

CASH CONVERSION CYCLE AND FIRMS' PROFITABILITY – A STUDY OF LISTED BEVERAGE, FOOD AND TOBACCO COMPANIES OF SRI LANKA

A.M. Inun Jariya ✉

*Department of Accountancy and Finance,
Faculty of Management and Commerce,
South Eastern University of Sri Lanka. Oluvil # 32360.*

Abstract

The purpose of this study is to examine the relationship between cash conversion cycle (CCC) and profitability of firms at Food, Beverage and Tobacco sector in Sri Lanka. CCC and the properties of namely days of sales outstanding days (DSO), days of inventory on hand (DIH) and number of days of payable (NDP) have been used to measure the CCC. Profitability is measured through return on asset (ROA) and return on equity (ROE). Analyzing a sample of 20 randomly drawn companies listed in Colombo Stock Exchange (CSE) in Food, Beverage and Tobacco sector over five years from 2011 to 2015, the study finds that CCC is negatively and significantly related to the profitability measure of ROE. Food, Beverage and Tobacco companies can increase profitability by maintaining shorter CCC. This investigation is significant as prior literature on CCC and profitability nexus in Food, Beverage and Tobacco sector is extremely limited. Findings obtained here are useful for Food, Beverage and Tobacco companies and policy makers to ensure efficient CCC at Food, Beverage and Tobacco sector in Sri Lanka.

Keywords: Cash conversion cycle (CCC), Profitability, Food, Beverage and Tobacco Companies, Sri Lanka

Introduction

The interest in cash conversion cycle (CCC) has grown over the last three decades because it substantially effect the behavior of profitability of firms. CCC is used to assess the effectiveness of the company's overall financial health (Richards & Laughlin, 1980). According to Eljelly (2004) the ultimate measure of the efficiency of liquidity planning and control is the effect it creates on profits and shareholders' value. At the same time, Nijam (2016) claims that profitability is a crucial measure in determining stock return and the share prices thereby influencing firms' valuation. Though an extensive amount of literature is being added in relation to CCC and profitability, there are conflicting findings exist among the researchers. Some of the studies found a significant positive relationship between CCC and profitability of firms (for example Nobanee, Abdullatif & Al Hajjar, 2011; Teruel & Solano, 2007; Hutchison, Farris & Anders, 2007). Whereas

there are some studies found negative relationship between CCC and profitability of firm (for example; Eljelly, 2004; Padachi, 2006). Therefore, the relationship between CCC and profitability has been drawn the special attention of researchers and practitioners and empirical evidences are being still sought from different perspectives.

The cash conversion cycle measures the number of days between the expenditure of the company's cash for the acquisition of raw materials to manufacture the products, and the collection of cash obtained from the sale of the finished goods (Sathyamoorthi & Wally-Dima, 2008). CCC length is considered among the fundamental ingredients of the working capital management (Appuhami, 2008; Keown, Martin, Petty & Scott, 2003; and Bodie & Merton, 2000). It is invariably useful as a comprehensive measure because it effectively takes into account the time lag between the expenditure for the acquisition or

purchases of raw materials and the collections from the debtors on account of the sales of finished goods (Padachi, 2006). It has been argued that an effective and efficient handling of short term assets and the corresponding payables is really a question of life and death for the business enterprises and has much to do with the continued existence of the firms (Jose, Lancaster & Stevens, 1996).

Further, the most of the existing studies are from foreign countries and industry specific. But, in case of Sri Lanka, very few studies focused on examining the relationship between CCC and profitability (for example, Lingesiya & Nalini (2011), Niresh (2012), Murugesu (2013), Priya & Nimalathasan (2013), Ajanthan (2013), Jayarathne (2014) and Nijam. (2016)). However, these studies do not specifically focus on exploring the impact of CCC on profitability of Beverage Food and Tobacco companies operating in Sri Lanka.

Food, Beverage and Tobacco sector is one of the important sectors due to its potential to deliver a host of benefits to the economy in terms of foreign exchange earnings, providing a suitable source of employment, contributing to innovation in the food system, uplifting of rural economy and playing an important role in local economy with the export revenue of 327 million US dollar in 2016 and an average growth of 1.88% per annum, Narandeniya (2017). However, the Sri Lankan Food, Beverage and Tobacco sector has encounter challenges of high cost of investment, high cost of production, difficult to obtain loans for the SME companies with in this sector and prevailing high interest rates in Sri Lanka. On the other hand, the Food, beverage and Tobacco industry has a potential for further expansion utilizing the resources available in the country and has a potential to develop/increase exports to the ethnic markets such as Middle East, Australia, United Kingdom, Canada and USA, Narandeniya (2017). Thus, the Sri Lankan Food, beverage and Tobacco primarily need to rely on internal cash flows for meeting the

current obligation and future capital expansion. This scenario necessarily requires efficient management of CCC of Food, beverage and Tobacco companies in Sri Lanka. Thus, the performance of Food, Beverage and Tobacco firms in Sri Lanka is assumed to be interconnected with how they manage their cash conversion. The objective of this paper is therefore to examine the CCC and the profitability of Food, beverage and Tobacco companies in Sri Lanka.

Literature Review

There is a widespread literature on the link between liquidity and profitability. Different findings have been reported in different countries and sectors. This section tries to review literature on the relationship between CCC and profitability.

Nobanee, Abdullatif & Al Hajjar (2010) evaluate the relationship between CCC and firm's performance using 34,771 companies active in Tokyo Stock Exchange, Japan during 1990-2004 and show that there is a strong negative relation between the length of the firm's CCC and its profitability in all of their study samples except for consumer goods companies and service companies. Their study further suggests that working capital managers of the Japanese firms can improve the profitability of their firms by shortening the cash conversion cycle.

Anser & Malik (2010) investigated the impact of CCC on profitability of listed manufacturing companies at Karachi stock exchange of Pakistan during 2006-2010 and show that CCC has significant inverse association with both return on assets and equity. Further, this study suggested that manufacturing companies are required to well estimate and evaluate the cash flows of the business, to well identify the long run and short run cash inflows and outflows to timely sort out the cash shortages and excess to formulate financing and investing strategies respectively.

Talonpoika., Monto, Pirttila & Karri. (2012), studied a new measure, the modified cash

conversion cycle (MCCC), and tested with empirical data of companies in Helsinki Stock Exchange and the study found that the MCCC reveals the real efficiency of operational working capital in companies that receive advance payments to a remarkable extent.

Attari & Raza (2012) investigate the association of cash conversion cycle with the size and profitability in Pakistan manufacturing companies over the 2008-2011 period using One-Way ANOVA and Pearson correlation techniques to analyze cross-sectional panel data covering 31 manufacturing companies operating in four industries (namely Automobile and Parts, Cement, Chemical, and Food Producers) and find that CCC significantly and negatively affects profitability in terms of return on total assets. They also report that the firm-level control variable, size in terms of total assets also significantly and negatively affect firms' profitability. These findings imply that managers to set up ideal threshold points within the context of liquidity management in the related sectors.

Majeed, Makki, Saleem & Aziz. (2013), this study examined the impact of different variables of cash conversion cycle on firm's performance in Pakistan. And the study found that the average collection period of accounts receivables, inventory conversion period and Cash conversion cycle (CCC) have negative relationship with firm's performance by using the sample of 32 companies selected randomly from three manufacturing sectors i.e. chemical, automobiles and construction & material for the period of five years ranging from 2006 to 2010.

Panigrahi (2013) examines the relationship between CCC and profitability of top five cement companies in India over the 2001-2010 periods and confirms that there exists a significant positive relationship between the CCC and such dependent variables as return on assets and equity. He also report that the firm-level control variables such as firm size

and debt ratio has insignificant effect on firms' profitability. These findings imply that managers could increase firms' profitability by having shorter CCC.

Manyo (2013) investigated the impact of CCC on return on assets. He employed both cross sectional and time-series regression analysis for a sample of 46 quoted firms listed on the Nigerian Stock Exchange from 2000 to 2009 and find that all components of cash conversion cycle (receivable conversion period, inventory conversion period, and payable deferral period) have negative relationship with profitability of return on assets. This study considered firms' size and growth as controllable variables. They suggest that managers can increase profitability by reducing the number of days in cash conversion cycle there by increase profitability as to create value for shareholders.

Yazdanfar & Ohman. (2013) provides empirical evidence that CCC significantly affects profitability. In addition, the firm-level control variables size, age, and industry affiliation significantly affect firm profitability. These findings imply that managers could increase firm profitability by improving their working capital management.

Muscettola (2014) show the CCC has no significant positive association with the profitability measure of net sales by analyzing 4,226 Italian manufacturing small medium enterprises, with revenues from 5 million to 50 million Euro over a period from 2007 to 2010. This study considered the rigidity of the assets as controllable variable which has statistically significant positive relationship with the profitability and the incidence of inventories and trade receivables to total assets have showed a negative trend. The study suggests that the relation between asset liquidity and profitability depends strongly on investment opportunities and, least as far as the sample of Italian firms analyzed, cannot be easily generalized.

Warrad (2015) examines the impact of CCC on the liquidity of 8 services firms in Jordan over the 2009-2012 periods and confirms that there is no significant impact exist between the CCC and Jordanian services firms' liquidity expressed by current ratio and quick ratio. The study suggests that services firms to apply a reduction cost strategy to restore the harmony between revenues and operating cost.

Cristea and Cristea (2018) examined the relationship between and profitability based on a sample comprising 330 Romanian companies on the Bucharest Stock Exchange Market operating in twelve industries over 2002-2016 period and find a negative relationship between CCC and profitability. They also suggest that for improving the profitability of the firm, number of days in CCC should be reduced.

There are some recently reported evidences such as, Lingesiya & Nalini (2011), Niresh (2012), Murugesu (2013), Priya & Nimalathan (2013), Ajanthan (2013), Jayarathne (2014) and Nijam. (2016), with in the context of Sri Lanka in relation to liquidity and profitability and there are sector specific. Lingesiya & Nalini (2011) reported a significant negative relationship between liquidity and profitability of 30 manufacturing firms in Sri Lanka over a period of 5 years from 2006 to 2010. Similar findings also reported in the study of Murugesu (2013), Priya and Nimalathan (2013), Ajanthan (2013) & Jayarathne (2014) who investigated firms in manufacturing sector in Sri Lanka. However, different conclusion found in Niresh (2012) and Nijam. (2016). Niresh (2012) found no significant relationship between liquidity and profitability by examining 31 listed manufacturing firms in Sri Lanka over a period of 5 years from 2007 to 2011. On the other hand Nijam (2016) investigated relationship between liquidity and profitability of 26 firms at hotels and travels sector listed in Sri Lanka over a period of three years from 2011-2013 and highlights

that liquidity in terms of CCC is positively and significantly related to the profitability.

Drawing from the above literature review it could be concluded that there are different directions observed such as positive, negative, significant and insignificant in between CCC and profitability across different sectors and countries.

Methodology

The aim of this research is to examine the relationship between CCC and profitability of Sri Lankan listed Food, Beverage and Tobacco companies. The study takes a quantitative approach which employs only the secondary data collected through annual reports of the firms covering the time span of five (5) years period from 2011 to 2015. The annual reports were obtained through the online database of Colombo Stock Exchange (CSE). The total number of firms listed in CSE, as at the period of this study, was 295 companies representing 20 sectors out of which 23 companies were under Food, Beverage and Tobacco sector which constituted the sample frame of this investigation. This research randomly sampled 20 Food, Beverage and Tobacco companies which represented approximately 87% of the population.

Measuring Cash Conversion Cycle and Profitability

Working capital management plays very important role in maintaining the efficient liquidity position of any organization. CCC has been considered as a useful measure of firm's effective working capital management and especially the cash management Attari & Raza (2012). Bodie & Merton (2000) define the CCC as the number of days between the date the firm must start to pay cash to its suppliers and the date it begins to receive cash from its customers. Eljelly (2004) describe CCC as the period of time between the actual expenses for production and actual cash received by a special sale of goods or services. Further, Keown et al. (2003)

describe the CCC as the sum of days of sales outstanding (average collection period) and days of sales in inventory less days of payables outstanding. Thus, CCC measures how long a firm will be deprived of cash if it increases its investment in capital in order to expand the sales. A firm could even realize a negative cash conversion cycle by collecting from customers before paying suppliers.

According to The Association of Chartered Certified Accountants (ACCA) (2010) CCC is calculated as (days of sales outstanding) + (days of inventory on hand) – (number of days of payables) where the days of the sales outstanding measures the average number of days from the sale of goods to collection of resulting receivables and calculated as [(accounts receivable/sales)*365], where the days of inventory on hand represents the average length of time needed for converting raw materials into finished goods and selling these goods which is calculated as [(inventory/cost of goods sold)*365] and where the number of days of payable measures the average length of time needed to purchase goods and pay for them and it is computed as [(accounts payable/cost of goods sold)*365]. Thus the formula of CCC which is the independent variable of this study and its components are summarized in the table 1.

Table 1. Measures of Independent Variable

Measures	Formula
Days of sales outstanding (DSO)	AAR/SAL*365
Days of inventory on hand (DIH)	AIN/COS*365
Number of days of payable (NDP)	AAP/COS*365
Cash conversion cycle (CCC)	[(DSO + DIH) – DP]
Where, AAR = Average accounts receivable, SAL – Sale, AIN = Average inventories, COS = Cost of sales and AAP = Average accounts payable.	

Literatures which sought to investigate CCC and profitability relationship have used different profitability measures. This study tests the impact of CCC on all such profitability measures as return on assets

(ROA) and return on equity (ROE). Table 02 provides the equations used on profitability measures which are dependent variables of this study.

Table 2. Measures of Dependent Variables

Measures	Formula
Return on assets (ROA)	PBT/TOA * 100
Return on Equity (ROE)	PAT/EQT * 100
Where, PBT = Profit before tax, TOA = Total Assets, PAT = Profit after Tax, EQT = Shareholders' Equity	

Model Specification

The present study basically tries to test the relationship between cash conversion cycle (CCC) and the profitability. Thus, the basic model to test that relationship can be stated as below.

$$\text{Profitability} = \alpha + \beta_1 \text{CCC} + e_i \dots\dots\dots(1)$$

As the profitability, the dependent variable, is here represented by Return on Assets (ROA) and Return on Equity (ROE), the above basic model (1) would be analyzed so that each such profitability measure be a dependent variable and thus be expressed as;

$$\text{ROA} = \alpha + \beta_1 \text{CCC} + e_i \dots\dots\dots(2)$$

$$\text{ROE} = \alpha + \beta_1 \text{CCC} + e_i \dots\dots\dots(3)$$

Results and Discussion

Table 3 summarizes descriptive statistics of the variables ruling this study.

Table 3. Descriptive Statistics

Variables	Mean	Medium	Maximum	Minimum	Standard Deviation
CCC	48.27	47.40	71.94	38.00	60.80
ROA	-25.93	-23.72	-.47	-8.88	1.41
ROE	-19.95	-17.94	1.14	-8.73	1.52
Where, CCC = Cash Conversion Cycle, ROA = Return on Assets, ROE = Return on Equity, n= 100 (Firms year observations)					

Accordingly, the mean value for CCC is 48 days with standard deviation of 61 days. The mean of return on assets of Food, Beverage and Tobacco firms here is -26% with 1.5% as standard deviation. The mean of return on equity is -20%.The standard deviation is 1.5% and minimum and maximum percentages are -9% and 1% respectively.

Table 4. Correlation Results

		CCC	ROA	ROE
CCC	r Sig	1		
ROA	r Sig	-0.105 0.299	1	
ROE	r Sig	-0.212* 0.034	.952** 0.000	1

Where, CCC= Cash Conversion Cycle, ROA= Return on Assets, ROE= Return on Equity.
n= 100 (Firms year observation).
*Significance at the alpha value of 0.05
**Significance at the alpha value of 0.01

Table 4 provides that CCC significantly and negatively correlate with such profitability measures as ROE (r= -.212, p= .034) while CCC has no statistically significant relationship with the profitability measure of ROA.

Regression analysis is performed for each profitability measure and CCC using Ordinary Least Square Method (OLS). CCC is used in the regression model as a composite value of DSO, DIS and DP. Regression results are summarized in table 5 and table 6. The analysis finds that the composite value of CCC is significant at alpha value of 0.05 when modeled with ROE. CCC in its aggregate is however insignificant in ROA model. ROE model has higher explanatory power (Adj R²= 4.5%, F = 4.0603) as compared to ROA models with composite

Table 5. Regression Models' Summary

Model	R	R ²	Adj. R ²	SE	F-Stat	Sig.
ROA = $\alpha + \beta$ CCC+ <i>ei</i>	0.105	0.011	0.001	1.408	1.019	0.299
ROE = $\alpha + \beta$ CCC+ <i>ei</i>	0.212	0.045	0.035	1.495	4.0603	0.034

Where, CCC= Cash Conversion Cycle, ROA= Return on Assets, ROE= Return on Equity
n= 100 (Firms year observation), **Significance at the alpha value of 0.05

CCC. It is also noted that ROE model with composite CCC is the statistically significant compared to ROA model which is insignificant.

The coefficients of the models suggest that CCC is negatively and significantly related to return on equity of Food, Beverage and Tobacco firms in Sri Lanka. Accordingly, the larger the CCC the lower is the return on equity. However, CCC is not significant in the regression model of ROA.

Table 6. Parameter Estimates of Regression Models

Model	Coefficients	
	α	β
ROA = $\alpha + \beta$ CCC+ <i>ei</i>	-1.420 (0.213)	-0.243 .299
ROE = $\alpha + \beta$ CCC+ <i>ei</i>	0565 (.639)	-0.530 (.034)**

Where, CCC= Cash Conversion Cycle, ROA= Return on Assets, ROE= Return on Equity.
n= 100 (Firms year observation).
**Significance at the alpha value of 0.05

Conclusion

The overall analysis indicates that CCC is negatively and significantly related to the profitability measure of return on equity of companies in Food, Beverage and Tobacco sector in Sri Lanka. This implies that CCC is more sensitive when the profitability is measured in terms of net profit margin. Companies in Food, Beverage and Tobacco sector in Sri Lanka tend to entertain higher profitability by allowing lower period of CCC. This finding is in line with that of Nobanee, Abdullatif and Al Hajjar (2010); Anser and Malik (2010; and Majeed, Makki, Saleem & Aziz. (2013) which found the significant negative relationship between CCC and profitability of the firms.

References

- The Association of Chartered Certified Accountants (ACCA), (2010) Official Text of the Professional Qualification, Financial reporting (FR).
- Ajanthan, A. (2013), "A nexus between liquidity & profitability: a study of trading companies in Sri Lanka", *European Journal of Business and Management*, Vol.5 No.7, pp. 221-237.
- Anser, .R. and, Malik, .Q.A., (2013), "Cash Conversion Cycle and Firms' Profitability – A Study of Listed Manufacturing Companies of Pakistan", *IOSR Journal of Business and Management (IOSR-JBM)*, Volume 8, Issue 2, pp. 83-87
- Attari, .M.A, and Raza, .K (2012), "The Optimal Relationship of Cash Conversion Cycle with Firm Size and Profitability", *International Journal of Academic Research in Business and Social Sciences*, Vol. 2, No. 4. Pp. 189-203.
- Appuhami, B.A Ranjith (2008). The Impact of Firms' Capital Expenditure on Working Capital Management: An Empirical Study across Industries in Thailand. *International Management Review* Vol. 4 No. 1.
- Bodie, Z. and Merton, R. C., (2000). *Finance*, International Edition, Prentice-Hall, New Jersey.
- Cristea, C., and Cristea, M. (2018), "Cash conversion cycle and corporate performance: evidence from Romania", *MATEC Web of Conferences* 184, 04009 (2018)
- Deloof, M., (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business and Finance Accounting*, 30: 573-587.
- Eljelly, A. (2004). "Liquidity-Profitability Tradeoff: An empirical Investigation in an Emerging Market", *International Journal of Commerce & Management*, Vol 14 No 2 pp. 48 – 61.
- Hutchison, P. D., Farris II, M. T. & Anders, S. B. (2007), "Cash-to-cash analysis and Management", *The CPA Journal*, Vol. 77, No. 8, pp. 42-47.
- Jayarathne, T.A.N.R. (2014), "Impact of working capital management on profitability: evidence from listed companies in Sri Lanka, Proceedings of the 3rd International Conference on Management and Economics, University of Ruhuna, Sri Lanka, 26-27 February 2014, pp. 269-274
- Jose, M., Lancaster, C. & Stevens, J. (1996), "Corporate returns and cash conversion cycles", *Journal of Economics and Finance*, Vol. 20 No 1, pp. 33-46.
- Keown, A. J., Martin, J. D., Petty, J. W. & Scott, D. F., (2003). *Foundations of Finance*, 4th ed., Pearson Education, New Jersey.
- Lingesiya, Y. and Nalini, S.(2011), "Working Capital Management and Firms' Performance: An analysis of Sri Lankan Manufacturing Companies", <http://www.kln.ac.lk/uokr/ICBI2011/A&F%20113.pdf>
- Majeed, S., Makki, M. A. M, Saleem, S., and Aziz, T. (2013), "The Relationship of Cash Conversion Cycle and Profitability of Firms: An Empirical Investigation of Pakistani Firms", *Journal of Emerging Issues in Economics, Finance and Banking (JEIEFB) An Online International Monthly Journal*, 1 (1): 35-51.
- Manyo, T., N., (2013), "Does Cash Conversion Cycle Have Impact on Return on Assets of Nigerian Firms?", *Research Journal of Finance and Accounting* ,Vol.4, No.14, 34-42.
- Murugesu, T., (2013), "Effect of cash conversion cycle on profitability: listed plantation companies in Sri Lanka", *Research Journal of Finance and Accounting*, Vol.4 No.18, pp.132-137.
- Muscettola, M. (2014), "Cash Conversion Cycle and Firm's Profitability: An Empirical Analysis on a Sample of 4,226 Manufacturing SMEs of Italy", *International Journal of Business and Management*; Vol. 9, No. 5, 25-35.
- Narandeniya (2017), N., (2017), "Industry Capacity Report", *Export Development Board (EDB) in Sri Lanka*.

- Nijam, H.M., (2016), "Cash Conversion Cycle, Its Properties and Profitability: Evidence from Listed Hotel Companies in Sri Lanka", *Research Journal of Finance and Accounting*, (Online) Vol.7, No.1, pp. 23-32.
- Niresh, J. A. (2014), "Trade-off between liquidity & profitability: a study of selected manufacturing firms in Sri Lanka", *Journal of Arts, Science & Commerce*, Vol.03 No.4(2), pp. 34-40.
- Nobanee, H., Abdullatif, M., Al Hajjar, M. (2011), "Cash Conversion Cycle and Firm's Performance of Japanese Firms", *Asian Review of Accounting*, 19(2), 147-156.
- Padachi, K. (2006) 'Trends in Working Capital Management and its Impact on Firms' Performance: An analysis of Mauritian Small Manufacturing Firms', *International Review of Business Research Papers*, Vol. 2, No. 2, pp.45-58.
- Panigrahi (2013), A. K., (2013), "Cash Conversion Cycle and Firms' Profitability – A Study of Cement Manufacturing Companies of India", *International Journal of Current Research* Vol. 5, Issue, 06, pp.1484-1488.
- Priya, K. & Nimalathasan, B. (2013), "Liquidity management and profitability: a case study of listed manufacturing companies in Sri Lanka", *International Journal of Technological Exploration and Learning (IJTEL)*, Vol 2 No 4, pp. 161-165.
- Richards, V. D. & Laughlin, E.J., (1980) "A Cash Conversion Cycle Approach to Liquidity Analysis", *Financial management*, Blackwell Publishing, pp. 32-38.
- Sathyamoorthi, C. R. & L. B. Wally-Dima (2008), "Working Capital Management: The Case of Listed Retail Domestic Companies in Botswana", *Journal of Management Research*, Vol. 7, Issue 5, pp. 7-24.
- Teruel, P.J.G. & Solano, P.M. (2007) "Effects of Working Capital Management on SME Profitability", *International journal of Managerial Finance*, 3(2), 164-177
- Warrad, L., (2015), "The Impact of Cash Conversion Cycle on Services Firms' Liquidity: An Empirical Study Based on Jordanian Data", *International Journal of Business and Management*; Vol. 10, No. 10; 108-115.
- Yazdanfar, D. & Öhman, P.(2014), "The Impact of Cash Conversion Cycle on Firm Profitability", *International Journal of Managerial Finance*, Vol. 10 No. 4, pp. 442 – 452.