ATILIM UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OFBUSINESS ADMINISTRATION
MASTER OF BUSINESS ADMINISTRATION

THE IMPACT OF WORKING CAPITAL MANAGEMENT ON THE FIRMS' PROFITABILITY

MASTER`S THESIS

Fatma ABD Al SHAFEA

Ankara, 2018

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I hereby declare that;

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- I prepared this thesis within the framework of the academic and ethics rules.
- I presented all the information, documents, evaluations and findings in accordance with the scientific ethical and moral principles.
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ÖZ

ABD AL SHAFEA, FATMA. İşletme Sermayesi İşletmesinin Firma Karlılığı ÜzerindekiEtkisi. Yüksek Lisans Tezi, Ankara, 2018.

Bu çalışma, işletme sermayesi yönetiminin firmaların karlılığı üzerindeki etkisini araştırmayı amaçlamaktadır. Çalışma, 2010-2016 döneminde İstanbul Menkul Kıymetler Borsası'na (BIST) kayıtlı gıda, içki ve tütünile dokuma, giyim eşyası ve derisektörlerindeki firma verileri kullanılarak gerçekleştirilmiştir. Veriler, panel veri metodolojisi kullanılarak analiz edilmiştir. Nakit dönüş süresi vebileşenleri, işletme sermayesi yönetiminin ölçüleri olarak kullanılmış ve kârlılık ölçütü olarak faaliyet karı oranı kullanılmıştır. Gıda, içki ve tütün sektörü üzerinde gerçekleştirilen analizin sonuçları, alacak tahsil süresi, ticari borç ödeme süresi, nakit dönüş süresi ve karlılık arasında anlamlı ve negatif bir ilişki olduğunu göstermektedir. Ayrıca firma büyüklüğü ile karlılık arasında pozitif ve anlamlı bir ilişki bulunmuştur. Bununla birlikte, stokta bekleme süresi, kaldıraç ve satışlardakibüyüme oranı karlılık üzerinde önemsiz bir etkiye sahiptir. Öte yandan, dokuma, giyim eşyası ve derisektörünün sonuçları, stokta bekleme süresi, kaldıraç ve karlılık arasında negatif ve anlamlı bir ilişki ile firma büyüklüğü ve karlılık arasında pozitif bir ilişki olduğunu ortaya koymaktadır. Ayrıca, nakit dönüş süresi karlılık ile negatif önemsiz bir ilişkiye sahiptir. Alacak tahsil süresi, ticari borç ödeme süresi vebüyüme oranı kârlılık üzerinde önemsiz bir etkiye sahiptir. Her ne kadar elde edilen sonuçların istatistiki anlamlığı sektörler arasında farklılık gösterse de, çalışmada etkin işletme sermayesi yönetiminin karlılığı arttırabileceği ortaya konulmuştur.

relküczöS rathanA

İşletme sermayesi yönetimi, karlılık ve panel veri metodolojisi

ABSTRACT

ABD AL SHAFEA, FATMA. The Impact of Working Capital Management on the Firms' Profitability. M.A. Thesis, Ankara, 2018.

This study investigated the effect of working capital management on the business firms' profitability. It was conducted between 2010 and 2016 period focusing on food, beverage, tobacco, textile, apparel, and leather companies operating in Turkey, which are listed on the stock exchange. The data were analyzed using the panel data methodology. The cash conversion cycle (CCC) components were utilized for analyzing working capital and operating profit ratio, which are popular indicators of profitability. The results for the food, beverage and tobacco sector showed strong but negative relation between accounts receivable period, accounts payable period, CCC and profitability. Furthermore, positive and significant relationship was found between the size of a firm and its profitability; however, inventory period, leverage, and sales growth showed insignificant impact on profitability. The results of the textile, wearing apparel and leather sector showed negative but significant relation between the leverage, inventory period, and a firm's profitability. Results also indicate that positive as well as significant relationship exists between a firm's profitability and its size. Moreover, the CCC showed negative but insignificant relation with profitability. Accounts receivable period, accounts payable period and sales growth showed insignificant impact on profitability. Although the statistical significance of the results differed based on different sectors, effective managerial policies definitely increase profitability of a firm.

Keywords

Profitability, working capital management, and panel data methodology.

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CHAPTER ONE

INTRODUCTION

Working capital means the amount of investment that is invested in the current assets while net working capital reflects the difference between current assets and liabilities.

Working capital management means managing current assets such as how much investment should be made to the current assets, how the funds should be distributed among different components of the working capital, and how to arrange finances to meet the need for the working capital (Brigham, 1999). Working capital management is a significant topic for financial management since it has a significant impact on liquidity, risk, profitability, and the most important of all, value of a firm. Moreover, working capital management can be challenging because it requires creating a balance between liquidity and profitability. Effective working capital management improves operational performance of a firm, its profits, shareholders' value assuring sufficient level of liquidity to meet the short-term obligations (Debarshi, 2011).

Sometimes firms can follow conservative working capital management policies, which refer to high investments in current assets as well as low investment in long-term assets (Pais& Gama 2005).It is essential to understand that excessive working capital investment diminishes profits due to high financing and opportunity costs of lost investment opportunities. Although the liquidity risk is low, the profitability will also be lower when that type of policies is implemented. Another policy adopted by some firms is aggressive in nature, and those firms make low investment to the components of working capital so as to increase profitability. This policy increases the profitability of the firms as well as the liquidity risk. As a result, firms should manage and control their current assets and liabilities for risk reduction in terms of short-term debts, and avoiding unnecessary investments in these assets by applying effective working capital

management policies that assure maintaining the liquidity-profitability balance (Şen, Köksal, & Oruç, 2009).

One of the major objectives of managing working capital is maintaining balance between the components of working capital, which ensures sufficient liquidity to continue with a business and increases profitability. Four major working capital management components include managing cash, accounts receivable inventory, and accounts payable. Determining an appropriate level of each component cannot be ignored. For example, a large inventory ensures that there is no chance of loss of sales. From another perspective, the costs related to holding too much inventory will increase; however, low levels of inventory may lead to lost sales when the demand increases (Siddaiah, 2009).

As far as the accounts receivable are concerned, increasing the accounts receivable period will require additional funds to be tied up to the accounts receivable, which will also increase the financing costs; therefore, it will decrease the overall profits. If the credit term of accounts receivable is narrow, bad debt will also be low but it is important to mention that holding a narrow credit term will ultimately lead to low levels of sales, and a consequent profit reduction. Moreover, it may lead to a negative relationship with customers (Ganesan, 2007).

Accounts payable is another working capital component. Delaying account payable is considered to be an inexpensive internal source of financing; therefore, increasing accounts payable is usually associated with increased profits; however, delaying payments too longer harms relationships with suppliers leading to a bad commercial reputation as well as loss of discounts that a supplier firm offers (Deloof, 2003). A common measure of the working capital efficiency is the CCC (cash conversion cycle), which informs decision makers about how many days a firm takes from purchasing raw materials to selling its finished goods. A shorter CCC is preferred (Swarup, 2011) because it implies that a firm is more efficient in terms of managing its cash flow (Uyar, 2009).

Effective working capital management includes maintaining the risk-return balance eliminating the risk associated with defaults, and avoiding excessive

investment in the working capital components. Effective management of the working capital also reduces the financial stress and the bankruptcy risk. According to the working capital literature, working capital management efficiency is linked with the working capital level and working capital investment reduction, which is used as an alternative term for increasing efficiency(Coşkun& Kök, 2011).The literature also shows that decreasing the investment in working capital components generally improves profits (Moyer et al., 2011; Nazir & Afza, 2009;Coşkun& Kök, 2011)

Sector differences may affect the credit policy, inventory policy and the other payment policies of the firms (Krueger, 2005). Thus, the impact of stressing on the working capital management components for increasing the overall profitability may be different for different sectors. In this study, two important Turkish business sectors such as food (including beverage and tobacco) and textile (including apparels and leather) have been analyzed. In 2016, the current assets-to-total assets ratio in the food, beverage and tobacco sector was 68.4% and it was 62.2% in the textile sector in Turkey, which makes working capital management more crucial (Source: www3.tcmb.gov.tr/sektor/2017/menu.php).

This has been conducted to analyze the link between profitability and the working capital management in the firms, which are listed in Borsa Istanbul Index(2010-2016) selling tobacco, foods, beverages textile, apparels and leather. The Panel data analyzing technique was used to conduct the analysis. Although the statistical significance shows differences among sectors, it is possible to claim that decreasing investments in the components of the working capital (accounts receivable and inventory) and decreasing the CCC can substantially increase profitability.

The current study has been organized as follows: The following part presents the literature review pertaining to the working capital management while the working capital and its factors are explained in chapter three. Managing components of the working capital have been explained in chapter four while the used research methodology and the results are given in chapter five and chapter six.

CHAPTER TWO

LITERATURE REVIEW

2.1.Literature Review

Working capital management is a prime issue for the current global financial management because it plays a major role in many fields; therefore, a large volume of published studies describe the relation between working capital management and other concerned variables/factors.

Filbeck & Krueger(2005)selected 1,000 firms between 1996 and2000 to examine the impact of working capital management on multiple industries based on the CFC magazine's annual survey. The six-sigma methodology was applied to analyze the data. The researchers asked two questions to test the hypothesis: Whether industries have significant differences in terms of their working capital efficiency? Do these measures change within the industry with the passage of time? The results indicated that the industries had significant differences in terms of managing working capital, and besides, these measures changed with time. The researchers highlighted the result that indicated variations in the interest rates, competition and innovation that affect the ways how the working capital is managed in different industries. When the interest rate increased, organizations are less desirous to make early payments that lead to postponing accounts payable and receivable, and cash payments.

Mohamad & Saad(2010)explored the impact of the components of working capital on the firms' performances by empirically analyzing the firm evaluations. 172 listed companies were randomly selected from Bursa and Malaysia from 2003 to 2007. Correlation and multiple regressions were used for analyzing the data, which resulted in finding positive as well as significant relation between current assets-total assets ratio, and the market value of a firm; however, negative relation was noticed between the three components (CCC, current ratio, and the ratio between current liabilities and total assets) and the firm's market value. The debt

ratio showed a positive relation with the market value. They stressed that managing working capital ensures improvement in the market value of a firm.

Zhang (2011) used a sample of 660 Finnish trading organizations and 800 manufacturing firms from 2003 to 2007 for analyzing the working capital management impact on corporate cash holdings. They found negative but strong relation that exists between the corporate cash holding and the working capital management both in Finnish trading and manufacturing firms. Moreover, the researcher reached a conclusion that the cash flow risks strongly affected corporate cash holding in such a way that whenever the level of cash holding increases, the cash flow risk increases as well. He mentioned that the firm size in the Finnish trading and manufacturing firms influenced their corporate cash holdings so much so that the small firms have a larger level of cash holdings as compared to the large firms.

Abbadi & Abbadi(2012)tried to determine the Palestinian industrial firms' working capital holdings using a sample of 11 firms, which were listed on the Palestine Securities Exchange (2004-2011). They used an econometric model and estimated parameters using the panel data analysis. They used the working capital ratio as a dependent variable while the CCC, operating cash flows, firm sizes, profits, leverages, real growth rates and interest rate as independent variables. Their results showed that CCC, ROA (return on assets) and operating cash flows have positive as well as significant relation with the working capital requirement whereas leverage and firm size were negative but significant for the working capital requirements. The research also showed that the real growth rate and the interest rate had no significant impact on the working capital requirements. The researchers indicated that Palestinian firms hold a large working capital because of their conservative policies and long CCC. Moreover, they concluded that Palestinian listed companies changed their working capital requirements keeping in view the leverage, total assets, operating cash flows, return on assets (ROA) and the cash conversion cycle (CCC).

Ogundipe, Idowu, & Ogundipe(2012)examined the influence of working capital management on the different firms' market value using data of 54 non-

financial Nigerian firms listed on the Nigerian Stock Exchange (1995-2009). The researchers analyzed the data using regression. Their results revealed a significant but negative relation between the CCC and the firms' market value, and also, positive and significant relation between the market value and the debt ratio. They concluded that the working capital management efficiency positively contributes to a firm's market value. As a result, they recommended that managers must ensure sufficient management of working capital components.

In a study conducted by Akinlo (2012), the factors, which determine the working capital needs in the Nigerian firms were analyzed from 1997 to 2007. The study included66 firms and used panel data for finding the working capital determinants. These internal factors included operating cycles, leverage, fixed and variable assets, sales growth, and permanent/working capital. External macroeconomic variables included the extent, to which, economic activities were carried out. The outcomes showed that the sales growth, business size, permanent working capital requirement, and firms' operating cycle were the primary factors behind the working capital requirements; however, leverage had a negative relationship with working capital requirements. The level of economic activity was positively associated with working capital requirements. The researcher indicated that firms are likely to increase their debt ratio when their short-term capital was consumed.

Naser, Nuseibeh, & Al-Hadeya(2013)aimed to explore factors affecting the working capital management. This study was conducted on the UAE-based non-financial firms listed on the Abu Dhabi Securities Exchange. The research was based on the latest annual reports of 69 firms, which were published on 31 December 2011. Descriptive statistical methods such as regression and correlation were applied. The researchers used six independent variables in their study namely sales growth, industry type, return on equity, operating cash flows, firm size, and leverage to measure their impact on working capital management. Three out of the mentioned six factors had a definitive impact on the CCC. The results showed negative but significant relation between the firm size and the CCC indicating that large firms (such as those, which are listed on the Abu Dhabi

Securities Exchange) have shorter cash conversion cycles than small firms. The same research showed negative relation between sales growth and the CCC. This means that sales growth increased when firms reduced their cash conversion cycles. In addition, high selling firms have faster CCC for financing their growth initiatives. They maintain specific liquidity as cash holding level; however, the leverage level of the same companies showed significant and positive relationship with the CCC. It implies that long cash conversion cycles are associated with high levels of leverage. The high level of leverage means that the company has inadequate liquidity position and requires the use of external financial sources.

Caballero, Teruel & Martínez(2013)investigated the firms' speed of adjusting working capital requirements to meet their targets. A sample of 60 non-financial Spanish firms was selected and their data was collected between 1997 and2004. Panel data methodology was used for analysis. Their findings indicated that the firms' adjustment speed to meet their working capital requirements was relatively fast, which is in line with the idea that the current balance sheet items could be easily changed even in the short-run. Moreover, their findings showed that the firms, which were able to acquire more internal funds, had a larger working capital requirement. They also found that companies face a greater working capital requirement when economic growth is higher. In addition, there was a negative relationship between the factors such as cost of external financing, growth opportunities, investment in fixed assets, likelihood of financial distress, profitability, and the working capital requirement. The researchers concluded that the speed of adjustment is not equal for all the firms. They also predicted that firms, which hold excess cash, adjust more quickly to achieve their target working capital requirement.

Bahiyan (2013) searched for evidence of the impact of working capital management on performance management. 134 firms were selected, which were listed on the Stock Exchange from 2005 to 2011, and their data were analyzed using the SPSS software. The results showed that the relation between the performance management and the working capital management was meaningful,

and aggressively choosing finance and investment in working capital would improve performance of firms.

Baños, García & Martínez(2014)examined the relationship between working capital and financial constraints. They selected 258 non-financial British companies from 2001 to 2007. They used panel data and the GMM methods for analysis. Their results showed that firms, which had a higher probability of facing financial constraints, had less optimal working capital as compared to those, which were less likely to face financial constraints. This result affirms the fact that a higher working capital level requires more financing. It also means bearing extra costs.

Rashvand & Tariverdi(2015)investigated the link between managing working capital and the operating cash flow. They collected data of 184 Iranian companies listed on the Tehran Stock Exchange (2009-2013). They used multiple linear regression for their analysis. For evaluating the management of working capital, three factors were employed: The size of the firm, liquidity and the degree of operating leverage. Their findings showed significant and positive relation between the companies' liquidity position and their operating cash flows. On the other hand, the results showed insignificant relationship between the company sizes, operating cash flows, and the degree of operating leverage. The results suggest that managers must increase their current assets according to their debts. In other words, they must invest the operating cash funds in the projects offering positive net present value (NPV)for increasing the returns and reducing dependence on external financial resources.

Goel & Sharma(2015)analyzed the changes in efficiency (pure efficiency and scale efficiency) and its impact on the working capital management. They collected data from 1,074 Indian manufacturing sector firms (2004-2013). Graphical, statistical analysis and the Malmquist productivity index were used in this research. The findings showed that the technological change was more than the change in the firms' efficiencies. They also found that the pure efficiency change was more than the changes in the scale efficiency. Moreover, the researchers showed that the sales growth rate had a positive impact on both pure

and scale efficiencies. Debt ratio also had a positive effect, but only on the scale efficiency. In general, they concluded that on average, the working capital management efficiency grew over the ten years (from 2004 to 2013).

García-Teruel,Baños-Caballero& Martínez-Solano(2016)analyzed the relation between the firms' performance and the financing strategy for meeting the working capital requirement of several SMEs (small and medium enterprises) between 1997 and2012. They applied the panel data and a two-step generalized methods for moment estimations. Moreover, their study was conducted on two different periods both before and during the financial crisis. They concluded that a suitable financial strategy can help firms for improving their performances. From 1997 to 2007, they found that firms having low percentages of working capital requirements, which were financed with the help of short-term bank debt, may improve their performances. On the other hand, firms having high proportion of working capital requirements, which are financed with short-term bank debt, and when their dependence on loan increases, it negatively affects their performances because they pay higher interest and face the refinancing risk (at even higher interest rate).During the 2008 financial crisis, firms, which had to pay less proportion of short term debt, remained the most profitable. Moreover, the relation between a firm's performance and the working capital requirements depend on that firm's financial flexibility. The researchers recommended that managers should not only pay attention to the working capital investments but also shed light on how this investment should be raised.

Gao & Wang(2017)evaluated the impact of efficiency of working capital management on the financial analysts' forecasting behaviors. It was conducted on listed Chinese manufacturers between 2004 and2014. They used CCC to measure the efficiency of working capital management. The outcomes show that there is a positive relation between the working capital management efficiency and the number of analysts following as well as their forecast accuracies. The study concluded that the number of analysts who chose to follow the firm decreased when the CCC was long; so, the average analyst’s forecasts would be less accurate and the issue of forecast dispersion would rise.

Even though the researchers extensively discussed the working capital management in the available literature, the link between the working capital management and profitability is still nota primary concern. A considerable amount of literature has been published on this topic, which we will discuss in the next two sections.

2.1.1. International Literature on Working Capital Management and Profitability

A research (Deloof, 2003) was conducted on the impact of working capital management on Belgian firms' profitability(1992-1996). The study covered 1,009 large Belgian non-financial firms. Both correlation and regression analyses were carried out, which showed a negative relation between the profitability, accounts receivable and payable periods, and the inventory turnover period. Moreover, the results suggested that the managers should raise a firm’s profitability by decreasing the days, which inventory, receivables and payables take. The results also highlighted that the firms, which earner less profits, waited longer before they could pay their bills.

Lazaridis & Tryfonidis(2006)explored the link between profitability and the working capital management using a sample of 131 listed Athenian companies from 2001 to 2004. They declared a negative relation between the two variables. They used gross operating profit and CCC to measure the working capital management. This study concluded that profits can be raised through properly managing the CCC by optimally maintaining its components such as accounts receivable and payable periods, and the inventory turnover period.

Ganesan(2007)conducted the same research on the telecommunication equipment industry (2001-2007). The study collected data from349 US telecommunication equipment firms. The results showed negative relation between the working capital management efficiency with both profitability and liquidity, and the researcher explained this relationship by mentioning that telecommunication firms should reduce days for improving the working capital

management efficiency to increase profit margins. Moreover, the researcher suggested that the telecommunication industry should reduce inventory as well as increase the time to pay the suppliers for obtaining more credit from the suppliers.

Teruel & Solano (2007) searched for empirical evidence regarding the impact of working capital management on profits. They analyzed 8,872 Spanish SMEs(1996-2002). The results showed negative but significant relation between the SMEs' profitability and the time required for accounts receivable and the inventory.

Rehaman & Nasr(2007)explored a negative as well as significant relation between working capital management variables including the CCC, inventory period, accounts receivable period, accounts payable period, current ratio and the overall profitability based on the data collected from 94 Pakistani firms listed on the Karachi Stock Exchange from 1999 to 2004. After carrying out regression and correlation analyses, they suggested that positive shareholders' value can be created by reducing the CCC to the minimum but appropriate levels. The researchers highlighted that the mentioned negative relationship was associated with the fact that less profitable firms have to wait for more time before they pay their bills.

Gill, Biger, & Mathur(2010)also explored the same relationship for 88 US manufacturing companies, which were listed on the NYC Stock Exchange (2005-2007). The study used cross sectional yearly data. The researchers claimed that for their sample of companies, there was a positive relation between CCC and profitability. On the other hand, there was a negative relation between profitability and the accounts receivable period; however, they could not find any statistically significant relation between profitability and the accounts payable period. Moreover, no significant relationship could be established between profitability and the inventory period. They suggested that it was possible for managers to create value for their shareholders if they reduce the average collection period. In addition, managers could increase a firm’s profits if they manage their working capital more effectively.

Mathuva(2010)explored profitability of a firm and its relation with the working capital management on a sample of 30 firms, which were listed on the Nairobi stock exchange (1993-2008). He used fixed-effect regression and the pooled OLS models, which showed a highly significant but negative relation between profitability and the accounts receivable period. They concluded that more profitable firms take the shortest time while recovering their receivables. According to the researcher, the relation between the profitability and the inventory is positive, which confirms that the firms maintaining sufficiently high inventories generate more profits because they reduce some production costs, and avoid loss of business because of less supply issues. In addition, it would protect them against price fluctuations. The researcher also observed positive relation between profitability and the accounts payable, which implies that the highly profitable firms took longer before paying their creditors.

Rahman et al.(2010)analyzed the balanced panel data of 204 Pakistani manufacturing organizations, which were listed on the Karachi Stock Exchange to analyze the impact that working capital management has on the firms' performances from 1998 to 2007. They found that the cash conversion and the net trade cycles negatively affected profitability, which is measured by calculating the net operating profit. They indicated that firms can create shareholders' value by restricting both the cycles to a minimum level. Moreover, they found negative relation between the inventory turnover time and the net operating profit; however, they could not validate negative relation between profitability and the average collection period that indicates the firms' recovery policy problems. Similarly, the positive relation between profitability and the average payment period remained unconfirmed, which also shows problems pertaining to the payment policies of the firms.

Naqvi(2010)aimed to investigate the link between profitability and the working capital management through statistical measures such as correlation and regression analyses and ANOVA. They selected 55 Pakistani textile firms, which were operating from 2003 to 2008. They found strong as well as positive relation between the two mentioned variables. In addition, they confirmed that the

working capital, fixed assets' costs, production cost, and firm size (in terms of invested capital) were strongly linked with profitability but the debt had a negative relation with profitability.

Afeef(2011)attempted to determine the possible impact of working capital management on the profits of Pakistani SMEs using the data provided by 40 Pakistani firms (2003-2008). She found strong but negative relation between variables such as the inventory period, receivable collection period and profitability; however, the cash conversion cycle and the period of accounts payable had insignificant relation with the sample firms' profitability.

During a research on 263 Indian listed firms, Sharma & Kumar(2011)evaluated the impact of working capital management on Indian firms' profitability. The sample firms were listed on the Bombay Stock Exchange(2000-2008). They analyzed the working capital management impact with the help of OLS multiple regression models, which exhibited negative relationship between accounts payable tenure and inventory turnover (in days), and the firms' profitability; however, their findings show positive relation between profitability and the time needed to collect receivables (in days).

Aregbeyen(2013)carried out investigations on 48 Nigerian large listed manufacturing firms (1993-2005) to find the impact working capital management has on firms' profitability. They used gross operating profit, net operating income and return on assets (ROA) for analyzing the profitability. They measured working capital management by CCC, accounts receivable period, accounts payable period, and inventory turnover period. After applying combined descriptive/statistical and econometric analyses techniques, they found strong but negative relation between profitability and the working capital management. The researcher recommended that the Nigerian manufacturing firms should shorten the time required for accounts receivable, accounts payable, and inventory turnover in order to decrease their CCC, and making their working capital management more effective for augmenting profitability.

Podilchuk(2013)investigated the link between the liquidity management and the Ukrainian enterprises' profitability for 2001-2010. The panel data analysis was carried out, and the liquidity was divided into two groups: static(current and quick ratios) and dynamic (CCC, accounts receivable, accounts payable and inventory turnovers). The researchers measured profitability in terms of return on assets, and the findings indicated positive impact of static liquidity on profitability but the dynamic liquidity could not be used in this study since there was no available information to analyze it.

Mengesha et al.(2014)aimed to find the working capital management impact on 11 Ethiopia-based firms' performances(2008-2012). Data were analyzed through quantitative statistical and pooled panel techniques for both time series and cross-sectional data forms. The firms' performances were measured by returns on assets as well as on investments. The results confirmed significant but negative relationship between the time periods of inventory turnover, accounts receivable, accounts payable, CCC and return on assets but the relation between CCC and period of accounts receivable was insignificant.

Mohammad (2015) aimed to examine how profitability of Iraqi firms was affected by effective working capital management. The study was conducted on 30 non-financial listed Iraqi firms between 2006 and 2013. Three types of data analysis were used in this study, the first was descriptive statistics, and the second type was correlation (Pearson correlation analysis). The last type was regression analysis, which was calculated by using generalized least squares. The research results show positive relationship between CCC, accounts receivable and payable periods, and the overall profitability. The research found negative association between profitability and the inventory period.

2.1.2.Turkish Studies on Working Capital Management and Profitability

Şen et al.(2009)studied the relation between the working capital management efficiency levels and the ROA (return on assets)for 49Istanbul Stock Exchange (ISE) listed firms from 1993 to 2007. Panel data analysis was used for

findings, which showed significant but negative relation between CCC, current ratio, net working capital, time periods for accounts receivable, inventory turnover, and the overall return on assets.

Uyar(2009)investigated the relation between the CCC (cash conversion cycle)length and the firm's profitability using a sample of 7 manufacturing and merchandising companies, which were listed on Istanbul Stock Exchange during Financial Year 2007. ANOVA and Pearson correlation analyses were used, which showed significant but negative relation between the length of CCC and the profitability. According to this research, less profitable firms had longer cash conversion cycles since they kept inventory for a long time, collected receivables very slowly, and paid debts quickly.

Karaduman, Akbas, Ozsozgun, & Durer(2010)conducted a study on 140 listed Turkish companies for the period 2005-2008 for analyzing the impact of working capital management on those firms' profitability. Panel data methods were employed for the analysis, which showed that the companys' return on assets spiked when the days required for recovering accounts receivable, accounts payable days, and the inventory turnover time were substantially decreased. They recommended that the firms should increase focus on working capital management tactics for enhancing their profits.

Coşkun & Kök(2011)investigated the working capital policies, and their impact on firms' profitability by analyzing financial data of 74 Turkish manufacturing companies listed on the Istanbul Stock Exchange from 1991 to 2005. The panel data method was performed that showed negative relation between CCC, time periods required for accounts receivable, inventory turnover, and the companies' overall profitability. They found positive relation between the time required for accounts payable and the firms' profitability. According to the results, the researchers concluded that in order for firms to increase their profitability, they should apply an aggressive investment policy for decreasing the inventory and accounts receivable periods.

Akbulut(2011)investigated the working capital management effect on a firm's profitability with the help of regression and ANOVA analyses on listed manufacturing corporations during the 2000-2008 period. The findings indicated that regression analysis showed a negative link between the CCC, which is an indicator of the working capital management, and the return on assets, which was used as a measure of profitability. In addition, the ANOVA analysis presented statistically significant difference between CCC and return on assets in the sub-sectors of the manufacturing sector.

Dursun & Ayrıçay(2012)determined the relation between the gross profit and working capital management based on the data of 120 production and trade firms, which were listed on the Istanbul Stock Exchange in Turkey during the 1996-2005 period applying the least squares method and the fixed effects model. The outcomes show negative relationship between the investigated variables. They clarified that high cash return time results in high sales numbers, and therefore ,it enhances profitability; however, a longer CCC needed external financing, which resulted in extra cost in the shape of interest. Thus, firms should make efforts for shortening the cash conversion cycle.

Vural, Sökmen, & Çetenak(2012)investigated the impact of working capital management components on a firm's performance applying the panel data analysis procedure on 75 listed manufacturing firms between 2002 and2009. The researchers found that any firm can generate high profits by shortening average collection periods and cash conversion cycles; that is, the relation between the time required for accounts receivable, and cash conversion had a negative relation with profitability. The relationships between profitability and other components of working capital management, according to this research, remained insignificant.

Aygün(2012)examined the working capital management impact on the firms' performance using the data of 107 manufacturing industries during the 2000-2009 period. The data was further analyzed using statistical processes. The findings indicated negative relation between ROA (return on assets) and the days required to recover the accounts receivable, accounts payable and inventory.

Aksoy (2013) also investigated the link between a firm's performance and its working capital management taking the data of 146 Turkish BIST-listed manufacturing industries (2003-2012) with the help of panel data. He used return on assets and Tobin's Q as dependent while CCC and its components as independent variables. He used pre-crisis and post crisis sub-samples (before and after 2008 financial crisis). The results showed that the inventory period was positively related with Tobin'sQ before crisis while it was negatively related with Tobin'sQ after crisis. Moreover, a statistically significant negative relationship was found between Tobin's Q and the accounts payable. The CCC showed negative relation with ROA (return on assets), and positive relation with Tobin's Q. The results of the performance indicators were negatively correlated with accounts receivable period and positively related with the current ratio.

Çerçi, Uzkaralar and Önal (2013) used the data of 134 Turkish listed manufacturing firms during the 1991-2011 period. For analyzing the data, they used multiple regression analysis. The study examined the profitability-working capital management interrelationship, and discovered positive relation between profitability and the current ratio; however, the cash conversion cycle negatively affected profitability. Moreover, they highlighted that there appears to be no significant relationship between profitability and the working capital management in the Turkish manufacturing subsectors.

Karabay(2013)examined working capital structure, working capital management strategy and the working capital management impact on the Turkish clothing companies' profitability(1996-2011). The data was analyzed after applying financial ratios, correlation and regression. The findings show negative correlation between factors such as the receivable collection period, CCC and the overall profitability, which was measured by gross operating profit. The researcher suggested that clothing firms should reduce their time for recovering accounts receivable and CCC in order to increase their profitability and they should find a proper liquidity ratio as a guideline for their processes.

Aytürk & Yanık(2015)investigated the relation between profits and working capital management for Turkish SMEs using dynamic panel data GMM estimators

to analyze the sample, which consisted of the data of 1123 Turkish SMEs from 2009 to 2013. The results showed negative relation between profitability and the CCC. Moreover, they concluded that effective management of working capital at every stage contributes positively towards profitability.

Konak & Guner(2016)investigated the relationship between the firms' performances and their working capital management on 29 firms listed on the Borsa Istanbul SME industrial index from 2011 to 2014. The researchers used time series as well as pooled OLS tests, and found negative relation among short-term debt turnover duration, net margin, and CCC (cash conversion cycle). They concluded that reducing the short-term debt turnover days can positively influence a firm’s performance.

Samiloglu & Akgün(2016)examined the relation between firms' performances and their working capital management using the data of 120 Turkish listed manufacturing firms from 2003 to 2012, and analyzed it using multiple linear regression models. Return on assets, return on equity, operating profits and net profit margins were used as performance indicators, and the outcomes show negative relationship between the periods of accounts receivable, accounts payable, CCC, and net profit margin. Furthermore, positive relationship was obvious between the net profit and the inventory period. Like previous studies, this study stressed the need for decreasing the time taken to recover the accounts receivable, accounts payable and CCC.

All the studies described above have provided us with ample information about working capital management as well as its components, and their effects on a firm's overall profitability. They also informed us whether these effects are positive or negative. Moreover, these studies shed sufficient light on how managers can increase shareholders' value by optimally managing the working capital. These studies will be taken as a reference in the variable selection process and also for establishing hypotheses for this study.

CHAPTER THREE

WORKING CAPITAL MANAGEMENT

3.1.The Importance of Working Capital Management

Working capital management (WCM) is indeed a major financial management issue because it has a definitive impact on both profitability as well as liquidity of a firm. The purpose behind working capital management is managing current assets as well as current liabilities, which is possible through managing the working capital components and continuously struggling to maintain an optimal working capital level. If the firms fail to maintain optimal working capital level, they are likely to encounter problems of illiquidity and sometimes bankruptcy as well(Jain & Khan, 2005).

It is a management form, which includes controlling, planning, and organizing the working capital such as cash, accounts receivable, inventories, and accounts payable etc. (C. Paramasivan, 2009). From another prospective, it helps avoiding excessive investments in the current assets and does not allow firms to invest when they have insufficient current assets (Şen et al., 2009). From this point, the objectives of working capital management can be listed as follows(Bhat, 2008):

1. To ensure that the investments in the current assets are at an optimum level;
2. To achieve the desired liquidity-profitability balance;
3. To ensure sufficient funds for running current operations; and
4. To accelerate the flow of funds, whether flowing in or flowing out.

3.2. Working Capital

3.2.1. Definition of Working Capital

Putting it simply, the working capital is necessary for the operational activities of any firm, for instance, purchasing raw materials, paying creditors, paying wages and salaries, and paying other costs etc.

In the Annual Survey of Industries (1961) (as cited in Garg, 2015, p.6), the working capital includes "stock of materials, fuels, semi finished goods including work in progress and finished goods, by-products, cash in hand and in the bank, and the algebraic sum of sundry credits" as represented by:

1- Outstanding factory payments, for example, rent, wages, interest and dividends.
2- Purchase of goods and services;
3- Short term loans and advances, sundry debts, loans pertaining to the sale of goods, services, and advances towards tax payments.

It is categorized into two different concepts:

3.2.1.1. Gross Working Capital

Generally, it means short-term investment funds, which are important assets of a business.

3.2.1.2. Net Working Capital

Unlike gross working capital, this concept is specific because it deals with both current assets and liabilities. It represents the difference between a firm's current assets and liabilities during a determined period. As a result, it can be either positive or negative.

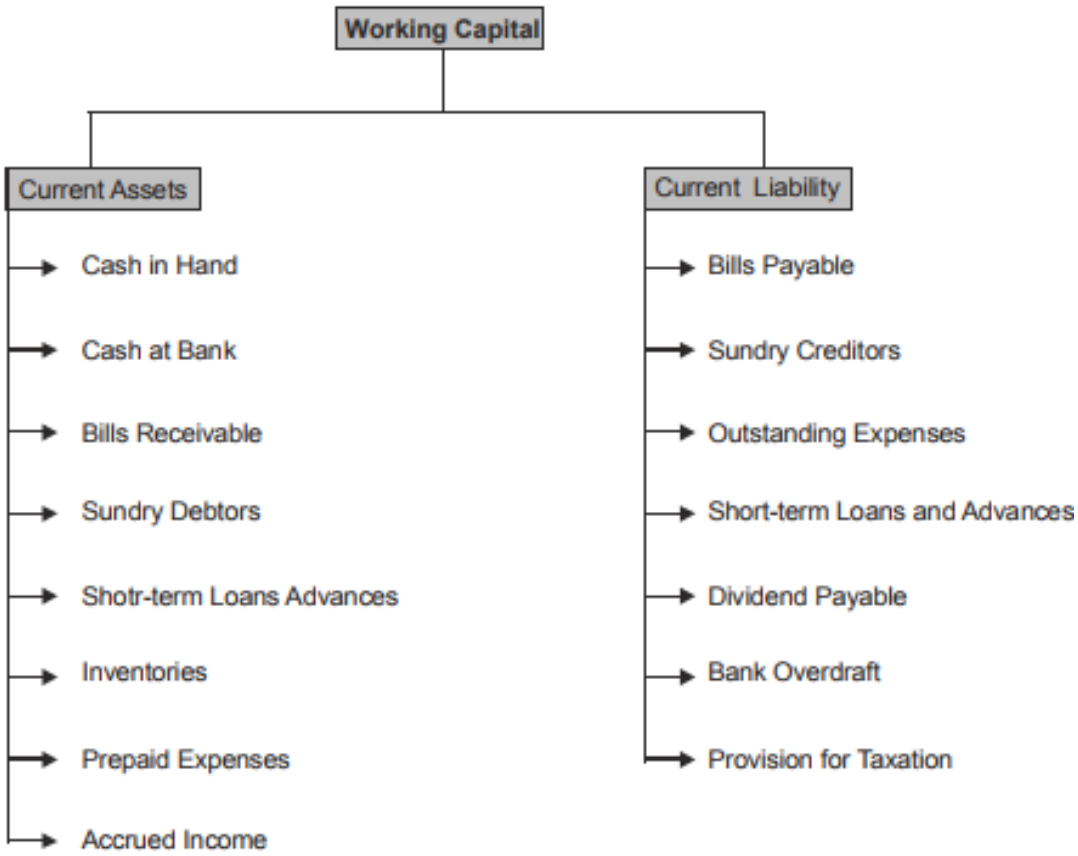

Figure 3.1: The current assets and current liabilities(C. Paramasivan, 2009).

When the net working capital is negative, it means that the current assets have exceeded the current liabilities, thereby putting the firm in a good liquidity position. Since the firm can cover all the current liabilities, it leaves more free cash for other activities such as making investments and dealing with upcoming operational costs etc. Negative net working capital is the opposite of its positive type. In case of negative net working capital, current liabilities exceed current assets that leads to a firm's inability to meet all of its immediately payable liabilities, which means that the firm will face liquidity problems.

In addition, net working capital shouldn't be too high/low since high working capital means losing investment opportunities to earn profits, and a low working capital refers to insufficient liquidity. Moreover, reducing working capital costs and maintaining the liquidity-profitability balance are important keys to profit maximization(Jain & Khan, 2005).

As a result, firms should maintain optimal working capital levels because every business has its creditors, lenders, and shareholders who wish to know about the financial health of the firm. Creditors are desirous to be aware whether a firm has sufficient liquidity to pay off its debts or not. Lenders want to assure whether the firm can payback their money, and the shareholders want to know whether the firm has the ability to give profitable dividends to them; therefore, optimal working capital level affects both profitability as well as liquidity of a business(R. Gupta & Gupta, 2015).

3.2.2. Types of working capital

If we consider time as an important asset, working capital can be of three types. They are permanent, temporary (seasonal/occasion specific) and semi-variable working capital (see figure 3.2). Each type has been defined in the subsections below.

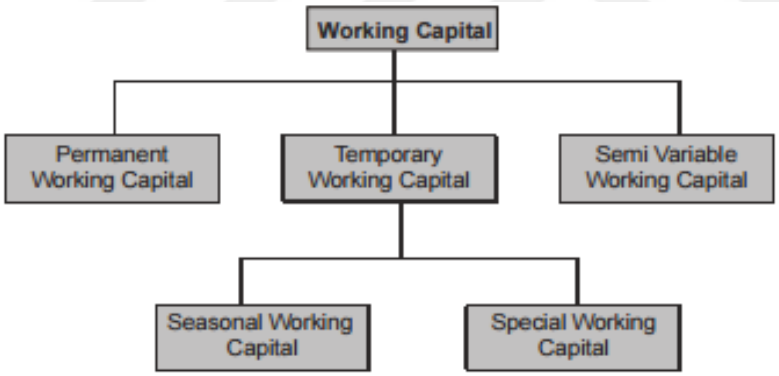

Figure 3.2: Time-based types of working capital(C. Paramasivan, 2009).

3.2.2.1.Permanent (Fixed) Working Capital

This working capital type remains fixed i.e., the working capital amount does not change, which means that the business should maintain a specific amount of capital at all occasions. The volume of sales or time will not affect the fixed working capital in every situation (C. Paramasivan, 2009).

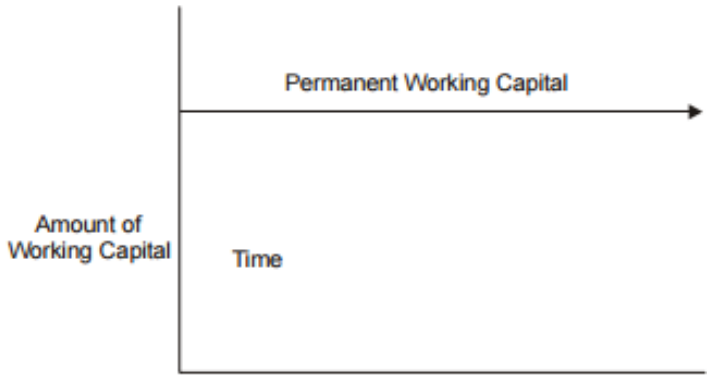

Figure 3.3: Permanent working capital(C. Paramasivan, 2009).

3.2.2.2.Temporary (Variable) Working Capital

In this type, the capital amount is variable according to the changing requirements whether to meet seasonal demands or other special requirements; therefore, the temporary working capital is classifiable into the following:

- Seasonal working capital that meets the seasonal business needs; and
- Special working capital, which is needed for meeting specific requirements of a business like brand or marketing campaign launch etc.(Reddy & Saraswathi, 2007).

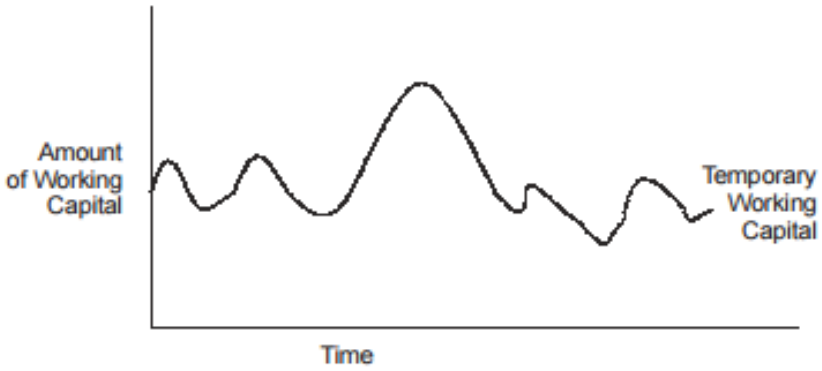

Figure 3.4: Temporary working capital(C. Paramasivan, 2009).

3.2.2.3. Semi-variable Working Capital

This type is called semi variable because companies require a specific amount in addition to the existing amount at a certain point. This may be because of sales variations(C. Paramasivan, 2009).

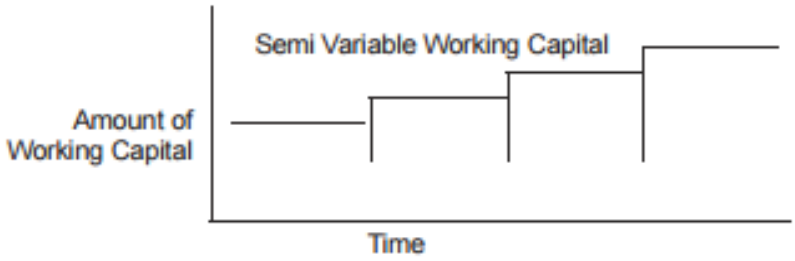

Figure 3.5: Semi variable working capital (C. Paramasivan, 2009).

3.2.3.Determinants of Working Capital

The working capital requirements depend on different factors, which are explained as follows:

3.2.3.1. Nature of Business

It is an important determinant of the amount of working capital, which the firm will keep. If the firm follows a strict credit policy and sells goods against cash, it won't need to keep a large amount as a working capital. For example, transport companies keep a certain amount as working capital, which is lower than the construction companies(Chandra, 2011).

3.2.3.2. Production Cycle

In case of longer production cycle, a large amount of working capital is needed. Conversely, if the production cycle is short, the business requires to keep a lower amount of working capital(Patra, 2006).

3.2.3.3. Business Cycle

In a simple manner, we can say that a business in booming conditions will maintain a large amount of working capital, but in conditions of depression, it will decrease it; thus, booming business cycles increase the need for working capital(C. Gupta, 2016).

3.2.3.4. Production Policy

The production policy of a business affects the working capital requirements. If a business follows a continuous production policy, it will regularly require working capital but in case it depends on the situational conditions, working capital requirements will be discrete(C. Paramasivan, 2009). In other words, the production policy is either stable that gathers inventories during the slacking periods in order to meet high demands during the peak season or in case the production is rolled back during the slack period. If a firm stabilizes its production, it will definitely need more working capital (Garg, 2015).

3.2.3.5. Credit Policy

Credit policy both in terms of procurement and sales also influences the working capital requirements. When the business managers pay debts on the last date, they have to maintain more in-hand cash and funds in the bank account. In case of sales, firms, which apply loose credit policies while collecting payments from their clients, need more working capital(Reddy & Saraswathi, 2007).

3.2.3.6 Growth and Expansion

The working capital requirements spike during the business expansion(Garg, 2015)because it requires more working capital and sustains extra expenses during the first stage.

3.2.3.7 Availability of Raw Materials

Availability of raw materials plays a great role for determining working capital requirements since the raw materials are significant for production. If raw materials are scarce, it stops production; therefore, a business has to maintain sufficient levels of raw material(s), for which, the need for working capital is high(Reddy & Saraswathi, 2007).

3.2.3.8 Earning Capacity

Firms having high earning capacity are in a position to create high working capital through operational profits, which, in some cases, are sufficient to fulfill the working capital needs(Garg, 2015).

3.2.4. Working Capital Policy

Finance managers pursue two types of working capital management policy, which include current asset investment policy and the current asset financing policy.

3.2.4.1. Current Assets Investment Policies

They determine the optimal proportion of investment in the current assets for a given level of sales. Effective management should achieve an optimum investment in both fixed as well as current assets. For this purpose, three investment approaches are applied(Kumar et al., 2013). They are given below:

A. Conservative approach

In this approach, the investment level in the current assets is high that supports a specific sales level. In this case, the risk is low since the level of current assets is high, which means that the firm does not encounter liquidity problems such as running out of inventory or cash shortages; however, this approach reduces profitability (Moyer, McGuigan, Rao, & Kretlow, 2011).

B. Aggressive approach

This approach indicates that the firm will have a low level of current asset investment for achieving their sales targets. This less investment increases profitability since cash requirements in the current assets is low; however, the risk is high because that approach negatively affects a firm's liquidity and creates financial problems (Moyer et al., 2011).

C. Moderate approach

According to this approach, moderate investments are done in the current assets to obtain a certain level of sales. As a result, this approach boosts liquidity as well as profitability (Moyer et al., 2011).

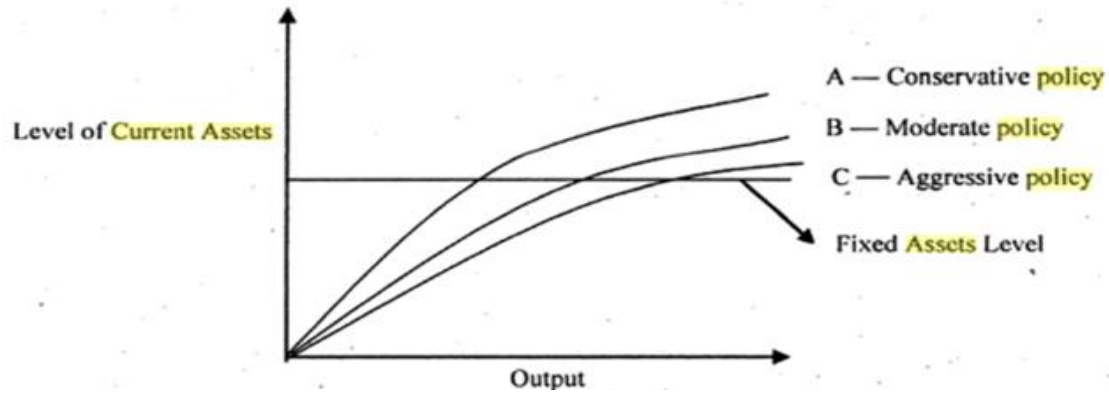

Figure 3.6: Types of current assets investment policy (Periasamy, 2009).

3.2.4.2 Current Assets Financing Policies

Under these polices, the firm will take decisions about the current assets proportion that can be financed either through long or short-term sources (Mathur, 2007).Different approaches, which help taking financial decisions in this context, are as follows:

A. Hedging approach

This policy uses short-term financial sources for financing either in the variable or temporary assets. It uses long-term sources for financing fixed assets or permanent current assets. It is based on matching the expected assets' life. For

example, a long-term loan (for example 10 years) is raised to finance those buildings, which have at least10 years expected life. In the same way, trade receivables that are expect to be received in 60days should be financed with a 60 day loan. It is clear that this policy works without needing the net working capital because the short-term assets can be financed using short-term funds(Garg, 2015).

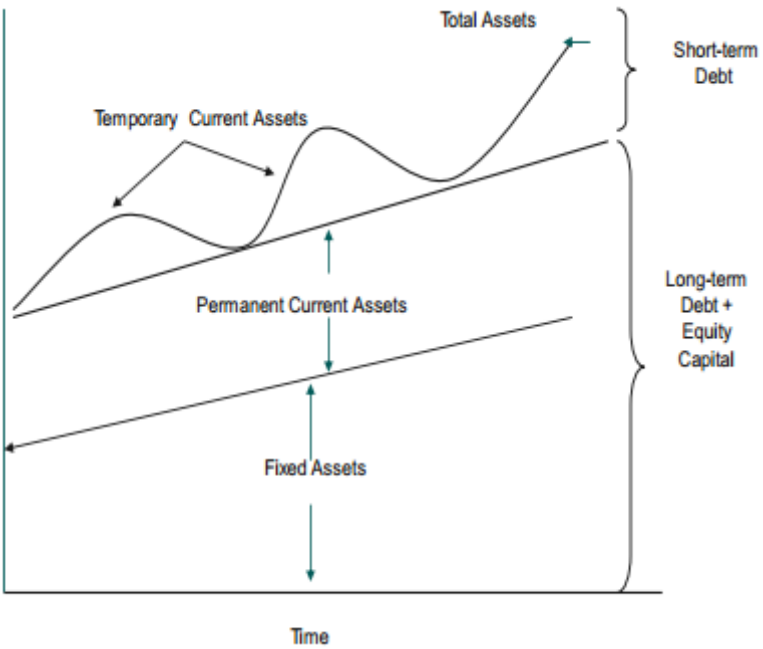

Figure 3.7: Hedging approach(Moyer et al., 2011).

B. Aggressive approach

According to this policy, the firm uses short-term funding for financing not only temporary but parts of permanent current assets as well. Some firms choose financing some segments of their fixed assets using the short-term financial sources. Opting for this policy is risky but it also brings high profitability (Gallagher & Andrew, 2000).

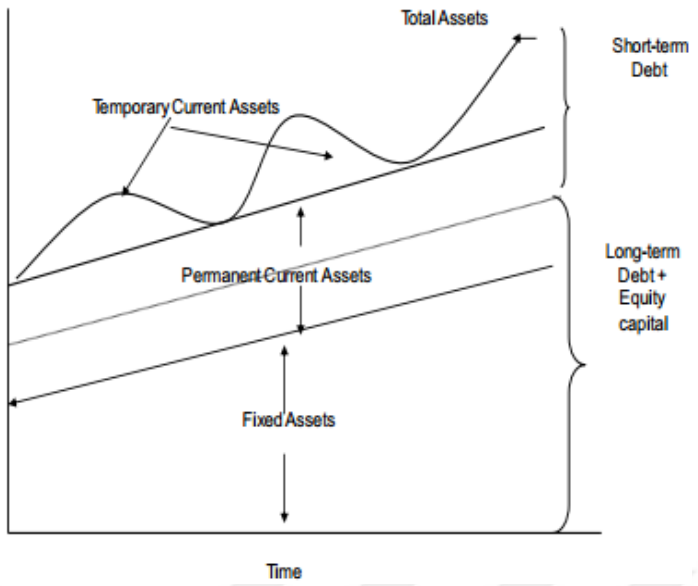

Figure 3.8: The aggressive approach(Moyer et al., 2011).

C. Conservative approach

This policy depends on using long-term funding for financing both fixed as well as permanent current assets, and sometimes, some temporary current assets as well. Since the dependence on short-term sources is lower, the risk is lower as well; however, profitability decreases because of the higher cost of long-term finance (Gallagher & Andrew, 2000).

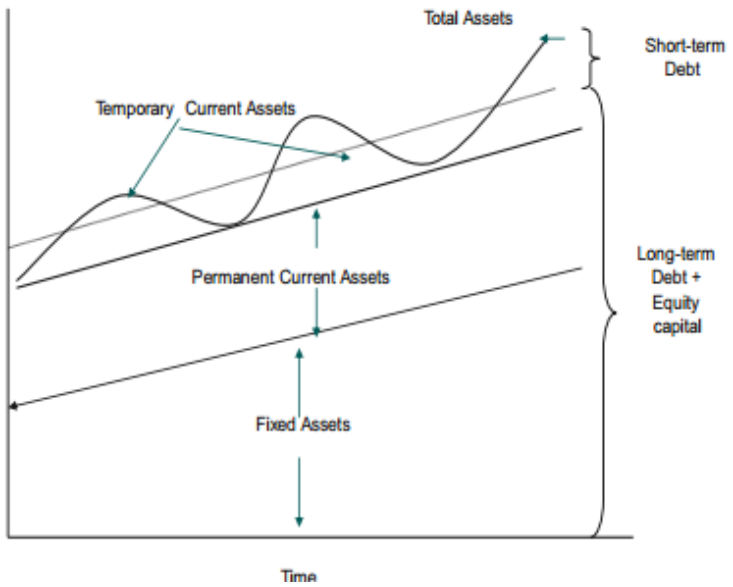

Figure 3.9: Conservative approach(Moyer et al., 2011).

CHAPTER FOUR

MANAGEMENT OF THE WORKING CAPITAL COMPONENTS

4.1. Cash Management

This management form suggests that companies should maintain sufficient cash on one hand and utilize the excessive cash in a useful manner that earns profits. This is the main and important part of cash management. Cash management basically means the management of liquidity in order to pay for the daily activities; therefore, cash management objectively focuses on managing and determining the optimum level of cash needed to run a business(Garg, 2015).

C. Paramasivan (2009)mentions that the cash management includes cash inflows and outflows. Sometimes, cash inflows exceed cash outflows, which happen due to the collections from debtors/large sales; however, on other occasions, cash outflows may be higher than cash inflows, which is the result of payments to creditors and for expenses, taxes, interest and dividends, etc. Thus, cash inflows and outflows should be considered for effective cash management.

4.1.1.The Importance of Cash Management

Cash is a key part of current assets; so, it acts like a firm's life blood(Chandra, 2011) since it is significant for the continuation of a firm or business activities such as purchasing goods, paying wages and salaries, paying suppliers and paying for other day-to-day activities; therefore, without keeping a sufficient amount of cash, companies cannot survive in the long run. As a result, companies should maintain adequate levels of cash in order to ensure that they can pay for all their daily operations, obligations, and unforeseen expenses. Moreover, keeping sufficient levels of cash (neither excessive nor inadequate) protects firms against liquidity problems especially regarding their inability to pay

debts whenever they are payable; however, holding excessive cash is not useful since that cash does not generate profit (inactive assets) (Bose, 2011) without investing it in something else that can generate profit including investments in the short-term. Cash is beneficial only when it is turned into something productive(R. Gupta & Gupta, 2015).

4.1.2. Motives behind Holding Cash

There are three important motives behind holding cash, which are presented below:(Khan, 2004).

4.1.2.1.Transactional Motive

It focuses on having enough cash for routine transactions, such as purchasing raw material, paying salaries, paying expenses, and taxes etc. This motive is mainly related to the normal activities of a business.

4.1.2.2. Precautionary Motive

This is a motive of directly holding cash to meet unexpected emergency events such sudden changes in prices, floods, and strikes etc.

4.1.2.3. Speculative Motive

This is a motive that allows a business to take advantage of opportunities, which are clearly not normal activities of that business, such as benefitting from price changes(purchasing goods at reduced prices), stock price changes, and interest rate changes. Benefits from investment opportunities give the firm an opportunity to grow in the near future.

4.1.3. Cash Management Models

Determining an optimum cash balance is a decision to determine the minimum cash level a firm requires for providing liquidity thereby reducing the

cost of holding cash. The models that are used to determine optimal cash level are: The Baumol and the Miller-Orr cash management models.

4.1.3.1. Baumol EOQ Cash Management Model

According to this model, the optimum cash holding level equals the point, at which, the carrying cost and the transaction cost are equal to each other. Carrying cost is the cost of holding cash, i.e., the interest, which will be earned if that cash is invested in marketable securities. Transaction cost is the cost involved to convert marketable securities into cash, such as brokerage costs, registration costs and other costs (Periasamy, 2009).The Baumol's model works with certainty and stability by making the following assumptions (Baker & Powell, 2009):

1. The needs of cash are determined in advance and with certainty.
2. The transaction costs are known and stable.
3. The interest of holding cash is known and it does not change over time.

The disadvantages of these assumptions are that the firm seeks to determine future cash flows in advance, which are assumed to be constant; this is not realistic in practice since the inflows and outflows of cash cannot be predictable in addition to the nature of cash being unstable (Baker & Powell, 2009).The graphical representation of Baumol model is presented in Figure 3.9.

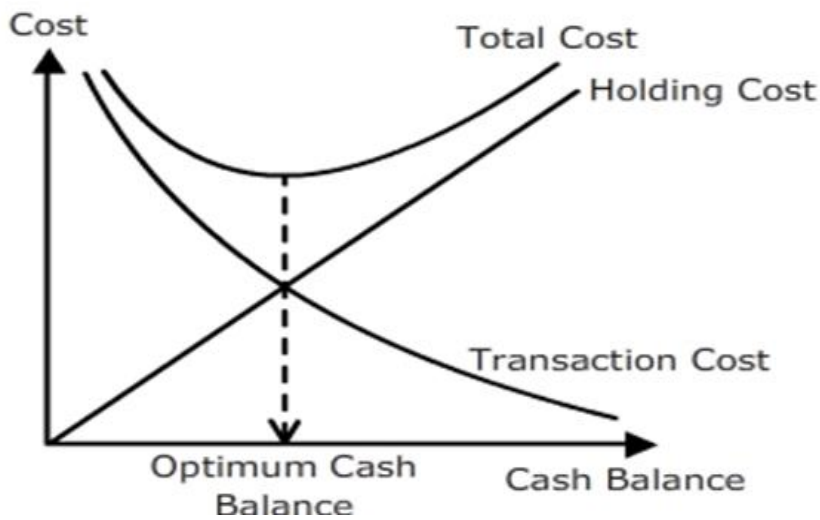

Figure 4.1: Two costs and optimum level of cash (Bose, 2011).

4.1.3.2. Miller-Orr Cash Model

The Miller-Orr cash model is based on the uncertainty in terms of cash payments. In other words, the Miller-Orr model seeks to make the Baumol model more realistic. This model sets upper and lower cash balance limits. When the upper limit is reached, it means there is too much cash; so, marketable securities will be purchased. When the cash level arrives at a lower limit, the marketable securities will be converted into cash; i.e., they will be sold. However, in case the cash balance is in between, the firm will not make any transactions.

In case of the upper limit, the firm will reduce the cash balance to the optimal cash balance level by buying marketable securities. In the lower limit cases, the firm will increase the cash balance to the optimal cash balance by selling marketable securities. In both cases, the cash balance reaches the optimal target cash balance.

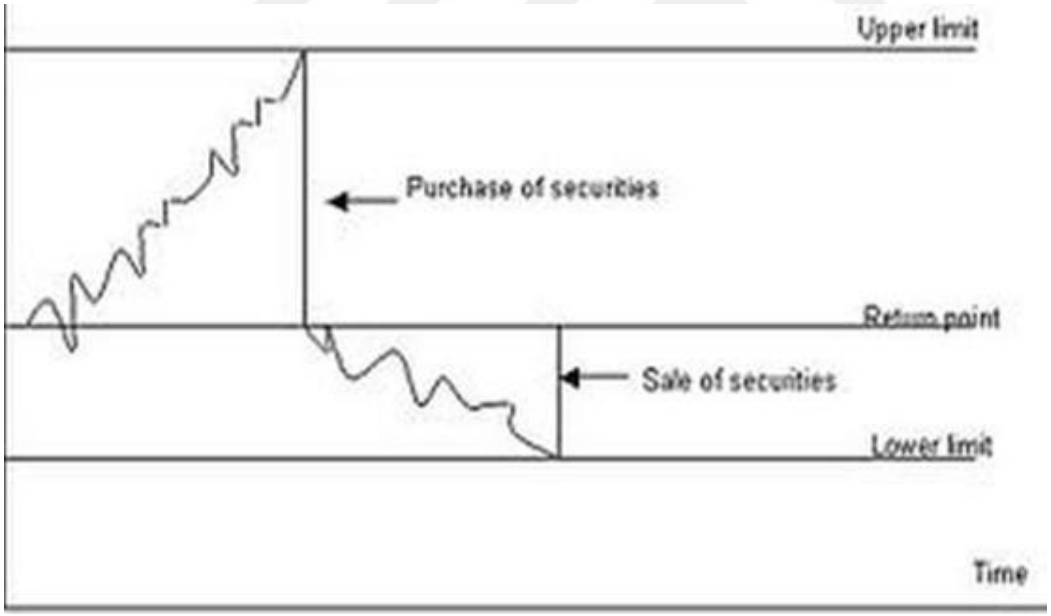

Figure 4.2: Miller- Orr cash management model(Bose, 2011).

4.2. Accounts Receivable Management

4.2.1. Managing Accounts Receivable

The term accounts receivable (AR) is used when the firm sells its goods on credit(Bragg, 2010). Management of accounts receivable aims to shorten the time between sales and collection from customers. It also aims to cut down the related costs as much as possible(Manoher, 2012).Salek (2005)states that the effective management of accounts receivable brings many benefits; which include:

1. Increased sales and profitability
2. Enhanced customer service (customer satisfaction)
3. Decreased bad debt losses
4. Reduced administrative burden on the revenue cycle strength

Financial managers should apply a good credit policy in order to effectively manage their accounts receivable. A major interest in accounts receivable management is deciding the credit terms, which are given to customers. The credit term has a direct impact on the costs and revenues gained from receivables. For instance, if credit terms are narrow (strict), the funds invested in accounts receivable will be less and the bad debt losses will also be lower. It might lead to sales reduction and ultimately reduce profits. Moreover, it may lead to negative customer reaction. Conversely, if credit terms are loose, the company will generate higher sales and profits; however, as the risks related to bad debts rise, the costs in terms of investments in accounts receivable will also increase since the customers might take a long time to pay.

It is understandable that managing accounts receivable in a proper manner is important because it immediately affects the financial condition of firms by affecting improved sales and profits, thus it reduces costs and losses (Shim, Siegel, & Dauber, 2008).

4.2.2. Factors Affecting Accounts Receivable

The following factors affect the investment in accounts receivable:

4.2.2.1. Volume of Credit Sales

The size of a credit sale is one of the top factors, which directly affect the investment in accounts receivable. If a firm sells a major part of its goods on credit, the level of accounts receivable will increase. Clearly, the amount of accounts receivable varies according to the change in the size of credit sales, which means that it can either increase or decrease.

4.2.2.2. Credit Policy of the Firm

A firm's credit policy can be either easy or strict. A firm that is applying a strict credit policy will have low levels of accounts receivable since it sells its goods on cash and it collects its money immediately. The firms following liberal/easy credit policy normally have high levels of accounts receivable since they more liberally sell their goods on credit.

4.2.2.3. Trade Terms

The two factors in credit terms include cash discount and the credit period. The amount of accounts receivable will be high when the credit period is longer as compared to other companies. Since cash discounts encourage customers to pay on time, the investment level in accounts receivable will be low.

4.2.2.4.Seasonality of Business

A firm that depends on seasonal sales will definitely provide credit sales in other seasons. For example, air cooling products may be sold on credit in the winter season and on cash in the summer season; therefore, the amount of accounts receivable will be high in comparison with the accounts receivable

during the season since the firm sells goods on a cash basis only during the season.

4.2.2.5.Collection Policy

Collection policy is needed for most of the companies because most of the customers show slow attitude while paying a firm's bills on time. A liberal collection policy leads to increasing investments in the accounts receivable. On the other hand, a strict collection policy clearly enables a firm to reduce accounts receivable levels, but it may decrease future sales levels as well.

4.2.2.6.Bill Discounting and Endorsement

A firm has to pay bill discounts and endorsements to third parties, which leads to decreasing the investment size in accounts receivable; however, investments in accounts receivable increase if bills are dishonored on the due date (Bhat, 2008).

4.2.3. Receivable Management

Receivable management involves consideration of the following two factors, the credit policy and monitoring the receivables.

4.2.3.1.Determination of Credit Policy

The credit policy of any firm involves credit standards, credit periods, cash discounts and collection procedures. A credit policy may be lenient or stringent.

A. Lenient credit policy

This is the policy, according to which, goods are sold on extremely liberal credit terms and standards. This leads to increased sales since this policy encourages customers to purchase more, and therefore, it increases both production levels and profits; however, the only major disadvantage of this policy

is that bad debt losses may increase because of nonpayment against credit sales. Moreover, this policy leads to liquidity problems since the firm would have difficulty paying its current obligations because it is unable to receive the payment in the current time (Bhat, 2008). In addition, after pursuing a lenient policy, the liquidity of a firm would be affected since more credit sales require more working capital because funds are not receivable.

B. Stringent credit policy

According to this policy, goods are sold on credit on a very selective basis, which means that the goods are sold to customers who have a proven financial ability to pay. A firm that follows a stringent policy reduces bad debt losses since their goods will be sold to customers who are creditworthy. Moreover, due to a firm's ability to receive timely payments from customers, the firm will have a good liquidity position; therefore, it will be able pay its current obligations quite easily. On the other hand, this policy can lead to reduced sales and decrease in profits since the firm follows a stringent policy, which does not allow it to give credit to average creditworthy customers.

Thus, firms should create balance between loose credit policy that boosts sales and profit and a strict credit policy that improves liquidity (Bhat, 2008). In other words, they should adopt an optimum credit policy that involves balancing costs and benefits. The optimum credit policy provides a tradeoff between liquidity and profitability.

Before establishing an optimum credit policy, the main variables of a credit policy should be specified. They are as follows:

1. Credit standards

A firm sets appropriate credit standards before providing credit to its clients. The customer has to meet specific minimum standards of financial stability and strength. If credit standards are too high, the sales and profits will be lost. Inversely, if they are too low, the risk of loss in terms of bad debts will be high (McMenamin, 2002).

2. Credit terms

Credit terms include the period of credit, which is granted to a customer before payment becomes due. They also include cash discounts in order to encourage the customer to pay on or before the due date, and therefore, it reduces risks like non-payment. Credit terms frequently come in this format: 2/10 net 30, which implies that if a client pays within 10 days, that client will get a 2 percent cash discount from the bill; otherwise, the total amount is to be paid within 30 days (McMenamin, 2002).

4.2.4. Monitoring and Controlling Receivables

There are traditional techniques available for monitoring accounts receivable including receivable turnover, average collection period and ageing schedules.

4.2.4.1.Receivable Turnover

Receivable turnover indicates link between receivables and credit sales of a firm because it measures the pace, at which, a firm converts the accounts receivable into cash. It is measured by the following equation: return rate = credit sales / average receivables (Bhat, 2008).

This ratio is available for internal users but it is difficult for external analysts because they cannot obtain information about credit sales or receivable bills; therefore, in order to avoid such problems, another method is available to measure the receivable turnover rate. A high receivable turnover rate is favorable since it indicates good liquidity situation of a firm.

4.2.4.2. Average Collection Period

It measures how much time a firm takes to collect its receivables from customers. In other words, it indicates the number of days (from sale to cash collection). This ratio converts the accounts receivable turnover rate to average

collection period. Unlike the rate of receivable turnover, high average collection period means that the liquidity of a firm is in bad position because it takes more time to collect money from customers.

Average collection period = 360 / Receivable turnover rate

4.2.4.3. Ageing Schedule Technique

According to this technique, the average collection period is grouped into different age groups at a specific time. If the age of receivables is high, the level of credit sales will also be high. The ageing schedule of a firm should be compared with standard ageing schedules in order to ensure that accounts receivable are in control (Periasamy, 2009).

Table 4.1: Aging Schedule

Age Classes (in days)	% of Accounts Receivable
0-30	29%
31-60	48%
61-90	17%
91 and more	7%

Moreover, payment patterns should be compared with previous ageing groups in order to show improvement or deterioration. For example, if $200,000 is receivable from 123 to 200 days, it comprises 9% of all the receivables, and the previous results showed that group at 7%, which means that the credit and collection manager was less aggressive about following late payments. In addition, poor ratio performance may be due to similar statistics found in ageing schedules. Ageing helps a firm determine whether its credit analysis is handled properly and it also helps firms to predict their cash flows by classifying outstanding liabilities by due date from the oldest to the latest. For external users, creditors use an aging schedule for making decisions to lend money to a firm. Auditors use it for evaluation of a firm’s receivables. As mentioned previously, if

a receivable is ageing, the level of credit sales will also be high; therefore, bad debts will increase. This is a logical estimation about doubtful accounts that ageing schedule provides (Sagner, 2010).

4.3. Inventory Management

The dictionary meaning of inventory is "a stock of goods or a list of goods. In accounting language, inventory means the stock of finished goods. From the manufacturing point of view, inventory includes raw materials, works in process, and stores etc" (C. Paramasivan, 2009). There are three possible inventory types:

1. **Raw materials**

They are purchased goods, which are inputs in the production line, and they become finished products.

2. **Work in process**

Work in process consists of goods developed using the raw materials and they are in the process of becoming final products(R. Gupta & Gupta, 2015).

3. **Finished goods**

These are goods that are finally produced and ready for selling to the customer (Pandey, 1995).

Effective inventory management is an essential task to determine an appropriate level of inventory to ensure that there is no damaged inventory or loss of sales. This protects the firm from the risks related to holding too much or too little inventory. Maintaining a high level of inventory enables a firm to meet its demand but also leads to high carrying costs. The additional costs pertaining to a high level of inventory include storage and insurance costs, goods perishing, and the obsolescence of goods even though too little inventory reduces carrying costs, the opportunity costs of being out of stock will increase. Moreover, the firm may lose opportunities when the demand increases or the firm may not be ready to

deliver goods to the customers on time. As a result, the level of customers' dissatisfaction will be high because of the firm's inability to meet their demand; therefore, managers should maintain optimum inventory level for avoiding such issues(Bose, 2006).

Brealey & Myers (2011) mentioned that almost two decades ago, the U.S. companies' inventory was around 12% of the firm assets but today it is around 9%. This means that the US companies reduced their inventory levels by adapting the “just-in-time” production and supply approach. This approach requires firm to keep the inventory at the minimum level. This approach aims to purchase raw materials, produce goods, and deliver them just in time (at the last hour before production starts) exactly when they are needed (Fabozzi & Peterson, 2003). This approach is a good technique to maintain an optimal level of inventory, which agrees with the inventory management principles(C. Paramasivan, 2009). The objectives of this approach are as follows:

1. Maintain an appropriate level of inventory to increase profitability;
2. Avoid price changes in the future;
3. Avoid both excesses and shortages of inventories;
4. Meet sudden product demands;
5. Ensure homogenous production process; and
6. Remove risks pertaining to additional costs.

4.3.1. Factors Affecting Inventory Levels of a Firm

Before deciding the optimum level of inventory, several factors should be considered because they affect inventory levels in many ways. It is important to learn about these factors, which are as follows(Coates, 2012):

1. Nature of product

The nature of a product has a major impact on inventory levels. Products, which become outdated, such as newspapers, have a very high inventory level. In

contrast, other products, which sell slowly, have a low inventory level such as antiques.

2. Importance of holding inventory

There are a number of products that must be displayed in order to attract customers such as clothing, which require a high level of inventory.

3. Length of product life cycle / fashion

A product that has a short life cycle must be held ata lower inventory level such as perishable products; however, fashionable products are predictable to sell rapidly; therefore, companies should hold higher inventory of fashionable products.

4. Inventory management system

Firms that follow a just-in-time inventory approach maintain very low inventory levels.

5. Quality of management

Marketing research has a significant effect since it provides information about products that customers frequently purchase and what they would prefer in the future; therefore, effective marketing research leads to appropriate inventory at the display; hence, a higher inventory level will be maintained.

6. Variety of products

Companies having variety of products, for example, firms selling 30 varieties of a product will definitely hold a higher inventory level than a firm offering only one type of product.

7. Efficiency of suppliers

Firms hold lower inventory levels in case suppliers are able to supply huge quantities in a short time, and vice versa.

8. Lead time

If the lead time (the time between placing and receiving orders) is long, firms are likely to hold a high level of inventory.

9. Customer expectation

If customers cannot wait and want their products immediately, inventory will be maintained. On the contrary, if customers are prepared to wait, there is no necessity to hold inventory.

10. Competition

A business is required to match its goods and supply services with its competitor; thus, the level of inventory is affected by the competitors' policies.

4.3.2. Inventory Related Costs

They are general types of costs that are important for making inventory-related decisions but generally firms try to minimize the total inventory cost. These costs include:

4.3.2.1. Ordering Costs

The ordering cost includes all fixed costs that remain constant with the size of the order (Shah, 2009).These costs are incurred every time a firm places an order. Ordering costs consist of the following:-

1. Administration costs

Administration costs include all the expenses needed for preparing purchase orders including documentation, obtaining any necessary approval and other formalities. The time required by the buyer can be reduced by using electronic ordering, and therefore, it can decrease this cost component.

2. Transportation cost

This cost is incurred when the order is sizeable. The transportation cost remains fixed regardless of the order size.

3. Receiving cost

This is related to the cost incurred on account of managerial work, which has to be carried out when an order is received, for instance, the receiver at the time of receiving has to prepare a goods receipt note, update the inventory record and make necessary checks regarding the concerned purchase order.

All fixed costs (costs that do not change with the order size), which are related to ordering should be included in the ordering costs, while other costs, which vary with order quantity, should be included in the cost of the item (Shah, 2009).

4.3.2.2. Carrying Cost

Carrying cost consists of all the actual and opportunity costs associated with holding inventory. Carrying cost includes the following:

1. Financing cost

A firm's assets and working capital can be assessed by analyzing its inventory.

2. Storage cost

Space costs are related to the size of an item and not the value. These costs are incurred in order to store inventory.

3. Inventory risk

This is based on the nature of an item. The costs are associated in this case with deterioration, theft, loss, damage and obsolescence. The products may have a

much higher risk; for example, fashion goods, perishable goods and high-tech products (Shah, 2009).

4.3.2.3. Stock out Costs

They are intangible in nature, and thus, it is difficult to measure the cause behind them, including the possibility that the cost will cover the economic consequences of the stock running out. There are two types of stock out costs (Shah, 2009):

1. **Lost sales cost**

When the finished goods are unavailable, the firm will lose potential sales; so, the cost incurred in this case is the opportunity of making profits. Losing opportunity probably influences the good will of the firm, and therefore, future sales as well.

2. **Back order cost**

In cases of the customer being prepared to wait for his/her order, the costs related to back order may include additional administrative costs, additional transportation and handling costs.

4.3.3. Economic Order Quantity (EOQ)

This model assumes that the optimal inventory order point is determined when the cost of holding inventory are balanced with the ordering costs. In other words, order costs and holding costs should be equal for maintaining the optimum inventory(Xiong, 2006). Holding costs include opportunity cost, deprecation, insurance, taxes, security, and storage costs. Ordering costs include transportation costs, cost of electronic data interchange, cost of preparing purchase orders and cost of finding suppliers. In addition, the economic order quantity model aims to find the specific quantity to order that minimizes the total cost of inventory. This model is based on the following assumptions (Xiong, 2006):

1. Demand is fixed and known with certainty.
2. Costs are constant and predictable with certainty.
3. There is no quantity discount.
4. All the demand for a product will be satisfied.
5. There is no lead time between placing an order and receipt of goods. As a result, there is no probability of stock out. This results in ignoring the shortage costs of inventory.

According to these assumptions pertaining to the constant demand for inventory, holding costs will be high since average levels of inventory and order quantity increase, while ordering cost will be low when the ordered quantity is increased and number of orders reduces (Ray, 2010).

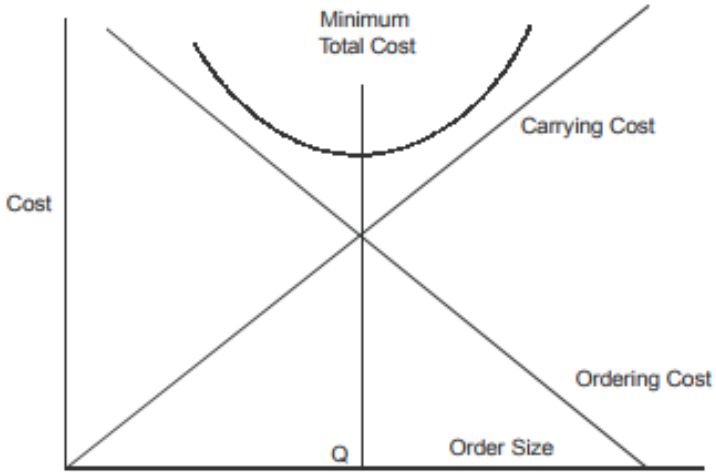

Figure 4.3: Economic order quantity (C. Paramasivan, 2009).

4.4. Accounts Payable Management

Accounts payable (AP) is the result of purchasing goods and obtaining services on credit (Bragg, 2002).Managing accounts payable includes the negotiation of the terms of purchase and determining when to pay the payable amounts. It can be said that a firm’s accounts payable are accounts receivable for another, and a firm's suppliers (creditors) will reduce their costs related to the funds limited in accounts receivable and bad debts; however, at the same time, they lengthen credit in order to increase their sales (Fabozzi & Peterson, 2003).

Maximizing accounts payable and extending the payment period is likely to be a competitive advantage for firms (Longenecker, Petty, Palich, & Hoy, 2013). Additionally, firms delay payments to keep some cash for other uses such as making investments to generate profit; however, paying late leads to some risks. For instance, when firms frequently delay their payments, they damage their reputation, which harms their relationship with suppliers. Another risk that arises is that delaying payments harm the credit ranking, which causes difficulties or results in high costs for a firm if it wishes to get loans from banks or purchase goods on credit in the future. On the other hand, if a firm pays its creditors on time, it will benefit from discounts and also establish a good relationship with suppliers (Fabozzi & Peterson, 2003).

As a result, firms should build a good policy or strategy to ensure that they gain benefits of every advantage of maintaining or improving their commercial reputation. The management of accounts payable helps a firm in the following ways:

1. Helps getting favorable credit from suppliers.
2. During cash shortage periods, a business tries to extend credit without damaging the business relationship with suppliers.
3. Keeping good relationship with regular and important suppliers.

CHAPTER FIVE

RESEARCH DESCRIPTION

The main objective of this study is finding out the impact of cash conversion cycle and the working capital components on profitability. This study has been conducted on 50 firms, which are listed on the Borsa Istanbul Index. They include 28 firms selling foods, beverages and tobacco, and 22 leather, textile, and wearing apparel selling firms (2010-2016). The researcher used the financial statements of the companies that are listed on Borsa İstanbul from2010 to 2016 to calculate the ratios used in this study (Operating profit, accounts receivable and payable periods, inventory period, and control variables). Table 5.1 summarizes the variables, which are chosen for this study.

5.1.Dependent Variables

Profitability indicates the ability of a firm to generate profit. Profit means earning out of sale of goods or services to customers after deducting expenses and sales costs. Thus, profit is the earning that is earned after effective utilization of resources. Profits are significant for the survival as well as growth of any business organization(Sinha, 2012). Operating profit has been selected as a dependent variable in this thesis to measure the profitability of firms.

5.1.1. Operating profit ratio (Oper p)

This ratio shows the profit of a firm from normal activities without taking into account any non-operating expenses and financial expenses such as taxes, interest and dividends; therefore, it measures how effectively a firm performs its operating activities. If the operating profit ratio is high, the firm will enjoy higher operational profitability, which is the outcome of managerial efficiency (Gurusamy, 1975).

Operating profit ratio can be computed with the help of the following equation:

Operating profit ratio = Operating profit/Net sales.

5.2.Independent Variables

Several methods have been introduced so far for evaluating the working capital management efficiency. Traditionally, liquidity ratios are used such as cash ratio, quick ratio and the current ratio. These ratios have a disadvantage that they are too general, and provide no specialized information about working capital management; however, the following measures are better than the traditional measures since they give detailed information about the liquidity position of a firm.

5.2.1. Accounts Receivable Period (ARP)

It indicates average number of days a firm takes to collect payments from its customers (Albrecht, Stice, Stice, & Swain, 2007). The equations used to compute the ARP are as follows:

Average accounts receivable/Net sales * 365.

Average accounts receivable = accounts receivable year beginning) + accounts receivable (end of year) / 2.

When the accounts receivable period is low, it is a good result because it means that the firm collects its money in short time. Moreover, this leads to shortening the cash conversion cycle, but too low accounts receivable period may be a sign of very tight credit policy

5.2.2. Inventory Period (INVP)

It shows how many days a firm takes for selling inventory. It measures how long a firm holds the inventories before selling them. In this context, fewer days

are better since it indicates that the firm is quickly selling inventory. Moreover, fewer days of inventory leads to shortening the cash conversion cycle (Porter & Norton, 2012).If the inventory period is too short, it may be a signal of insufficient inventory. The equation used for calculating the inventory period is as follows:

Inventory period = Average inventory/cost of goods sold * 365.

Average inventory =(inventory at the year commencement + inventory when the year ended)/2.

5.2.3. Accounts Payable Period (APP)

It reveals the average number of days a firm takes before paying its suppliers. If the APP value is low, both inventory and accounts receivable will be better in case of shorter cash conversion cycle, but more days are preferable because it shortens the CCC. In addition, a higher number means that the firm is holding more cash that enables it to make investments elsewhere. The higher number of days means that the firm is losing the cash discount opportunities, which suppliers generally offer (Kline, 2007).The equation used to measure accounts payable period is as follows:

Accounts payable period= average accounts payable / cost of goods sold * 365.

Average accounts payable = (accounts payable at the beginning of the year+ accounts payable at the end of the year)/2

5.2.4. Cash Conversion Cycle (CCC)

It indicates the time a firm takes while converting raw material into cash or receiving money from its customers by fulfilling their demands. Every accountant knows that the shorter CCC is better, and besides, it has a positive effect on the financial health of a firm. When this cycle is short, the cash is released to make

other activities such as investing in new projects and purchasing new equipment etc. Moreover, it is very important to know how long the cash conversion cycle is because when a firm knows that, it will ensure financing its operations with either short-term or long-term loans. Additionally, the long cash conversion cycle indicates the need to finance with long-term loans; however, a business with shorter CCC can finance its cash needs using short-term loans.

CCC = accounts receivable period + inventory period– accounts payable period .

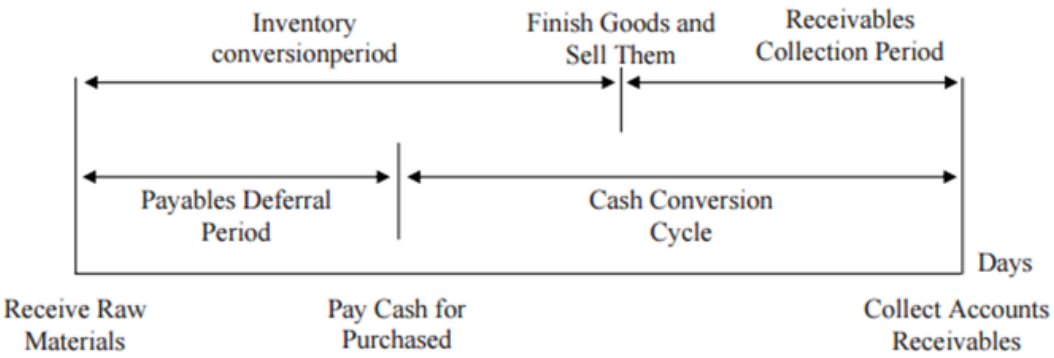

Figure 5.1: Cash conversion cycle(Ehrhardt & Brigham, 2016).

5.3.Control Variables

In addition to dependent variables and some independent variables, control variables may affect the profitability of a firm. They affect sales growth, leverage, and firm size, which have been selected as control variables for this thesis based on previous research (Deloof, 2003; Raheman et al., 2010; Raheman & Nasr, 2007; Sharma & Kumar, 2011).

5.3.1.Leverage (Debt-to-Assets Ratio) (L)

This ratio shows the quantity of a firm's assets, which are financed with debt instead of equity. This ratio, when high, means that a great part of the firm's assets have been financed using debt that emphasizes the fact that the firm has not been in a situation to pay back its debts. Moreover, the firm may be putting itself at risk of nonpayment, and unexpected increase in the interest ratio; however, when this ratio is low, asset financing is more dependent on equity. Thus, leverage

is used to determine the financial risk of a firm. It also means that the lower leverage results in higher profitability. Leverage ratio is calculated using the following equation:

Leverage = Total Debt/Total Assets.

5.3.2.Sales Growth (SG)

It is used to determine the financial health of a business. It is considered to be the most significant measure that assures a firm's financial and marketing strengths, the worth of its stock, and its future financial outlook. Moreover, in order to obtain a useful sales growth ratio, it is recommended to compare the sales growth with the sale growth of other companies. In addition, potential investors are interested in the speed of a firm's growth because it definitely affects their future investments in that firm. As a result, sales growth positively affects the profitability of firms. Firms should commit to sales growth so that they would be able to present their sales growth rate as a picture of their financial health to creditors and shareholders. Sales growth is not the only measure to determine the financial position of a business, it is considered as the most important one.

Sales growth is calculated using the following equation:

Sales growth = (current year sales − previous year sales)/previous year sales

5.3.3.Firm Size (FS)

Firm size considerably affects a firm's profits. The determining factors, which indicate the size of a firm, include the number of employees working in a firm, market capitalization, speed of growth, and so on. Large firms have a greater ability to extend credit terms than the small firms. Moreover, large firms are able to purchase huge quantities of goods; therefore, they are able to obtain discounts that enable them to become more profitable. In most cases, a firm's size increase results in increasing its profitability. The most popular method of measuring firm size is the natural logarithm of sales (LN), which is a control variable according to

previous researches(Deloof 2003; Raheman et al., 2010). The following table summarizes the variables used in this thesis:

Table 5.1: Variables selected for the study

Type of Variable	Name of Variable	Calculation methods
Independent Variables	Accounts Receivable Period (ARP)	Average accounts receivable ÷ sales × 365
	Inventory Period (INVP)	Average inventory ÷ cost of goods sold × 365
	Accounts Payable Period (APP)	Average accounts payable ÷ cost of goods sold × 365
	Cash conversion cycle (CCC)	Accounts receivable period + inventory period − accounts payable period
Dependent Variables	Operating Profit (Oper p) Operating profit after expenses and costs ÷ net sales	
Control Variables	Leverage (L)	Total liabilities ÷ total assets
	Firm Size (FS)	Natural logarithm of sales (LN)
	Sales Growth (SG)	Sales of current year − sales of previous year ÷ sales of previous year

5.4.Hypothesis Formulation

Based on the literature review, there are four hypotheses that will be tested in this thesis: If a firm takes longer time to collect its accounts receivable, the financial risks of bad debt will increase leading to decrease the profitability. By offering more trade credit to customers even though it leads to high sales, the likelihood of uncollected payments (bad debt) will increase. A firm tying up too many resources to accounts receivable will also increase the financing costs. Additionally, this will cause the firm to miss valuable investment opportunities; therefore, the expected relationship between these two variables is negative. The

first hypothesis has been presented as follows:

H_1: The relation between the accounts receivable period and the firms' profitability is negative.

Generally, a lower inventory period is interpreted in the sense that the firm is effectively managing its inventory since it is able to sell inventory more quickly paying costs and overcoming risks, and generating high profits. Contrarily, if the inventory period is long (the firm takes a long time to turn its inventory into sales), costs related to holding inventory and risks of inventory damage will increase and profitability will be low. Just like the accounts receivable, money tied up in stock restricts the ability of a firm to avail valuable investment opportunities, which will also increase the financing costs. The second hypothesis is as follows:

H_2: There is a negative relation between the inventory period and profitability.

If a firm takes a long time to pay off its creditors, it will save some money for other investments, thus profitability will be enhanced. Delaying payments is considered to be an internal source of financing for firms; however, holding payments for a long time may affect a firm's relationships with suppliers in a negative way.

The third hypothesis is presented as follows:

H_3: There is appositive relation between the accounts payable period and a firm's profitability.

If CCC is short, the profitability will increase. A shorter CCC indicates better liquidity. In other words, a firm can sell inventory more quickly, take a short time to collect cash from customers and extend the payable period. In addition, firms having shorter CCC have effective working capital management, which means that firms can have sufficient cash, which enables them to pay for both daily operational activities as well as short-term liabilities.

The fourth hypothesis is presented as follows:

H_4: There is a negative relation between the CCC and the profitability of firms.

5.5.Methodology

This thesis has been prepared to find the impact of working capital management on a firm's profitability utilizing the secondary data, which has been collected from the sample firms' financial statements. Those firms were operating in the food, beverage, tobacco, apparel, leather and textile, sectors. These firms are listed on Borsa İstanbul (BIST) stock exchange from 2010 to 2016.

The method used in this thesis is Panel data analysis, and we used STATA 14 to conduct the analysis.

5.5.1. Nature of the Panel Data

"A panel data set (also called as longitudinal survey) is a set or survey, in which, a given set of firms is repeatedly sampled at different points in time. In such a set, several observations are available for each sample" (Matyas & Sevestre, 1996).

5.5.2. Advantages of Panel Data

There are several advantages of panel data sets over pure time series and cross sectional data sets(Matyas & Sevestre, 1996):

Panel data provide the researcher with many observations, which are likely to ensure more reliable parameter estimates. The important point of this is: the researcher will be able to define/test sophisticated models with lower restrictive behavioral assumptions.

Another benefit of panel data sets is possibility of reducing the multi-collinear problems. In that case, the explanatory variables are not expected to be

highly correlated.

Moreover, the panel data enables a researcher to determine and measure those effects, which are not detected by using pure time series or cross section data. Occasionally, the time series data has short-term effects, whereas cross section data reflects long-run behaviors. When both types are combined in the form of panel data, a more dynamic structure is available for evaluations.

Panel data is also a useful method for eliminating or decreasing bias during estimation.

For example, in case of a simple production model, the log-output is expressed in terms of log-capital, log-labor, and managerial abilities, which is typically not observable through other methods. Omitting managerial ability within the context of cross-sectional analysis will lead to bias in the factor elasticity estimates. Panel data allows us to use this significant variable in the form of individual effect that is constant over time.

5.5.3. Fixed Effect Model (FE)

Fixed effect simply refers to variables that are stable across individuals, such as age, gender, and ethnicity, as it is understandable that these variables do not change or they change at a steady rate over time. Moreover, any change that they cause to any individual is the same. Thus, they have fixed effects. The fixed effects have benefits such as they allow correlation and time-specific impact of the explanatory variables; therefore, the investigator does not need to formulate the correlation patterns (Hsiao, 2007).

A disadvantage of the fixed effects model is that when the sample observations increase in number, the unknown parameters rise as well. The classical incidental parameter problem is introduced in the case when **T** (time series observations) is limited. Another disadvantage is that the time invariant coefficients are allowed to be estimated(Hsiao, 2007).

The equation for the fixed effects model becomes:

$$\mathbf{Y_{it} = \alpha_0 + B_{1i} + B_2 X_{2it} + B_3 X_{3it} + \ldots + B_k X_{kit} + U_{it}.}$$

Where:

i:- demonstrates cross sectional unit.

t:-time period.

K:- variables number, and

B_{1i}:- is used for individual effects.

5.5.4. Random Effects (RE)Model

Unlike the FE model, this model's differences across entities are random and not correlated with the independent variable (Torres-Reyna, 2007). The advantages of random effects are presented as follows (Hsiao, 2007):

The first advantage is that the number of parameters remains fixed when the size of the sample increases. Another advantage is that it allows efficient estimator derivation, which benefits from inter and intra-group variations. The final advantage is that the random effect facilitates estimating time-invariant variables' impact. The disadvantages of the random effect model include the resulting estimator bias when the random effects model is incorrectly specified. The general formula for the random effect model is:

$$\mathbf{Y_{it} = \alpha_0 + B_{1i} + B_2 X_{2it} + B_3 X_{3it} + \ldots + B_k X_{kit} + \mathcal{E}_i + U_{it}.}$$

To conclude, the benefits that the RE model has are exactly the problems of the FE model. The Hausman test determines which one of them should be used.

5.5.5. Hausman Test

The Hausman test determines whether the RE or FE should be used because their estimates are significantly different. When the Hausman test is applied, the assumptions of the RE model hold, then the RE model produces the same

estimated parameters not unlike the FE model; however, it has greater efficiency or smaller standard errors than the FE model. The alternative hypothesis of the Hausman test indicates that the estimated parameters of both the methods are significantly different.

In the nutshell, the FE estimates will be used in the Hausman test when the null hypothesis is rejected. The alternative hypothesis indicates that the FE estimates are constant. On the other hand, the RE estimates are used in the Hausman test when the null hypothesis is accepted (Pedace, 2013). Thus, the Hausman test helps to decide whether a researcher will use FE or RE. RE is preferred for null hypothesis while FE is preferred for alternative hypothesis.

The following models will be applied in both sectors using the fixed effect and random effect models to analyze the impact of Working Capital Management on the profitability of firms.

Model 1 examines the impact of the independent variables (ARP, INVP and APP) on profitability. Model 2 examines the impact of CCC on profitability.

Fixed Effects Model (Tobacco, Food, Beverage Sector &Textile, Leather and Wearing Apparel Sector):

Model (1):

$P_{it} = \alpha_0 + B_1\ ARP_{i,t} + B_2\ INVP_{i,t} + B_3\ APP_{i,t} + B_4\ Lev_{i,t} + B_5\ Size_{i,t} + B_6\ Growth_{i,t} + \Sigma^6_{i=1}\delta_i\ D_i + u_{it}$

Model (2):

$P_{it} = \alpha_0 + B_1\ CCC_{i,t} + B_2 Lev_{i,t} + B_3\ Size_{i,t} + B_4\ Growth_{i,t} + \Sigma^6_{i=1}\ \delta_i\ D_i + u_{it}$

Random Effects Model (Tobacco, Food, Beverage Sector &Textile, Leather and Wearing Apparel Sector):

Model (1):

$P_{it} = \alpha_0 + B_1\ ARP_{i,t} + B_2\ INVP_{i,t} + B_3\ APP_{i,t} + B_4\ Lev_{i,t} + B_5\ Size_{i,t} + B_6$ Growth

$_{i,t} + \Sigma^{6}_{i=1} \delta_i D_i + \varepsilon_i + u_{it}$

Model (2):

$P_{it} = \alpha_0 + B_1 CCC_{i,t} + B_2 Lev_{i,t} + B_3 Size_{i,t} + B_4 Growth_{i,t} + \Sigma^{6}_{i=1} \delta_i D_i + \varepsilon_i + u_{it}$

Where:-

P_{it}**:** shows the profitability ratio(Operp) that is used in the study.

D_i: represents the dummies for the years 2011-2016 while2010 is used as a base year and it is not shown in the model.

B_1: slope coefficient of ARP in model1, and also shows slope coefficient of CCC in model 2.

B_2: slope coefficient of INVP in model1, and also slope coefficient of Lev (leverage) in model 2.

B_3: slope coefficient of APP in model 1), it also shows slope coefficient of size in model 2.

B_4: slope coefficient of Lev in model (1), and also slope coefficient of growth in model (2).

B_5: slope coefficient of size in model (1).

B_6: slope coefficient of growth in model (1).

$ARP_{i,t}$: receivable period of the firm i for time period t.

$INVP_{i,t}$: inventory period of the firm i for time period t.

$APP_{i,t}$: payable period of the firm i for time period t.

$Lev_{i,t}$:total liabilities to total assets ratio of firm i for time period t.

$Size_{i,t}$: Natural logarithm of sales of firm i for time period t.

$Growth_{i,t}$: Growth of sales of firm i for time period t.

u_{it}: the error term.

ε_i: gives the random effects across firms, error associated with the cross-sectional unit only (does not include time effects).

α_0: constant term

5.5.6.Descriptive Statistics

Descriptive statistics show the mean, minimum, maximum and standard deviation for each variable given in this thesis in order to provide a general picture about the characteristics of variables before conducting the analysis .From Table 5.2, it is obvious that the mean values for ARP, INVP, APP and CCC of selected firms are 73.75%, 99.02%, 76.11% and 96.65%, respectively. The mean values for operp, L, FS, and SG of selected firms are -1.87, 57.15%, 18.76% and 18.50%.

Table 5.2: Descriptive Statistics (food, beverage and tobacco sector)

Name of V	Mean	SD.	P50 (medium)	Min.	Max.
ARP	73.75037	54.456	55.58996	6.600863	331.9508
INVP	99.02187	78.23701	63.71002	3.451921	378.1298
APP	76.11853	38.91356	69.67636	7.640241	203.9929
CCC	96.65371	98.63989	74.52293	-96.77886	356.0632
OPERP	-.0187401	.2868764	.0333134	-2.465334	.4273588
L	.571568	.4301199	.5229894	.1177169	3.931008
FS	18.76165	2.166719	18.50345	12.20358	23.06702
SG	.1850071	.4209582	.1289878	-.9987296	2.826456

From Table 5.3, the mean values for ARP, INVP, APP and CCC of the selected firms are 94.92%, 119.44%, 66.86% and 147.50%, respectively. The mean values for operp, L, FS and SG of the selected firms are 6.75%, 48.31%, 18.29% and 11.54%, respectively.

Table 5.3: Descriptive Statistics (Textile, wearing apparel and leather sector)

Name of Variable	Mean	SD.	P50(medium)	Min.	Max.
ARP	94.92418	48.74741	92.67474	17.18038	303.8281
INVP	119.4434	68.12673	106.7822	14.70888	344.099
APP	66.86122	40.11493	53.97159	3.257977	226.9492
CCC	147.5064	73.37587	149.4517	-28.39557	316.1033
OPERP	.0675571	.2117762	.0594924	-.4162945	1.684146
L	.4831024	.2372571	.4578928	.0363585	1.411607
FS	18.2993	1.357577	18.52761	15.74231	21.3695
SG	.115435	.2536501	.0889613	-.4373465	1.239414

5.5.7.Correlation Analysis

The correlation analysis was performed for analyzing the link between profitability and the working capital management components. Field (2005) pointed out that multi-collinearity is an issue when the correlation coefficient exceeds 0.8. The outcomes of both food and textile sectors clearly indicate that their correlations did not exceed the mentioned threshold value prescribed by Field (2005).Table **5.4**indicatesthe correlations among the variables of food sector. The correlation between INVP and ARP is 0.088. APP and ARP have a correlation coefficient 0.1619. The correlation between APP and INVP is 0.1716, CCC and ARP has a correlation 0.5813, the correlation between CCC and INVP is 0.7644, and CCC and APP have a correlation -0.1694. For textile, wearing apparels and leather sector, Table **5.5** shows the correlations between variables in this sector. INVP-ARP correlation was -0.2356, APP-ARP correlation was0.1159. The APP-INVP correlation was 0.2422, the CCC-ARP correlation was 0.3986, and the CCC-INVP correlation was0.634, CCC-APP correlation was -0.2509. All the given correlation values show that none of the correlations is high enough, so

chances of multi-collinearity are non-existent.

Table 5.4: Correlation Analysis (food, beverage and tobacco sector)

	Arp	**Invp**	**app**	**l**	**fs**	**sg**	**Ccc**
Arp	1.0000						
Invp	0.0880	1.0000					
App	0.1619	0.1716	1.0000				
L	-0.0207	-0.0345	0.3538	1.0000			
fs	-0.2747	-0.3854	-0.1947	0.0221	1.0000		
Sg	-0.0438	0.1406	-0.0448	0.0135	-0.0579	1.0000	
ccc	0.5813	0.7644	-0.1694	-0.1794	-0.3824	1.1024	**1.0000**

Table 5.5: Correlation analysis (textile, wearing apparel and leather sector)

	Arp	**Invp**	**app**	**ccc**	**l**	**Fs**	**sg**
Arp	1.0000						
Invp	-0.2356	1.0000					
App	0.1159	0.2422	1.0000				
ccc	0.3986	0.6340	-0.2509	1.0000			
L	0.1045	0.0166	0.3221	-0.0921	1.0000		
Fs	-0.1474	0.0230	0.1536	-0.1644	0.1092	1.0000	
sg	-0.1960	-0.0947	-0.0923	-0.1703	-0.0711	0.0066	**1.0000**

CHAPTER SIX

RESULTS AND DISCUSSION

6.1.Introduction

The working capital management has impact on the profitability of Turkish firms operating in the food, beverage, tobacco textile, wearing apparel ,and leather sectors. Those firms were listed on Borsa İstanbul (BIST) from 2010 to 2016, and their performances were examined applying two models(FE & RE). The Hausman test were carried out to shed light on whether to use the FE or RE models in the analysis. The interpretations are according to the model chosen by the result of the Hausman test.

6.2. Results of Food, BeverageandTobacco Sector.

For these sectors, the Hausman results are in favor of using RE, which is obvious from Table 6.1. Both the fixed and random effect results are presented in Table 6.2.

Table 6.1: Hausman Results (Food, beverage and tobacco sector)

	Model (1)	Model (2)
Prob>chi2	0.9747	0.1763
Chi2	4.42	13.93

Table 6.2: Relationship between working capital components and profitability (Food, beverage and tobacco sector)

Name of variable	FE			RE		
	Coef	**Std-Err**	**Prob**	**Coef**	**Std-Err**	**Prob**
ARP	-.0014907	.0005934	0.014**	-.0011636	.0004859	0.017**
INVP	-.0014676	.0005642	0.011**	-.000542	.0004075	0.183
APP	-.0011388	.0010622	0.286	-.0024894	.0008248	0.003***
L	.1432752	.0915548	0.121	.1002444	.061779	0.105
FS	-.043249	.0285911	0.133	.0720653	.0164576	0.100
SG	.1384091	.0517121	0.009***	.0255471	.050079	0.610
Dum11	-.0398866	.0823344	0.629	-.0508977	.0898633	0.571
Dum 12	.0513523	.0823505	0.534	.040131	.0902789	0.657
Dum13	.0292191	.0816215	0.721	.0146663	.0889387	0.869
Dum14	.011064	.080921	0.892	-.0350264	.0880153	0.691
Dum15	.1214066	.0824471	0.114	.0993244	.0890737	0.265
Dum16	.0827733	.1041679	0.429	.0828173	.1093997	0.449
Cons	.9879015	.5514595	0.076	-.3001949	.3440021	0.383

*Significant at 10%. **Significant at 5%. ***Significant at 1%.

This study found significant but negative relation between ARP, APP and P. ARP was found significant at 5% while APP at 1% significance level. The relation between P and INVP is also negative; however, it was insignificant. The interpretation of these results is that the profitability of a firm increases by reducing the days a firm takes to pay/receive the accounts payable and receivable. The relation between ARP and P is expected to be negative in the first hypothesis and the results matched the expectations. This result indicates that firms have strict credit policies that help reducing risks such as bad debt losses and costs; therefore, a lower ARP leads to higher profitability.

The relation between APP and P is expected to be positive as per third hypothesis; however ,it was negative, which indicates that firms making their

payments on time will gain many advantages. The advantages such as obtaining cash discounts that the suppliers may offer, having a good commercial reputation and establishing a good relationship with suppliers enable firms to acquire loans from banks or purchase goods more easily on credit from suppliers in the future. Even though delaying suppliers' payments is considered to be a cheaper internal financing source, it has many risks. Thus, it can be said that less profitable organizations take more time before they pay their bills.

The results of the second model for the food, beverage and tobacco sector have been presented in Table 6.3.

Table 6.3: Relation between CCC and Profitability (Food, Beverage and Tobacco Sector)

Name of variables	FE			RE		
	Coef	**Std-Err**	**Prob**	**Coef**	**Std-Err**	**Prob**
CCC	-.0017589	.0003467	0.000***	-.0008097	.0003463	0.019**
L	.0879415	.0923651	0.343	.0114946	.0627436	0.855
FS	-.0408893	.0294613	0.168	.0391601	.0174539	0.025**
SG	.1743067	.0516602	0.001***	.0636539	.0523038	0.224
DUM11	-.0282632	.0849072	0.740	-.031845	.0949533	0.737
DUM12	.0311761	.08461	0.713	.0196475	.0951016	0.836
DUM13	.0099688	.0838366	0.906	-.0092643	.0937577	0.921
DUM14	-.0041505	.0833192	0.960	-.0572121	.0929354	0.538
DUM15	.0674356	.0829693	0.418	.0350524	.092906	0.706
Dum16	-.02322719	.1010419	0.818	-.0404401	.1118585	0.718
Cons	.8189806	.565902	0.151	-.7132249	.3543419	0.044

*Significant at 10%. **Significant at 5%. ***Significant at 1%.

The CCC-P relation, which has been mentioned in the table given above, was expected to be negative in the fourth hypothesis and the results matched the expectations. This result demonstrates that shorter CCC positively affects firms, since it shows a better liquidity position. That enables a firm to pay its debts on time, pay for its daily operations and to save free cash for other uses such as

investing in new projects or expanding the current business, purchasing new equipment, and making other investments for future growth. As a result, the profitability will definitely improve. The relationship between control variables L and P is positive but insignificant, and the relationship between FS, SG and P is positive but statistically insignificant.

6.3. Results for Textile, Wearing Apparel and Leather Sector

These sectors were placed in the first model, the Hausman results are in favor of using RE. But the results were unclear for the second model. The Hausman test results are presented in Table 6.4. Both of the fixed and random effects, according to panel data analysis, are presented in Table 6.5. It is found that relationships between ARP, APP and P are positive but insignificant. There is a negative but significant relation between INVP and P at 10% significance level. FS has a positive and significant influence on P, which is significant at 10% significance level; however, the relationship between SG and the profitability of firms is positive but statistically insignificant. These results show that firms with shorter inventory periods increase their profitability because they can quickly sell their inventory, and thus they have low additional costs and risks, which are usual in case of high levels of inventory. Moreover, a shorter inventory period helps in shortening CCC. Firms with lower leverage ratios gain high profits. FS positively affects the profitability of firms because when firms are larger, profitability will be enhanced. Delaying payments is considered as an inexpensive internal source of financing, which can be proven by the fact that highly profitable firms wait longer before paying their bills, and expanding their credit policy, which enables customers to check the quality of products, which results in a positive relationship with customers as well as increased sales and high profit generation.

Table 6.4: Hausman Result (Textile, wearing apparel and leathersector)

	Model (1)	**Model (2)**
Prob>chi2	0.9999	Chi2<0 ==> The model failed to meet the asymptotic assumptions given in the Hausman test
Chi2	0.85	-3.58

Table 6.5: Relationship between working capital components and profitability (Textile, wearing apparel and leathersector)

Name of variable	**FE**			**RE**		
	Coef	**Std-Err**	**Prob**	**Coef**	**Std-Err**	**Prob**
ARP	-3.33e-06	.0009306	0.997	.0001107	.0003954	0.780
INVP	-.0016384	.0009117	0.076*	-.0005357	.0002874	0.062*
APP	-.0007109	.0013474	0.599	.0005547	.0004928	0.260
L	-.2988017	.1550139	0.057*	-.3541225	.0840939	0.000***
FS	-.2069395	.1136851	0.072*	.0230577	.0138763	0.097*
SG	-.0599984	.0971539	0.538	.0019101	.0750112	0.980
Dum11	-	-	-	.1236548	.0667173	0.064
Dum12	-.1502653	.0686728	0.031	-.036378	.0647672	0.574
Dum13	-.0746704	.0687973	0.281	-.0043321	.0619341	0.944
Dum14	.013677	.0733348	0.852	.0691689	.063231	0.274
Dum15	.0763966	.0801815	0.343	.0972999	.0624158	0.119
Dum16	-.0101601	.0837258	0.904	-	-	-
Cons	4.290165	2.094601	0.044	-.2095991	.2717327	0.441

*Significant at 10%. **Significant at 5%. ***Significant at1%.

The panel data analysis concerning the effects of CCC on profitability for the textile, wearing apparel and leather sector are presented in Table 6.6. Since the results of the Hausman are not clear, the results of second model FE and RE were obtained. Both FE and RE showed negative as well as insignificant relation between CCC and P. Moreover, the relation between SG and P is also negative and insignificant for both models. The FE model exhibits negative as well as

insignificant relation between FS and P; however, the RE model presents a positive but insignificant relationship between FS and P. The correlation between L and P is negative but significant in both the models. This result indicates that a lower leverage ratio increases the profitability of firms. Generally, a shorter CCC is preferred since it positively affects the profitability of firms. The results of RE and FE models have been given in the tables in the following section:

Table 6.6: Impact of CCC on Profitability (Textile, wearing apparel and leathersector)

Name of variable	**FE**			**RE**		
	Coeff	**Std-err**	**Prob**	**Coeff**	**Std-err**	**Prob**
CCC	-.0007823	.000686	0.257	-.0003772	.0002552	0.139
L	-.3980264	.142315	0.006***	-.3349599	.0808822	0.000***
FS	-.1058129	.0999536	0.293	.020557	.0137354	0.134
SG	-.0630989	.0971462	0.518	-.0124069	.0744891	0.868
Dum11	-	-	-	.1117948	.0661257	0.091
Dum12	-.1683548	.0686758	0.016	-.0452618	.0646202	0.484
Dum13	-.1008136	.0676693	0.140	-.0125927	.0618577	0.839
Dum14	-.0212903	.0713711	0.766	.0633707	.0631706	0.316
Dum15	.0241756	.0758937	0.751	.090146	.0624286	0.149
Dum16	-.0670915	.0764729	0.383	-	-	-
Cons	2.382999	1.822962	0.195	-.1244086	.2672628	0.642

CHAPTER SEVEN

CONCLUSIONS

Working capital management is essential for daily business operations of any firm. It includes all short-term items in a balance sheet; thus, it is considered as a good technique for measuring liquidity of a firm. Moreover, good working capital management creates inexpensive internal financing sources. As a result, firms are required to effectively manage their working capital. Working capital management is a crucial area that needs attention of the business owners and finance professionals because it significantly influences profitability as well as liquidity. The management of working capital requires proper management of cash, accounts payable, accounts receivable, and inventory. Keeping each component at an optimum level helps firms reduce their need for borrowing that enhances their profitability and creates higher value for their shareholders. An effective way to assess the cash flow health of any business is monitoring how it manages its working capital. Accordingly, this thesis has assessed the working capital management impact on Turkish firms' profitability particularly companies selling food, beverages tobacco, textile fabrics, wearing apparels, and leather. These companies were listed on Borsa İstanbul Exchange from 2010 to 2016. The panel data methodology was applied for analysis. In case of food, beverages and tobacco sector, the study found negative but significant relationships between periods of accounts receivable and payable, CCC and profitability. Moreover, the firm size-profitability relationship was found to be positive and significant. It was found that leverage and sales growth have insignificant effect on profitability. Although, the relationship is negative between inventory period and profitability, the results are statistically insignificant, which indicate that decreasing accounts receivable period and accounts payable period positively affect a firm's profitability. The interpretation of the negative relation between profitability and the accounts payable period is that the firms get discounts when they pay their bills sooner. As a result, their commercial reputation is enhanced, which ensures getting more credit from suppliers and obtaining bank loans more easily in the

future. In addition, the negative impact of accounts receivable period on profitability indicates that firms increase their profitability by taking a shorter time to collect their receivables, which reduces their chances of accumulating bad debts. Furthermore, CCC has been applied because it is a good measure of the working capital management efficiency because when the CCC is shorter, profits are likely to increase. The findings of the food, beverage and tobacco sector are in line with the findings of Aregbeyen (2013),Aygün (2012), Aytürk & Yanık (2015), Deloof (2003), Juan García-Teruel & Martinez-Solano (2007), Kumar et al. (2013), Lazaridis & Tryfonidis (2006), Raheman & Nasr (2007), Samiloglu & Akgün (2016), and Uyar (2009).

For the textile, wearing apparel and leather sector, the study found negative but significant relation between inventory turnover period, leverage and profitability. Moreover, firm size shows positive and significant impact on profitability. The relation between CCC and profitability was negative; however, it was statistically insignificant. Accounts receivable period, accounts payable period and sales growth had insignificant influence on profitability. The profitability of firms increases when the inventory period and the leverage ratio are reduced. On other hand, increasing firm size positively affects the profitability of firms. A lower inventory level indicates that a firm takes short time to sell its inventory, and eliminate costs and losses that emerge as a consequence of keeping high levels of inventory. Larger firms are in a position to gain several benefits out of economies of scale than smaller firms do, and thus, larger firms increase their profitability. Leverage has negative relation with profitability in this sector; however, according to the finance theory, leverage helps the firms to increase their profits when sales are increasing. It most probably happens because of high debt levels and high interest costs, so leverage does not lead to the same result in this sector. The findings of the textile, wearing apparel and leather sector are in agreement with some previous researchers' findings (Afeef, 2011; Kumar et al., 2013; Mathuva, 2015).

To summarize, it is found in the study that the firms in the food, beverage and tobacco sector can increase their profitability by reducing some variables

including their CCC, accounts receivable period, and accounts payable period. The firms operating in the textile, wearing apparel and leather sector can generate higher profits by decreasing their inventory turnover period.

The researcher concludes that firm managers can generate large profits for their businesses and improve the firm's stock value by properly managing the CCC and each one of its components. Although the statistical significance of the results is different for different sectors, it can be said that effective working management increases profitability in most of the cases.

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