory Conversion Period (ICP)	ICP is the time required to convert inventory into cash	$\frac{\text{Average Stock Value}}{\text{Cost of Sales}} \times 365$
Debtors’ Conversion Period (DCP)	DCP is the time required to collect the cash from debtors.	$\frac{\text{Average Debtors}}{\text{Net Credit Sales}} \times 365$
Creditors’ Conversion Period (CCP)	CCP is the length of time the firm is able to defer payments on various resource purchases.	$\frac{\text{Average Creditors}}{\text{Cost of Sales}} \times 365$
Cash Conversion Cycle (CCC)	CCC is the length of time between a firm's purchase of inventory and the receipt of cash from accounts receivable	$CCC = ICP + DCP - CCP$
Profitability Ratio		
Return on Assets (ROA)	It is based on the relationship between the sales and total assets of a firm.	$\frac{\text{Net Sales}}{\text{Total Assets}} \times 100$

6. Findings

Findings explain model, relationship between working capital management and profitability and working capital management and its impact on profitability.

6.1 Model

It is important to note that the ROA depend upon ICP; DCP; CCP and CCC the following model is formulated to measure the impact of working capital management on profitability.

$ROA = f(ICP; DCP; CCP; CCC)$ -Equation

$$ROA = \beta_0 + \beta_1 (ICP) + \beta_2 (DCP) + \beta_3 (CCP) + \beta_4 (CCC) + e$$

Where as:

ROA = Return on Assets.

ICP = Inventory Conversion Period.

DCP = Debtors Conversion Period.

CCC = Cash Conversion Cycle.

e = error term.

Based on the above regression model ICP; DCP and CCP are considered as the dependent variables where as ROA are the independent variables. The detail analysis is carried out with the help of above variables.

6.2 Relationship between working capital management and profitability

Profitability is generally depending on working capital management, thus working capital indicators such as ICP, DCP, CCP and CCC should have a relationship with profitability indicators. In order to test the relationships, the correlation analysis was carried out and the results are summarized in the Table-2.

Table 2: Correlation Matrix

Variables	CCC	ICP	DCP	CCP
ROA	-0.127**	-0.050	-0.192*	0.004
ICP			.244	-0.127
DCP				.276

** Correlation is significant at the 0.01 level (2- tailed)

* Correlation is significant at the 0.05 level (2- tailed)

Table-2 shows that the correlation values between the variables. CCC and ROA are negatively correlated the value of -0.127 which is highly significant at 1 percent level of significance, which means that as the cash conversion cycle increases ROA decreases.

6.3 Working Capital Management and Its impact on profitability

Multiple regression analysis was performed to investigate the impact of

working management on profitability which the model used for the study is given below.

The WCM (ICP; DCP; CCP and CCC) in the above model revealed the ability to predict ROA ($R^2 = 0.375$). In this model value of R^2 denotes that 37.5 percent of the observed variability in ROA can be explained by the different in activities of WCM namely ICP; DCP; CCP and CCC. This variance is highly significant as indicated by the F value

(F=45.431 and P = 0.000) and an examination of the model summary in conjunction with ANOVA indicates that the model explains

the most possible combination of predictor variables that could contribute to the relationship with the dependent variable.

Table 2: Predictors of ROA - Model summary

Model	R	R ²	Adjusted R ²
1	0.612 ^a	.375	-1.501

a. Predictors: (Constant), ICP; DCP; CCP and CCC

6.4 Hypotheses testing

Table 3: Coefficients for predictors of ROA

Models	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	β	Std.Effor	Beta		
1 Constant	127.636	116.085		1.100	0.470
ICP	3.170	4.934	2.775	-0.065	0.002
CCP	-1.510	2.784	-2.077	.642	0.636
DCP	-1.365	2.011	-1.036	-.542	0.684
CCC	-1.215	1.987	-1.015	-0.050	0.006

Source: Survey data

In the above model, t value for ICP is highly significant at 1 percent level. It indicates that with increasing level of ICP, ROA will be increased -0.065 levels. Hence H1a is accepted. On the other hand, CCP and DCP are not y significant. Therefore, H2b and H3c are rejected.

Further the coefficient of the cash conversion cycle variable is negative at a value of -0.0503 and p value is 0.006. H1 is accepted at 1% level of significant. This implies that an

increase in the number of day's cash conversion cycle by 1 day is associated with a decline in ROA by 5.03%. So H1 is accepted.

7. Concluding Remarks

Main purpose of the study is to identify the impact of working capital management on profitability of manufacturing companies. ROA is used for the purpose of measuring profitability. The correlation values between

the variables. CCC and ROA are negatively correlated the value of -0.127 which is highly significant at 1 percent level of significance, which means that as the cash conversion cycle increases ROA decreases. In addition ICP is highly significant at 1 percent level. It indicates that with increasing level of ICP, ROA will be increased -0.065 levels. Further the coefficient of the cash conversion cycle

variable is negative at a value of -0.0503 and p value is 0.006. H1 is accepted at 1% level of significant. This implies that an increase in the number of day's cash conversion cycle by 1 day is associated with a decline in ROA by 5.03%. The results suggest that managers can increase profitability of manufacturing firms by reducing the number of day's inventories and accounts receivable.

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Pension risk management in a developing economy: lessons from the nigerian capital market

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Abstract: *The killer risk in any pension scheme is the failure of pension asset sufficiency to meet the promised benefits to retirees. A Pension Risk Management aims at ex ante arrangement to protect retirees' standard of living. Nigeria introduced pension reforms in 2004 fatefully at the same time when extensive reforms were made in the banking sector. Prior to the Act being passed, there was a major proposition that pension funds should not be invested in Nigerian capital market. This paper reviews pension risks of the new DCS (Defined Contributory Scheme) and the implications of investing pension fund in the capital market of a developing economy. A trend analysis was performed on market index and capitalization and a simulated pension asset was subjected to pension risks. Despite the asset allocation guideline on investments by the Pension Commission, there is certainly uncertainty concerning guaranteeing pension payments in future due to unmanaged pension risks. This paper suggests investment policy should accompany a DCS based on the risk appetite of workers, minimum guarantee of returns on investment of pension assets and a range of interest rates for actuarially determined annuities. Further studies may examine whether PFAs should operate as closed end or open end mutual funds.*

Keywords: Pension risks, Actuarial risks, Defined Contributory Scheme, Annuity, Privatized pensions

1.0 Introduction

In 1944, the ILO (International Labour Organization) conference recognized that the

nations of the world must set in motion an agenda to give minimum social security to workers and their dependants who need protection depending on each level of economic