The Impact of Cash Conversion Cycle on Services Firms' Liquidity: An Empirical Study Based on Jordanian Data

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Abstract

Depending on (Warrad et al., 2015) study that represented the impact of turnover ratios on Jordanian services sectors' performance, which revealed adverse results in comparison with other previous studies on the same sector; the difference, was explained by the operating costs as an explanatory item. The researcher try to investigate again whether the distortion in the operating costs during the period from 2009 to 2012 which resulting from the excess of the increase in operating costs over the increase in revenues in the Jordanian services firms will make differences in the results in the current study from the results in the previous studies.

The current study aims to study the impact of cash conversion cycle on the liquidity of Jordanian services firms that expressed by current ratio and quick ratio during the period from 2009 to 2012. The results showed   that there is no significant impact of cash conversion cycle on Jordanian services firms' liquidity, also, there is no significant impact of cash conversion cycle on Jordanian services firms' current ratio, finally there is no significant impact of cash conversion cycle on Jordanian services firms' quick ratio, which prove the previous discussion, because of that The researcher recommends services firms' management to apply a reduction cost strategy to restore the harmony between revenues and operating cost.

Keywords: Cash Conversion Cycle (CCC), current ratio, quick ratio, Amman Stock Exchange (ASE)

1. Introduction

The long run is a misleading guide to current affairs. In the long run we are all dead. John Maynard Keynes

It would t not valuable to own a business that receives payment before the product has actually delivered, and it would not be clever to pay for purchased goods months after they have been delivered. (Schmidlin, N. 2014). Firms need cash to practice ordinary business transactions. Some firms keep excess cash in order to meet and cover unexpected expenses. Sometimes a firm delay for raw materials purchase decisions expecting that prices may increase or decrease. Predictions on price changes may require keeping higher cash balances. On the other hand, some banks require a part of a loan to keep on deposit in the bank for the age of a loan. These deposits, described compensating balances, should not be fixed as cash. Cash must be free from any restrictions. A company cannot use compensating balances to meet obligations. Compensating balances against short-term loans are usually represented separately in the current asset. Compensating balances against long-term loans are represented into long-term asset. The effective interest rate for a borrower with compensating balance requirements is greater than nominal interest rate. (http://www.marciniak.waw.pl/NEW/120031/FR9.pdf)

The assessment of a company's liquidity in a good manner, consider being very important because a decrease in liquidity cause a larger risk of bankruptcy. FASB describes liquidity as reflecting "an asset's or liability's nearness to cash" (Statement of Financial Accounting Concepts No. 5, Recognition and Measurement in Financial Statements of Business Enterprises). (CAGLE et al., 2013).

Effective and adequate management of a firm's liquidity indicates a leader element in securing the overall ability of a firm to meet its current obligations using current assets. In order to find a way to predict, manage, and evaluate the firms' liquidity, the firm identifies specific analytical tool called the cash conversion cycle. The cash conversion cycle can be defined as a number of days between actual cash outflows on firms' purchases and

actual cash inflows resulting from its sales. (Stojanovic, 2014).

The services sector considered as the most vital sector in the Jordanian economy, which comprises 67% of the GDP. Since Dec., 2000 Jordan has been a participant in the (WTO) General Agreement on Trade in services and one of the seven Mediterranean partners that officially opened negotiations on liberalization on services and the right of establishment at the Euro-Mediterranean Trade Ministerial Conference in Marrakech. Liberalization will provide Jordan with access to the EU services market, the largest in the world, and provides benefits from EU service technologies, company links and investments. (http://www.jedco.gov.jo/joomla/index.php).

This paper will try to investigate the impact of cash conversion cycle on services firms' liquidity as a prominent sector in Jordanian economy for the period from 2009 to 2012, and will try to compare its results with other related studies, finally try to explain the causes of difference if they were founded.

2. Previous Studies

The relationship between cash conversion cycle as a liquidity indicator and the current ratio and quick ratio for food and beverage industry of Greece food companies was represented by Lyroudi et al. (2000) study which applied regression an correlation analysis, and t-tests of two independent sample means. The results showed a significant positive relationship between the cash conversion cycle and the current and quick ratios; also the cash conversion cycle was positively related to the ROA and the net profit margin but had no linear relationship with the leverage ratios. Also, the two liquidity ratios had negative relationship with the debt- to -equity ratio, and a positive relationship with the times interest earned ratio, all the above with no difference between the liquidity of large and small firms.

The relationship of a tool in working capital management cash conversion cycle with profitability, liquidity and debt structure was represented by Kurt et al. (2002). The study was applied on data for the period from 1995 to 2000, on 167 firms which listed on the Istanbul Stock Exchange (ISE). The results showed a positive relationship between cash conversion cycle and liquidity ratios and negative relationship with return on asset and return on equity, also the results suggested that higher leverage ratio affects adversely the liquidity and profitability. On other hand there is no significant relationship between the cash conversion cycle and the leverage ratio. There is no significant difference in the cash conversion cycle on the basis of period, but it differs on the basis of sector and firm size.

The relationship between cash conversion cycle and levels of 879 small U.S. manufacturing firms' and 833 small U.S. retail firms' liquidity, invested capital, and performance was represented by Ebben et al. (2011) study revealed that cash conversion cycle was found to be significantly related to all of liquidity, invested capital, and performance, more efficient cash conversion cycle means better liquidity, need less debt and equity financing, and gives higher returns, moreover the small firm may be reactive in managing CCC. The study concentrated on the importance of cash conversion cycle as a proactive management tool for small firm owners.

Evaluation methods for a company's liquidity was investigated by Cagle, Corey et al. (2013) study by comparing Circuit City and Best Buy consumer electronics companies during ten-year period prior to Circuit City's bankruptcy filing in 2008. The results showed that the current ratio measure does not include a time factor but the cash conversion cycle formula incorporates time related to number of days of inventory on hand, number of days of sales outstanding, and number of days of payables.

Li-Hua Lin, et al. (2014) study compared two listed and delisted Taiwan food industries companies' performance using liquidity indicators. The study applied on financial data of the two listed and delisted companies for the period 1996 – 2005. After calculate their current ratio, quick ratio and cash conversion cycles, the results revealed that cash conversion cycle indicators better reflect the company's actual short-term debt-paying ability and liquidity.

The relationship between cash conversion cycle and performance of cement industry of 16 firms Pakistan for the period from 2007 to 2012 was represented by Yasir, M., et al. (2014) study which used the correlation and regression analysis. The study revealed a negative relationship between firm's cash conversion cycle and Companies' performance.

The effect of the net operating cycle on the Jordanian services' sector profitability was represented by warred L. (2015) study. The researcher used return on asset (ROA) and return on equity (ROE) as a measurement of profitability during the period from 2009 until 2013. The study revealed that there is no significant effect of net operating cycle on health care and hotels sectors' return on asset (ROA), there is no significant effect of net operating cycle on health care sectors' return on asset (ROA) and there is no significant effect of net operating cycle on hotels sectors' return on asset (ROA). Also the results indicates that there is no significant effect of net

operating cycle on health care and hotels sectors' return on equity (ROE), there is no significant effect of net operating cycle on health care sectors' return on equity (ROE) and there is no significant effect of net operating cycle on hotels sectors' return on equity (ROE).

3. Hypotheses

In order to study the impact of Cash conversion cycle on Jordanian service firms' Liquidity expressed by current ratio and quick ratio the researcher test the following hypotheses:

Main Hypothesis:

H_{01}: There is no significant impact of cash conversion cycle on Jordanian services firms' liquidity.

Sub Hypothesis

H_{11}: There is no significant impact of cash conversion cycle on Jordanian services firms' current ratio.

H_{12}**:** There is no significant impact of cash conversion cycle on Jordanian services firms' quick ratio.

4. Research Methodology

This study aims to investigate the impact of cash conversion cycle on service firms' liquidity; this is as an empirical study based on Jordanian data. The study is based on two factors to measurement of service firms' liquidity, namely services firms' current ratio and services firms' quick ratio. The study population consisted of all service firms' listed at Amman Stock Exchange (ASE) during the period (2009-2012), they are eight firm's types listed at service sector in ASE, namely Health Care Services, Educational Services, Hotels and Tourism Sector, Transportation Sector, Technology and Communication, Media Sector, Utilities and Energy, and Commercial Services. In addition, the required financial data for the study factors / variables will be gathered from the database of ASE available online during the study period. The database of ASE is based on the annual firm reports of the studied firms. Thereby, source of data is database of ASE.

Besides, quantitative strategy has been adopted for this study. This is because the study wants to explore the impact of cash conversion cycle on service firms' liquidity (services firms' current ratio and services firms' quick ratio). Also, the study wants to explore the relation and the strength of the relation amongst the factors / variables discussed in this study. Thus, the study is based on use the Statistical Package for Social Sciences (SPSS v. 20), were the study has been used Correlation and Simple Regression analysis to test the hypotheses.

4.1 The Research Sample

The study investigates financial reports for 8 Jordanian Service firms listed on the Amman Stock Exchange (ASE) for the period   from 2009 to 2012.

4.2 Variables of the Study

4.2.1 Independent Variable- Cash Conversion Cycle (CCC)

Cash Conversion Cycle (CCC)*: the cash conversion cycle is the length of time it takes to turn the firms' cash investment in inventory back into cash, in the form of collections from the sales of the inventory. The cash conversion cycle is computed from days of sales outstanding, days of inventory on hand, and number of days of payables as follow*: (Financial Reporting and Analysis, 2012)

> *Cash conversion cycle= (days of sales outstanding) + (days of inventory on hand) – (number of days of payables). (Financial Reporting and Analysis, 2012)*

4.2.2 Dependent Variables-Current Ratio, Quick Ratio

Current ratio: The current ratio measures the adequacy of current assets to meet the company's short-term liabilities. It reflects whether the company is in a position to meet its liabilities as they fall down. *(ACCA, 2010).*

It can be calculated as follow:

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Quick ratio: the quick ratio is also known as the acid test ratio because by eliminating inventory from current assets it provides the acid test of whether the company has sufficient liquid resources (receivables and cash) to settle its liabilities. (ACCA, 2010)

It can be calculated as follow:

$$\frac{\text{Current Assets - Inventory}}{\text{Current Liabilities}}$$

4.3 Data Analysis and Results

In order to achieve the study objectives, the study checked some of the pre-requisites of a certain key statistical application. The study data is checked for Normality by Normality test (Shapiro-Wilk test), and the result for this test was been the study data is normally distributed.

4.3.1 Descriptive Data Analysis

The current study has been used measures of central tendency through mean, standard deviation, the lowest and highest values. This is in order to describe and explain the nature of data and characteristics of data. The study used these measures due to the commonly used in previous studies. The following sections explain the result of these measures according to variables of this study respectively:

Cash Conversion Cycle

The following table shows the result of measures of central tendency (mean, standard deviation, the lowest and highest value).

Table 1. Cash conversion cycle

Sector	Cash Conversion Cycle			
	2009	2010	2011	2012
Heath Care Services	99.80	99.31	130.32	142.99
Educational Services	-15.32	-7.75	28.28	9.89
Hotels and Tourism	-12.89	-9.06	-4.38	-20.02
Transportation	-36.35	-0.20	3.64	-17.02
Technology and Communication	-400.25	-364.20	-369.09	-338.77
Media	158.88	142.67	81.20	90.44
Utilities and Energy	26.84	66.16	60.25	63.46
Commercial Services	63.13	58.51	64.44	45.96
Minimum	-400.25	-364.20	-369.09	-338.77
Maximum	158.88	142.67	130.32	142.99
Mean	-14.52	-1.82	-0.67	-2.88
Std. Deviation	169.09	156.19	155.11	146.51

Table 1 shown the results of the descriptive data analysis for the study period (2009-2012), it can be concluded on the basis of mean values that the maximum mean for Cash Conversion Cycle during the study period was (-0.67) for 2011 year, and the minimum mean for Cash Conversion Cycle during the study period was (-14.52), and this is for 2009 year. Besides, the standard deviation was (155.11; 169.09 respectively). Also, the lowest and highest values were (-400.25; 158.88 respectively), and this is for Technology and Communication firms, and Media firms during 2009 year. The reason for this conclusion is the fact that the global financial crisis (August, 2008) may be affected the Cash Conversion Cycle in 2009.

Liquidity

This study has discussed the liquidity variable through two factors current ratio and quick ratio in order to measurement of service firms' liquidity in this study. The following tables show the result of measures of central tendency (mean, standard deviation, the lowest and highest value) for services firms' current ratio and services firms' quick ratio during the study period (2009-2012).

Table 2. Current ratio

Sector	Current Ratio			
	2009	2010	2011	2012
Heath Care Services	1.03	1.19	1.08	1.14
Educational Services	0.80	0.87	1.00	1.08
Hotels and Tourism	0.98	1.48	1.16	1.39
Transportation	0.70	0.72	0.62	0.70
Technology and Communication	1.42	1.56	1.50	1.53
Media	3.29	2.66	1.89	1.09
Utilities and Energy	0.96	0.92	1.02	1.01
Commercial Services	2.09	1.83	1.72	1.39
Minimum	0.70	0.72	0.62	0.70
Maximum	3.29	2.66	1.89	1.53
Mean	1.41	1.40	1.25	1.17
Std. Deviation	0.88	0.63	0.42	0.26

The above table shown that the lowest value of services firms' current ratio was (0.62) in the year of 2011, and this is for Transportation sub-sector. Also, the highest value of it was (3.29) in the year of 2009 for Media sub-sector. The maximum mean for services firms' current ratio during the study period (2009-2012) was (1.41) for the year of 2009, and the minimum mean for it also was (1.14), and this is for the year of 2012, with the standard deviation (0.88; 026 respectively).

Table 3. Quick ratio

Sector	Quick ratio			
	2009	2010	2011	2012
Heath Care Services	0.89	1.04	0.94	1.06
Educational Services	0.75	0.81	0.94	1.03
Hotels and Tourism	0.94	1.42	1.12	1.33
Transportation	0.66	0.68	0.58	0.63
Technology and Communication	1.40	1.53	1.47	1.51
Media	2.48	2.06	1.46	0.78
Utilities and Energy	0.51	0.51	0.72	0.74
Commercial Services	1.81	1.57	1.46	1.14
Minimum	0.51	0.51	0.58	0.63
Maximum	2.48	2.06	1.47	1.51
Mean	1.18	1.20	1.09	1.03
Std. Deviation	0.67	0.53	0.35	0.30

In addition, Table 3 showed the results of the descriptive data analysis for services firms' quick ratio during the study period (2009-2012). The maximum mean for services firms' quick ratio was (1.20) for the year of 2010, and the minimum mean for it during the study period was (1.03), and this is for the year of 2012. Also, the standard deviation was (155.11; 169.09 respectively). The lowest services firms' quick ratio value was (051) for the period (2009-2010), and this is for Utilities and Energy firms (sub-sector). As, the highest services firms' quick ratio value was (2.48) in the year of 2009, and this is for Media firms (sub-sector).

4.3.2 Correlations between Variables

Spearman correlation test has been used in this study in order to find the relationship between the study variables/factors. The result of this test as follows:

Table 4. Correlations between variables

		Cash Conversion Cycle	Current Ratio	Quick Ratio
Cash Conversion Cycle	Pearson Correlation	1		
	Sig. (2-tailed)			
Current Ratio	Pearson Correlation	.086	1	
	Sig. (2-tailed)	.639		
Quick Ratio	Pearson Correlation	-.106	.954	1
	Sig. (2-tailed)	.564	.000	

According to the basis of P-Values in Spearman correlation test that shown in the above table 4, there is a positive correlation between Current Ratio and Quick Ratio (0.954) and it is under the significance level (of 0.05). The correlation between Cash Conversion Cycle and Current Ratio is (0.086) but it is not significance level. Besides, the correlation also between Cash Conversion Cycle and Quick Ratio is (-0.106), and it is not significance level.

4.3.3 Hypotheses Testing

On the basis of the measured data by Simple Regression analysis to test the hypotheses in this study, the following parts show the result of this test according to each hypothesis, both main and sub hypotheses.

Main Hypothesis

H01: There is no significant impact of cash conversion cycle on Jordanian services firms' liquidity.

This study aims to investigate the impact of cash conversion cycle on Jordanian services firms' liquidity, based on the period (2009-2012). Moreover, the following table 5 shows the result of Simple Regression test in order to achieve the objective of this study.

Table 5. Main hypothesis

Beta	R Square	Adjusted R Square	T	Sig.
.001	.000	-.033	-.004	.997

The Table 5 indicated that the correlation of cash conversion cycle and Jordanian services firms' liquidity is calculated to be (.001), and the significance level for this hypothesis shown that it is greater than the Significance level (0.05), hence null hypothesis (H01) is accepted. Besides, R^2 value of the full model regression is (0.000)-no interpreted ratio. Thereby, there is no significant impact of cash conversion cycle on Jordanian services firms' liquidity.

Sub Hypotheses

H011: There is no significant impact of cash conversion cycle on Jordanian services firms' current ratio.

This hypothesis looks at the impact of cash conversion cycle on Jordanian services firms' current ratio, based on the period (2009-2012). The current study is based on use the Simple Regression test, and the result of this test as follows:

Table 6. First sub hypothesis

Beta	R Square	Adjusted R Square	t	Sig.
.086	.007	-.026	.474	.639

From the above table, the correlation of cash conversion cycle and Jordanian services firms' current ratio is calculated to be (.086), and the significance level for this hypothesis shown that it is greater than the Significance level (0.05), hence null hypothesis (H011) is accepted. R^2 value of the full model regression is (0.007). Thereby, there is no significant impact of cash conversion cycle on Jordanian services firms' current ratio during the study period.

H012: There is no significant impact of cash conversion cycle on Jordanian services firms' quick ratio.

This hypothesis aims to investigate the impact of cash conversion cycle on Jordanian services firms' quick ratio;

this is during the period (2009-2012). The result of the Simple Regression as follows:

Table 7. Second sub hypothesis

Beta	R Square	Adjusted R Square	T	Sig.
.106	.011	-.022	-.583	.564

R^2 value of the model regression is (0.011) at Beta value of (0.106), thereby the correlation of cash conversion cycle and Jordanian services firms' quick ratio is calculated to be (.106), which is greater than significance level of (0.05), so it provides enough evidence that the model is not significant. As a conclusion, there is no significant impact of cash conversion cycle on Jordanian services firms' quick ratio during the study period (null hypothesis is accepted).

6. Summary and Conclusion

This study is achieved to approve if there is an impact of cash conversion cycle on the liquidity of Jordanian services firms that expressed by current ratio and quick ratio during the period from 2009 to 2012.

The following table shows the result of test the study hypotheses, both main and sub hypotheses.

Table 8. Conclusion

Hypothesis	Result
H01: There is no significant impact of cash conversion cycle on Jordanian services firms' liquidity.	Null hypothesis is accepted
H011: There is no significant impact of cash conversion cycle on Jordanian services firms' current ratio.	Null hypothesis is accepted
H012: There is no significant impact of cash conversion cycle on Jordanian services firms' quick ratio.	Null hypothesis is accepted

The results above mentioned the acceptance for all the null hypotheses, which means there is no significant impact of cash conversion cycle on Jordanian services firms' liquidity, also, there is no significant impact of cash conversion cycle on Jordanian services firms' current ratio, finally there is no significant impact of cash conversion cycle on Jordanian services firms' quick ratio. These results not accordance with the previous studies, which can be explained again by the distortion in the operating costs during the period from 2009 to 2012 which resulting from the excess of the increase in operating costs over the increase in revenues in the Jordanian services firms.

Depending on those results the researcher recommends services firms' management to apply a reduction cost strategy to restore the harmony between revenues and operating cost.

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