

CASH CONVERSION CYCLE AND FINANCIAL PERFORMANCE: EVIDENCE FROM LISTED MANUFACTURING FIRMS IN SRI LANKA

¹*S. Balagobei

Department of Financial Management, Faculty of Management Studies and Commerce, University of Jaffna, Sri Lanka

saseelab@univ.jfn.ac.lk

²S. Anandasayanan

¹*S. Balagobei

Department of Financial Management, Faculty of Management Studies and Commerce, University of Jaffna, Sri Lanka

[sayananakshi@yahoo.com](mailto:sayanakshi@yahoo.com)

ABSTRACT

Cash Conversion Cycle (CCC) is considered as an effective measure of firms' working capital management. It is also a prolific performance measure for assisting how well a company is managing its working capital. This study aims to investigate the influence of CCC on the financial performance of listed companies in Sri Lanka. The data was gathered by using secondary sources, whereas Pearson's correlation and multiple regression analysis were employed to analyse the data for the period of 2011 to 2018. The results of the empirical finding show that there is a strong negative influence of the cash conversion cycle on the financial performance of listed companies. Therefore, the study suggests that managers of listed companies can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level and also accounts receivables should be kept at an optimal level.

Keywords: *cash conversion cycle, financial performance and working capital*

INTRODUCTION

Increased competition in recent eras has directed attention to the rationalization of short-term investments, giving working capital management a vital role in corporate performance. Several issues related to working capital management are regarded as significant reasons for the failure of the organisations. Working capital management, which involves managing cash, inventory, and accounts receivable, affects a firm's short-term financial performance. Cash management is one of the key areas of working capital management and assumes more considerable significance because it is the most liquid asset used to satisfy the firm's obligations. Cash

management is the process of collecting and managing cash, as well as using it for short-term investment. It is a crucial element of a company's financial stability and [solvency](#).

The cash conversion cycle (CCC) of a firm is equal to the time it takes to sell inventory and collect receivables less the time it takes to pay the firm's payables. It represents the number of days that a firm's cash is tied up within the operation of the business. The CCC captures a fundamental feature of a firm's operation, i.e., it explicitly recognizes that the four basic business activities (purchasing or production, sales, collection, and payment) create flows within the working capital accounts that are non-instantaneous. It is a widely used metric to gauge the effectiveness of a firm's management and intrinsic need for external financing (Ross, Westerfield, and Jaffee, 2002; Raddatz, 2006; Braun and Raddatz, 2008; Tong and Wei, 2011).

In this study, the cash conversion cycle is used as the independent variable while the current ratio, leverage and firm growth are used as control variables. A shorter cash conversion cycle is associated with high profitability because it improves the efficiency of using the working capital. A short cash conversion cycle indicates that the company manages and processes inventory more quickly, collects cash from receivables more quickly, and slows down cash payments to suppliers. This increases the efficiency of internal operations of a firm and results in higher profitability, the higher net present value of cash flows, and higher market value of a firm (Gentry et al., 1990). The cash conversion cycle can be shortened by reducing the time that cash is tied up in working capital. This could happen by shortening the inventory conversion period via quicker processing and selling goods to customers, or by shortening the receivable collection period via speeding up collections, or by lengthening the payable deferral period via slowing down payments to suppliers. On the other hand, shortening the cash conversion cycle could damage the firm's operations and lead to poor organisational performance. Reducing the inventory conversion period could increase the shortage cost and make the companies lose their good credit customers, and lengthening the payable period could damage the firm's credit reputation.

The prominence of cash flow is particularly pertinent when access to cash is difficult and expensive. When the real economy faces the recession, businesses involve the additional risk of customers running into financial difficulty and becoming unable to pay invoices. This can lead to a shortage of cash from non-operational sources such as bank loans. Thus, for

manufacturing operations to be run effectively and efficiently, optimum cash management techniques must be adopted as cash shortage can disrupt the firm's manufacturing operation. In contrast, excessive cash can simply remain idle, without contributing anything in terms of return towards the firm's profitability.

The cash conversion cycle is a useful way of assessing the liquidity of a firm, especially for small companies that are usually operated with fewer financial resources, compared to larger companies that have better access to both money and capital markets. Shortening the cash conversion cycle could be one crucial source of financing for small firms. Cash conversion cycle definitions are not constant. For example, Stewart (1995) defines a cash conversion cycle as "a composite metric describing the average days required to turn a dollar invested in raw materials into a dollar collected from a customer." Besley and Brigham (2005) describe a cash conversion cycle as "the length of time from the payment for the purchase of raw materials to manufacture a product until the collection of account receivable associated with the sale of the product.

Although, several studies have been carried out on working capital management and its impact on the profitability of companies to the best of the researcher's knowledge, there is dearth of literature on studies that examine the relationship between the most critical component of working capital; cash conversion cycle and financial performance in a developing economy like Sri Lanka. Therefore, this paper analyses the panel data explicitly to investigate the impact of the cash conversion cycle on the financial performance of firms listed manufacturing companies on Sri Lanka during a seven-year period (2011-2018).

Research Problem

Today due to the changing world's economy, the advancement of technology and increased global competition among the companies, every company is striving to enhance their performance and for that, companies are putting every effort to bring their cash conversion cycle at optimum level to increase performance.

Effective working capital management focuses on having an optimal level of working capital for maximizing the shareholder's wealth. Large inventory and a justified trade credit policy may lead to high sales; larger inventory reduces the risk of a stock-out. Firms can encourage by providing trade credit to increase sales because it allows customers to assess product quality

before paying. Accounts payable, which is the overdue payments to suppliers, allows a firm to check the quality of bought products. Similarly, accounts payable can be an inexpensive and flexible source of financing for any type of business firm and can be very costly if the firm is offered a discount for early payment. Working capital management is measured by using the cash conversion cycle. A longer cash conversion cycle might increase profitability because it leads to higher sales. However, corporate profitability might also decrease with the cash conversion cycle, if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers. In this study, the research question arises as follows: “To what extent CCC influence on the financial performance of listed companies in Sri Lanka?”

Therefore, this study aims to empirically investigate the influence of CCC on the financial performance of listed manufacturing companies in Sri Lanka from 2011 to 2018.

LITERATURE REVIEW

Theoretical Framework

Efficient working capital management of business firms includes freeing up cash from inventory, accounts receivable, and accounts payable. By managing these components effectively, companies can reduce their dependence on expensive external funding sources. This will increase the efficiency of using working capital components and lead to more profitability and creating more market value.

The cash conversion cycle is the most popular measure of cash management. The cash conversion cycle is calculated as $(\text{accounts receivables} / \text{sales}) \times 365 + (\text{inventories} / \text{cost of goods sold}) \times 365 - (\text{accounts payable} / \text{cost of goods sold}) \times 365$. It shows the average length of time between expenditure for the purchase of raw materials and the collection of cash from receivables. So, the longer this time lag, the larger the investment in working capital.

Shortening the cash conversion cycle leads to high profitability because it improves the efficiency of using the working capital. The cash conversion cycle can be shortened by reducing the time that cash is tied up in working capital. This could happen by shortening the inventory conversion period via processing and selling goods to customers more quickly, or by shortening the receivable collection period via speeding up collections, or by increasing the payable deferral period via slowing down payments to suppliers. This increases the efficiency

of internal operations of a firm and results in higher profitability, the higher net present value of cash flows, and higher market value of a firm (Gentry et al., 1990).

Cash management has therefore been defined by Johnson and Aggarwal (1988) to involve managing the money of the firm in order to attain maximum interest income on idle funds. The Chartered Institute of Bankers of Nigeria (2000) also explained that the role of cash management is to plan, monitor and control the cash flows and the cash position of a company maintaining its liquidity. Also, Pandey (2005) opined that cash management is significant because it constitutes the smallest portion of the total current assets, yet management considerable time is devoted in managing it. He further discussed that the recognition of cash as both a valuable resource and an operational necessity for business is core to cash management in the short and long term.

Jordan (2003) describes the cash conversion cycle in three stages, an inventory stage after the production process and here interested companies generally cost inventory as it works to reduce days of inventory for several reasons, including cost and also maybe some product operations damage. The second stage is the stage of collection of accounts receivable by customers and here must be the policy balanced and long-term in terms of the speed of collection and to cover any obligation addition to re-investment of cash received and thus provides sufficient liquidity for companies to do its job operating daily. The third stage is the stage of repayment account payables to creditors. In this stage, the company exposed to study the days keep company with cash and reinvestment opportunities Other and non-payment on the due date for creditors, but that may have on company's additional cost to the benefits of the delay, which could raise the price of a product or service besides loss the company's reputation in the market as a result of non-payment at maturity date may also affect the delay in payment of payables companies lose for the early discount.

Empirical Studies

In this section, the researchers review the existing literature on the link between the cash conversion cycle and financial performance. Most of the studies that empirically examined the association between cash conversion cycle and profitability showed a significant and negative relationship.

Wang (2019) find out that a zero-investment portfolio that buys the lowest CCC decile stocks and shorts the highest CCC decile stocks earns 5%–7% alphas per year. The CCC effect is prevalent across industries, remains even for large-capitalization stocks, distinct from the known return predictors, and cannot be explained by the financial intermediary [leverage](#) risk. Chong-Chuo Chang (2018) documented a negative relationship between the CCC and firm's profitability and value, supporting that an aggressive working capital policy can enhance corporate performance; however, this effect reduces or reverses when firms exist at the lower CCC level.

Nobanee, Abdullatif and AlHajjar (2011) investigate the relationship between a firm's cash conversion cycle and its profitability. It is examined using dynamic panel data analysis for a sample of Japanese firms for the period from 1990 to 2004. The analysis is applied at the levels of the full sample and divisions of the sample by industry and by size. Findings reveal that a strong negative relationship between the length of the firm's cash conversion cycle and its profitability is found in all of the authors' study samples except for consumer goods companies and services companies. Baños-Caballero, García-Teruel, and Martínez-Solano (2010) asserted that a longer CCC might increase a firm's sales and profitability for several reasons: First, a firm can increase its sales by extending a higher trade credit that helps the firm to strengthen its relationships with its customers. Second, more extensive inventories can prevent interruptions in the production process and loss of business because of the scarcity of products.

The results of a study by Deloof (2003) showed a significant and negative relationship between cash conversion cycle and profitability of Belgian firms. Shin and Soenen (1998) also reported a significant negative relationship between the net trade cycle and profitability for US firms. ALShubiri (2011) argues that funds committed to working capital can be seen as hidden sources that can be used for improving a firm's profitability. Karaduman et al. (2011) revealed the significant and negative relationship between the cash conversion cycle and profitability measured by return on assets of companies listed on the Istanbul Stock Exchange.

Uyar (2009) examined the relationship among the cash conversion cycle, size and profitability for firms listed on the Istanbul Stock Exchange. The results showed a significant negative correlation between the cash conversion cycle and profitability, as well as between the cash conversion cycle and firm size. The results also showed a shorter cash conversion cycle of the retail/ wholesale industry than that of manufacturing industries. Lazaridis and Tryfonidis

(2006) investigated the significant relationship between operational profitability and the cash conversion cycle; the results also showed that executives could increase the profitability of their firms by correctly handling the individual components of working capital to an optimal level.

The rationale of the research is to examine the impact of the cash conversion cycle on financial performance in a different context, Sri Lanka. Earlier literature depicts mixed results; hence it may be concluded that the relationship must be investigated further under different settings better to generalize the results for future propositions in this regard. So in this research, return on equity and return on assets are taken as proxies of financial performance to identify and measure the influence of cash conversion cycle on financial performance as measured by return on assets and return on equity, while taking current ratio, firm growth and leverage as control variables.

RESEARCH METHODOLOGY

The research methodology is a planned sequence of the entire process involved in conducting a research study. It is the "blueprint" of the study. Based on the empirical evidence, the following conceptual framework was developed to examine the influence of CCC on the financial performance of listed manufacturing companies in Sri Lanka.

Sample and Data

This study examines the relationship between the cash conversion cycle and the financial performance of listed companies in the manufacturing sector in Sri Lanka. The Colombo Stock Exchange (CSE) has 299 companies representing 20 business sectors as at 29th March 2018, with a Market Capitalization of Rs.3, 032.7Billion. The target population of the study is 41 manufacturing firms listed on the Colombo Stock Exchange. The sample of the study is twenty listed companies randomly selected within this industry. The study focused on listed companies due to easy accessibility to the financial information of the selected firms. The secondary data is collected from audited financial statements of listed manufacturing companies in the Colombo Stock Exchange and the study covers seven years between 2011 and 2018. Information extracted from financial statements is fully audited and therefore, data are considered reliable.

Variable selection

The primary independent variable, cash conversion cycle, may overlap with other variables such as current ratio, leverage and firm growth. To measure the effect of each variable, the independent variables are classified into two groups, i.e., the main independent variable and control variables. In agreement with Lazaridis and Tryfonidis (2006), the independent variable, the Cash conversion cycle, is measured as follows: number of days of accounts receivable + number of days of inventory - number of days of accounts payable. In other words, CCC is a proxy for the net time interval between a firm's cash expenditures for purchases and its final recovery of cash receipts in terms of days. Return measures dependent The dependent variable, financial performance on Assets (ROA) and Return on Equity (ROE). It explains how organizations can increase their revenue and generate sales by utilizing the available resources optimally. Control variables of the study are current ratio, leverage and firm growth. The current ratio is calculated by current assets to current liabilities, whereas leverage as measured by debt to equity. Firm growth is the log of total assets.

Conceptual Framework

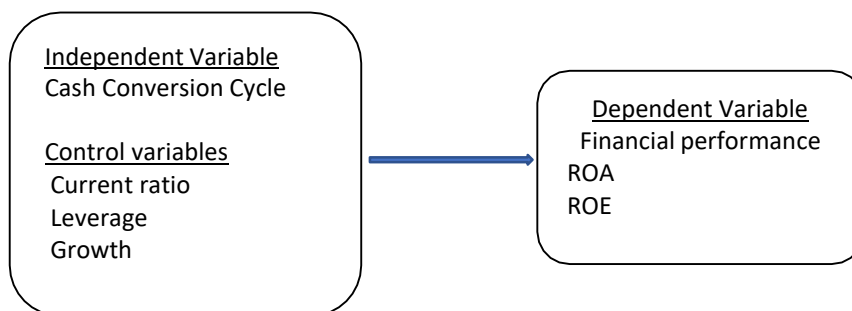


Figure1: Conceptual Framework

The hypotheses of the study

Based on the empirical studies of the cash conversion cycle, the following hypothesis was formulated:

H₁: Cash conversion cycle has a significant and negative influence on Return on equity.

H₂: Cash conversion cycle has a significant and negative influence on Return on assets.

Model Specification

The following multiple regression model is to examine the impact of the cash conversion cycle on the financial performance of the listed manufacturing companies in Sri Lanka.

$$ROA = \beta_0 + \beta_1 CCC + \beta_2 CR + \beta_3 LE + \beta_4 GR + \varepsilon \dots\dots\dots (1)$$

$$ROE = \beta_0 + \beta_1 CCC + \beta_2 CR + \beta_3 LE + \beta_4 GR + \varepsilon \dots\dots\dots (2)$$

Where,

- ROA - Return on Assets
- ROE - Return on Equity
- CCC - Cash conversion cycle
- CR - Current ratio
- LE - Leverage
- GR - Growth
- E - Error term
- $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ - Model coefficients

Pearson's correlation and multiple regression analysis were employed to analyse the data of the cash conversion cycle and financial performance measured by ROE and ROA from 2011 to 2018.

DATA ANALYSIS

Correlation Analysis

Correlations between the variables considered in the study are presented and calculated based on the 140 observations from 20 listed manufacturing companies in Sri Lanka. Table 01 presents the Pearson correlation coefficients between the cash conversion cycle and financial performance variables.

Table 1: Correlation Matrix

Correlation						
Probability	CCC	Current ratio	Leverage	Growth	ROA	ROE
CCC	1.000					

Current ratio	0.128	1.000				
	0.130	-----				
Leverage	-0.091	-0.009	1.000			

	0.282	0.915	-----			
Growth	0.095	-0.010	0.529	1.000		
	0.263	0.897	0.000	-----		
ROA	-0.368	-0.036	-0.178	-0.043	1.000	
	0.000	0.665	0.034	0.612	-----	
ROE	-0.321	-0.040	0.055	0.060	0.898	1.000
	0.000	0.637	0.517	0.481	0.000	-----

Source: Survey data

As shown in Table 01, cash conversion cycle is significantly negative correlated with financial performance measured by ROA ($r = -0.368$, $p = 0.000 < 0.01$) and ROE ($r = -0.321$, $p = 0.000 < 0.01$) at 0.01 levels. Further, current ratio and growth are not correlated with ROA and ROE, while leverage is significantly related to only ROA ($r = -0.178$, $p = 0.034 < 0.05$) at 0.05 levels. Therefore, it can be concluded that there is a significant negative correlation of cash conversion cycle with financial performance and there is no correlation of control variables such as current ratio and growth with financial performance.

Test for Variance Inflation Factor (VIF)

A variance inflation factor (VIF) provides a measure of multicollinearity among the independent variables in a multiple regression model. Detecting multicollinearity is essential because while it does not reduce the explanatory power of the model, it does reduce the statistical significance of the independent variables.

Table 2: Multi-Co Linearity among the independent variables

Variables	Collinearity Statistics	
	Tolerance	VIF
CCC	.946	1.057
Current ratio	.983	1.018
Leverage	.700	1.430
Firm growth	.699	1.431

Source: Survey data.

The variance inflation factor is used to identify the multicollinearity using SPSS and, if the VIF is higher than 10, which is a clear case of multicollinearity (Hair et al., 1995). In this study multicollinearity, problem do not arise among the variables as all variance inflation factors are less than 10.

Multiple Regression Analysis

The regression was carried out in order to assess how well the financial performance can be explained by knowing the value of the cash conversion cycle. Table 3 illustrates the influence of the cash conversion cycle on financial performance measured by ROE and ROA in Model I and Model II respectively.

The value of the coefficient of determination (Adjusted R-Squared) in the model I is 0.4608, implies that CCC can explain 46.08% of the variation in ROE, current ratio, leverage and growth and remaining 53.92 % of variation is not explained in this model. Adjusted R-squared for model II is 0.3977%, implies that CCC can explain 39.77% of the variation in ROA, current ratio, leverage and growth and remaining 60.23 % of the variation is not explained in this model. An Analysis of Variance (ANOVA) indicates that models are significant for ROE and ROA.

Table 3: Coefficients for predictors of financial performance

Variables	Model I: ROE		Model II: ROA	
	Fixed	Random	Fixed	Random
Constant	0.076939 (0.000)	0.097254 (0.0000)	0.087318 (0.0001)	0.117123 (0.0000)
CCC	0.00000123 (0.848)	-0.0000958 (0.0221)	0.0000233 (0.8148)	-0.000124 (0.0494)
Current ratio	-0.0000465 (0.6111)	-0.0000195 (0.8311)	-0.0000935 (0.5106)	-0.0000508 (0.7133)
Leverage	-0.015605 (0.1348)	-0.016986 (0.4534)	0.015303 (0.1798)	0.009667 (0.3584)
Growth	0.000997 (0.7204)	0.002049 (0.0143)	-0.003684 (0.3949)	-0.000871 (0.8364)
Observation	140	140	140	140
R- Squared	0.569641	0.548209	0.526462	0.426261
Adj. R-Squared	0.484312	0.460897	0.43257	0.397706
F-statistic	6.675769	2.863524	5.607143	1.269856
Prob (F-statistic)	0.000	0.025738	0.000	0.004957

Durbin-Watson stat	1.995282	1.639129	2.010743	1.63925
<hr/>				
Hausman Specification				
Test Prob> Chi-sq		4 (0.0841)		4 (0.1986)
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Source: Survey data.

As per the result of the fixed-effect model cash conversion cycle and control variables such as current ratio, leverage and growth are not contributing to financial performance. Further, Hausman (1978) suggested a test to check whether the individual effects are correlated with the regressors. Under the null hypothesis, no correlation between individual effects and explanatory variables, both random effects and fixed effects estimators, are consistent but the random effect estimator is efficient while fixed effects are not. Under the alternative hypothesis, individual effects are correlated with the regressors; the random effects estimator is inconsistent while the fixed effects estimator is consistent and efficient. The hypotheses were tested while applying the Hausman test. The results of the Hausman specification test do not allow rejecting the null hypothesis that the difference in coefficients is not systematic. Given such results, the preferred model is the Random-effects GLS for two models because it is consistent and efficient under the circumstances.

Therefore, it can be concluded that the cash conversion cycle has a negative influence on financial performance measured by ROE and ROA in listed manufacturing companies of Sri Lanka. So hypothesis I and hypothesis II are supported with findings which are collaborated with previous studies such as Chong-Chuo Chang (2018); Nobanee, Abdullatif and AlHajjar (2011); Deloof (2003) and Karaduman et al. (2011). Control variables such as current ratio and leverage have an insignificant influence on ROE whereas growth has a significant influence on ROE. Moreover, there is no the significant influence of current ratio, leverage and growth on ROA.

This study implies that a firm with a relatively shorter period of cash conversion cycle is more profitable. Therefore, reducing the firm's CCC is a potential way for the firm to create additional shareholder's value. This is in line with Deloof (2003) and Shin and Soenan (1998), who found a strong negative relationship between Cash Conversion Cycle and Profitability. Furthermore, the Debt ratio has a significant impact on corporate profitability measured by ROA.

CONCLUSION AND RECOMMENDATIONS

Working capital management is vital to a firm's effective performance and firm value. However, most previous literature on corporate finance has conferred issues regarding the association between long-term financial decisions, such as capital structure and capital expenditure, and corporate performance. Existing studies have seldom explored issues regarding liquidity management; hence, this study conducted an empirical analysis of the influence of the cash conversion cycle on the financial performance of listed companies in Sri Lanka.

The results indicate that CCCs exhibit a significantly negative influence on financial performance measured by ROA and ROE. This finding indicates that firms can shorten their CCC to increase financial performance. The listed companies can improve financial performance by shortening the cash conversion cycle. Cash conversion cycle can be shortened by reducing the inventory conversion period via processing and selling goods more quickly, or by reducing the receivable collection period via speeding up collections, or by lengthening the payable deferral period through slowing down payments to suppliers. Shortening the cash conversion cycle improves the performance of a firm because the longer the cash conversion cycle, the higher the need for expensive external financing. Therefore, by reducing the time that cash is tied up in working capital, a firm can operate more efficiently.

Collectively, this study provides essential implications to corporate managers in the efficient and effective management of the CCC. Avenues for future research include two directions. First, there should be similar studies in countries with different institutional characteristics and financial systems. Second, there should be studies that focus on the working capital management policies and profitability of Sri Lankan firms. Working capital management policies include both investing and financing policies.

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