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# Narrative Literature Review on Target Cash Conversion Cycle, Speed of Adjustment and Determinants

Nufazil Ahangar
nahangar113@gmail.com

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**Abstract**

The purpose of this paper is to review research on target cash conversion cycle, speed of adjustment and determinants of CCC and suggest agenda for future research. Using narrative literature review method, the present study reviews 339 journal articles. Detailed narrative review reveals that target cash conversion cycle, speed of adjustment and determinants of CCC phenomenon are not fully explored and need the attention of researchers.

**Keywords:** target cash conversion cycle, speed of adjustment, determinants of CCC, Narrative Literature review, Working capital management

**Paper type:** Literature review

## 1. Introduction

For any economic entity, working capital is regarded as a life-giving force. In fact, a business organization cannot sustain without optimal working capital, nor can it grow without efficient decisions vis-à-vis working capital management. Thus, efficient management of working capital is an important pre-condition for the success of an enterprise (Altaf and Shah, 2017; Ghosh and Maji, 2004). It is in this backdrop that enormous literature on working capital management emerged following the seminal work of Smith (1980), who asserted that a firm must efficiently manage its working capital because it affects the profitability and consequently the value of the firm. Although, previous literature indicates the criticality of the whole bunch of working capital management decisions as a predictor of firm profitability, yet the major part of the literature on the subject has largely remained focussed on analysing the impact of working capital management on firm profitability. Many other dimensions of working capital, the dynamics thereof and their bearing on the overall success of an organization have not been the popular agenda for researchers as there are still many unexplored areas having a great potential for research. For instance, recently, a study by Baños-Caballero et al (2016) suggested that the firm profitability is impacted by the way the firm finances its working capital. Interestingly, another study of Baños-Caballero et al (2014) concluded that the relationship between cash conversion cycle (CCC) and firm profitability is contingent upon the degree of the firm being financially constrained. Similarly, there are only a few studies that have attempted to investigate other interesting phenomena of working capital; like the determinants of CCC, the target CCC, if firms do have one, and the speed of adjustment towards that target. Taking cue from here, researcher conduct narrative literature review on the topic Target cash conversion cycle, speed of adjustment and determinants of CCC which are the actual basis for this paper. Thereby the objectives of the study are to:

• synthesize the existing literature on Target cash conversion cycle, speed of adjustment and determinants of CCC

• classify and explore the issues on target cash conversion cycle, speed of adjustment and determinants of CCC suggested by published research articles.

• suggest a research agenda for future work.

## 2. Methodology of narrative literature review

For the purpose of this paper, we use narrative literature review methodology. Therefore, in this paper, we conducted a search for published journal articles on WCM across databases to collect a range of published articles for narrative review. We use Emerald, Sage, Science direct, Scopus and EBSCO bibliographic databases for searching articles. We used a keyword search to identify articles to be taken for narrative literature review. We collected articles published on working capital for a period of (1990-2018). Further, we used systematic deletion process to eliminate duplicate articles that were part of two databases, for example Scopus and Science direct. Further, we eliminated articles that did not had full-text available, leaving us with a total of 339 articles for conducting narrative literature review. Table I provides the details of database search.

**Table I: Database search**

| Database | Time period | Total number of articles matching keywords | Total articles selected |
|---|---|---|---|
| Emerald | 1990-2018 | 104 | 56 |
| Sage | 1990-2018 | 23 | 6 |
| Science direct | 1990-2018 | 112 | 82 |
| Scopus | 1990-2018 | 214 | 103 |
| EBSCO | 1990-2018 | 201 | 92 |
| Total | | 654 | 339 |

## 3. Narrative review

### 3.1. Target cash conversion cycle, speed of adjustment

It is generally believed that longer cash conversion cycle (CCC) requires greater investment in working capital, while as shorter CCC requires lower investment in working capital. Contending to this general belief, the pioneering studies by Ng et al. (1999); Deloof and Jegers (1996) and Smith (1987) asserted that larger investments in working capital or longer CCC may have the positive impact on firm profitability as it may increase the firm's sales. Supporting this line of argument, Wilner (2000) suggested that larger working capital investment may increase the firm profitability because firms may be able to get discounts for early and smooth payments. However, maintaining larger investments in working capital has higher costs. In other words, a larger investment in working capital needs to be financed that may increase the interest expense and thereby enhance the bankruptcy risk for an organization (Altaf and Shah, 2019, 2018a, Soenen, 1993).

In addition, maintaining larger investments in inventories increase various expenses like warehouse rent, warehouse security expenses etc. (Kim and Chung, 1990). Since there are relative costs and benefits attached to maintaining working capital investments, there are potential reasons to believe that firms may have target CCC that balances the relative costs and benefits. Thus, a firm may follow an adjustment process to reach the target CCC. In other words, a firm may adjust its current level of CCC to reach the target CCC in anticipation of balancing the costs and benefits. The quicker the adjustment process, the greater will be the speed of adjustment and vice versa. Further, it is suggested that organizations do stray from their target CCC. Such deviations may be due to irregular shocks to cash flows, shocks to the cost of production etc. Besides, it is assumed that the management has a high degree of control over the items on the current balance sheet and, subsequently, these items can be changed and manipulated by the managers quite immediately, even in the short run. However, such immediate adjustment cannot be thought of in the case of working capital because the cost of

adjustment is much higher in working capital (Peles and Schneller, 1989). Thus, firms adjust their CCC only when it is beneficial to adjust rather than remain deviated from the target (Altaf and Shah, 2018b, BañosCaballero et al., 2010). It must be noted that the current CCC can be adjusted by modifying all the three components of CCC i.e. receivables, payables and inventory. Given that it is assumed that firms do have a target CCC and they adjust their current level of CCC to the target at a particular speed. However, the prior literature on working capital management has largely ignored to examine this phenomenon1. A review of available literature identified only a few studies examining this issue, using partial adjustment model (see for example, Cuong and Cuong, 2016; Mathuva, 2014; Banos-Caballero et al., 2010). More specifically, Cuong and Cuong (2016) on a sample of 112 firms from Vietnam conclude that Vietnamese firms have a target CCC and they adjust only 48 percent of working capital as compared to the target. In other words, the speed of adjustment towards the target CCC in these firms is 0.48. In addition, Mathuva (2014) also found that Kenyan firms maintain a target CCC and they adjust towards their target at a speed of 0.44. Both, Cuong and Cuong (2016) and Mathuva (2014) concluded that speed of adjustment towards the target CCC is quite slow. However, Banos-Caballero et al. (2010) while working on Spanish data asserted that Spanish firms have a target CCC and they adjust towards the target quickly at a speed of 0.87. From the studies cited above, it can be concluded that firms do have a target CCC but they remain deviated from the target because the speed at which they adjust towards target is not quick enough to converge the current level of CCC towards the target. The above findings suggest that the gap exists between the actual CCC and the target CCC.

***Table II summarises some important empirical works with regard to investigation of target cash conversion cycle, speed of adjustment and its determinants at the global level.***

**Table II:**
**Studies conducted to investigate target cash conversion cycle, speed of adjustment and its determinants**

| Author(s) Year | Country | Sample Size | Time period | Variables studied | Finding (Relationship) |
|---|---|---|---|---|---|
| Qurashi and Zahoor (2017) | UK | 10 firms | 6 Years | Working capital<br>Firm size<br>Growth<br>Leverage<br>Profitability<br>Economic conditions | <br>-<br>+<br>-<br>Non- sig<br>+ |
| Cuong and Cuong (2016) | Vietnam | 112 firms | 10 years | Working capital requirements<br>Target level of working capital ($WCR_{it-1}$)<br>Cost of external finance<br>Firm size<br>Profitability<br>Fixed Investment<br>Growth<br>Sales volatility | <br>+<br>-<br>-<br>+<br>-<br>-<br>+ |
| Goel and Sharma (2015) | India | 1,200 firms | 10 years | Cash conversion cycle<br>Firm age<br>Firm size<br>Growth<br>Asset tangibility<br>Leverage<br>Profitability<br>Economic conditions | <br>-<br>-<br>+<br>+<br>-<br>+<br>Non-sig |

| | | | | | |
|---|---|---|---|---|---|
| Baños-Caballero et al. (2010) | Spain | 4076 firms | 5 years | Cash Conversion Cycle (CCC)<br>Target level of working capital ($CCC_{i,t-1}$)<br>Cash flow<br>Firm size<br>Growth<br>Asset tangibility<br>Leverage<br>Return on assets<br>Economic condition (GDPGR) | <br>+<br>+<br>Non-sig<br>-<br>-<br>-<br>-<br>Non-sig |
| Mathuva (2014) | Kenya | 33 firms | 14 years | Cash Conversion Cycle (CCC)<br>Target level of working capital (CCCi,t-1)<br>Cash flow<br>Return on assets<br>Capital expenditure<br>Firm size<br>Sales growth<br>Leverage<br>Firm age<br>Economic condition (GDP) | <br>+<br>+<br>-<br>-<br>Non-sig<br>-<br>Non-sig<br>+<br>Non-sig<br>- |
| Nazir and Afza (2009) | Pakistan | 132 firms | 3 years | Working capital requirements<br>Leverage<br>Growth<br>Firm size<br>Profitability<br>Cash flow<br>Economic condition | <br>-<br>Non-sig<br>Non-sig<br>+<br>Non-sig<br>Non-sig |

### 3.2. Determinants of CCC

As mentioned above, maintaining longer CCC has its own costs and benefits. Thus, maintaining an optimal level of CCC is imperative for a firm as it balances profitability and liquidity. Based on this assumption, available literature has brought out a number of factors that determine CCC.

***3.2.1. Cash Flow*** Cash flow is regarded as the best proxy for ascertaining the capacity of a firm to generate internal resources. Prior literature has thrown up conflicting findings vis-a-vis the relationship between cash flow and CCC. Specifically, some researchers found either a positive or a negative relationship between cash flow and CCC. Earlier in 1993, Fazzari and Petersen suggested that for US manufacturing firms working capital is sensitive to cash flow shocks and is positively influenced by variations in cash flow. Accordingly, firms with high cash flows would be in a position to pursue a conservative working capital strategy but negative cash flow firms need other sources to finance their deficiency in working capital (Hill et al. 2010). This explanation is in tandem with the pecking order theory that asserts that internally generated funds should be the first choice for financing a firm because of the cost advantage it offers. These findings thus exemplify that firms that are better off to generate internal resources maintain higher investment in working capital. Supporting this line of argument, a number of studies have found a positive relationship between cash flow and CCC (see for example, Haron and Nomran, 20162; Wasiuzzaman and Arumugam, 2013; Banos-Caballero et al., 2010). Contrary to the above assertion, it is argued that firms with higher cash flows tend to reduce investment in working capital because these firms are anticipating the smooth flow of cash and, therefore, a lower requirement of investments in working capital. More recently, Appuhami, (2008) argued that with the increase in cash flow, companies tend to reduce investment in working capital, thus shortening their CCC. Certain empirical studies have found support for the negative relationship between cash flow and CCC (see for example, Mansoori and Muhammad; 2012; Chiou et al., 2006)

***3.2.2. Leverage*** Extensive literature has consistently found a negative relationship between leverage and CCC (see for example, Wasiuzzaman and Arumugam, 2013; Akinlo, 2012; BañosCaballero et al., 2010). Empirical evidence demonstrates that as firms increase their leverage, CCC tends to reduce. This is because for firms with larger leverage, cost of funds invested in CCC is higher as they need to pay a risk premium (Chiou et al., 2006). This phenomenon results in a situation where a firm would pay more attention towards efficiency of working capital in order to release the funds that are blocked in operating cycle or in components of working capital (Nazir and Afza 2009). In addition, finance theory argues that the returns from working capital are low and hence a highly levered firm would not find it worthwhile to invest larger amounts in working capital (Banos-Caballero et al. 2010). Thus, a negative relationship is expected between leverage and CCC.

***3.2.3. Firm size*** Firm size is a determinant of CCC because of the interaction of four factors viz; capital market access, negotiation power, economies of scale and reputation. With regard to capital market access, it is argued that since larger firms remain the focus of analysts, there is less information asymmetry, permitting them easier access to capital as compared to smaller firms. With better access to capital markets, less information asymmetry and lesser borrowing frictions, larger firms can pursue a relaxed receivable, payable and inventory policies (Hill et al., 2010). In addition, companies that have better access to capital markets, redistribute capital to the firms with poor access to financial markets via trade credit or commercial credit (Niskanen and Niskanen, 2006). With regard to the negotiation power, it is assumed that survival of a firm follows Darwinian principle 'survival of the fittest'. Large firms can impose their terms on smaller firms which in turn impose their terms on still smaller firms. Further, with regard to economies of scale, it is argued that larger firms enjoy the benefits of economies of scale. Such firms maintain bulk of inventories and thus, are able to enjoy the quantity discounts. However, smaller firms need to regularly maintain higher inventories in order to cash the quantity discounts and also need to be prepared for volatile sales (Preve and Sarria-Allende, 2010). Moreover, larger firms are capable of coordinating their supply chain in a more efficient manner. Lastly, with regard to the reputation, it is assumed that larger firms have reputation in the markets and are known for their product quality and accordingly, need not to extend liberal trade credit to customers. Contrary to this, small firms do not enjoy good reputation in the market and thus, need to advance trade credit and guarantee product quality (Wasiuzzaman and Arumugam, 2013). Based on the above arguments, there is a reason to believe that firm size may have the positive effect on CCC. This view is supported by certain empirical studies (see for example, Hill et al., 2010; Chiou et al., 2006) Contrary to the above, firm size is also associated with the bargaining power that a firm enjoys over its suppliers and customers. Prior literature asserts that a large sized firm can use its dominance in the market and hold lesser inventories and also pursue a rigid credit policy. Thus, firms with higher bargaining power are in a position to promote restrictive credit policy without losing customers (Wasiuzzaman and Arumugam, 2013). Compared to this, small sized firms need to extend trade credit facility and maintain product quality since they do not enjoy a good reputation in the market (Wasiuzzaman and Arumugam, 2013). Given the possibility that large sized firms can pursue a restrictive credit policy as compared to small sized firms, large firms tend to invest smaller amounts in working capital while as, small firms tend to invest large amounts in working capital. Based on these explanation, negative relationship between firm size and CCC has also been found in the previous literature (see for example, Qurashi and Zahoor, 2017; Cuong and Cuong, 2016; Haron and Nomran,2016; Wasiuzzaman and Arumugam, 2013; Mansoori and Muhammad, 2012).

***3.2.4. Firm Age*** Available literature suggests firm age as one of the determinants of CCC because of its association with firms' financing and trade credit practices and policies (BañosCaballero et al., 2010). Prior literature has used firm age as a proxy of time that firm has spent in building relationship with the suppliers and customers, building creditworthiness among the financers, knowing its customers and building reputation among them (Cuñat, 2007). In spite of such interaction, researchers have found either a positive or a negative impact of firm age on CCC. The plausible reason for the positive impact of firm age on CCC has been put forth by (Chiou et al., 2006), who suggest that older firms can get external finance easily and at better terms. Thus, it is possible that a positive relationship may exist between firm age and CCC. In line with this argument, a number of other studies documented evidence for the positive impact of firm age on CCC (see for example, BañosCaballero et al., 2010 and Chiou et al., 2006). Contrary to the above, it is argued that young firms have better growth opportunities and thus tend to grow faster. However, as the age of the firm increases, growth rates tend to become more stable, indicating fewer opportunities available for further growth and subsequently less demand for capital (Chiou et al., 2006). In addition, increase in the age of firm, its experience and relationships with suppliers would make it possible for them to invest less amount in working capital (Wasiuzzaman and Arumugam, 2013). Besides, young firms might be more aggressive in managing working capital due to the limited availability of funds and thus, would manage working capital more efficiently than older ones. Accordingly, due to the lower requirement of working capital in older firms, there might be a negative influence of firm age on CCC. This line of argument is further supported by many studies (see for example, Wasiuzzaman and Arumugam, 2013; among others).

***3.2.5. Asset tangibility*** Empirical evidence with regard to relationship between asset tangibility and CCC offers two conflicting findings. The main argument revolves around the amount of asymmetric information generated by the assets of the firm. It is argued that intangible assets generate more asymmetric information than tangible assets because firms with high tangible assets remain focus for analysts and accordingly, they face a low information asymmetry. Thus, firms having higher tangible fixed assets may be able to raise funds at lower cost for investment in working capital and thus might have longer CCC. Accordingly, asset tangibility has a positive impact on CCC (Kieschnick et al., 2006). Contrarily, a firm with low tangible assets may not be able to raise its funds at lower costs because of the higher asymmetric information and accordingly, may have lesser funds available to invest in working capital. It may, therefore tend to have shorter CCC. Based on this phenomenon, researchers have evidenced the negative impact of asset tangibility on CCC (Cuong and Cuong, 2016; Wasiuzzaman and Arumugam, 2013; Banos-Caballero et al. 2010).

***3.2.6. Growth*** Pecking order theory suggests that firms that anticipate growth opportunities need additional capital in future preferably to be met from internal sources. Accordingly, in anticipation of growth opportunities, these firms may increase the reserves of cash holdings (Wasiuzzaman and Arumugam, 2013) and stock higher inventories (Kieschnick et al., 2006). Thus, a positive relationship has been found between growth and CCC (see for example, Qurashi and Zahoor, 2017; Cuong and Cuong, 2016; Wasiuzzaman and Arumugam, 2013; Mansoori and Muhammad, 2012). Compared to above, it is argued that companies with higher growth opportunities might have smaller CCC (BañosCaballero et al., 2010). Two plausible reasons for this phenomenon have been put forth in the literature. First, working capital of high growth firms is mostly financed by trade credit (Cuñat, 2007). Second, companies in pursuit of

maintaining growth, might extend more trade credit to their customers in times of low demand (Emery, 1987). Thus, it is evident that rapid sale firms might face liquidity problems and thus face bankruptcy. Facing shortage of cash and inability to pay their payables, these firms need more capital to fund inventories and receivables. Based on these explanations, a negative relationship has also been found between growth and CCC (see for example, Haron and Nomran, 2016; BañosCaballero et al., 2010; Hill et al., 2010)

***3.2.7. Profitability*** Profitability as a determinant of CCC has shown either a positive or a negative impact on CCC. A highly profitable firm may have sufficient cash available for investing and hence would not be much worried about the effective administration of working capital (Nazir and Afza, 2008). Since profitable firms maintain higher investment in working capital, a positive relationship has been found between profitability and components of CCC (see for example, Cuong and Cuong, 2016; Mansoori and Muhammad; 2012; Nazir and Afza, 2008; Chiou et al., 2006). Contrary to the above, since profitable firms find it easy to obtain funds, it is expected that they would maintain a minimum level of working capital and cash. Accordingly, a negative relationship is found between profitability and CCC (see for example, Çetenak et al., 2017; Haron and Nomran, 2016; BañosCaballero et al., 2010)

***3.2.8. Macro-economic conditions*** Available literature suggests macroeconomic conditions as a possible determinant of CCC. Lamberson (1995), asserts that any change in the economic activity has a substantial effect on CCC and the nature and quantum of impact varies with the firm size and other characteristics. It is argued that during periods of recession, firms find it difficult to obtain external finance due to limited cash supplies (Chiou et al., 2006). Further, the periods of recession result in the decline in sales that leads to increased level of inventories. Moreover, customers also take more time in paying off their obligations during such periods. In addition, a firm maintains additional inventories and receivables during economic slump, signifying that firms respond to economic slow-down by reducing production (Chiou et al., 2006). Based on these reasons, a positive relationship has been found between macroeconomic conditions and CCC (see for example, Qurashi and Zahoor, 2017; Wasiuzzaman and Arumugam, 2013; BañosCaballero et al., 2010). However, the reverse has also been found true. In other words, negative relationship between macro-economic conditions and CCC has also been documented (see for example, Mansoori and Muhammad, 2012; Chiou et al., 2006). During economic boom, firms can obtain the external finance easily and thus, might lower down their investment in working capital (Mathuva, 2014; BañosCaballero et al., 2010)

## 4. **Conclusions and directions for future research**

A critical analysis of the empirical research reviewed above reveals that the literature with regard to target cash conversion cycle, speed of adjustment and determinants of CCC has not fully developed across developed and developing countries, since the researcher identified only few studies, for example, Cuong and Cuong (2016); Mathuva (2014); Banos-Caballero et al. (2010) that have investigated the determinants of CCC, the target CCC, if any, and the speed of adjustment thereof. The critical but exhaustive review of available literature on working capital management reveals that target cash conversion cycle, speed of adjustment and determinants of CCC are crucial aspects among working capital management literature that have remained evasive. The area, therefore, warrants a perennial and quality research especially on the dimensions unexplored hitherto. Thus, future research can be conducted to overcome the limitations highlighted above. Since the speed of adjustment and the impact of various firm-level factors on working capital may be contradictory, conducting such analysis across different

countries sounds logical. Further, considering the developing literature on the impact of cash flow shocks on working capital, it might likewise bear significance to dissect whether the speed of adjustment towards target working capital is connected with the positive and negative shocks to cash flows. Moreover, due to the disparities in ownership structure, adaptability and charge, the financing alternatives and techniques are very different amongst small and large firms, future research on similar aspects across small and large firms under different institutional and monetary frameworks would be quite interesting.

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