Working Capital Optimization: A Supply Chain Perspective

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Abstract

The reason for this study is to examine the effect of working capital optimization on the efficiency of Iraqi companies across various industries. The study uses least square model and panel data used for four industries. The analysis gives empirical confirmation that cash conversion cycle used as a proxy of working capital and impact significantly and negatively impact on profitability of the firm and also firm level control factor age and industry influence on the firm performance. Such results indicate that administration can improve organizational profitability by reducing its working capital. The findings of this study can be examined in various socio-economic and industrial contexts. This research is limited to the Iraqi context. This research applies the existing body of information to investigate a panel data set in the context of a developing economy by using the regression equation. This innovative research explores empirically the effect of working capital management on the performance.

Keywords

Working Capital Optimization, Cash Conversion Cycle, Performance, Iraq.

Introduction

Supply chain management (SCM) is the partnership between business partners manufacturers and manufacturers of essential raw materials, producers, distributors, transporters, retailers, banks and financial institutions, etc. the main definition is connected by products, information and finance flows (Kouvelis., Chambers., & Wang., 2006). The management of the upstream cash flow is as important as management of downstream product flows in order to ensure an efficient supply chain network. "From this point of view, working capital management (WCM) as an integral component of management of the

financial supplier chain (FSCM) has attracted considerable interest as it is a way to speed up work capital (WC) time-cycles and to increase the profitability of the company (Gupta., Dutta., 2010). For these reasons, the importance of effective WCM, particularly in emerging market SCs, has dramatically increased with difficulties in access to capital, limited financial infrastructure and, in the first place, legal, regulatory and accounting uncertainties (Deloof., 2003).

The increased volatility in financial-crises market conditions increased competition among organizations in the last decade. Organizations are searching for ways to improve their profitability and stay competitive on the market. There is never a normal way to finance operations through loans and advances. After the financial crisis, the financial situation forced companies to find ways to finance their activities. Working capital optimization is an important method of gaining competitive advantages in order to provide an effective supply of finances for supply chain (Simatupang, & Sridharan, 2005).

The WCM in SCs cannot be properly performed at intra-hierarchical level since it involves liabilities at the intergovernmental level of the SC and calls for cooperation at all phases of the SC. (Protopappa & Seifert, 2011). In recent literature it has taken charge of the management of working capital for smooth delivery of funds for the supply chain. Several studies have been carried out to concentrate this subject from the point of view of supply chain working capital management. The emphasis was on rising the working capital cycle in order to speed up profits and also to gain competitive advantages over rivals (Matyac, 2015).

Companies have historically aimed to boost the value chain through cost reduction strategies. Nevertheless, these strategies are not successful in creating a secure and long-term supply chain. (Ruyken, Wagner & Jonke, 2011). Mismanagement of the working capital is often in value chain systems, and subsequently, liquidity issues have increased threats against suppliers. (Ellram and Liu, 2002; Lee, 2004). These conditions have raised insolvency risks for upstream and downstream parties in the value chain, as new development restrictions and increasing premiums have increased the risk of debt coverage. Companies therefore have to reassess their working capital approach, because techniques and tools that have been very effective in the past are possibly not appropriate for what is to come, they will use new strategies.

Multinational companies closely track the supply chain and manage their working resources (Lazaridis and Tryfonidis, 2006; Otto and Obermaier, 2009) due to the fact that working capital management strongly affects their performance and profitability (Gomm, 2010).

Consequently, the conventional way to deal with management of working capital confined from supply chain cannot be lingered on (Smith and Buddress, 2005). An ultimate tool assess working capital management is cash conversion cycle also known as CCC (Farris and Hutchison, 2002). Reduce the cash exchange time, because of high turnover of working capital, improves productivity. Moreover, the minimum period of cash exchange reduces the resources used in the supply chain sector and thereby improves productivity. There is no rule of law for the cash conversion process, as it differs from company to company. This should be noted. Therefore, a reduced cash conversion time for one company can have a negative effect on another company in the same supply chain network. Working capital optimisation is therefore important for effective work capital management outcomes. The introduction of a single supply chain player will undermine the overall value of the network supply chain and adversely affect the profitability of networked businesses (Preve and Sarria-Allende, 2010).

Earlier literature explores the effect of work capital in large and developing economies (Shin & Soenen, 1998; Ajilore and Falope, 2009; Deloof, 2003; Padachi, 2006; Garcia-Teruel and Martinez-Solano, 2007). This Framework is explored in the Iraqi sense by the various effects of the socio-economic conditions of countries. This study analyzes the cash conversion period as a proxy for optimizing working capital for Iraqi cross-industrial results. In addition, CCC's relationship to Return on Capital Employee for each sector is evaluated to establish advice on working capital optimisation.

Literature Review

Supply Chain Finance is a single framework for tracking all financial procedures in the supply chain (Camerinelli, 2009; Pfohl and Gomm, 2009). Working capital is calculated to see that a business operates the most efficient way between current assets and current liabilities. Positive working capital is needed in the long run to ensure that the company can survive and have sufficient resources to meet its short-term commitments and operating costs. Working Capital management consists of three instruments: payment receivables, inventory receivables and account receivables.

Active cash management is important to avoid external funding in order to provide timely funds for projects from internal money streams. Compared with low liquidity, high-liquidity businesses can obviously achieve higher growth rates and so cash-rich businesses can benefit from suppliers to reduce product costs (Bailen, 2001). A balanced liquidity is therefore more important as more surplus cash decreases the value of the company not used to make a profit. The formula for calculating the process of conversion is CCC= (Accounts

receivable + total sales)*360 + (Inventory/cost of goods sold)*360 + {(Accounts payable + salaries/cost of goods sold)+ general, selling and administrative expenses)}*360.

The interest can be positive and negative for the cash exchanging process. The negative value for the cash conversion process indicates how many days a business has pre-paid its sales to cash. The optimistic CCC value indicates a company's incompetence and determines the days that the company will plan to pay the supplier due to delayed consumer payments. Around the same time, the optimum CCC amount is shown by the zero value of the cash conversion process.

Past research has been performed in the United States into the impact of working capital management on corporate productivity. For instance, Jose, Lancaster and Stevens (1996) conducted a research on US manufacturing companies has shown that a short cash exchange time results in improved profits. Therefore, businesses with lower CCC are more likely to support customers by reducing the expense of inefficient working capital. They do have an advantage. Likewise, in the sense of US companies, working capital productivity and competitive relationships have studied and found a negative correlation between the cash conversion and profitability periods.

(Shin and Soenen, 1998). In addition, the number of days in the cash exchange process needs to be decreased instead of adding more bonds to decrease the volume of work capital. The relation between management and performance of working capital has also been investigated by Ebben & Johnson (2011) and A strong negative association has been established. In line with these studies, Japanese businesses have researched how liquidity and competitiveness are related and found that companies' efficiency can be increased with the reduction of the cash conversion process (Wang, 2002; Lazaridis and Tryfonidis, 2006; Mathuva, 2010).

On the other hand, some scholars affirm that the cash exchange process and productivity of businesses are a beneficial relationship. A research has found a positive relationship between productivity and the cash exchange process for the food industry on the Athens Stock Exchange. In addition, in American manufacturing firms, a positive relationship between liquidity and productivity is stated (Gill Biger and Mathur, 2010). It is contended that profitability may be increased by managing accounts receivables at best possible level.

In previous literature the relationship between the conversion process and corporate profitability has been shown to be incomplete. In addition, the trend under discussion literature is centered on the collection of heterogeneous samples and primarily oriented

economies. Consequently, contradictions in past studies need more evidence to support the negative correlation between cash exchange period and profitability. The following statements are also suggested by this report:

H1: Profitability is negatively associated with cash conversion cycle of firm working in Iraq.

The research also discusses the company's special characteristics that affect the cash conversion process and profitability relationship. The business age is therefore considered to be a variable factor that can impact the relationship of CCC and profitability. Previous research shows that older companies have more access to external finance, so the management aspects of working capital and liquidity are less risky to experienced firms (Berger and Udell, 1998; Howorth and Westhead, 2003; Mathuva, 2010). It also found that age of firm positively linked with profitability (Ban˜os-Caballero et al., 2011).

Research Methodology and Design

The research is carried out in Iraq to clarify the allocation of working capital in various industries. The cash conversion process is used as a proxy for the optimizing of working capital and the connection of CCC with company profitability is discussed across various industries. Return on investment shall be calculated as profitability. This survey was aimed at providing advice on the optimizing of working capital by controlling cash conversion cycles for various Iraqi industries. A sample of 784 firms from different industries has been gathered for this purpose. The industries are beverages, food, retail and wholesale firms. A set of panel data used for estimating the proposed model from 2005 to 2016. The data were obtained from the financial statements of firms and outliers were removed from the data set. Table 1 presents descriptive statistics for selected companies.

Table 1 Descriptive Statistics

	Beverages	Food	Retail	Wholesale	Total
Mean ROA	0.10	0.14	0.15	0.11	0.125
SD	0.09	0.12	0.16	0.17	0.135
Mean Firm Age (years)	17.43	20.71	16.92	26.82	20.47
SD	11.45	13.65	12.83	18.73	14.16
CCC Mean (days)	45.21	39.23	41.52	81.24	51.80
SD	92.43	40.26	129.74	85.92	87.08

The company included in the survey is around 19.44 years old but a relatively large standard deviation value indicates that most businesses are experienced. In addition, the highest profitability of retail firms is noted, while the lowest CCC value amongst other sectors is

found in the food companies. Moreover, to examine the equality of CCC mans among industries ANOVA test is applied and results of ANOVA test is demonstrated in table 2.

Table 2 ANOVA Statistics

ANOVA Result of CCC	Sum of Squares	df	Mean square	F	Sig.
	29682.823	4	10983.82	1184.283	0.000*

Econometric Model

This research followed the least square approach for regressing CCC against ROA and Firm Age. This econometric equation for this model is

$$ROA = \alpha + \beta 1 CCC + \beta 2 Age + \epsilon. \qquad (1)$$

Here in this equation β shows the value of regression coefficients, CCC is explained as cash conversion cycle, ROA is considered as return on assets, Age represents the log of firm age and ϵ is the error term.

Results and Discussion

The Pearson's correlation analysis among independent and dependent variables is analyzed and shown in table 3. The multi-collinearity has not been found among the variables as the correlation is very small. Further, the correlation analysis matrix revealed the direction of correlation among CCC and profitability. A negative correlation analysis among CCC and ROA described that lower level of CCC tend to have more profitability. A negative correlation among ROA and Age of firm showed that experienced firms are tends to be less profitable.

Table 3 Correlation Matrix

	ROA	CCC	Age
ROA	1.0000		
CCC	_ 0.0782*	1.0000	
	0.0000		
Age	_0.0896*	0.0932*	1.0000
	0.0000	0.0000	

*significant at 0.05 level

Table 4 displays the effects of regression model that includes CCC, ROA, and Firm Age. It is found that all sectors have a negative relationship with profitability which is statistically important. The companies that have shorter cash conversion cycle appear to be more profitable. In fact, age of the company has a negative correlation with profitability. In other

terms we might suggest that younger businesses are more organized than older firms to handle the cash transfer process. The R^2 showed that independent variables are responsible for 10.4% change in dependent variable.

Table 4 Regression Estimation

Constant	_0.005	0.028**	0.062**	0.072**	_0.041**
Sig.	0.036	0.000	0.000	0.000	0.000
CCC	_0.056**	_0.035**	_0.052**	–0.066**	_0.022**
Sig.	0.000	0.000	0.000	0.000	0.000
Age	_0.47**	_0.040**	_0.030**	_0.041**	_0.032**
Sig.	0.000	0.000	0.000	0.000	0.000
R2	0.102	0.082	0.096	0.079	0.104

**significant at 0.01 level

Table 5 Heteroskedasticity Tests

	Beverages	Food	Retail	Wholesale	Total
$\varkappa^2$	45.30	64.24	23.59	51.84	687.32
Sig.	0.000	0.000	0.000	0.000	0.000

To check the results for the heteroskedasticity to calculate the fitness of the Breusch-Pagan/Cook-Weisberg model test applied. Table 5 presents the findings of the Heteroskedasticity test. It is further noted that the normal CCC level does not have a thumb rule. Depending on the level of the cash conversion process can vary from industry to industry, and from country to country. It is suggested, however, that the firm should consider reducing or lowering the cash conversion period in order to increase profitability. Optimizing the cash conversion cycle is also essential in order to become independent from external funding and to control internal funds for funding supply chain activities.

The product class is an important determinant of the level of sensitivity needed within the supply chain network (Park et al., 2009), and thus for high profitability accomplishment. Such firms need secure collaboration between supply chain partners to accomplish long-term relationships with a view to promoting mutual trust. In addition, a comprehensive approach to working capital is required to reach an optimum degree of adjusted CCC. The way that one organization's payable period is another company's receivable period will encourage all supply chain participants in the supply network to maintain a long term relationship for a sustainable CCC model.

Conclusion

Working capital optimization reduces the liquidity risk and improves the overall business profitability. Working capital management is therefore an important component for

achieving competitive advantage and improving company performance. This report confirms the relationship between the cash conversion cycle and return on assets where CCC is used as a proxy for the working capital management and ROA is assumed as a proxy of profitability. The business with lower collection time, which appears to be more profitable. Hence, the higher degree of inventory turnover and receivable accounts continue to increase overall working capital. Still, company efficiency can be improved by maintaining an optimal amount of working capital. Managers are also recommended to sustain and control the lower level of the cash conversion process in order to improve firm value. The findings of this study are in line with previous studies of Ebben and Johnson (2011) and Mathuva (2010). Therefore, the findings of this study include guidance for academics, professionals and policy makers that an organization can increase its profitability by controlling working capital or reducing the cash conversions cycle.

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