



Impact of Working Capital Management on Profitability: Evidence From Listed Companies in Sri Lanka

T.A.N.R. Jayarathne^a

^aFaculty of Management and Finance, University of Ruhuna, Sri Lanka. ruwininadee82@gmail.com

Abstract

Working capital management is a crucial component of financial management and has a crucial effect on profitability and liquidity of firms. Moreover, most of the literature have identified that optimal working capital management positively contributes to the firm value. This study based on the data during 2008-2012 on listed manufacturing companies in the Colombo Stock Exchange investigated the effect of working capital management on profitability. The findings suggest that the profitability is negatively associated with the account receivable period, inventory turnover period, and cash conversion cycle. Further, it was found that the profitability is positively associated with account payable period. Moreover, the evidence suggests that increase in leverage leads to decline in the profitability. Therefore, the findings of paper reveal that manufacturing companies can boost their performance in terms of profitability by managing working capital appropriately.

Keywords: *manufacturing companies; Colombo Stock Exchange; profitability; working capital management*

1. Introduction

Working Capital Management (WCM) is one of the crucial component in financial management. In general, WCM refers to the management of current assets and current liabilities. Usually, working capital gets converted into cash within twelve months (Dong & Su, 2010). Current liabilities includes account payables, notes payables, short-term bank loans, taxes payables, accrued expenses and the portion of long-term debt (Bernstein & Wild, 1998). Receivable, payables, inventories and cash are key components of working capital (Abuzayed, 2012; Lazaridis & Tryfonidis, 2006; Naser, Nuseibeh, & Al-Hadeya, 2013).

Padachi (2006) indicate that the profitability and liquidity are the most fundamental concerns in managing working capital. Here, liquidity is directly linked to the ability of a firm to meet short-term obligations. Bagchi and Khamreei (2012) indicate that the WCM is a vital component in financial management. Irrespective of the profit-orientation, size and the nature of business, all firms require an optimum level of WCM. Inefficiency of WCM may lead the firm into a pitfall (Niresh, 2012). Optimal WCM positively contributes to the creation of firm value. On the one hand, cost of liquidity brings a serious problem and stands against profitability (Dong & Su, 2010). On the other hand, a firm cannot survive without sufficient liquidity because the firm may face the problem of insolvency. Therefore, a balance between profitability and liquidity must always be maintained. Padachi (2006) stated that a well-designed and executed WCM is anticipated to contribute positive value to the firm.

The literature has identified different relationships between WCM and profitability (Deloof, 2003; Ganesan, 2007; Gill, Biger, & Mathur, 2010; Islam & Mili, 2012). Deloof (2003) have found a negative relationship between WCM and profitability. Further they revealed a negative relationship between liquidity and profitability. Even though few studies are available in the Sri Lankan context, there is no consensus of the findings (Nimalathasan, 2010; Appuhami, 2008). Therefore, this study investigates how the components of

WCM including account payable, account receivable, inventory and cash conversion cycle affects the profitability of manufacturing companies listed in the Colombo Stock Exchange in Sri Lanka.

2. Related Literature

Key difference between long-term and short-term financing is in terms of the timing of cash. The short-term financing reflects the working capital needs of the firm and involves cash flows within a less than one year of period. Gross working capital indicates all current assets and the difference between current assets and current liabilities represent the net working capital of a firm. WCM is engaged with arranging cash, monitoring account receivable and account payable activities and proper maintaining of inventory. Optimum WCM affects liquidity and profitability, and enhances the value of the firm (Bagchi & Khamrui, 2012).

However, there are number of definitions for WCM. Naser, et al (2013) identified WCM as the management of cash, receivables, inventories and payables. Ganesan (2007) has explained WCM as short-term financing requirements of a firm. Needs of working capital depend on the type of business and industry. However, the components of working capital, generally, includes cash, debtors, receivables, inventories, marketable securities and redeemable futures (Appuhami, 2008).

Managing accounts receivables is important for any firm because it is directly linked to the sales. Bieniasz and Golas, (2011) defined the term receivables as the number of days from the moment of sale (issuing of invoice) until receiving of the payment. Credit sales create account receivable allowing a reasonable credit period for their customers. Credit sales increase the sales volume of the company. However, this may lead to increase the bad debts (Bhattacharya, 2003). Therefore, it is essential for firms to implement a suitable collection policy. Increased average collection period generally reflects poor collection efforts, delays in customer payments and customers financial distress (Bernstein & Wild, 1998).

Generally, inventories are the second largest asset in a manufacturing firm. There are three types of inventories, i.e., raw materials, work-in process, and finished goods. Inventory may be lead to several costs like storage cost, insurance and obsolescence cost. Further, if a firm does not maintain a proper investment level in inventories, a disruption of the production and decrease in the sales can occur. Mathuva (2010) defined the inventory conversion period as the time taken to convert inventory held in the firm into sales. If inventory conversion period increases, cost of inventory tends to increase. Therefore, the purpose of inventory management is to minimize these costs without causing disruption in the production (Bhattacharya, 2003).

Cash is the most liquid asset of any firm. Naser, et al (2013) have identified cash management as the process of ensuring that enough cash is available to meet the running expenses. It also aims to reduce the cost of cash holding. Cash conversion cycle starts with the purchases of raw materials. Then, the firm starts production process during which these raw materials are converted into finished goods. Finished goods are then sold. The time lag between purchase of raw materials and the sale of goods is identified as the inventory period. Then, the time lag between goods sold and cash received is identified as the collection period of debtors. Moreover, the difference between the stock arrivals to company and cash paid for materials considered as the payable period. The purchase of raw materials and collection of cash for sale identified as operating cycle and cash cycle allow for deduct the payable period from operating cycle.

Accounts payable includes trade credit and accrued expenses which together provide finance to the operations of a business on an ongoing basis (Bhattacharya, 2003). Inventory, accounts recoverable and cash management reflect the current assets of the WCM. But account payable represents the current liabilities of the WCM. Credit period of account payable shows how many days are taken to pay their suppliers. If payment period is increased, it may result in loss of good suppliers. Therefore, firms should keep better relations with their supplies and try to keep optimal WCM.

Different results of literature can be found in different economic environment. Dong and Su (2010) had an attempt to study the relationship between profitability and cash conversion cycle in listed firms in Vietnam stock market. Findings of the study show the strong negative relationship between Profitability and the CCC. This indicates that the CCC increases, it will effect to decrease the Profitability of the firm. Bagchi

and Khamrui (2012) investigated the relationship between WCM and firm profitability in India and findings of their study indicate that CCC and debt are negatively associated with firm's Profitability.

Lazaridis and Tryfonidis (2006) have explored the relationship between corporate profitability and WCM in the Athens Stock Exchange. The finding of results shows a negative relationship between profitability and working capital indicators like days of accounts receivable, account payable and cash conversion cycle. They concluded that firms can create profits by effectively handling each component of the cash conversion cycle. Mathura (2010) has examined the influence of WCM components on profitability in the Nairobi Stock Exchange (NSE). His result shows that there is a negative relationship between the accounts collection period and profitability. Moreover, positive relationships between the inventory conversion period and profitability, and average payment period and profitability have also been found.

Moreover, Mohamad and Saad (2010) investigated that the effect WCM and the performance of Malaysian listed companies. They found that current assets to total asset ratio shows positive relationship. Cash conversion cycle, current assets to current liabilities ratio and current liabilities to total assets ratio shows the negative relations. Kaddumi and Ramadan (2012) conducted a study to assess the effect of WCM on the performance in Jordanian Industrial corporations listed at Amman Stock Exchange. They explained that the negative relationship of average collection period, average age of inventory with profitability. This also implies that handling proper inventory and shortening the debtors collection period will increase the profitability. On the other hand the positive relationship of average payment period with the profitability involve that the increase the days of payment period will increase the profitability.

Bilal, Naveed, and Taliv, (2011) investigated the impact of WCM on profitability of the companies listed at Karachi Stock Exchange. Results indicate a positive relationship between WCM and profitability. Azam and Haider (2011) investigated the impact of WCM on firms' performance for non-financial institutions listed in Karachi Stock Exchange. The findings reveals that WCM has an impact on firms' performance and indicate that managers of the firms can add value to their share holder through reducing inventory size, cash conversion cycle and net trading cycle. Further, if days of supplier's payment is increased then overall firm's performance also improves.

Further, Bieniasz and Gołas (2011) have conducted a research to examine the influence of WCM on the food industry enterprises profitability in Poland and selected countries in the Eurozone. The research concluded that the food industry with the shortest working capital cycles help to obtain the higher rates of profitability. Further results indicate that the cycles of inventory, accounts receivables and current liabilities were negatively correlated with the profitability.

Few studies have been carried out in Sri Lanka as well. For example, Nimalthasana (2010) has done a study using the manufacturing companies in CSE to identify the effect of WCM on profitability. He has found out a negative relationship between cash conversion cycle and profitability; a positive relationship between the inventory conversion period and profitability. Niresh (2012) has inconclusive findings. Previous studies regarding the WCM have found different relationships among the components of WCM and profitability.

3. Methodology

This study explores the relationship between WCM and profitability based on the data during the five year period ranging from 2008 to 2012 on 20 manufacturing companies listed in the CSE. The manufacturing industry was selected for investigation because it is the largest subsector which contributes to the gross domestic product of Sri Lanka. These 20 companies have been chosen out of 39 listed under manufacturing sector in CSE using purposive sampling method where companies with highest market capitalization were chosen. Selected sample represents 67 percent of the manufacturing industry in Sri Lanka (among listed companies). The data were mainly collected from the published annual reports of the selected manufacturing companies.

Accounts receivable, inventory, accounts payable and cash conversion cycle was identified as indicators of WCM following Dong and Su (2010), Mohamad and Saad (2010), Bieniasz and Golas (2011). Profitability was measured using ROA. Firm size, sales growth and debt ratio were used as control variables.

To assess the impact of WCM on profitability, pooled ordinary least squares regression analysis was employed. The regression equations are illustrated below.

$$\text{Model 1: ROA} = \alpha + \beta_1 \text{AR} + \beta_2 \text{Slog} + \beta_3 \text{SG} + \beta_4 \text{DR} + \varepsilon$$

$$\text{Model 2: ROA} = \alpha + \beta_1 \text{INV} + \beta_2 \text{Slog} + \beta_3 \text{SG} + \beta_4 \text{DR} + \varepsilon$$

$$\text{Model 3: ROA} = \alpha + \beta_1 \text{AP} + \beta_2 \text{Slog} + \beta_3 \text{SG} + \beta_4 \text{DR} + \varepsilon$$

$$\text{Model 4: ROA} = \alpha + \beta_1 \text{CCC} + \beta_2 \text{Slog} + \beta_3 \text{SG} + \beta_4 \text{DR} + \varepsilon$$

Where ROA denotes return on assets, AR denotes number of days accounts receivable, INV denotes number of days of inventory, AP denotes number of days accounts payable, CCC denotes cash conversion cycle, Slog denotes natural logarithm of sales (company size), SG denotes sales growth, DR denotes debt ratio (Leverage) and finally α denotes intercept, β denotes regression coefficients, and ε denotes the error term. Measurements of variables are illustrated in table 1.

Table 1: Measurements of variables

Variables	Method of Computation
ROA (Profitability)	Profit Before Interest and Tax(PBIT)/Total Assets
AR (Number of days accounts receivable)	(Average of accounts receivable / Sales)*365
INV (Number of days Inventory)	(Average Inventory/Cost of Goods Sold)*365
AP (Number of days accounts payable)	(Average of accounts payable / Cost of goods sold)*365
CCC (Cash Conversion Cycle)	(No. of days accounts receivable) + (No. of days inventory) –(No. of days accounts payable)
Slog) Firm size	Natural Logarithm of sales (LogS)= ln (sale)
SG (Sales growth)	(Current year sales - Previous year sales)/Previous year sales
DR (Debt ratio)	Total liabilities/Total assets

4. Results and Findings

Table 2 illustrates the descriptive statistics for 20 manufacturing companies listed in CSE for the period of five years ranging from 2008 to 2012. A total of 100 observations were used for the data analysis. Regression results are illustrated in table 3. R^2 is 68.5 percent ($F = 54.93$, $p < .001$). The results of model 1 indicates that the coefficient of AR is negative and statistically significant ($\beta = -0.093$, $p < 0.01$). This implies that when the number of AR increased by one day, the ROA of the firm tend to decrease by .093 percents. If days of collection period is increased, customers have good opportunity for acquiring more goods for longer credit period. As a consequence, the sales of the company increase. As a result profits may increase. However, bad debts may increase expenses as well. Debt ratio is negatively associated with profitability ($\beta = -0.123$, $p < 0.01$). In other words, when the leverage increases, profitability tends to decrease. Sales growth shows the positive relationship with ROA ($p < 0.01$). Moreover, log of sales used as proxy for firm size positive relationship with its ROA ($\beta = 5.690$). These results indicate that larger firms can earn higher profits.

Table 2: Descriptive Statistics

	N	Minimum	Maximum	Mean	S.D.
ROA	100	-17	30	11.48	8.648
AR	100	15	228	74.43	47.193
INV	100	24	285	109.42	53.679
AP	100	12	213	52.06	36.916
CCC	100	-139	467	131.79	104.094

Result of model 2 shows a adjusted R^2 of 64.4 percent ($F = 45.79$, $p < 0.001$). The coefficients indicate that the relationship between numbers of days inventories an ROA is negative ($\beta = -0.064$, $p < 0.000$). It implies that an increase in the number of inventory days results in a decrease in profitability. Further, if the inventory takes more days to sell, it will negatively affect profitability. For example, storage and insurance

cost can be increased and as a result the profitability may decrease. High inventories cause tie up money in the firm. Effects of other variables were same as in the model 1. For example, the effect of DR is negative and SG and Slog have a positive impact on ROA.

Table 3: Relationship between WCM and Profitability (2008-2012). Pooled OLS Models

Independent variables	Dependent Variable =ROA			
	Model 1	Model 2	Model 3	Model 4
Intercept	3.234(0.530)	-4.301(0.400)	-16.584(0.003)***	3.883(0.405)
AR	0.093(0.000)***			
INV		0.064(0.000)***		
AP			0.040(0.043)**	
CCC				-0.048(0.000)***
DR	-0.123(0.000)***	-0.143(0.000)***	-0.131(0.000)***	-0.097(0.000)***
Slog	0.059(0.010)***	0.092(0.000)***	0.091(0.001)***	0.058(0.006)***
SG	5.690(0.000)***	7.977(0.000)***	8.730(0.000)***	4.993(0.000)***
F-Value	54.930(0.000)***	45.790(0.000)***	27.051(0.000)***	68.823(0.000)***
Adjusted R square	0.685	0.658	0.532	0.743
VIF(Variation Inflation Factor)	1.079	1.396	1.396	1.455
Firm years	100	100	100	100

The p-value are the parentheses with *, **, *** denoting significance at 10% , 5%, and 1% levels, respectively.

According to model 3, adjusted R² is 51.3 percent (F = 27.051, p=.001). Number of days of account payable has a positive impact on and ROA ($\beta = 0.040$, $p < 0.05$). It indicates profitable firms take more days to pay their bill. This implies that companies withhold their payment to their creditors to take advantage of the cash available for their working capital needs (Matuwa, 2010). Thereby, the firm can invest these additional funds in short term assets to increase profits. Size of the firm and sales growth has a positive impact on profitability, and the DR has a negative impact on profitability.

Model 4 as well is statistically significant (R² = .733, F = 68.82, $p < .001$). Cash conversion cycle is negatively associated with and ROA ($\beta = -0.048$, $p < .001$). It implies that if the cash conversion cycle increases profitability is decreased. However, increase in the days of cash conversion cycle means that delay in money inflows. Therefore, it leads to unbalance the cash holdings and tie up of liquidity. This affects negatively on profits. Moreover, the effect of DR on profitability is negative, and the effects of SG and firm size are positive.

5. Conclusions and Implications

This paper attempted to assess the effect of WCM on profitability using a five year (2008-2012) dataset on 20 manufacturing firms listed in CSE. The result shows that a liberal credit policy tends to decrease the profitability. This finding is consistent with Mathuva, (2009), Lazaridis and Tryfonidis, (2006). Further, ties up of inventory in the stores leads to the decrease in the profitability. Moreover, large companies get more benefits from the delay in payment to their creditors. On the other hand, the findings indicate that firms must try to reduce the cash conversion cycle to an optimum level. The study provides valuable insight to the financial managers in formulating strategies. However, technological and seasonal changes in demand etc have not taken into consideration in this study.

References

- Abuzayed, B. (2012). Working capital management and firms' performance in emerging markets: the case of Jordan. *International Journal of Managerial Finance*, 8(2), 155-179.
- Appuhami, B. R. (2008). The impact of firms' capital expenditure on working capital management: an empirical study across industries in Thailand. *International Management Review*, 4(1), 8-21.

- Azam, M., & Haider, S. I., (2011). Impact of Working Capital Management on Firms' Performance: Evidence from Non-Financial Institutions of KSE-30 index. *Interdisciplinary Journal of Contemporary Research In Business*, 3(5),481-492.
- Bagchi, B., & Khamrui, K. (2012). Relationship between working capital management and profitability: a study of selected FMCG companies in India. *Business and Economics Journal*, 2012, 1-11.
- Bernstein, L. A., & Wild, J. J. (1998). *Financial Statement Analysis, Theory, Application and Interpretation* (6 ed.): Irwin/Mc Graw Hill.
- Bhattacharya, H. (2003). *Working Capital Management, Strategies and Techniques*. New Delhi: Prentice hall.
- Bieniasz, A., & Golas, Z. (2011). The influence of working capital management on the food industry enterprises profitability. *Contemporary Economics*, 5(4), 68-81.
- Bilal, A. R., Naveed, M., & Taliv, N. A. (2011). Impact of Working Capital On profitability Of Cement Sector of Pakistan. *Contemporary Research in Business*, 3, 661-666.
- Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance & Accounting*, 30(3-4), 573-588.
- Dong, H. P., & Su, J. (2010). The relationship between working capital management and profitability: a Vietnam case. *International Research Journal of Finance and Economics*, 49, 59-67.
- Ganesan, V. (2007). An analysis of working capital management efficiency in telecommunication equipment industry. *Rivier academic journal*, 3(2), 1-10.
- Gill, A., Biger, N., & Mathur, N. (2010). The relationship between working capital management and profitability: evidence from The United States. *Business and Economics Journal*, 10, 1-9.
- Islam, M. N., & Mili, S. A. (2012). Working Capital Investment and Financing Policies of Selected Pharmaceutical Companies in Bangladesh. *Research Journal of Finance and Accounting*, 3(4), 1-7.
- Kaddumi, T. A., & Ramadan, I. Z. (2012). Profitability and Working Capital Management: The Jordanian Case. *International Journal of Economics and Finance*, 4(4), 217.
- Lazaridis, I., & Tryfonidis, D. (2006). Relationship between working capital management and profitability of listed companies in the Athens stock exchange. *Journal of financial management and analysis*, 19(1).
- Mathuva, D. (2009). The influence of working capital management components on corporate profitability: a survey on Kenyan listed firms. *Research Journal of Business Management*, 3(1), 1-11.
- Mohamad, N. E. A. B., & Saad, N. B. M. (2010). Working capital management: The effect of market valuation and profitability in Malaysia. *International Journal of Business and Management*, 5(11), 140.
- Naser, K., Nuseibeh, R., & Al-Hadeya, A. (2013). Factors Influencing Corporate Working Capital Management: Evidence From an Emerging Economy. *Contemporary Issues in Business Research*, 2(11-30).
- Nimalathasan, B. (2010). Working capital management and its impact on profitability: A study of selected listed manufacturing companies in Sri Lanka. *Information Management*, 76-82.
- Niresh, J. A. (2012). Working Capital Management & Financial Performance of Manufacturing Sector in Sri Lanka. *European Journal of Business and Management*, 4(15), 23-30.
- Padachi, K. (2006). Trends in working capital management and its impact on firms' performance: an analysis of Mauritian small manufacturing firms. *Int.l Review of Business Research Papers*, 2(2), 45-58.