Does Cash Conversion Cycle Affect Firm Profitability? Evidence from the Listed Small and Medium-Sized Enterprises

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Nakit Dönüş Süresi Firma Kârlılığını Etkiler mi? Küçük ve Orta Ölçekli Halka Açık Firmalara Yönelik Bir Uygulama	**Does Cash Conversion Cycle Affect Firm Profitability? Evidence from the Listed Small and Medium-Sized Enterprises**
Öz	**Abstract**
Bu çalışmada Borsa Istanbul KOBİ Sanayi Endeksi'ne kayıtlı 28 küçük ve orta ölçekli işletmeye ait finansal veriler ışığında nakit dönüş süresi ile kârlılık arasındaki ilişki ele alınmıştır. 2010-2019 dönem aralığının dikkate alındığı çalışmadan elde edilen ampirik bulgular nakit dönüş süresi ile kârlılık arasında pozitif bir ilişki olduğunu göstermiştir. Nakit dönüş süresi bileşenleri genelinde bakıldığında ise, kârlılık ile stok dönüş süresi ve borç ödeme süresi arasında istatistiksel olarak anlamlı ve negatif bir ilişki olduğu görülmüştür. Diğer taraftan alacak tahsil süresinin de kârlılık üzerinde negatif bir etkiye sahip olduğu, ancak söz konusu ilişkinin istatistiksel olarak anlamlı olmadığı tespit edilmiştir.	Using a sample of 28 Small and Medium-Sized Enterprises (SMEs) listed in BIST Industrial Index from 2010 to 2019; this study aims to offer an evidence on the relationship between cash conversion cycle and profitability. Empirical findings show that cash conversion cycle has significantly positive link with profitability. When considered the cash conversion cycle components, it is seen that there is a statistically significant and negative relationship between profitability and two of cash conversion cycle components, such as days inventory outstanding and days payable outstanding. Moreover, the study also reveals a negative relationship between days sales outstanding and profitability, but it is not statistically significant.
Anahtar Kelimeler: Nakit Dönüş Süresi, Küçük ve Orta Ölçekli İşletmeler, Kârlılık, Likidite, Büyüklük	**Keywords:** Cash Conversion Cycle, Small and Medium-Sized Enterprises, Profitability, Liquidity, Size
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1. Introduction

Cash conversion cycle (CCC), as the degree of firms' liquidity, implies the number of days that capital tied up in the business processes. Having a short cash conversion cycle rather than a long period is considered a positive situation for the firms' profitability. At this point, financing of the working capital needed to maintain without operational disruption is provided by either debts or commercial loans. Commercial debts are the most important short-term financing source especially for the small and medium-sized enterprises (SMEs) due to the limited access to bank loans. SMEs finance a significant part of their working capital needs through commercial loans borrowed from suppliers from which they purchase the needed raw materials. At this point, speeding up the production process and collections of receivables and slowing down payments related to debts within reasonable periods, in other words shortening the cash conversion cycle, will allow the required amount of working capital to be provided. However, shortening CCC may not always have positive effects on the operational performance. For instance, shortening the days inventory outstanding leads to the loss of important customers due to the inability to fulfill sudden orders on time. Similarly, extending the days payable outstanding to a large extent may affect creditworthiness of the firms negatively (Nobanee, 2011: 148). Therefore, it is possible to express that there is no certain standard about the direction of association between CCC and profitability. Many factors such as sector, reputation, size, etc. may be effective on the direction of this association.

SMEs have three scale sizes as micro, small and medium and their status are characterized according to the persons employed, turnover and the balance sheet size. According to the European Commission, firms with more than 250 employees and with a turnover of less than 50 million Euros or with a balance sheet size of less than 43 million Euros are considered as SMEs (European Commission, 2015: 10). SMEs establish the business relationships with large businesses at almost every point in the value chain, including manufacturers, suppliers, distributors, retailers and service providers, allowing small entrepreneurs to connect with the industry. In this context, their positive contribution to employment and GDP also positions SMEs in an important place in the national economies. The functioning of SMEs differs from large enterprises in terms of funding sources, cash management and planning. SMEs have less financial complexity but less experience in business planning and cash management (International Finance Corporation, 2010: 10-11). Also, unlike large enterprises, SMEs may meet the requirements of the economy more quickly through their flexibility and networking capability (Rotar et al., 2019: 3303). In terms of working capital, this concept refers to the level of liquidity and hence the credit worthiness for large enterprises, while it refers to the funding source needed for SMEs to carry out their operations effectively (Rawat and Dave, 2017: 2).

Access to financial resources provides firms with great opportunities in terms of both expanding their operations and modernizing their equipment, and this situation positively affects the competitiveness and growth of firms. This access level is generally related to the size of firms, and as the firm size increases, it becomes more difficult for the firms to benefit from external sources of finance. In this regard, it is possible to specify that the widespread rate of informality among SMEs, perceived high risk profile (low credibility), information asymmetry, low collateral levels and limited financial management capacities are among the reasons for this situation (OECD et al., 2019: 267).

SMEs have a low credibility due to the low level of assets, which they can show as collateral and low capitalization. Separately, although they are quite dynamic to adopt the developments resulted from economic fluctuations, they are more exposed to these fluctuations. In addition, a number of deficiencies in the accounting records, financial statements or business plans of SMEs also lead to information asymmetry and negatively affect their creditworthiness. These problems that SMEs face at the point of financing from financial markets lead them to supplier loans (short-term financing) in financing, and in this case, effective working capital management becomes extremely important for SMEs. Another reason that makes effective management of working capital important is the fact that the assets owned by SMEs mainly consist of current assets and short-term debts are weighted as a source of external financing. Because working capital is related to current assets and short-term debts, SMEs should manage their liquidity in a very efficient way. Otherwise, lack of adequate experience in managing current assets and liabilities may lead SMEs to financial distress. In overcoming these difficulties faced by SMEs in financing, they may be traded on the stock exchange and obtain funds from the financial markets by issuing their shares. However, due to the above-mentioned characteristics of SMEs, investors may be in a suspicious approach and SMEs may not be able to bear the fund needs they need to maintain their assets or provide growth (Afrifa, 2013: 27-29). In this context, the main target of this study is to examine the impact of CCC, as an element of working capital management, on profitability for the firms listed in Borsa Istanbul SMEs Industrial Index over the period of 2010-2019 by considering the above-mentioned problems that SMEs may usually encounter.

The remainder of this study is organized as follows. In Section 2, some theoretical explanations associated with cash conversion cycle are made. In section 3, the related literature is overviewed in detail. Section 4 explains the data set and the method of investigation, whereas section 5 reports the findings from the empirical research. Finally, the results are discussed and some suggestions are made in Section 6.

2. Theoretical Framework

CCC, which is a cross-cutting issue for working capital management, equates to the difference between operating cycle and payment period to sellers. The operating cycle shows the period starting from the purchase of goods and ending with the collection of receivables. CCC depends on the durations of stocks, receivables and payables, and increases with the length of the stock turnover rate and the collection period of receivables. The assumption here is that the payout time to sellers does not change. Likewise, the shortening of the days payable outstanding without changing the days inventory and sales outstanding also lengthens the cash conversion cycle. This increase indicates that the firm needs more financing and it is also seen as an early warning measure. The prolongation of this span may also show that there is a problem in the transfer of the firms' stocks and/or the collection of receivables. These problems may only be hidden by the extension of the payment period to the sellers. While all other conditions are the same, the shortening of the CCC indicates that tied-up stocks and receivables decreases; consequently, firms' total assets decrease and turnover rates increase. In a typical manufacturing firm, this cycle is as follows (Ercan and Ban, 2012: 277-278):

Figure 1: The Cash Conversion Cycle
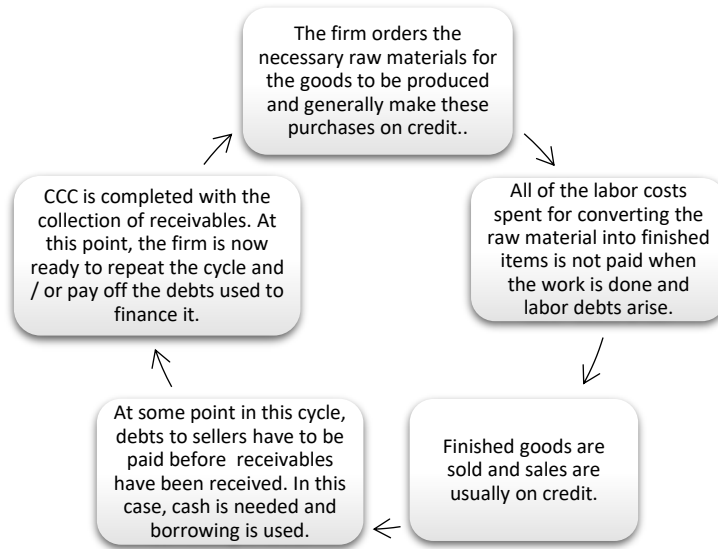
Source: Ercan and Ban, 2012: 277.

CCC is described as a financial indicator that shows the speed and efficiency of reaching the required funds and is calculated as follows (Takai, 2018):

CCC= Days Inventory Outstanding (DIO) + Days Sales Outstanding (DSO) – Days Payable Outstanding (DPO)

Where,

→ DIO: (Annual average inventory assets/Annual cost of goods sold) x 365 days
→ DSO: (Annual average accounts receivable/Annual sales) x 365 days
→ DPO: (Annual average short-term accounts payable/ Annual cost of goods sold) x 365 days

CCC is of great significance for the firms from the point of financing decisions as well. Firms with a high CCC level need more funds to subsidize their working capital and at this point they usually resort to floating debt. However, the high amount of floating debt, especially during financial crisis periods, may impose on firm performance negatively (Wang, 2019: 472). Firms should shorten their CCC and try to complete their cash cycles as soon as possible without damaging their operations. Shortening DIO, DSO and lengthening DPO may reduce the duration of cash conversion without increasing costs and bringing damage to sales. The shortening of the CCC decreases the net current assets requirement and increases the degree of free cash flow, thus creating a concrete impact on the firm value (Ehrhardt and Brigham, 2009: 550). Improving cash flow management and accounts receivables process, collecting accounts receivables faster, disbursing accounts payable more slowly, and managing inventory more efficiently may be very useful in shortening CCC (Deutsch, 2017). On the other hand, it may be stated that an extra investment in receivables and inventories increase profitability up to a certain point, but if they are above this point, extra investments may reduce profitability. Similarly, the use of trade liability will increase profitability up to a

point, but reduce profitability above that point. Therefore, although there is usually a negative link between CCC and profitability, it is also possible that a positive link exists.

3. Literature Review

There are several studies made as to the relationship between CCC and firm performance all over the world such as Nigeria, Sri Lanka, Japan, Italy, Turkey and Pakistan. The related literature provides ample evidence that cash conversion period such as inventory conversion period, debtor conversion period and creditor conversion period may have an influence on firms' profitability to a great extent:

Uyar (2009) studied the impact of the length of CCC and size, measured in total revenues and total assets, on profitability, measured in ROA and ROE, using a sample of 166 listed industrial firms for the year of 2007. By using Pearson correlation analysis, the findings showed a statistically significant negative link between CCC and ROA, but not with ROE. A study by Ebben and Johnson (2011), on the effect of CCC on liquidity, invested capital and firm performance, quantified by asset turnover ratio and return on invested capital, also showed that a shorter CCC had a positive impact on financial performance.

Nobanee et al. (2011) concentrated their study on the relationship between CCC and profitability, measured in return on investment, for 2318 listed nonfinancial Japanese firms over the period of 1990-2004. They applied two explanatory variables as the differenced lagged dependent variable and the first difference of CCC. By using dynamic panel data, a negative link between CCC and profitability was detected. Yucel and Kurt (2012) studied the impact of CCC on profitability, liquidity and debt structure of 167 listed firms for the period of 1995-2000. ROA, ROE and NPM were considered as the dependent variable, while CCC, current ratio, quick ratio and leverage ratio were used as the independent variables. The findings showed that CCC had a negative effect on ROA and ROE.

In the same vein, Anser and Malik (2013) carried out a study on the impact of CCC on profitability of 155 listed industrial firms for the period of 2007 and 2011. CCC, natural logarithm of sales and financial debt level were considered as independent variables and two models were generated by using two profitability ratios, measured in ROA and ROE. Obtained findings showed a negative link between CCC and profitability ratios. Murugesu (2013) also provided support for this association for the listed plantation firms in Sri Lanka over the period of 2008 and 2012.

Aytekin and Guler (2014) aimed to determine the effect of cash conversion period and its components on the profitability (ROA, ROE and EBIT) of 26 firms listed in the BIST Non-Metallic Mineral Products Index (XTAST) for the period of 2009 and 2012. The empirical results reported that days inventory outstanding had a negative impact on ROA, indicating that shortening days inventory outstanding may improve ROA. Additionally, it was seen that days payable outstanding affected both ROA and ROE positively. The findings also documented that cash conversion cycle and its components had no statistically significant impact on EBIT.

Muscettola (2014) examined how CCC affected firm profitability, measured in EBITDA on net sales by considering a sample of 4226 Italian SMEs for 2007-2010. In the study, total fixed assets/total assets, cash and bank deposits/total assets, inventory/total assets and trade receivables/total assets were also considered as control variables. The regression analysis results showed that there was no significant relationship between CCC and profitability.

Zakari and Saidu (2016) studied the influence of CCC on ROA for 8 listed telecommunication firms over the period of 2010-2014. By making multiple linear regression analysis, they reported that CCC affected ROA positively.
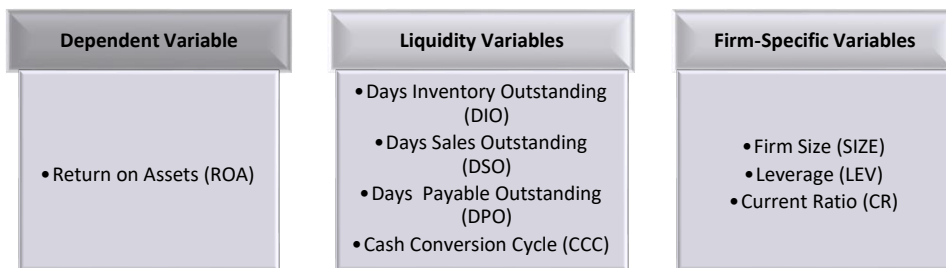
Tsagem et al. (2017) assessed the link between working capital efficiency and profitability of 311 Nigerian SMEs between 2007 and 2013. CCC was considered as the efficiency of working capital and ROA was included as profitability ratio. Firm size, leverage, sales growth and firm age were also considered as control variables. The obtained findings from panel data regression analysis showed a negative relationship between CCC and ROA. Similarly, Sugathadasa (2018) examined the impact of CCC components on firm profitability measured through ROA and ROE. Using a sample of 10 listed industrial firms in Sri Lanka, it was seen that DIO and DSO had a positive effect on ROA, while a negative link between DPO and ROA.

The literature on the relationship between cash conversion cycle and profitability is greatly enormous. The results obtained from the studies analyzing the mentioned relationship may differ on the basis of the variables, sector, time period and country. At this point, the literature examined in this study mainly consists of the studies that have been conducted in recent years and that include the variables used in this study. Considering the evaluated literature, it is seen that there is a great evidence that cash conversion cycle negatively affects profitability, indicating that shortening cash conversion cycle increases profitability (Uyar, 2009; Ebben and Johnson, 2011; Nobanee et al., 2011; Yucel and Kurt, 2012; Anser and Malik, 2013; Murugesu, 2013, Tsagem et al., 2017). On the contrary, Zakari and Saudi (2016) and Sugathadasa (2018) recorded a positive link between cash conversion cycle and profitability.

4. Data Set and Methodology

The data set for the analysis are obtained from the published financial statements of 28 SMEs listed in BIST SMEs Industrial Index covering the period of 10 years from 2010 to 2019 (some firms are excluded from the analysis because their net sales and cost of sales are equal to zero). The dependent, independent and control variables used in the analysis are shown in Figure 2:

Figure 2: Dependent and Independent Variables

Dependent Variable	Liquidity Variables	Firm-Specific Variables
• Return on Assets (ROA)	• Days Inventory Outstanding (DIO) • Days Sales Outstanding (DSO) • Days Payable Outstanding (DPO) • Cash Conversion Cycle (CCC)	• Firm Size (SIZE) • Leverage (LEV) • Current Ratio (CR)

In this study, ROA is used as an accounting-based measurement, in determining firm profitability and it is calculated as net profit divided by total assets (Yucel and Kurt, 2012; Anser and Malik, 2013; Murugesu, 2013; Nijam, 2016; Tsagem et al., 2017). CCC and its components are considered as the independent variables, and firm size, financial leverage, and current ratio are used as the firm-specific variables (Lyroudi and McCarty, 1993; (Majumdar, 1997; Padachi, 2006; Samiloglu and Demirgunes, 2008; Mathuva, 2010; Al-Shubiri and Aburumman, 2013; Al-Abass, 2017).

Financial leverage (FL) is the ratio of total liabilities to total assets. When considered SMEs, it is expected that financial leverage may affect profitability negatively due to the high cost of borrowing. Prior research by Lyroudi and McCarty (1993) provides evidence that liquidity may affect firm profitability to a large extent, thus current ratio (CR), calculated as dividing current assets by short-term debts, is used as a firm-specific variable in the model as well. It is also expected a positive link between firm size and profitability due to larger firms' easy access to financial sources and the existence of economies of scale. So, firm size (FS) is considered as another independent variable and measured as a natural logarithm of firms' total assets. The moderating effect of CCC on the firm profitability is estimated through two-step system generalized method of moments (GMM). The dynamic panel equation of profitability estimation is as follows:

$$ROA_{it} = +\beta_i ROA_{it-1} + \alpha_{it} X_{it} + \mu_i + \phi_t + \varepsilon_{it} \qquad i = 1, \dots, N, t = 1, \dots, T$$

Where i denotes the firm (i = 1,…,28) and t denotes years or time-series dimensions (t = 2010,…,2019). X_{it} is a vector of other control variables which are hypothesized to affect ROA. μ_i represents firm-specific effects; and ε_{it} is random error term. Current ratio, leverage and logarithm of total assets are included in order to account for the other control variables. Finally, time dummies are counted in the regression ϕ_t to control for the time-specific effects and to eliminate cross-sectional dependence in the data. Dynamic panel data analysis is based on the GMM method first developed by Hansen (1982) and enables to obtain asymptotically efficient estimators. Later, Anderson and Hsia (1981, 1982) adapted GMM to panel data and suggested taking the first differences of dynamic panel data models in the first step and predicting dynamic panel data models by using the instrumental variable instead of the lagged value of the dependent variable associated with the error term in the second step. The GMM method was later developed by Holtz-Eakin, Newey and Rosen (1988), Arellona and Bond (1991), Arellona and Bover (1995) and Blundell and Bond (1998) and named as System GMM (Bond, 2002: 145-146). These dynamic panel estimators are designed for a linear functional relationship, situations with 'small T, large N' panels. By adding one more assumption, Arellona and Bover (1995) and Blundell and Bond (1998) extended Arellona and Bond (1991) estimator and proposed system GMM. This assumption that first differences of instrumental variables are uncorrelated with the fixed effects increased model efficiency (Roodman, 2009).

The dynamic panel data method is generally used when there are some unobservable factors affecting both the dependent variable and the explanatory variables, and when some explanatory variables are strongly associated with the historical values of the dependent variable. The model, an extended version of the GMM estimator known as system GMM and included in the equations created in the dynamic panel data model, was proposed by Blundell and Bond (1998). This model is derived from the estimation of a system of two simultaneous equations, one in levels (with lagged first differences as instruments) and the other at first differences (with lagged levels as instruments). If there is heteroscedasticity and a correlation between and units, the two-step sys-GMM uses a consistent estimation of the weight matrix, taking the residuals from the one-step estimation (Davidson and MacKinnon, 2004: 353).

In panel data sets where T smaller than N, system GMM estimation method is also preferred for the determination of the linear relationship between variables. Two-step estimators of system GMM are also available and in the case that the independent variables are internal variables, the findings from the two-step estimates are more consistent and

deviant. Since T smaller than N in the data set of this study, model estimations are made with the two-step system GMM proposed by Arellano and Bover (1995) and Blundell and Bond (1998).

5. Main Findings and Discussion

Table 1 gives descriptive statistics of 28 SMEs for a period of ten years from 2010 to 2019. As presented in Table 1; on average, SMEs show positive ROA (0.01%) and the minimum and maximum values are -0.34% and 0.51%. The table also shows a negative mean of 135-day cash conversion cycles indicating the efficiency levels of working capital management. Negative CCC indicates that firms do not need funds and that the days sales outstanding is shorter than days payable outstanding, which is desirable by the firms. If CCC is negative, SMEs may sell their stocks and collect their receivables very quickly, and receive maturities and make payments from suppliers as long as possible. This implies that SMEs have greater liquidity and their working capital isn't tied up for long time. Therefore, it may be concluded from this finding that SMEs are sufficient enough in cash management to overcome the financing problems.

Mean of the CCC components are 149-days, 106-days and 390-days for DIO, DSO and DPO variables respectively. The time taken for SMEs to order raw materials and produce and sell the product is the lowest 6 days, while the highest is 822 days. Additionally, SMEs can collect their receivables in less than a day and no later than 1037 days. Looking at the short-term debt payment periods of SMEs, it has been also seen that they pay after a minimum of 14 days and a maximum of 17022 days. As for the firm-specific variables, it is seen that the mean is 7.61%, 0.49% and 2.75% for SIZE, LEV and CR, respectively.

Table 1: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROA	280	0.01	0.11	-0.34	0.51
CCC	280	-135.205	1315.86	-16794.4	1027.85
DIO	280	148.78	131.82	6.44	822.25
DSO	280	106.01	94.41	0.52	1036.49
DPO	280	389.99	1314.16	13.98	17021.82
SIZE	280	7.61	0.41	6.02	8.326
LEV	280	0.49	0.27	0.02	1.707
CR	280	2.75	3.87	0.03	43.86

The correlations between all pairs of variables used in the analysis are presented in Table 2. As can be understood from Table 2, there is significant positive correlation between CCC and ROA (0.13). When considered the components of CCC; it is seen that DIO (-0.31), DSO (-0.07) and DPO (-0.16) correlate negatively with profitability. The firms-specific variables, firms' size (0.12) and current ratio (0.32) reveals positive coefficient with ROA, but firms' leverage has a negative coefficient (-0.45) with ROA.

Table 2: Correlation Matrix

Variable	ROA	CCC	DIO	DSO	DPO	SIZE	LEV	CR
ROA	1							
CCC	0.13	1						
DIO	-0.31	0.12	1					
DSO	-0.07	-0.04	0.08	1				
DPO	-0.16	-0.99	-0.01	0.12	1			
SIZE	0.12	-0.1	-0.31	0.08	0.07	1		
LEV	-0.45	-0.17	-0.01	0.04	0.17	0.09	1	
CR	0.32	0.13	-0.07	0.13	-0.12	-0.08	-0.55	1

In determining the effect of CCC on firm profitability, two-step system GMM estimator based on *Arellano and Bond (1991)* is used because this method provides control for endogeneity by using instruments. Table 3 reports the estimation results of the model from the years 2010 to 2019, for a total number of 280 observations:

Table 3: Model Estimation Results

ROA	(1)	(2)	(3)
Lagged ROA	0.455***	0.444 ***	0.461***
	(0.00)	(0.00)	(0.00)
CCC	5.58e-06***		
	(0.00)		
DIO		-1.36e-04**	
		(0.01)	
DSO		-1.15e-05	
		(0.84)	
DPO		-6.37e-06***	
		(0.00)	
SIZE	0.034*	0.032*	0.038**
	(0.09)	(0.09)	(0.02)
LEV	-0.109 ***	-0.116***	-0.113***
	(0.00)	(0.00)	(0.00)
CR	-0.001	-0.001	-0.001
	(0.68)	(0.65)	(0.63)
Time Dummies	Yes	Yes	Yes
Observations	252	252	252
Instruments	22	24	21
Number of Groups	28	28	28
Arellano-Bond: AR (1)- (p-val)	0.00	0.00	0.00
Arellano-Bond: AR (2)- (p-val)	0.44	0.38	0.48
Sargan test (p-val)	0.05	0.05	0.04
Hansen test (p-val)	0.17	0.17	0.99

The results in Table 3 portray that the variable of CCC is positive and significant for ROA contrary to the negative relationship rule between these two variables. This finding implies that higher the CCC greater would be the ROA and supports the findings of previous studies (Lyroudi and McCarty, 1993; Padachi, 2006; Gill et al., 2010; Stephen and Elvis, 2011; Muscettola, 2014; Nijam, 2016). On the other hand, this result differs from those of relevant studies found negative relationship between CCC and ROA (Garcia-Teruel and Martinez-Solano, 2007; Uyar, 2009; Ebben and Johnson, 2011; Nobanee et al., 2011; Majeed et al., 2012; Anser and Malik, 2013; Tsagem et al., 2017; Chang, 2018; Orjinta and Ven. Okpalaukeje, 2018; Kalantonis et al., 2019). Al-Abass (2017) also reported a negative association between

CCC and ROA, but the association was not statistically significant. It is possible to state that lengthening cash conversion cycle may affect firm profitability positively due to the increase in sales. However, it is also known that profitability may be negatively affected by the cash conversion cycle. The reason for this is that the cost of the investments made in the working capital of the firm is higher than the return of the loans provided to the customers and the investments made in inventories (Deloof, 2003: 574-575).

As for the components of cash conversion cycle, estimation results show that DIO and DPO are negatively related to profitability and statistically significant at the 1% and 5% respectively. Additionally, there is a negative association between DSO and profitability as well, but it is not statistically significant. It can be concluded from these findings that SMEs may enhance their profitability by shortening their inventory and account payable conversion periods. In the light of these results, it is possible to state that SMEs' deferring payments to suppliers may provide an advantage in terms of cash they need in fulfilling their daily operations. Enqvist et al. (2014) also found a negative and statistically significant relationship between ROA and these two components of CCC. Similarly, Gill et al. (2010) reported a significant negative link between DSO and ROA. Additionally, the results are in line with the findings of Majeed et al. (2012), but the relationship between DPO and ROA is insignificant and the relationship between DSO and ROA is significant. On the contrary, Muscettola (2014) and Sugathadasa (2018) documented significantly positive relationship between DSO and ROA. As can be seen from the empirical findings, it is concluded that profitability of a firm with shorter DIO and DPO may increase. So, it is possible to state that more profitable firms pay their debts in a shorter time and their stock holding periods are shorter. At this point, the negative link between DIO and profitability indicates that an effective inventory control policy is followed by the analyzed SMEs and the amount of cash or credit sales increase. Additionally, debts paid in a short time may have a positive effect on profitability as it provides firms with significant discounts. This situation provides benefits for the relevant firm managers in establishing an appropriate inventory control policy (Deloof, 2003: 582-583).

For control variables, estimation results show that size depicts a significant positive association between ROA, implying that the larger size brings with it more profitable. But leverage is significantly and inversely related to ROA, indicating that leverage negatively affects profitability by increasing the cost of resources. Also, it can be said that the inverse relationship between leverage and profitability (the decrease in ROA while the leverage increases) may be caused by the reversal of the leverage effect due to high borrowing. The last outcome of this study is that the coefficient on the link between current ratio and ROA is negative but insignificant.

Table 4: Long-run Estimation Results

ROA	(1)	(2)	(3)
CCC	1.02e-05 ***		
	(0.00)		
DIO		-1.55e-04**	
		(0.04)	
DSO		-2.07E-05	
		(0.84)	
DPO		-1.15e-05***	
		(0.00)	
SIZE	0.063 **	0.038*	0.070**
	(0.05)	(0.07)	(0.01)
LEV	-0.200***	-0.210***	-0.225***
	(0.00)	(0.00)	(0.00)
CR	-0.002	-0.002	-0.003
	(0.68)	(0.65)	(0.63)

Note: Long-term coefficients are calculated with $\alpha / (1 - \beta)$. Stata "nlcom" command is used. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

Coefficients and standard errors of long-term effects can be calculated in dynamic panel data models (Papke and Wooldridge, 2005). So, two-step system GMM estimator is also used to estimate the long-run effects of CCC on profitability. The results do not change as can be seen from Table 4. There is a significant and positive relationship between CCC and ROA, and DIO and DPO also have a significant and negative effect on ROA in the long term. DSI and CR variables are not found to have a significant relationship with ROA in the long term as well as in the short term.

5. Conclusions, Recommendations and Limitations

The profitability of the firms with a strong liquid structure is higher than those with weak liquidity. Therefore, firms trying to increase firm value under intense competitive conditions concentrate on liquidity factors that positively affect their profitability. At this point, as a dynamic measurement technique of liquidity, the cash conversion cycle provides reliable and meaningful results regarding the liquidity levels of companies. The related literature generally holds that there is a negative relationship between the length of the CCC and profitability, in other words, profitability will increase as the cash conversion cycle gets shorter, but the prolonged cash conversion cycle may also positively affect profitability. According to Ege et al. (2016), this is mainly due to the fact that the costs of the investments made in working capital are higher than the loan returns granted to the customers and the investment returns made to the stocks. Additionally, as mentioned by Shin and Soenen (1998), firms may increase their sales by applying a more flexible credit policy. This extends the cash conversion period, but also increases profitability. In this sense, this paper reporting a positive relationship between CCC and profitability also suggests that SMEs should lengthen cash conversion cycles in order to enhance their profitability.

Based on the findings, this study also reveals that DPO and DIO have a negative impact on profitability. As stated by Afrifa (2013), not being able to utilize more profitable investment opportunities by adhering to the stocks of the capital and the costs of holding stocks such as rental fee, theft, heating and lightening may be considered as the main causes of this negative relationship. Therefore, shortening the days inventory outstanding by releasing capital may have a positive impact on profitability, both by allowing the evaluation of profitable

investment opportunities and by reducing the related costs. In addition, firms' making early payments and benefiting from the discounts offered by suppliers and developing bilateral business relations with them are among the factors that may positively affect profitability. So, this study suggests that it is better for SMEs to increase their profitability by shortening days payable and inventory outstanding.

Given the above-mentioned empirical findings expressing how cash conversion cycle affects profitability, this study is expected to provide a better understanding for the firm managers, creditors and researchers analyzing the so-called relationship in the frame of SMEs. For example, firm managers may increase their profitability by shortening days inventory and payable outstanding and by lengthening cash conversion cycle. Therefore, avoiding over-investing in stocks and shortening the payment times of debts may benefit firm managers in order to achieve high profitability targets. Additionally, investors and creditors may shape their preferences by considering these factors as well. They may choose the firms that have a shorter days inventory and payable outstanding due to their high profitability levels. At the same time, the so-called investment or lending preferences may be made in the direction of firms with a long cash conversion cycle.

The main limitation of this study is that it is applied on the listed industrial SMEs. As is known, access to financing resources and cash conversion cycles of the firms may show some differences according to scale sizes and the sector in which firms operate. Therefore, it would not be very accurate to generalize the recommendations presented for the SMEs analyzed in this study. Future researches may develop various recommendations by taking into account the firms of different sizes and type or period intervals of different lengths.

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