

**T.C.  
SAKARYA UNIVERSITY  
GRADUATE SCHOOL OF BUSINESS**

**THE IMPACT OF WORKING CAPITAL MANAGEMENT  
PRACTICE ON FIRM PROFITABILITY: AN EVIDENCE  
FROM MANUFACTURING FIRMS LISTED IN  
ISTANBUL STOCK EXCHANGE**

**MASTER THESIS**

**Mohammed Bashir YUSUF**

**Department : Business Administration  
Field of Science : Management and Organization**

**Thesis Advisor : Dr. Öğr. Üyesi Mustafa Kenan ERKAN**

**APRIL – 2019**

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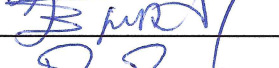

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**“This thesis approved by consensus of the jury members on April 24, 2019.”**

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**Mohammed Bashir YUSUF**

**April 24, 2019**

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## **LIST OF ABBREVIATIONS**

<b>ANOVA</b>	: Analysis of Variance
<b>BIST</b>	: Borsa Istanbul
<b>CFO</b>	: Chief Financial Officer
<b>ISE</b>	: Istanbul Stock Exchange
<b>KAP</b>	: Kamuyu Aydınlatma Platformu
<b>KPP</b>	: Chemical, Petrol and Plastic
<b>KSA</b>	: Kingdom of Saudi Arabia
<b>SMEs</b>	: Small and Medium-Sized Enterprises
<b>UK</b>	: United Kingdom
<b>USA</b>	: United States of America

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<b>Tezin Başlığı:</b> Çalışma Sermayesi Yönetimi Uygulamasının Firma Karlılığı Üzerine Etkisi: İstanbul Menkul Kıymetler Borsası'nda İşlem Gören İmalat Firmalarından Bir Çalışma	
<b>Tezin Yazarı:</b> Mohammed Bashir YUSUF <b>Danışman:</b> Dr. Öğr. Üyesi Mustafa Kenan ERKAN	
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<p>Çeşitli finansal kararları alma sürecinde derin karışmalardan dolayı, çalışma sermaye bileşenleri imalat firmaları için çok önemlidir. Bu nedenle, bu çalışmanın temel amacı, İstanbul Menkul Kıymetler Borsası'nda işlem gösteren Türk kimya, petrol ve plastik imalat firmalarının beş yıl boyunca 2012'den – 2016'ya kadar çalışma sermayesi yönetimi uygulamasının firma karlılığı üzerindeki etkisini incelemektedir. Alacakların tahsil süresi (ATS), stok devir süresi (SDS), borçların devir süresi (BDS) ve nakit dönüş süresi (NDS) bağımsız değişkenler olarak kullanılan çalışma sermaye bileşenleridir. Hem aktif karlılığı (AK) hem de öz sermaye karlılığı (ÖSK), bağımlı değişkenler olarak kullanılan firma karlılığı değişkenleridir ve buna ilave olarak, cari oranı (CO), kaldıraç oranı (KO) ve satış büyümesi (SB) kontrol değişkenleri olarak kullanılmaktadır.</p> <p>Araştırmacı, bağımsız ve bağımlı değişkenleri arasındaki ilişkiyi ortaya çıkartmak ve daha sonra çalışmanın mümkün hedeflerine ulaşmak amacıyla tanımlayıcı istatistikler, korelasyon ve doğrusal regresyon analizi uygulanmıştır. Nihayet, Pearson korelasyon sonucu firma karlılığının ATS ve SDS değişkenleriyle pozitif ve negatif bir korelasyona sahip olduğunu bulunmuştur, ayrıca AK'nın sırasıyla BDS ve NDS değişkenleri ile sırasıyla negatif ve pozitif bir korelasyonu bulunurken, ÖSK'nın BDS ve NDS değişkenleri ile sırasıyla pozitif ve negatif korelasyon varmış. Ancak, doğrusal regresyon sonucu firma karlılığının ATS ve BDS değişkenleriyle pozitif ve SDS ve NDS değişkenleriyle negatif bir ilişkiye sahip olduğuna tanık olmuş. Sonuç itibarıyla, araştırmacı NDS ve BDS değişkenlerini kısaltmayı ve ayrıca stok eksikliği veya aşırılığı aşmak için satın alma, üretim ve pazarlama bölümleri arasında güçlü bir iletişim kurmayı önerir.</p>	
<b>Anahtar Kelimeler:</b> Çalışma Sermayesi Yönetimi, Karlılık, İmalat Firmaları, İstanbul Menkul Kıymetler Borsası.	

<b>Title of the Thesis:</b> The Impact of Working Capital Management Practice on Firm Profitability: An Evidence from Manufacturing Firms Listed in Istanbul Stock Exchange	
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<b>Department:</b> Business Administration	<b>Field of Science:</b> Management and Organization
<p>Due to their deep involvement with various financial decisions, working capital components are very essential for manufacturing firms. Therefore, the principal aim of this study was definitely to inspect the influence of working capital management practice on the firm profitability of the Turkish chemical, petrol and plastic manufacturing firms listed on Istanbul Stock Exchange for a period of five years from 2012 to 2016. Accounts receivable period (ARP), inventory conversion period (ICP), accounts payable period (APP), and cash conversion cycle (CCC) are working capital components that employed as independent variables. Both return on assets (ROA) and return on equity (ROE) are firm profitability variables that hired as dependent variables and in addition to this, current ratio (CR), debt ratio (DR), and sales growth (SG) are exploited as control variables.</p> <p>The researcher is designed certainly to employ descriptive statistics, correlation and linear regression analysis as a statistical testing tool to uncover the association between independent and dependent variables and then reach the possible goals of the study. Finally, the Pearson correlation result exposed that firm profitability has a positive and negative correlation with ARP and ICP variables respectively, additionally, ROA has a negative and positive correlation with APP and CCC variables respectively while ROE has a positive and negative correlation with APP and CCC variables respectively. However, the linear regression result witnessed that firm profitability has a positive relationship with ARP and APP variables and a negative relationship with ICP and CCC variables. In the end, the researcher recommends to shorten CCC and APP variables and also build strong communication among purchasing, production, and marketing departments to overcome shortage or excess of inventory.</p>	
<b>Keywords:</b> Working Capital Management, Profitability, Manufacturing Firms, Istanbul Stock Exchange.	

## INTRODUCTION

As early as the 1900s, financial management has been viewed as one of the sub-areas in management discipline. Ultimately, it has turned into considerably more critical and visible simply because numerous decision-making were actually influenced by the information found in this discipline. At this time, an outstanding administration of resources and payments is often perceived as successful financial management by considering that they have a huge influence on the value of both the firm and investors. Thus, financial management is more deeply grouped into numerous sub-groups by which usually the job of working capital management is becoming exceptionally vital for every business to give a much-needed boost to the profitability. For this reason, working capital management deemed to be regarded as a very essential sub-area found in financial management.

Consequently, lots of financial experts and researchers have clearly defined working capital management as being the process of establishing and developing strategies, policies, rules, regulations, and guidelines for the short-lived assets and short-lived debts and as well the funds wanted by the short-lived assets in order to positively reinforce the daily projects to be done successfully. It additionally delineated that a healthy WCM should certainly ascertain a satisfactory connection among the varied proxy variables of firm's working capital in an effort to make an effective mixture which in return promises capital sufficiency for the business.

Working capital generally is categorized as the gross and the net working capital. Simply, gross working capital can certainly be used to determine a firm's overall funding in short-lived assets namely; cash, marketable security, short receivable and stocks. Thus, these types of short-lived assets can be quickly changed into cash within the fiscal year for most businesses. In addition; net working capital can undoubtedly be indicated the major difference between short-lived assets and short-lived financial obligations. Therefore, working capital, alternatively, is known as "net working capital" by the accountants and financial professionals.

A reliable and stable working capital management needs to make conceivable for a firm to positively meet its future operating expenses without any errors and avoid risks and

uncertainties. As a result, a large number of business firms irrespective of their type and size have seen themselves in challenging circumstances with the lenders or creditors mainly in these modern days simply because management personnel of the firms doesn't regularly check on and deal with the liquidity which is usually the sum of working capital.

Therefore, working capital management expected to be given extra attention when it comes to this globalization issues and its fast currency fluctuations considering that the cost of capital is gradually rising and source of funds are really becoming hard to find in an easy way. Thus, if a business is definitely ineffective in the handling of working capital variables, then it is not going to only cut down profitability but as well lead potentially into a financial meltdown which might possibly ruin the entire business. For that reason, both inadequate and irrational excessive working capital is actually detrimental to a firm's existence.

Profitability essentially can determine the level of earnings which a firm generated from various elements of production such as; the labor force, material, and also capital. Generally, there are two techniques which usually can be employed in assessing the firm's level of efficiency in profitability which is; qualitative and quantitative techniques. The return on assets (ROA), return on equity (ROE), return on sales (ROS), gross profits etc., are highly well-known quantitative measurement variables in accounting and finance fields since they provide an accurate view of how perfectly a firm can take care of and use its overall assets.

Hence, this study works on determining what levels of influence do the working capital management variables have on firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange for a period of five years between 2012 and 2016.

### **Problem Statement**

Undoubtedly, the working capital has a critical role in profitability together with the decisions relevant to the financial management for firms as long as it absolutely has the right to influence on overall firm's productivity and also profitability generated from daily assignments.

Just about all the prior researchers of this topic witnessed that there is certainly a

significant or/and insignificant association between working capital management variables and firm profitability. Therefore, management of working capital needs to have watchful eyes since the WC variables moves and also takes place in business enterprises like the bloodstream circulates in human body and then helps to function properly.

Basically, the study is used to examine the level of impact of working capital management practice on firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange for a period of five years between 2012 and 2016. Accordingly, the study is definitely targeted to match the knowledge gap and reveal a fresh perspective to the earlier researches by simply taking the following three major problems into consideration.

Firstly, generally speaking, there are initially an inadequate group of studies relevant to profitability and working capital management in Turkey from 2012 to 2016 period. As an example, Karaduman, Akbas, Çalışkan and Durer (2011) analyzed the level of association between working capital management and profitability for the Turkish emerging firms from 2005 to 2009. Karadağlı (2012) assessed the level of impact of working capital management on profitability by simply employing a group of Turkish SMEs from 2002 to 2010. Karadağlı (2013) similarly screened the level of influence of working capital management on the profitability of 169 Turkish companies from 2001 to 2010.

Secondly, in particular, earlier studies relevant to working capital management practice and profitability that tested on Turkish manufacturing firms are definitely insufficient and need to be extended furthermore by comparing several variables in both independent and dependent.

Thirdly, there are certainly various studies explored in many countries such as; India, Iran, Pakistan, Bangladesh, etc. that exclusively inspected the levels of association between working capital management practice and profitability for chemical, petrol and plastic firms. However, the influence of working capital management on profitability for manufacturing firms listed on Istanbul Stock Exchange, specifically BIST (XKMYA) chemical, petrol, and plastic index has been omitted.

## **Objectives of the Study**

The general objective of the study is definitely to attest the levels of influence of working capital management practice on firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange for a period of five years between 2012 and 2016. To be able to achieve the general objective of the study, the researcher takes the following specific objectives into consideration:

1. To check out the impact of the accounts receivable period (ARP) on firm profitability for sampled manufacturing firms in ISE.
2. To evaluate the effect of the inventory conversion period (ICP) on firm profitability for sampled manufacturing firms in ISE.
3. To study the impact of the accounts payable period (APP) on firm profitability for sampled manufacturing firms in ISE.
4. To identify the influence of the cash conversion cycle (CCC) on firm profitability for sampled manufacturing firms in ISE.

## **Questions of the Study**

In accordance with the study objectives and an intensive literature review, the following study questions are taken into account:

1. In what degree does the accounts receivable period (ARP) have an impact on firm profitability for Turkish manufacturing firms listed in ISE?
2. Does the inventory conversion period (ICP) have an effect on firm profitability for Turkish manufacturing firms listed in ISE?
3. About what level does the accounts payable period (APP) have an impact on firm profitability for Turkish manufacturing firms listed in ISE?
4. Does indeed the cash conversion cycle (CCC) have an influence on firm profitability for Turkish manufacturing firms listed in ISE?

## **Significance of the Study**

It is actually believed that working capital is definitely very critical for a firm's survival just as bloodstream is vital for the human body's survival. As a consequence, this kind of study definitely is inspected to fulfill the knowledge gap and add a new perspective to the

prior studies by simply conveying the level of influence of working capital management variables on firm profitability variables. The results are certainly used to support the CFOs of manufacturing firms in such a way that they can easily employ various working capital variables to enhance their earnings and also a firm's market value. By the end of the study, financial managers will certainly be capable of avoiding any imbalance between working capital variables and then taking care of satisfactory balance between a firm's short-lived assets and short-lived debts to get over the liquidity hardships and strengthen the firm's whole earnings. Then again, the results will probably be useful for regulatory bodies like; the Turkish manufacturers associations and various other respective government institutions including the Turkish ministry of industry and technology, by ensuring that they can use the end results of the study to structure the best ideal strategies and tactics that can make it easier for manufacturers to identify their maximum capabilities. Furthermore, this study can certainly be used by the financial analysts, stockbroker agents, and various other groups who fascinating to invest in Turkish chemical, petrol, and plastic manufacturing firms. Definitely, the study will be beneficial to scholars and academicians who are keen to carry out research on WCM or simply related areas seeing that it will probably add to the existing literature for reference. Last but not least, the study will probably enable the researcher himself to acquire expertise and knowledge in conducting a study, for example, data gathering, analysis and interpretation.

### **Scope of the Study**

Obviously, this study is employed to delimit solely checking out the influence level of working capital management variables on firm profitability of the Turkish manufacturing firms listed on Istanbul Stock Exchange. In order to really keep away from incomplete data and errors, only the Turkish chemical, petrol, and plastic manufacturing firms with five years (2012 – 2016) of audited financial reports are used to definitely process to the subsequent steps which are examination and interpretation of gathered data in the study. As a result of availability, reliability and easy accessibility, the study is applied to rely on secondary data gathered from financial reports of the Turkish manufacturing firms. Accordingly, this study is certainly used to put emphasis only on chemical, petrol, and plastic firms to order to accomplish the general objective of the study. To examine the



level of impact of working capital management variables on firm profitability, the study is employed descriptive statistics, correlation and regression analysis as a statistical testing technique.

### **Outline of the Thesis Report**

The study is primarily arranged into three main parts. The first part exclusively enlightens the overall concepts of working capital. The second part inspects the level of interconnection between working capital management variables and firm profitability. Conceptual framework, literature review, research design, description of the variables, development of the hypotheses, data collection procedure, population, sampling technique, specification of the models, data analysis tools and finally, interpretation of the findings are presented in the third part.

## **PART 1: WORKING CAPITAL CONCEPTS**

Primarily, this part is concentrated on overall basic concepts and meanings of working capital. It is mainly grouped into the following sections; definition and meaning of working capital, cycle of working capital, measures of working capital and finally, policies of working capital.

### **1.1. Definition and Meaning**

The word “*capital*” was first used as its recent meaning in England about 1611, resulting from “capital grant”, signifying that a "grant of land" from the King or Queen in that particular period, which might possibly be on the basis of a new real estate. Capital is, to begin with, a collection of funds and are unable to get its appearance historically until final the movement of commodities has offered arise towards the money relation. Subsequently, the major difference between capital which is money, and money which is money, just originates from the difference inside their type and shape of the operating cycle. First of all, money which is initially needed to acquire items is normally the money we know all recently and in addition, it's employed for assisting the exchange of goods. On the flip side, capital is also money which is usually used to purchase items simply for the purpose of reselling it again in the future. As a result, this translates to that capital is available exclusively within the process of buying items from and then reselling it to, whereby money is developed only to be able to get it once again for the purpose of exchanging commodities from one firm to another firm.

In the field of finance and economics, the word “*capital*” is usually used in several means (Bhattacharyya, 1987). In economics, the word “*capital*” signifies properties that are actually composing of an enormous variety of items which are used for both short and long-range targets and they are namely; houses, recyclable materials, different types of machines, equipment, plants, and currently goods-in-process. A financial manager of a firm obviously searches for these items in the asset's side of the "balance sheet" without overlooking them. Just for capital, he/she definitely moves his/her focus towards the other side of the "balance sheet" and simply never does any miscalculation for combining both of them, whilst considering the total capital of the firm. Even though economists consider the term "*fixed capital*" as what is usually showed by long-lived assets, whilst a financial

manager identifies this term “*fixed capital*” as a resource with a long-term maturity say like; five, ten, or even fifteen years maturity.

Basically as we know, the term “*working capital*” has a root and came along with the old Yankee peddler, who does launch his own wagon with portable commodities/items and after that set off in the way to peddle his items and the items were indeed referred to as “*working capital*” since it undeniably was what he sold to a purchaser, or “exchanged” in order to really gain his own income. Thus, the wagon and horse were definitely his own “fixed assets”, and also recognized as his long-lived assets since it remains the same in a long period. The man also basically possessed the horse and wagon, as a result, these were funded as being an “equity” capital, on the other hand, the man received his goods from sellers on credit (Borrowed from suppliers) or perhaps he was given a debt to completely acquire the items (Cash obtained from the bank). These kinds of debt were identified as a working capital loan, and so the loan needed to be paid back just about every voyage to show the fact that the peddler became worthy and in addition, able of fulfilling the loan he took.

Generally, funding in short-lived assets which are designed to be the main factor for undertaking the routine assignments of a firm often known as the notion of “*working capital*” (Firer, Jordan, Ross and Westerfield, 2008: 4-9). Kaveri (1985) denotes working capital as the dissimilarity between short-lived assets and short-lived financial obligations which is very crucial for firms to use it properly. Thus, managing this working capital is a day-to-day assignment which generally assures that a firm has enough resources and utilize it smartly in order to continue its steady projects and also prevent them from uncommon disruptions.

Traditionally, working capital (WC) is referenced as the main difference between the inflow and outflow of a firm’s money which is supposed to have an influence on routine tasks of the business. Arnold (2008: 515-520) understood working capital as it incorporates the following “stocks in store, fuels, partially-finished items consisting of both finished and work-in-progress, cash in hand and at bank and the algebraic sum of various obligations as listed in the factory payments like for example; rent, salaries, interest and shareholder’s dividend; acquisition of new products; short-lived loans and varied debtors comprising amounts that are as a result of selling goods and/or services on

credit and last but not least advances designed for tax obligations”.

From the other point of view, the term “*working capital*” come to be extensively denoted as a “circulating capital” which can be altered from one shape to another quickly, such as; starting from cash, then turning into products, then transforming these products into work-in-progress and after that finished items, the sale of these finished items and ultimately realizing cash from buyers or debtors (Weston and Brigham, 1977: 261-276). Aside from that, Shin and Soenen (1998) outlined working capital being a “time interval between incurring expenses for acquiring of raw materials from suppliers and receiving money from finished items when they become sold goods”.

In summary, working capital pertains to a firm’s managerial accounting technique and tool which is definitely meant to watch over and exploit smartly the two elements of working capital namely; short-lived assets and short-lived financial obligations to make certain that the business keeps on running its daily assignments economically and sufficiently. Consequently, working capital is the gas that produces heat or power for a business firm to receive additional energy and then accelerate to gain extra earnings by performing routine tasks properly.

## **1.2. Importance of Working Capital**

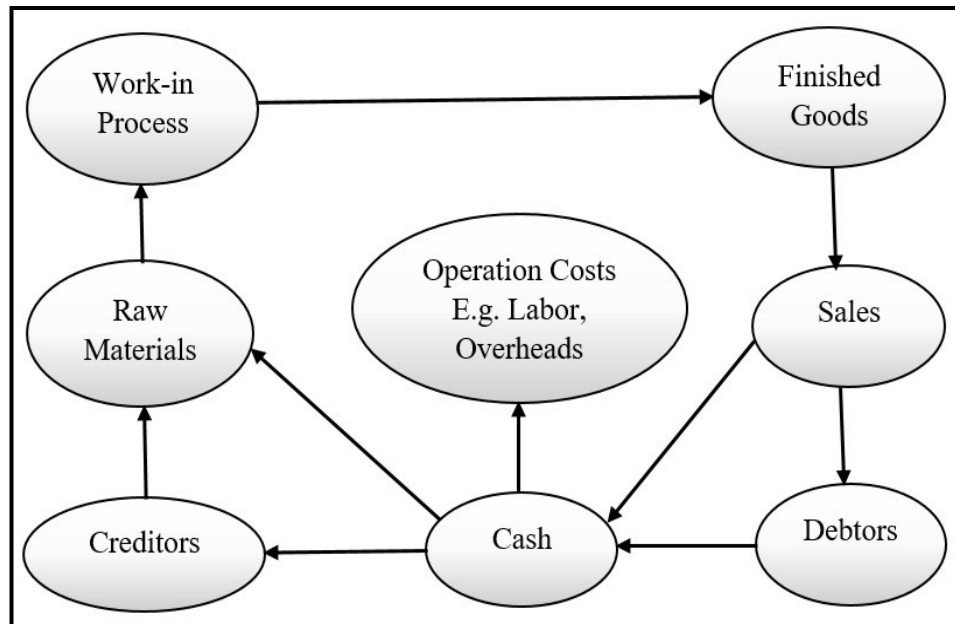
According to Bhunia (2010), working capital is certainly a central and vital aspect when it comes to financial decision-making since it is undoubtedly a percentage of the funding in total resources that commonly will involve determining an ideal financing investment for a firm. Thus, every single firm desires a positive working capital to interact with its short-lived costs and daily assignments competently. Obviously, working capital maintains the business firm to move ahead and truly without it, the business firm definitely may quit running and ultimately terminated from the market after getting too weak. Therefore, the following points are written below highlight the reason why working capital is critical in business firms:

- Working capital needed by any kind of business firms all over the year to tolerate seasonal fluctuations and keep functioning in order to move forward consistently,
- It supports the plan of paying off shareholder’s dividend with the aid of undertaking day-to-day assignments productively,

- It is employed for reimbursing long-lived loans and debentures, build an excellent reputation, and then increase a firm's creditworthiness once obligations are reimbursed in a timely manner,
- It enables a firm to fight against its rivals by simply spending a sufficient amount of money in daily assignments for creating and applying marketing campaigns and sales promotions, and finally
- It grants enhanced working conditions by basically preserving its equipment and nurturing manpower in good condition and boosting the productivity of the overall firm.

### **1.3. Cycle of Working Capital**

According to Kavitha (2007), working capital revealed as among the most affordable and the ideal source of cash that can be found within a firm; as a consequence, strong and stable working capital management definitely makes cash which generally can be used to strengthen the whole firm assignments and also cut down risk possibilities and uncertainties. Harrington (1993: 104) highlights the working capital cycle as the ebb and tide of money throughout the whole firm in response to the particular change rate in sales activities and production. It truly is the total of time period that goes on between ordering raw materials and receiving cash from selling finished products that produced by a firm, hence working capital cycle is required to be as shortest as possible for every single firm to be able to secure enough cash flow and get rid of any cash deficiency that possibly disrupts day-to-day assignments and overall performance. Acknowledging that a perfect working capital cycle is usually endeavoring to balance the inbound and outbound cash of firms and then utilize it properly. So, the working capital cycle is mostly a diagram that highlights what the inbound cash is certainly used for and how the inbound cash is truly leaving from the firm. Whenever a firm feels cash deficiency, it is essentially advised to utilize cash coming from the working capital cycle since it is inexpensive and less difficult to find than any kind of source of the finance. Accordingly, the figure drawn below discloses the way working capital cycle moves on.



**Figure 1:** Working Capital Cycle

**Source:** Arnold, G. (2008). *Corporate Financial Management*, 4<sup>th</sup> Edition, Harlow: Financial Times Prentice Hall, p. 530.

In a critical manner, numerous firms put different types of working capital cycles into practice (Harrington, 1993: 105). Hence, the working capital cycle diagram can vary from a single firm to another according to their business type and size. Some firms possibly execute very short cycle that definitely eliminates the needless time period between producing products and receiving cash from sales whilst a variety of them possibly receive raw materials from suppliers quite a long time just before the earlier product could be finished goods since their cycle is too short and speedy. While some firms possibly apply very long cycle which usually increases the time period between producing items and acquiring cash from buyers. Consequently, firms should certainly screen and analyze their ecosystem and then find out how much time their cycle will normally take, then thereafter, it will probably be viable to get rid of avoidable time interval within or between the cycle by comparing and contrasting to the prior condition.

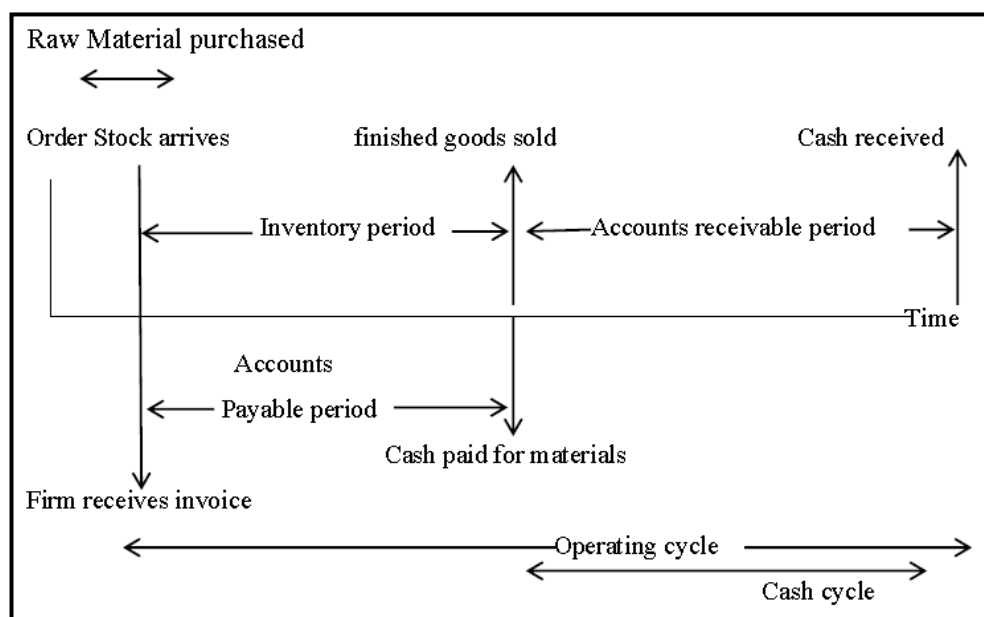
#### **1.4. Measures of Working Capital**

According to Jose, Lancaster and Stevens (1996), the usefulness of WCM is frequently judged by using different measures and the liquidity ratios namely; current and quick ratios are exactly traditional measures. These kinds of ratio create a speedy look for the

financial position of a firm, so the higher the ratio the more capable of business firms to fulfill their short-lived obligations. According to Gill, Biger and Mathur (2010), the liquidity ratios are indeed ineffective to provide particular information and details with regards to working capital.

The study which was carried out by Shin and Soenen (1998) applied another variable which is a net-trade cycle (NTC) for being a measure of working capital management. As the viewpoint of Nobanee and Alhajjar (2009), calculating the net-trade cycle is very simple where the CCC is a little bit complicated.

As the researcher intensively revised the earlier studies, it's observed that the CCC was frequently picked as the proxy variable of working capital management (Mathuva, 2009; Padachi, 2006; Deloof, 2003). As the researcher pointed out in earlier sections, the CCC is noted as the duration between when ordering raw materials until receiving cash from selling finished goods. According to Gill, Biger and Mathur (2010), the prolonged period of CCC implies that business is in need of further cash to fund its operation cycle, alternatively, unprolonged duration of CCC asserts that business has enough liquidity to put in its daily assignments. Therefore, the framework placed below engaged by Hillier, Ross, Westfield, Jaffe and Jordan (2010: 724) to simply give details about how the cash cycle and operating cycle works.



**Figure 2:** Cash Flow and Operating Cycle

**Source:** Hillier, D.J., Ross, S.A., Westfield, R.W., Jaffe, J., and Jordan, B.D. (2010). *Corporate Finance*, European Edition, London: McGraw-Hill Higher Education, p. 724.

Again, according to Hillier, Ross, Westfield, Jaffe and Jordan (2010: 724-726), the operating cycle covers the length of time between purchasing materials from suppliers and acquiring cash from buyers whilst, cash cycle begins when a firm pays off cash to suppliers for ordering raw materials and terminates the moment when cash collected from customers with outstanding receivables. In a narrow sense, the need for a short-term fund is to begin when there is certainly a gap between inflow and outflow of cash in a business.

### **1.5. Policies of Working Capital**

According to Brigham and Houston (2003: 689), formulating a working capital policy and then executing it into a business is viewed as the definition of working capital management. Therefore, these policies which executing into a business have an impact on the overall firm's performance. So, working capital management policy is a practice for deciding to invest a business through the use of short-lived assets and funding firms' assets by making use of short-lived financial obligations wisely (Bandara and Banda, 2011: 2). Accordingly, the most popular working capital management policies that used as a means of working capital financing are namely; the aggressive, moderate and conservative policy which are discussed here below in detail:

#### **1.5.1. Aggressive Policy**

Aggressive working capital policy desires the firms to essentially retain a low amount of short-lived assets and attempt to pay out their debts when it's past due or as late as possible; thus, they spend the majority of their resources into vital investment and usually retain a lesser amount of cash on hand. Then simply, aggressive working capital policies are involved with higher return and higher risk at the same time. If sales are changeable and the firm desires to elevate, it is worthwhile to consider employing an aggressive policy.

#### **1.5.2. Moderate Policy**

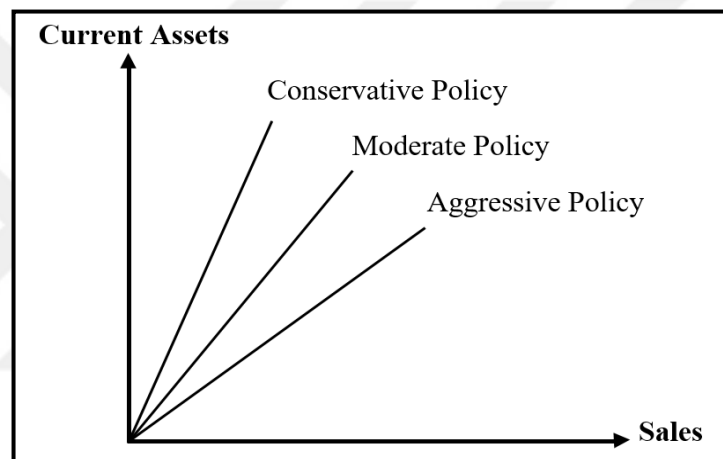
The moderate working capital policy will work in a set up where the short-lived assets are exploited properly to match up with the short-lived debts; hence, it points out that



firms can easily continue to retain an adequate amount of cash as a result of paying out their debts. Consequently, the moderate policy is a medium-sized risk and revenue policy which favors in funding non-permanent working capital via short-lived loans whilst having fixed working capital financed by equity or long-lived obligations.

### 1.5.3. Conservative Policy

Conservative working capital policy is attached to the least risk and revenue which included supreme cost as a result of funding the overall working capital by using long-lived loans and equity. The figure placed down demonstrates the valuation of the working capital policies in line with total sales and short-lived assets.



**Figure 3: Working Capital Policies**

**Source:** Paramasivan, C., and Subramanian, T. (2009). *Financial Management*, 10<sup>th</sup> Edition, New Delhi: New Age International Ltd, p. 160.

According to Nazir and Afza (2009), firms can absolutely cut down the financial risk and boost their entire performance if they formulate a proper working capital management policy which can be familiar with the role and drivers of working capital management. Thus, the policies additionally spotlight the significance of WCM and how working capital management policies influence on firm's total profitability.

## **PART 2: WORKING CAPITAL MANAGEMENT AND FIRM PROFITABILITY**

Basically, this part elucidates the impact of “working capital management” on “firm profitability” thoroughly. Therefore, this part is divided into four sections which are; concepts of working capital management, components of working capital management, firm profitability and finally, impact of “working capital management” on “firm profitability”.

### **2.1. Concept of Working Capital Management**

The general concept of working capital management has been studied and defined by various researchers and experts. In most cases, working capital has multiple definitions but is defined as an amount of money that regularly designed for achieving the day-to-day assignments and making sure that these daily assignments are running flawlessly without any disruption. Concisely, working capital management is to make arrangements for the overabundance between short-lived assets and short-lived financial obligations by setting up suitable policies and plans. Thus, short-lived assets are the firm’s resources which are usually can end up being cash or quickly convertible into cash within the existing financial year and they are mostly used to run daily projects which contribute at least something to the long-range targets of a firm.

Short-lived assets are actually contained almost all those firm’s resources that can easily be getting back in the form of cash within a calendar year from the steady jobs of a firm, normally within a year or lesser than a year and as they can probably be altered such temporary investment into cash immediately when needed (Raheman and Nasr, 2007). These kinds of short-lived resources are included; cash in hand or at the bank, marketable securities, stocks and short receivables. Pointless and unconscious over funding in short-lived investments is definitely not advisable in any business firm since it influences the overall earnings, due to this fact, business owners or managers should give extra attention and certainly keep up an ideal level of short-lived investments.

Short-lived liabilities are actually a business’s financial obligations or debts which usually are anticipated to repay back within a financial year or within an ordinary operating cycle for every business firm and they show up in a business’s statement of

financial position (Balance sheet). Furthermore, short-lived debts are the firm's obligations which are assured to repay back immediately at the end of the deadline or even before its due date. These types of short-lived debts are included; short payables, bank overdraft as well as unpaid bills. Thus, firms with short-lived debts are certainly accountable for paying back these debts in a timely manner in order to maintain a delightful relation with their creditors. The short-lived debts are expected to use as a source of funds for daily assignments which should carefully be observed, and every single firm is required to be in a satisfactory condition when it comes to the liquidity for making certain that they can be paid off when its due date without any interruptions.

Moreover, good credit policy of trade and large stocks will probably lead a firm to secure a large volume of sales which contribute adequate earnings. Trade credit may steadily raise sales volume since it enables clients to get and assess product's level of quality before paying out the cash which is something useful for them (Long, Mallitz and Ravid, 1993; Deloof and Jeger, 1996).

According to Reason (2008), strengthening the working capital management (WCM) is surely vital defending tool for firms and fighting back mechanism to withstand the effects of economic turbulence and distress. According to Eljelly (2004), healthy working capital management includes setting up and managing of short-lived assets and short-lived obligations in such a way that eliminates threats of incapability to fulfill the short-lived obligations on one hand and on the other hand, get rid of making an excess abnormal investment in these resources which are crucial for daily tasks.

## **2.2. Components of Working Capital Management**

In a mathematically comprehensible way, subtracting the total of two sub-groups under balance sheet which are short-lived assets and short-lived financial obligations is simply known as working capital; two of them consisting of a variety of sub-accounts namely; *cash and short-lived marketable securities*:- these accounts are named cash on hand and at bank accounts, and others which are usually marketable securities that the business firm can easily convert into cash and employ it to gain quick income, *accounts receivable*:- this is definitely one of the accounts under short-lived assets consisting of the entire on credit sales that the customers are indeed estimated to pay off on deadline

which can't be longer than one year, *inventory*:- is also another account under short-lived investments which usually combines all items, for example, raw materials, partially finished items and completely finished items, *payables*:- the accounts payable stands for the sum of portions owed that should repay to creditors for acquisitions of items at a particular date and lastly, *other working capital accounts*:- there are numerous accounts under this sub-group, for example, accrued expenses and prepaid expenses which frequently show up on "balance sheet" of the firm (Sagner, 2011: 3).

Atarere (2016: 56) highlighted that working capital can possibly be taken into key five concepts which are; negative working capital, permanent working capital, net-working capital, temporary working capital and gross working capital, thus, *negative working capital*:- is viewed as when short-lived debts goes more than short-lived resources, and then it proves that there is certainly an economic catastrophe once such difficulties took place inside a firm, *permanent working capital*:- noted like the least expensive tool for funding in all short-lived resources that needed all period to actually accomplish business assignments at the most desirable level, *net-working capital*:- is thought to be short-lived resources minus short-lived financial obligations which are; payable bills and outstanding expenses, *temporary working capital*:- known the amount of money which is simply reserved for contingency purpose to resist imbalances from period to period and then continue to keep the business operations in a right manner and finally, *gross working capital*:- pertains to the firm's funding in total short-lived resources which definitely will be capable of converting into cash within a financial year or within twelve months and contains such as; cash on hand and at bank, short receivables, bills receivable, short-lived securities and stock.

### **2.2.1. Cash Management**

According to McLaney (2000: 328), cash is exactly quite a bit wider than restricting to just one aspect of working capital, more vitally, it's really like bloodstream system of the human body because it is usually employed for being a medium of exchange and also hooks up the entire firm's economic activities, as a result, cash management plays a considerable role in almost all assignments of the firms, no matter what business size or type.

Cash is simply deemed to always be the most important seed corn within a firm that acts to assist in the business's whole assignments with short-range or long-range goals and objectives. College of San Mateo which is found in California declares that a large number of firms are actually battling to survive and keep going their particular routine functions and tasks, not really due to making a smaller amount of earnings, but rather using undesirable cash management tools at the right moment. Thus, it asserted that firms can easily boost their profitability by simply putting these particular essential rules of cash management into action namely; supervision of stock level, funding of surplus in good money-making projects, the extent of short payment duration plan, elimination or cutting down of expenditures, and ultimately lowering of average collection duration.

Cash handling and management is certainly among the very sensitive proxy variables in working capital and believed to be a process of dealing with the inflow and outflow of cash circulations that encourages both short-range necessities and long-range investments of a firm's projects. Therefore, cash management has intended the flow of cash which usually improves liquidity and rises shareholder's value combined with a firm's investment money that will aid a firm to accomplish its targets easily.

As the viewpoint of Financial Management Service (2002: 2), the primary key functions of proper cash handling and management are broken down into three main sections which are; 1) timely cash disbursement as needs emerge, 2) on time deposit of cash collected from customers, and lastly 3) get rid of idle cash that does not necessarily make any kind of profit rather probably drops its value caused by an inflation, therefore, obtaining proper cash handling and management techniques will help firms to further strengthen their particular internal control by preparing convenient cash budgeting and cut down the probability of cash shortages, furthermore, the Financial Management Service concisely stated that the principal aim of cash handling and management is definitely the usage of firm's cash and taking corrective actions in the right manner.

In a further understandable way, the principal reason of why proper cash handling and management procedures and practices are crucial is essentially to keep up cash at an ideal level which firms can easily enable to run their tasks properly and stay away from cash disaster that can be either suffering from cash shortages or uphold excess cash. Accordingly, a firm with inadequate cash would possibly not capable to match payment

of the critical expenses for its routine assignments and financial obligations that are expected to be paid back in a timely manner. A good example, Uwuigbe, Uwalomwa and Egbide (2012: 50) unveiled that a large number of firms in Nigeria are earning a profit on paper and then they are enforced into liquidation because of the incapability to fulfill their short-lived financial obligations on due date". Accordingly, it is inevitable for firms to handle cash properly at their ideal levels to be able to keep up firms in good condition and operate properly.

Proper management of cash actually makes it easy for firms to stay away from both shortages of cash that might disrupt the firm's short and long-term jobs and surplus of cash which usually causes an idle resource and then adds zero profit to a firm's total earnings. For this reason, retaining excess cash proves that there is a lack of using the firm's assets properly and mostly it's a challenge to the business firms since they're not gaining zero earnings from that retained excess cash and then this causes opportunity cost. Thereby, it's fundamental for the management group to make a better decision for investing the needless amount of the cash by buying new stocks or putting needful long-lived investments which may possibly enhance total earnings of the business and shareholders' value since that needless amount of cash is probably not needed by the routine operations of the firm.

Cash conversion cycle (CCC) is definitely viewed as a proper strategy for cash handling and management, seeing that it establishes a definite length of time from ordering raw materials, then producing finished items, then selling finished items on cash or credit until finally collecting receivable. Mathematically, the CCC is essentially the total average of the accounts receivable length of time plus the inventory turnover length of time minus the accounts payable turnover length of time.

Muscettola (2014: 32) expressed that cash conversion cycle is really as powerful as a car engine to judge how business firms take care of their particular working capital variables, seeing that it reveals the capability of a firm to meet up with its obligations on due date, collect receivables on time and also find out average length of time of inventory conversion, in addition, this definitely clarifies that all the other proxy elements of working capital management are a part of cash conversion cycle formula since it is computing variables which consist of average receivables length of time, inventory

conversion length of time, and accounts payable length of time; let's glance the CCC formula below:

$$\text{Cash Conversion Cycle} = \text{ARP} + \text{ICP} - \text{APP}$$

Whereas:

ARP: Accounts receivable period.

ICP: Inventory conversion period.

APP: Accounts payable period.

According, the sub-formula for finding out the various other elements which are employed in the cash conversion cycle formula are written below:

$$\text{Accounts Receivable Period} = (\text{Accounts Receivable} / \text{Net Sales}) \times 360 \text{ Days}$$

$$\text{Inventory Conversion Period} = (\text{Total Inventory} / \text{Cost of Goods Sold}) \times 360 \text{ Days}$$

$$\text{Accounts Payable Period} = (\text{Accounts Payable} / \text{Cost of Goods Sold}) \times 360 \text{ Days}$$

Managing of cash conversion helps to generate positive earnings and make possible for firms to continue their survival whereas mishandling of cash causes a complete catastrophic breakdown of a firm's projects. Practically, if a business firm deals with cash in a positive manner, this, in essence, means that other working capital management variables will positively match with the exact pathway as cash, additionally, this enlightens the usefulness of proper cash handling. As a result, it is incontrovertible that proper handling of cash plays a critical role in realizing business desires; short-range or long-range desires and ought to be given its considerable attention while making all sort of decisions associated with a firm's movements otherwise it will eventually tackle it.

According to Yücel and Kurt (2002: 2), firms ought to give huge attention to the CCC and act of increasing the strength of competitive aspects that the firms encounter in domestic as well as overseas markets specifically under complex ecosystems which are usually very crucial for controlling liquidity, handling cash properly and its management, since firms can effortlessly stay surviving for a long time by solely cutting down or slowing down their long-range investments, however, if there is no exceptional curiosity to working capital management variables, then they may possibly encounter a pitfall of a firm's projects as whole. A proper cash handling and management are completely

unavoidable to specify what amount of cash required by which process to be able to uphold the needed levels of cash for a business.

A large number of firms in growing countries unable to be survived and then ruined, indeed not because of earning a smaller amount of income but instead of an improper and poor cash handling system, consequently, proper cash handling has a significant impact on profitability as well as durability of the firms.

According to Peavler (2016), surveys carried out for determining the defeated firms and revealed that 60 percent of the downfall originated from improper cash handling and management, rather from the profitability side. Consequently, proper cash handling and management are viewed as among the crucial activities that decide a firm's financial success or failure.

### **2.2.2. Receivables Management**

In today's high rivalry ecosystem, selling items on credit turned into an inescapable means for raising earnings and also attracting more customer's attention. Otherwise, no firm can effortlessly become competitively ultra-powerful in both worldwide and domestic ecosystem without selling items on credit. However, there should be effective policies and techniques which are indeed suitable for staying away from unpaid or bad debts caused by selling items on credit in order to control receivables properly. Additionally, firms should pay huge attention whenever procedures standardize what amount of credit will likely be awarded to which type of trustworthy customers? Will there definitely be an extension of credit terms in the firm for trustworthy customers? Just how many days that will probably be average for paying the invoices? Under various other conditions; improper handling of receivables possibly induces uncorrectable, uncontrollable and unmanageable receivables. For that reason, it influences the entire earnings of firms and cash needed for daily tasks.

According to Duru, Ekwe and Okpe (2014: 35), the essential elements of managing receivable properly are associated with the process of collecting receivables and setting a credit policy for firms and so they found out an assisting framework for collecting outstanding credit to cut down risks and take out deferred payments. As long as receivables are actually necessary for business, firms need to reduce the length of time of



collecting it whenever possible, increasing its length of time might possibly cause improper handling of receivables and then that will ideally double the amount of bad or doubtful debts, as a result, the main intent of proper receivables handling and management is to essentially lessen the credit terms to get money from customers very early and then constantly maintain bad debts at minimal level to keep away needless expenses for collecting receivables that can easily ruin the entire firm's productivity and earnings.

Gorondutse, Ali and Ali (2016: 3), pointed out that techniques to deal with receivable would definitely have an impact on the entire earnings of firms, thus the management group should surely judge the capabilities and trustworthiness of their particular customers to know they can easily pay off their debts before agreeing to sell items on credit and then collecting it later on. However, definitely putting extra pressure on customers for making payments early could positively be good enough for accomplishing short-range plans and then save plenty of cash at that moment but that could negatively ruin the long-standing relationship between customers and firm. In this highly competitive ecosystems, it is very easy for any customer to shift from one firm to another firm that basically covers their desires of finding ease payment plans. In reality; if a customer drops off, the sales volume will automatically be decreased and then if sales volume scale down, the entire earnings will probably be declined and lastly, the firm will be eliminated from the market. As a result, policies and strategies of receivables should certainly be a convenience for both customers and firms to be able to maintain sales volume at expected levels and reinforce overall productivity.

According to Yadav, Vani and Pradip (2009: 32), there is an extensively increasing assumption which usually declares the sole variable in working capital that can straightforwardly boost sales volume under the scheme of credit sales is accounts receivable; thus, system of handling and managing receivables particularly the credit control system is merely one variable which can verify that extensively increasing assumption, controlling credit is extremely critical for working capital as a whole, as a result, business management team should put emphasis on it intensely in order to level up entire sales capacity by applying credit sale properly and keeping away from bad debts to scrutinize that the raised sales capacity creates a sufficient amount of earnings and also hold down costs as lowest as possible. Additionally, the following techniques of handling

receivables will certainly upgrade sales capacity while scaling down bad debts:

- Before selling on credit, customers need to be screened and analyzed with regards to the request to ascertain whether they worth or not,
- Asking customers for the last five years of financial statements for examining their liquidity ratios and assessing their assets and also debts,
- Taking an appropriate decision soon after having evaluation results and then setting up their pre-specified credit limit based on results,
- There must be an evaluation again for upgrading the pre-specified limit of credit. This implies that no limit extension unless scrutinizing again, and
- Proper and complete documentation procedure is required for both firm and customer just for a future lawsuit.

Firms should fundamentally look at several angles for instance; the cost of funding for collecting receivables, bad debt possibility and term extension plans whenever formulating accounts receivable policies and strategies in order to keep it at finest levels. Subsequently, sales capacity will probably be high without incurring additional costs in connection with accounts receivable.

According to Brealey, Myers and Marcus (2003: 512), the degree levels of receivables are commonly influenced by conditions and terms of credit that need to compromise both customers and accounts receivable and also keep up sales capacity at projected levels, accordingly, firms should certainly cope with the customers by simply smoothing anything possible they desire to get rather than restricting and concentrating on accounts receivable excessively and seeing only risks associated with the costs of collection and bad debts, however if no compromise, firms may possibly come across low sales volume and income and then simply will get bankrupted because of getting rid of their customer's attention.

### **2.2.3. Inventory Management**

Irrespective of size and sector, management of inventory is undeniably vital for all firms in particular manufacturing firms. Inventory is much like a blood vessel since it maintains the continuance of business projects, thus if the daily business projects do not necessarily receive enough inventory regardless of their function and feature, the entire business may

collapse at all. Therefore, supervision of inventories begins with producing or ordering raw materials from suppliers, then converting them into work-in-process and then completely finished items which are prepared for sale. As a result, it is incontrovertible that proper inventory supervision and management is critical for productivity, liquidity, and also overall profitability of the firms.

According to Sagner (2011: 122-124), dwindling the level of stocks is among the greatest mechanisms for solid system of stock supervision and management and in addition is the key target for some firms that are formulated to launch the Just-In-Time (JIT) system which denotes to order raw materials and/or produce items when their actual demands raised. Therefore, both the JIT system and solid system for stock supervision and management can execute jointly these two features; dwindle the level of stocks and produce items when their actual demands raised up. The JIT system accepts the fact that producing items more than their demands are just like wasting and misusing the resources and also incurring inessential costs which are generally intended to avoid for some reasons. Accordingly, employing the JIT system practically requires a comprehensive system related to quality control which can definitely make sure that every single process must be in a timely mannered way.

According to Douissaa and Jabeur (2016: 550-551), the ABC approach is regarded as the greatest recurrently formulated system for inventory management that classifies the entire stocks into three essential classes termed class A, B, and C. This classification is normally determined by items and exactly how their entire performance in the involvement of usage and usefulness. First of all, class A founds the most crucial items that between 5% - 10% of the items but retains between 70% - 80% of the annual usage. The second class which is named B has modest items that consist of 50% - 70% of the items although it involves 15-25% of annual usage. The final class is C that has the least rating in the usage level. The key target of this approach is to constantly keep control of inventory system in a good way which figures out the inventories that can significantly be employed for each class and eventually will likely make it easier for firms to hold down inventory costs at their lowermost level.

Preve and Sarria-Allende (2010: 86) proclaimed that system of stock supervision and management engaged by firms relies on the structure of the business firms (for example;

manufacturing, merchandise and service firms), thus the engaged system of stock supervision and management will certainly possess reference to the structure of the business that the companies put up to generate returns and also operate properly. As an example, a manufacturing firm's inventory is completely not same as merchandise or service firms; in the same viewpoint, the methods engaged to deal with inventory level ought to be one of the greatest suitable methods that match for the manufacturing industry. Furthermore, they proposed that engaging an economic ordering quantity (EOQ) method is absolutely the ideal acceptable for supervising and managing inventory. This exceptional method concentrates on dwindling costs of investment that linked to the inventory levels.

Takon (2013: 68) also advised that the recurrently engaged technique for managing and supervising inventory capacity is an economic ordering quantity (EOQ) model to conquer encountering excessive or shortage inventory in a way that wholly unwanted expenses are essentially dropped to the lowermost level. Hence, this formula written down is for computing the quantity at that point:

$$EOQ = \frac{\sqrt{2 (F) (S)}}{(c) (p)}$$

Whereas:

EOQ: The economic ordering quantity,

F: Fixed expenses for engaging and receiving an order,

S: Annual sales in items,

C: Carrying expense pointed out as a percentage of the inventory value, and

P: Purchase prices that company spends per item.

According to Aro-Gordon and Gupte (2016: 3), undeniably, the EOQ is not a highly acceptable model for supervising and managing inventory system whilst criticizing its assumption because of not agreeing with the real-life circumstances. This model assumes that sales stay constant or unchanged in entire periods which is definitely not truthful since periodic or economical changes possibly take place anytime. Aside from that, it assumes that firms ought to basically decide in advance almost all the needed level of

stocks for the entire period which is absolutely not an easy task in actual life.

The frequently applied technique for managing and computing inventory is the inventory conversion period (ICP) which is basically the average period of time that firms keep their stocks before converting into cash. This kind of technique shows the critical time to buy raw materials, then processing them further to convert into completely finished items and finally, moving them to the market for selling it. The turnover duration is vastly vital since it has an effect on the duration of the sales and also overall productivity of the manufacturing process.

Thomas, Paul and Julius (2004: 231) announced that the ICP is truly one of the ratios that concentrate on the performance of the daily business assignments, this ratio is well-matched for manufacturing firms since these firms continue retaining several categories of physical stocks that will need varied supervision techniques. As a consequence, the inventory conversion ratio started to be the ideal one that can be employed to supervise the entire inventory processes. Together with the use of an inventory management system, firms will make it easy to analyze the ultimate levels of inventory in order to avoid excessive or insufficient levels of inventory.

Several firms involving in various sectors may possibly work with a similar or dissimilar technique for engaging their system of inventory supervision and management, nevertheless, the key aim is to essentially have a fruitful system to watch out inventory challenges. Abdulraheem, Yahaya, Isiaka and Aliu (2011: 53), checked out the inventory management of Nigerian small business firms and then they witnessed that the level of inventory has major influence on the business's overall profitability; as a result, they encouraged that high levels of profitability will principally rely upon the system of supervising and managing inventories which firms formulate. Hence, their study definitely declares the benefits and necessity of implementing a strong system for inventory supervision and management.

#### **2.2.4. Payables Management**

Generally, accounts payable are obligations that expected to generally be paid out within a financial year and in addition, they frequently occur as a result of credit purchase, for example; trade or accounts payable and short-lived loans.

Accounts payable come up as a result of acquiring goods and services from suppliers under purchase on credit which will probably be paid back at a specific date in the future; firms should keep up a blameless relationship with suppliers and find this connection as a great opportunity for short-range sources of fund to invest the day-to-day assignments devoid of interest fee. On the other hand, handling accounts payable in a careless manner could lead to ruin the relationship between firms and suppliers which might finally conclude a loss of trustworthiness and also cause reputation issues. Therefore, bumping into such incidents will indisputably have a result on the cash flow system and also the entire profitability.

Commonly, firms that engaging a prestigious relationship with their suppliers will delight in getting fat discount rates, convenient credit terms and other conditions including; oversimplification of documentation, an extension of the credit limit and duration and so on. Therefore, these facilities save money and time which can often escalate the performance of profitability. Besides that, these firms have a chance of receiving free of charge sources of finance as they invest it in their steady business movements. Subsequently, firms that establish, develop and retain a mutual-benefited relationship with suppliers can easily catch all rewards related to credit purchase such as; extending the payment duration and so on. These kind of suggestions are truly constant with the previous researchers namely; Öner (2016), Makori and Jagongo (2013), and Gul, Khan, Rehman, Khan, Khan and Khan (2013). Conversely, Gorondutse, Ali and Ali (2016), Cristea and Cristea (2016), and lastly, Khanqah, Khosroshahi and Ebrati (2012) didn't agree on the truth of this assertion of lengthening the turnover period of payable to enhance profitability.

Niresh (2012: 29) suggested that manufacturing firms can take care of their working capital in the most effective manner by specifically postponing trade payable in accordance with the approved credit terms and conditions that will completely lead an enhancement of profitability as he inspected the correlation between working capital management and financial performance of manufacturing firms. On the other hand, occasionally suppliers offer discount rates to motivate early bill payments, therefore, financial directors need to take advantage of discounts provided by suppliers as soon as announced.

### **2.3. Firm Profitability**

As outlined by Gnanasooriyar (2014: 358), firm profitability is delineated as the ability to make use of all of the available funds for making an adequate amount of earnings that will certainly make it easy for firms to function properly. Different kinds of profitability ratios display a firm's capability to gain enough and realistic amount of income which also testifies the financial wellness in line with the firm operations, therefore, the level of profitability is regularly fascinated by directors, lenders, and shareholders along with the general public to judge a firm's overall processes and performances.

Business firms are strictly obliged to maintain functioning uninterruptedly and survive long period for being profitable, simply because making a profit will make it easy for firms to fulfill their expenses and simply invest the business to further expansion and growth. According to Hofstrand (2009: 1), the greatest technique for judging the income and expenses is the profitability, therefore, he more intensely defined expenses as costs incurred in the result of the making revenues whilst income determined as revenue from daily tasks.

As proclaimed by Tulsian (2014: 19), a reliable technique for finding out the efficiency and performance of a firm's projects in comparison with the capital invested is known as profitability analysis, therefore, the level of profitability is the main essential concern for stockholders since it discloses the levels of income determined by invested capital in the business. However, the following well-known ratios are adopted by various firms to evaluate their overall level of profitability and performance which are; return on investment (ROI), return on equity (ROE), net profit margin (NPM), return on assets (ROA), and also gross profit margin (GPM).

The prior researchers applied various variables to evaluate the levels of correlation between working capital management and profitability by using dissimilar tools. Consequently, for computing the profitability, the researchers employed several variables which are grouped into the three primary parts as noted below.

#### **2.3.1. Profitability Based on Sales**

Under this section, gross profit margin (GPM), operating profit margin (OPM), and net profit margin (NPM) ratios are the three measurements of the profitability based on sales.

Analyzing elements of income with a firm's sales and then delivering a clue about aspects that decide a company's revenue to the potential stockholders and investors is referred as profit margin, as an example, if investors want to determine how perfectly production resources are organized and controlled, then they can simply use gross profit margin through computing this formula below;

$$\text{Gross Profit Margin} = (\text{Sale Revenue} - \text{Cost of Goods Sold}) / \text{Sale Revenues}$$

Then again, suppliers and shareholders can easily employ operating profit margin if they are definitely fascinated more in proving and calculating the cost of operations which might not be instantly connected with the production costs, seeing that it provides more concern on overhead costs and this unique formula is for measuring it;

$$\text{Operating Profit Margin} = (\text{Earnings Before Interest and Tax} / \text{Sale Revenues})$$

The gross profit margin (GPM) and operating profit margin (OPM) have one major dissimilarity which is the consideration of operating expenses but they are closely similar, thus, gross profit ratio doesn't take all operating expenses into account which incurred during the period when computing the profit margin while operating profit margin does.

The ratio which usually considers the operation costs and other financing expenses instantaneously which used to put in the company's projects namely; preferred stocks which are regarded as net profit margin while the gross profit margin and operating profit margin don't consider how firm's projects are funded. Consequently, the net profit margin is the most appropriate ratio for computing both operating and financing costs and the formula is this below;

$$\text{Net Profit Margin} = (\text{Net Income} / \text{Revenues})$$

To evaluate net income made from each dollar of the overall earnings and how management cuts down expenses to be able to enhance the profit, this ratio is the right one as long as its primary goal focuses on that angle.

### **2.3.2. Profitability Based on Sources**

Generally, the sales based profitability ratios are being used to determine the link between earnings and resources being used by looking at the source of fund, thus, the return on



equity (ROE) and return on capital employed (ROCE) implementation is regularly very crucial when overall earnings are contrasted with the capital invested in a business. An essential ratio that computes a firm's capability of gaining income by rendering common shares and how positively these common shareholder's fund has been exploited is known as the return on equity (ROE). With the use of this ratio, shareholders can define if executives of a firm have properly managed to attain the company's target and management's level of efficiency in generating profit, thus, the following formula written below is used to compute the ROE;

$$\text{ROE} = (\text{Net Profit} / \text{Owner's Equity})$$

When we supposed to calculate the ROE, it can certainly be used either the net profit before tax or net profit after tax. The profit after tax is very crucial when financial executives desire to measure how much dividends are indeed on hand for giving out to shareholders, but the profit before tax is even more useful and acceptable when the concentration is the computation of management's level of efficiency. Therefore, financial experts encouraged that the higher the ROE ratio, the better management considerably making use of capital wisely to enhance the profitability.

As declared by Wood and Sangster (2005: 625), the return on capital employed (ROCE) or the satisfactory return on invested capital is what a larger number of shareholders look for and, as a result, is one of the primary motives why investors initially spend money in a firm. To ensure that, this ratio determines the fruitful exploitation of the assets made available for the business, thus, this formula written below is used to calculate it;

$$\text{ROCE} = \text{Net Profit} / (\text{Capital Employed} + \text{Long-Term Borrowings})$$

The consideration of the long-lived loans is the major difference between the ROE ratio and the ROCE ratio. Therefore, when we computing the ROCE ratio, the capital employed is made up long-lived loans and also equity from investors at the same time while the ROE is merely delimited to equity only and equity is normally the share capital combined with all the reserves.

### **2.3.3. Profitability Based on Assets**

Under this category, the returns on assets (ROA) and return on investments (ROI) are the two essential ratios for judging profitability based on assets. Plenty of studies made use of the ROA while others still favored implementing the ROI but completely no differentiation between both ratios, therefore, both of them can be used for the same goal.

Calculating the proportion of net income to the total resources invested in a business is regarded as the return on assets (ROA). Hence, it evaluates the capability of a firm to make use of its resources wisely to generate earnings while contrasting the profit with the employed resources. The financial technique utilized by the majority of the financial professionals to estimate the rate of returns made through exploiting the full amount of resources in a firm is used to call the ROA. Under normal conditions, the investors primarily favor seeing higher ratio rather than lower and the following formula down below is commonly employed to figure out the ratio;

$$\text{Return on Assets} = (\text{Net Profit Before Tax} / \text{Total Assets})$$

In summary, Jose, Lancaster and Stevens (1996), Lyroudi, McCarty, Lazaridis and Chatzigagios (1999), Uyar (2009) and finally, Gorondutse, Ali and Ali (2016) desired to apply the ROA for their studies since they assumed that it's the ideal ratio used to compute the profitability efficiency but the supreme decision to pick a particular ratio depends on the researcher's reasons and aims.

### **2.4. The Impact of WCM Practice on Firm Profitability**

The main importance of working capital management (WCM) depends on numerous factors which are tremendously crucial for every firm to take control and manage its daily projects wisely; first of all, the funds invested in working capital are actually high compared to the overall resources utilized in the manufacturing sector.

As a result, it is inevitable to utilize these short-lived assets in a productive way for daily projects. Further, working capital management instantly has an effect on the liquidity, profitability and subsequently entire net earnings of the business. Nevertheless, the liquidity and profitability are really two facets of a coin since they function in contrasting directions in firms. If the liquidity of the business raise, then the profitability certainly

diminish and vice versa. Management of working capital, as a result, intends to keep up to balance contrast relation between the liquidity and profitability even though the firm runs daily functions properly.

The prior researchers applied several variables to evaluate the level of interconnection between working capital management and firm profitability by using dissimilar tools. Consequently, there are plenty of studies inspected the influence level of working capital management practice on firm profitability in a number of countries for different business sectors.

Thus, one of the ground-breaking studies on this topic was written by Uyar (2009) who took both Turkish merchandising and manufacturing firms registered on ISE to explore the interconnection between the CCC and profitability along with firm size for only 2007 period by making use of ANOVA and correlation analysis as a testing tool. The outcomes of the study showed that the manufacturing firms have prolonged CCC comparing to the merchandising firms and in addition, the outcomes proved also that there is a significant negative interconnection between profitability and the CCC variable besides between firm size and the CCC.

Şamiloğlu and Demirgüneş (2008) used up a group of Turkish companies registered on ISE to examine the interconnection between WCM variables and profitability through the use of a regression analysis tool for the period between 1998 and 2007. The study brought out that there is a negative interconnection between profitability and these WCM variables; ARP, ICP, and leverage ratio, while the interconnection between sales growth and profitability is positive.

Karadağlı (2013) assessed the influence of WCM on the profitability of 169 Turkish companies for the duration between 2001 and 2010 and the study stated an unfavorable connection between the CCC and firm performance namely; accounting and market parameters of firm performance. The study concluded that a reducing the ARP and APP cause a rise in firm performance namely; operating income and stock market returns while a cut down in inventory turnover period motives a boost in firm performance namely; stock market returns.

One more study carried out by Şen and Oruç (2009) checked out the association between

the effectiveness of the WCM and profitability of Turkish firms registered on ISE for the duration between 1993 and 2007 through the use of CCC as a variable for working capital and ROA as a variable for profitability. They witnessed that there is an unfavorable association between the WCM variables namely; ARP, ICP, CCC, NWC level along with current ratio and ROA variable.

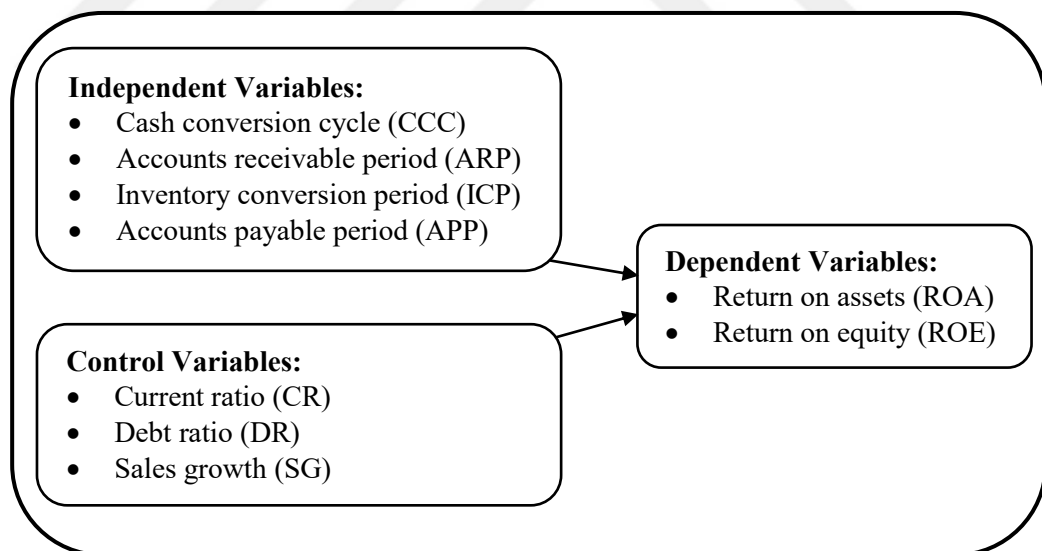
In a nutshell, we discussed the levels of interconnection between the WCM on firm profitability under this part, additionally, we explained the four independent variables of working capital management briefly. Furthermore, we discussed different profitability ratios which used to measure the overall performance of business enterprises. Lastly, we presented a summary of the prior studies connected to the level of influence of working capital management practice on firm profitability from a couple of research papers carried out in Turkey.

## **PART 3: THE IMPACT OF WORKING CAPITAL MANAGEMENT PRACTICE ON FIRM PROFITABILITY OF KPP FIRMS**

Essentially, this part is discussed the overall research methods and findings drawn from correlation and regression analysis. Thus, this part is grouped into the following sections which are; conceptual framework, literature review, research design, description of the variables, development of the hypotheses, data collection procedure, population, sampling technique, specification of the models, data analysis tools and finally, interpretation of the findings.

### **3.1. Conceptual Framework for the Study**

The overall theory of the study is definitely presented on the conceptual framework in order to carry out the existing and new knowledge, therefore, knowledge can easily be translated into a further comprehensive style for empirical application. In the study, the conceptual framework consisted of four independent variables, two dependent variables and three control variables.



**Figure 4:** Conceptual Framework of the Study

**Source:** Drawn by Researcher.

The above figure presented the conceptualization framework of the study which comprised of the dependent, independent and control variables. The four independent variables of this study pointed out the statistics that are certainly used to assess the

influence of working capital management. These four independent variables comprised of cash conversion cycle (CCC) that is definitely used to evaluate how speedily a firm can turn its resource inputs into cash, accounts receivable period (ARP) that is normally used to assess the period of time expected to convert receivables into cash, inventory conversion period (ICP) that is certainly used to check the period a firm needed to convert stocks into cash and pay its bills without incurring penalties, and lastly accounts payable period (APP) that is simply used to measure how long a firm will take to pay off debts to its creditors.

The two dependent variables of this study specified the statistics that are actually going to analyze and uncover how a firm's profitability is influenced. These two dependent variables consisted of return on assets (ROA) which is usually used to compute the percentage of profit that a firm generated with regards to its overall assets, and lastly return on equity (ROE) which is often used to scale the percentage of profit that a company earned with regards to its book value of investor's equity, also referred to as net assets or assets minus debts.

The three control variables of this study indicated the statistics that are used for calculating the impact of a firm's liquidity, leverage and sales growth. These three control variables included current ratio (CR) which is usually used to find out a firm's capability to pay back its short-lived financial obligations, debt ratio (DR) which is simply used to assess a firm's capital structure, financial obligations and capability to match these financial obligations on due date, and eventually sales growth (SG) which is used to compute the amount in which the average sales volume of a firm has grown frequently from a year to another year.

### **3.2. Literature Review**

Generally speaking, there are plenty of studies inspected the influence levels of working capital management on profitability in a number of countries for different business sectors. Therefore, to test the influence of working capital management variables on firm profitability, first of all, the study is analyzed a number of studies from both the worldwide and Turkey and then presented these analyzed studies in the following paragraphs below in the form of a time sequential order and then summarized in Table 1

below.

Hence, one of the pioneering studies on this topic is written by Jose, Lancaster and Stevens (1996) whom their final target was to appraise the reciprocal connection between aggressive working capital management and profitability for the period between 1974 and 1993 by applying cash conversion cycle as a working capital management variable and both return on assets and return on equity as a profitability variables. Consequently, they witnessed that cash conversion cycle had an unfavorable influence on profitability in a cross-sectional test.

Beaumont and Begemann (1997) looked into the relationship between return on investment (ROI) variable and multiple variables of working capital management for the South African commercial firms for the period between 1984 and 1993. The used working capital management variables were a net-trade cycle and cash conversion cycle and return on investment as a profitability variable. Thus, the outcomes of the research proved a trade-off association between liquidity and profitability, in addition, the same association between the WCM variables and profitability.

Shin and Soenen (1998) had applied correlation and regression techniques to uncover the influence of firm's net-trade cycle (NTC) on profitability for a sample of 58,985 American companies during the period between 1975 and 1994. The study discovered that shorter NTC brings to an excessive present value of net cash flow and excessive shareholders value. Hence, if the companies engaging shorter NTC, this means that the companies can deal with their working capital properly since the company involves much less financing from outside.

Lyrودي, McCarty, Lazaridis and Chatzigagios (1999) devoted to testing firms which were registered in London Stock Exchange with the duration of four years. Finally, they concluded that liquidity ratios (CR & QR) and cash conversion cycle have an unfavorable interconnection with profitability namely; return on equity (ROE), net profit margin (NPM), and return on assets (ROA).

Deloof (2003) had inspected the interconnection between working capital management and firm profitability in the period between 1992 and 1996. Finally, His outcomes unveiled a significant negative interconnection between gross operating profit and WCM

variables namely; inventories, accounts payable and accounts receivable turnover. As a result, the study suggested that investor's value can be boosted by keeping a minimal number of days of accounts payable, accounts receivable and inventories.

Eljelly (2004) employed regression and correlation analyses as a statistical testing tool by taking a sample of 929 joint stock companies in Saudi Arabia. As a result, the study pointed out that the interconnection between profitability and liquidity variables were a significant unfavorable.

Lazaridis and Tryfonidis (2006) took a sample of 131 firms registered on Athens Stock Exchange to inspect the interconnection between working capital management and corporate profitability for the duration between 2001 and 2004. As a result, they found out that the cash conversion cycle has a significant unfavorable relationship with profitability namely; gross operating profit. The conclusion uncovered that executives can easily make earnings by managing cash conversion cycle properly for their firms and continuing to keep all other variables of WC at the ideal level.

Raheman and Nasr (2007) occupied more than a sample of 94 Pakistani firms registered in Karachi Stock Exchange to study the interconnection between profitability and working capital management (WCM) variables for the period between 1999 and 2004. As a result, the outcomes of the study mentioned that a negative connection is out there between the WCM variables namely; CCC, ARP, ICP, APP and CR and profitability variable namely; net operating profit.

Şamiloğlu and Demirgüneş (2008) used up a group of Turkish companies registered on ISE to examine the interconnection between WCM variables and profitability through the use of a regression analysis tool for the period between 1998 and 2007. The study brought out that there is a negative interconnection between profitability and these WCM variables; ARP, ICP, and leverage ratio, while the interconnection between sales growth and profitability is positive.

Uyar (2009) took both Turkish merchandising and manufacturing firms registered on ISE to explore the interconnection between the CCC and profitability along with firm size for only 2007 period by making use of ANOVA and correlation analysis as a testing tool. The outcomes of the study showed that the manufacturing firms have prolonged CCC



comparing to the merchandising firms and in addition, the outcomes proved also that there is a significant negative interconnection between profitability and the CCC variable besides between firm size and the CCC.

One more study is carried out by Şen and Oruç (2009) checked out the association between the effectiveness of the WCM and profitability of Turkish firms registered on ISE for the duration between 1993 and 2007 through the use of CCC as a variable for working capital and ROA as a variable for profitability. They witnessed that there is an unfavorable association between the WCM variables namely; ARP, ICP, CCC, NWC level along with current ratio and ROA variable.

Dong and Su (2010) discussed the correlation between the WCM and profitability by working with a group of 130 firms registered on Vietnam Stock Market for the period between 2006 and 2008. They uncovered that there is an unfavorable relationship between the WCM variables namely; CCC, ICP and ARP and operating profit, while the APP variable has a positive correlation with profitability.

Karaduman, Akbaş, Çalışkan and Dürer (2011) inspected the correlation between the WCM and profitability of Turkish emerging firms for the duration between 2005 and 2009. The CCC was used as a variable for WCM and ROA variable used as a variable for profitability. They uncovered that there's a positive interconnection between the dwindling CCC and ROA variable.

Karadağlı (2012) assessed the influence of WCM on profitability by applying a group of Turkish SMEs firms for a period of 9 years from 2002 to 2010. Finally, the study identified that the interconnection between the net-trade cycle along with CCC and return on sales along with the stock market return for small firms is a positive, but the CCC and net-trade cycle showed a significant unfavorable connection with return on sales as well as stock market return for bigger firms.

Karadağlı (2013) assessed the influence of WCM on the profitability of 169 Turkish companies for the duration between 2001 and 2010 and the study stated an unfavorable connection between the CCC and firm performance namely; accounting and market parameters of firm performance. The study concluded that a reducing the ARP and APP cause a rise in firm performance namely; operating income and stock market returns while

a cut down in inventory turnover period motives a boost in firm performance namely; stock market returns.

Mengesha (2014) learned the association between the WCM and profitability performance of Ethiopian metal manufacturing firms for the period between 2008 and 2012. The ROA and ROI were Profitability variables while working capital variables were CCC, ARP, ICP, and APP. Alternatively, control variables used were a CR, firm size, SG, and DR. The research discovered a significant unfavorable connection between the CCC and profitability. Nevertheless, the CCC, ARP, ICP, and APP had shown a nil significant relationship with the ROI, while the ARP, ICP, and APP, and CCC had shown an unfavorable interconnection with the ROA.

Philip (2015) took a sample of Kenyan sugar manufacturing companies to examine the interconnection between the WCM and profitability for the period between 2008 and 2013. The WCM variables used were ARP; APP, ICP, and CCC whereas profitability variables were ROA only. Alternatively, DR, firm size, and the CR were estimated as control variables. Finally, the study identified that the APP and ARP had displayed an unfavorable association with profitability, whereas CCC and ICP had shown a positive correlation with profitability.

Öner (2016) took a sample of Turkish manufacturing companies to examine the interconnection between the WCM and profitability for the period between 2005 and 2014. The researcher employed the CCC, ARP, ICP, and APP as independent variables of WCM while operating profit margin was regarded as the dependent variable. The study found out an unfavorable connection between the CCC, ARP, and ICP and the profitability, whereas APP had a positive connection with profitability variable. The study recommended that companies ought to probably diminish their CCC, ARP, and ICP for enhancing profitability.

Gorondutse, Ali and Ali (2016) looked into the influence of trade receivables and inventory management of Malaysian small and medium manufacturing firms for the duration between 2006 and 2012. The study used CCC, ARP, ICP, and APP as independent variables while dependent variables were ROA, ROE and net operating profit. The study outcome revealed an unfavorable connection between ARP along with

ICP and profitability. Finally, the researchers recommended that the WC managers ought to reduce the CCC, ARP, APP, and ICP in order to ultimately enhance the levels of profitability.

**Table 1**  
**Summary of WCM and Profitability Related Studies**

<b>Researchers &amp; Years</b>	<b>Countries</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Results</b>
Jose, Lancaster and Stevens, (1996)	USA	CCC	Return on assets (ROA) and Return on equity (ROE)	Significant negative association between CCC and profitability variables.
Begemann and Beaumont, (1997)	South Africa	Net-trade cycle (NTC) and CCC	Return on investment (ROI)	Trade-off connection between WCM variables and ROI.
Shin and Soenen, (1998)	USA	NTC	Operating income	Strong negative association between NTC and profitability variable.
Lyrودي, McCarty, Lazaridis and Chatzigagios, (1999)	UK	CCC, Current ratio (CR) and Quick ratio (QR)	Net profit margin, ROA and ROE	CCC, CR along with QR had a negative association with profitability variables.
Deloof, (2003)	Belgium	ARP, ICP and APP	Gross operating profit (GOP)	Significant negative correlation between GOP with the WC variables.
Eljelly, (2004)	KSA	CCC and CR	Net profit income	CCC and CR had a significant negative association with net profit income.
Lazaridis and Tryfonidis, (2006)	Greece	CCC, ARP, ICP, and APP	GOP	Significant negative connection between gross operating profit and WCM variables.
Raheman and Nasr, (2007)	Pakistan	CCC, ARP, ICP, APP, and CR	Net operating profit	Strong negative correlation between net operating profit and WCM variables.
Şamiloğlu and Demirgüneş, (2008)	Turkey	ARP, ICP and Leverage ratio (LR)	ROA	Negative association between ARP, ICP and LR and profitability while positive association between sales growth and ROA.

Uyar, (2009)	Turkey	CCC and Firm size	ROA and ROE	CCC had a negative correlation with profitability variables, while CCC had also a negative correlation with firm size.
Şen and Oruç, (2009)	Turkey	CCC, ARP, ICP, CR, and Net-working capital (NWC)	ROA	ROA had a negative association with CCC, ARP, ICP, CR, and NWC.
Dong and Su, (2010)	Vietnam	CCC, ARP, ICP, and APP	Gross operating profit	Positive association between profitability and APP, while strong negative association between profitability and CCC, ARP, and ICP.
Karaduman, Akbaş, Çalışkan and Durer, (2011)	Turkey	CCC	ROA	CCC had a positive relationship with ROA.
Karadağlı, (2012)	Turkey	NTC and CCC	Return on sales (ROS)	ROS and stock market return had a positive association with both NTC and CCC for small firms but negative for bigger firms.
Karadağlı, (2013)	Turkey	CCC	Operating income and Stock market return	Negative correlation with operating income and stock market return.
Mengesha, (2014)	Ethiopia	CCC, ARP, ICP, and APP	ROA and ROI	Negative link between CCC and profitability. Thus, CCC, ARP, ICP, and APP had no significant with ROI, but ARP, ICP, APP, and CCC had a negative association with ROA.
Philip, (2015)	Kenya	CCC, ARP, ICP, and APP	ROA	ROA had a negative connection with ARP and APP, whereas ROA had a positive connection with both CCC and ICP.
Öner, (2016)	Turkey	CCC, ARP, ICP, and APP	Operating profit margin	Profitability had a significant negative link with CCC, ARP, and

				ICP, while it had a significant positive connection with APP.
Gorondutse, Ali and Ali, (2016)	Malaysia	CCC, ARP, ICP, and APP	ROA, ROE and Net operating profit (NOP)	ARP and ICP had a negative correlation with ROA, ROE, and NOP, while APP had a positive correlation with ROA and ROE.

**Source:** Drawn by Researcher.

### 3.3. Research Design

Just as the researcher mentioned in the problem statement, there are indeed several studies from different countries around the world including Turkey which definitely are studied about this topic but the influence level of working capital management on firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms is indicated to be neglected. Therefore, the core target of the study is certainly to verify the influence of working capital management elements on the firm profitability variables namely; ROA and ROE by merely working with secondary data obtained from the sampled manufacturing firms listed on Istanbul Stock Exchange, in particular the BIST (XKMYA) chemical, petrol and plastic index for the period of five years.

It is indispensable to acquire a very clear roadmap and guidelines for any kind of study that is indeed estimated to be accomplished with an organized scientific outcomes; subsequently, research design is a system to commonly be adopted to reach the study outcomes (Kinnear and Taylor, 1996; Churchill and Iacobucci, 2005). Consequently, the study is used a quantitative approach with an explanatory research design which is often known as “hypothesis-testing” to generally analyze the gathered data and check out the correlation between working capital management components and profitability variables namely; ROA and ROE. According to Kothari (2004: 39), hypothesis-testing research endeavors to identify a causal relationship between dependent and independent variables of the study.

### **3.4. Description of the Variables**

The key target of this study is obviously to check out the influence of working capital management practice on firm profitability of sampled manufacturing firms listed on Istanbul Stock Exchange for a period of five years from 2012 to 2016. So as to attain that target, the study is clearly classified the essential variables into three which are; dependent, independent, and control variables.

There are two dependent variables for this study to identify the statistics that basically are used to examine and find out how is the efficiency level of the profitability of sampled manufacturing firms. Accordingly, the dependent variables comprised of return on assets (ROA) which is generally used to calculate the percentage of profit that a firm generated with regards to its overall assets, and return on equity (ROE) which is often used to find out the percentage of profit that a firm generated with regards to its book value of investor's equity, sometimes labeled as net assets or assets minus debts.

There are four independent variables for this study to point out the statistics that are indeed employed to determine the levels of efficiency of the working capital management components. Therefore, these independent variables comprised of accounts receivable period (ARP) that is normally used to evaluate the period of time anticipated to convert receivables into cash, inventory conversion period (ICP) that is completely used to verify the period a firm wanted to convert its stocks into cash and pay bills without incurring penalty charges, accounts payable period (APP) that is basically used to assess how long a firm will take to pay off its debts to the creditors, and finally, cash conversion cycle (CCC) that is clearly used to analyze how quickly a firm can switch its resource inputs into cash.

Alternatively, there are three control variables for this study to reveal the statistics that are actually applied to dispose the influence of a firm's liquidity, leverage and sales growth on profitability. Thus, these control variables consisted of current ratio (CR) which is commonly used to identify a firm's capability to pay off its short-lived debts, debt ratio (DR) which is simply used to analyze a firm's capital structure, financial obligations and capability to fulfill these financial obligations on due date and finally, sales growth (SG) which is basically used to calculate the percentage in which the sales

volume of a firm has enhanced from a year to another year. The following table below shows the formulas, types and abbreviations of dependent, independent and control variables employed in the analysis phase.

**Table 2**  
**Types and Formulas of the Variables**

Type	Variables	Abbr.	Formula
Dependent Variables	Return on Assets	ROA	(Net Income / Total Assets)
	Return on Equity	ROE	(Net Income / Shareholders' Equity)
Independent Variables	Accounts Receivable Period	ARP	$\frac{\text{Accounts Receivable}}{\text{Net Sales}} \times 360$
	Inventory Conversion Period	ICP	$\frac{\text{Total Inventory}}{\text{Cost of Goods Sold}} \times 360$
	Accounts Payable Period	APP	$\frac{\text{Accounts Payable}}{\text{Cost of Goods Sold}} \times 360$
	Cash Conversion Cycle	CCC	ARP + ICP – APP
Control Variables	Current Ratio	CR	(Total Current Assets / Total Current Liabilities)
	Debt Ratio	DR	(Total Liabilities / Total Assets)
	Sales Growth	SG	(Current Year Sales – Prior Year Sales / Prior Year Sales)

**Source:** Drawn by Researcher.

### 3.5. Development of the Hypotheses

Based on an in-depth review of literature attached to the influence of working capital variables on firm profitability, the researcher generally is witnessed that there is definitely huge contradictory results associated with the prior studies. For that reason, the researcher is formulated the following hypotheses for the study to find out intensely the overall levels of correlation between working capital management variables and firm profitability variables of sampled manufacturing firms.

Thus; the first hypothesis of the study is as the following:

H<sub>0</sub>: There is an insignificant connection between accounts receivable period (ARP) and

firm profitability (ROA and ROE) of the Turkish chemical, petrol, and plastic manufacturing firms in ISE.

H<sub>1</sub>: There is a significant connection between accounts receivable period (ARP) and firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms in ISE.

The second hypothesis of the study is as the following:

H<sub>0</sub>: There is an insignificant correlation between inventory conversion period (ICP) and firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms in ISE.

H<sub>1</sub>: There is a significant correlation between inventory conversion period (ICP) and firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms in ISE.

The third hypothesis of the study is as the following:

H<sub>0</sub>: There is an insignificant relationship between accounts payable period (APP) and firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms in ISE.

H<sub>1</sub>: There is a significant relationship between accounts payable period (APP) and firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms in ISE.

The fourth hypothesis of the study is as the following:

H<sub>0</sub>: There is an insignificant association between cash conversion cycle (CCC) and firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms in ISE.

H<sub>1</sub>: There is a significant association between cash conversion cycle (CCC) and firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms in ISE.

### **3.6. Data Collection Procedure**

The researcher chosen to employ secondary data as a data collection tool in order to gather the required data which was an externally audited financial reports relevant to working capital management and profitability in the form of the statement of financial position and also profit & loss statement over a period of five years from sampled manufacturing firms. Therefore, these secondary data were gathered from the public disclosure platform (Kamuyu aydınlatma platformu) website, and/or website of each firm. Finally, the period of five years was determined mainly for the reason that the entire firms in the country



including the manufacturing firms were obligated to organize and publish an externally audited financial reports for every calendar year and then doubtlessly they continue to keep it properly and securely for benchmarking or a variety of other reasons.

### **3.7. Population and Sampling Technique**

The population of the study is consisted of 20 Turkish chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange for a period of five years from 2012 to 2016. The staple reasons for focusing on these manufacturing firms listed on Istanbul Stock Exchange are the availability, easy accessibility and reliability of the financial reports since it is unconditionally obligatory to each and every firm listed on Istanbul Stock Exchange to publish a comprehensive and meaningful externally audited financial reports while enlightening almost all their financial status to the general public. Thus, the website of public disclosure platform and Istanbul stock exchange are undeniably found to be the convenient and trustworthy for getting the needed data by spending a limited fund and time. Besides, choosing only manufacturing firms particularly chemical, petrol, and plastic sector also is helped the researcher to prevent any kind of bias and complexity and finally, uncover the beneficial end result of the study.

The non-probabilistic sampling specifically purposive sampling method known as "homogeneous sampling" is employed due to the following reasons; First of all, firms that are already engaging in the manufacturing industry on ISE is only chosen in order to prevent any kind of error or bias in this study. In undertaking this, the sample deemed only firms that are definitely involved in the BIST (XKMYA) chemical, petrol, and plastic manufacturing firms. Secondly, firms with complete five years of an audited financial reports are regarded for this study in order to stay away from any sort of incomplete or unrelated data. The other reason for choosing the duration is due to the most recent trustworthy data for this inspection is available in the period from 2012 to 2016. For the study, simply firms with the CR, DR, and SG which are control variables, working capital components namely; ARP, ICP, APP, and CCC and likewise profitability ratios such as; ROA and ROE are taken into account for the next phase which was data analysis, results, and interpretation. Consequently, continuity and homogeneity in the existing data are a prerequisite for examining the correlation between the WC proxy variables namely; ARP, ICP, APP, and CCC and firm profitability of the Turkish

chemical, petrol, and plastic manufacturing firms, thus all those firms with uncomplete or unstandardized data are omitted from the sample selection. Immediately after testing the firms based on the selection conditions, the accurately 20 chosen firms with their five years are presented in the Appendix 1.

In a nutshell, the total of the firms is 27 found in public disclosure platform but 7 firms are reasonably omitted from the study since they did not match up with the outlined two selection conditions which are the duration and availableness of the needed data or variables as presented in the table below.

**Table 3**  
**Required Variables and Number of Years**

No.	Required Variables	Number of Years				
		2012	2013	2014	2015	2016
1	ROA	√	√	√	√	√
2	ROE	√	√	√	√	√
3	ARP	√	√	√	√	√
4	ICP	√	√	√	√	√
5	APP	√	√	√	√	√
6	CCC	√	√	√	√	√
7	CR	√	√	√	√	√
8	DR	√	√	√	√	√
9	SG	√	√	√	√	√

**Source:** Drawn by Researcher.

### 3.8. Specification of Models

The study estimated this model which is drawn in the form of an equation in order to uncover the interconnection between dependent variables and independent variables which are composed of four working capital management variables and three control variables as following:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon \dots\dots\dots \text{(Equation)}$$

Whereas:

Y: The dependent variables,  $X_1$  to  $X_7$ : The independent variables,  $\beta_0$ : The intercept of the equation,  $\beta_1 - \beta_7$ : The coefficients of independent variables, and  $\varepsilon$ : The error term.

Accordingly, the study is used the following specified separate models in accordance with the formulated hypotheses to check out the deeper interconnection between working capital management components and profitability variables.

Model 1: This model is in fact used to test the first hypothesis of the study which identifies if there is an insignificant and/or significant connection between the accounts receivable period (ARP) and the firm profitability (ROA and ROE) for the sampled manufacturing firms in ISE;

$$A) ROA = \beta_0 + \beta_1 (ARP) + \beta_2 (CR) + \beta_3 (DR) + \beta_4 (SG) + \varepsilon$$

$$B) ROE = \beta_0 + \beta_1 (ARP) + \beta_2 (CR) + \beta_3 (DR) + \beta_4 (SG) + \varepsilon$$

Model 2: This model is indeed used to check out the second hypothesis of the study which confirms if there is an insignificant and/or significant correlation between the inventory conversion period (ICP) and the firm profitability for the sampled manufacturing firms in ISE;

$$A) ROA = \beta_0 + \beta_1 (ICP) + \beta_2 (CR) + \beta_3 (DR) + \beta_4 (SG) + \varepsilon$$

$$B) ROE = \beta_0 + \beta_1 (ICP) + \beta_2 (CR) + \beta_3 (DR) + \beta_4 (SG) + \varepsilon$$

Model 3: This model is basically employed to verify the third hypothesis of the study which ascertains if there is an insignificant and/or significant relationship between the accounts payable period (APP) and the firm profitability for the sampled manufacturing firms in ISE;

$$A) ROA = \beta_0 + \beta_1 (APP) + \beta_2 (CR) + \beta_3 (DR) + \beta_4 (SG) + \varepsilon$$

$$B) ROE = \beta_0 + \beta_1 (APP) + \beta_2 (CR) + \beta_3 (DR) + \beta_4 (SG) + \varepsilon$$

Model 4: This model is essentially used to evaluate the fourth hypothesis of the study which discovers if there is an insignificant and/or significant association between the cash conversion cycle (CCC) and the firm profitability for the sampled manufacturing firms in ISE;

$$A) ROA = \beta_0 + \beta_1 (CCC) + \beta_2 (CR) + \beta_3 (DR) + \beta_4 (SG) + \varepsilon$$

$$B) ROE = \beta_0 + \beta_1 (CCC) + \beta_2 (CR) + \beta_3 (DR) + \beta_4 (SG) + \varepsilon$$

Whereas:

ROA: Return on Assets, ROE: Return on Equity,  $\beta_0$ : The intercept of the equation,  $\beta_1 - \beta_7$ : The coefficients of independent variables, ARP: Accounts Receivable Period, ICP: Inventory Conversion Period, APP: Accounts Payable Period, CCC: Cash Conversion Cycle, CR: Current Ratio, DR: Debt Ratio, SG: Sales Growth, and  $\varepsilon$ : The error term.

### **3.9. Test of the Significance**

For all intents and purposes, the researcher has hired the Pearson correlation and multiple linear regression analyses to measure the strength and direction of the interconnection between the dependent variables and independent variables for the study. Furthermore, the study is strictly applied the 1% and 5% test of significance level as it is the most repeatedly used in the studies.

### **3.10. Data Analysis Tools**

The entire process which starts off suddenly after data collection and ends at the phase of data analysis and interpretation is generally known as data analysis (Cooper and Schindler, 2003). Hence, the outcomes have utterly obtained by practicing a statistical software called Statistical Package for Social Science (SPSS) which is used for the analysis of dependent and independent variables. A quantitative research approach is applied to find out the results of the study; accordingly, descriptive statistics, correlation and regression analyses are employed for the study to check out the interconnection between dependent and independent variables.

Descriptive statistics analysis is the first step in the analysis phase of the study and indeed used to explain relevant aspects of phenomena about the study variables and then present a piece of complete information relating to each relevant variable such as; mean, standard deviation, maximum and minimum value.

Correlation analysis is the second step in the analysis phase of the study and used to find out the direction of the linear relationship between variables and also check the strength of the connection between research variables namely; dependent and independent

(Tabachnick and Fidell, 2007: 56-57). With this study, the Pearson correlation coefficient is employed for checking out the levels of correlation between dependent and independent variables. Concerning the direction of the relationship, the positive correlation reveals that when one variable raises the other one also raises while the negative correlation displays inverse relationship (Pallant, 2007: 101).

Regression analysis is used as the third step in the analysis phase to determine the causal relationships between profitability variable and other occupied variables of the working capital management. A pooled regression is applied to carry out the study seeing that the gathered data has both time series and cross-sectional dimensions. Consequently, the ordinary least squares methods are employed for analysis in order to identify and clear up the relationship between one dependent variable and two or more independent variables since all firms in the sample are from the Turkish manufacturing firms in ISE, particularly chemical, petrol and plastic sector.

### **3.11. Descriptive Statistics**

The descriptive statistics tool is indeed utilized to come up with a precise comprehension from the trends of working capital management and profitability of the chemical, petrol, and plastic manufacturing firms on Istanbul Exchange Stock. It absolutely is the first step in the analysis stage of the study that used to explain important aspects of the phenomena in relation to the value of the variables and present complete information regarding the relevant value of the variables, for example; average, standard deviation, maximum and minimum value. The study has employed nine variables which are comprised of two dependent variables, four independent variables and three control variables for attaining the purpose of the analysis phase. Therefore, working capital elements that hired as independent variables are basically accounts receivable period (ARP), inventory conversion period (ICP), accounts payable period (APP) and cash conversion cycle (CCC). The profitability measures that decided to definitely use as dependent variables are both the return on assets (ROA) and return on equity (ROE) and in addition to that, current ratio (CR), debt ratio (DR), and sales growth (SG) are designed to use as control variables. Consequently, the table below shown descriptive statistics of the 20 chemical, petrol, and plastic manufacturing firms for the period of five years from 2012 to 2016.

**Table 4**  
**Descriptive Statistics Outcome**

<b>Variables</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
ROA	100	-7.68	34.72	7.2627	7.11362
ROE	100	-16.08	62.21	13.9567	12.89208
ARP	100	1.54	220.99	81.5987	50.55073
ICP	100	6.09	249.26	83.0183	56.92737
APP	100	17.05	200.27	75.0076	39.07216
CCC	100	-29.59	318.79	89.6092	85.75872
CR	100	38.82	1164.71	193.9672	160.20305
DR	100	8.73	88.73	47.7143	17.37664
SG	100	-12.34	85.60	10.8787	17.02714

The above table is pointed out that the average value of the return on assets (ROA) is 7.26% of overall assets of the manufacturing firms with a standard deviation of 7.11%. Using this, it can easily be interpreted that the value of the ROA can deviate from the mean to both sides by 7.11%. The minimum value of ROA is -7.68% while its maximum value is 34.72%. Traditionally speaking, a ROA with one percent or higher has been regarded as a positive profit however, this ratio will indeed fluctuate along with the existing economic developments.

The return on equity (ROE) is another profitability variable for computing the ratio of profit returned as a shareholder's equity which has an average value of 13.96% with a standard deviation of 12.89%. This signifies that the value of the ROE can deviate from the mean to both sides by 12.89%. The minimum and maximum values of the ROE are -16.08% and 62.21% respectively. Seeing that the mean value is a little bit higher than the standard deviation, this reveals that the chemical, petrol, and plastic firms are quite effective in maintaining to generate a sufficient ROE. In contrast to the ROA, the ROE is obviously higher in the chemical, petrol, and plastic manufacturing firms.

The accounts receivable period (ARP) is among the proxy variables of working capital management for the study which has an average value of 81.60 days to collect debts owed to a firm by its customers through credit sales with a standard deviation of 50.55 days. This shows that it takes an average of 2 months and 22 days approximately for the

chemical, petrol, and plastic manufacturing firms to collect their cash from sales on credit and this can vary by 50.55 days to both sides of the mean value. The minimum time considered by the firms to collect their cash from the receivables is 1.54 days, while the maximum time considered is 220.99 days.

The inventory conversion period (ICP) is another proxy variable of working capital management used for the chemical, petrol, and plastic manufacturing firms which expects an average of 83.02 days to convert their stocks into cash and pay their bills without any fines. As proven in the above table, the standard deviation of inventory turnover period is 56.92 days. The minimum time considered by the firms to convert their finished goods into sold goods is 6.09 days, while the maximum time considered is 249.26 days.

As the above table shown, the chemical, petrol, and plastic manufacturing firms take an average of 75.01 days to pay off their short-lived payables which were incurred through purchasing goods or services on credit with a standard deviation of 39.07 days. This suggests that that the accounts payable period (APP) which is among the proxy variables of the sampled manufacturing firms, particularly chemical, petrol, and plastic firms can deviate from the mean to both sides by 39.07 days. The minimum time considered by the firms to pay off their payables is 17.05 days, while the maximum time considered is 200.27 days.

In the chemical, petrol, and plastic manufacturing firms, the cash conversion cycle (CCC) is among the critical elements of working capital management which has an average of 89.61 days to convert the short-lived assets and other resource inputs into cash with a standard deviation of 85.76 days. The minimum value of the CCC is -29.59 days and the maximum value is 318.79 days. The value of standard deviation is not much greater than the mean, this implies that the chemical, petrol, and plastic manufacturing firms' cash conversion cycle doesn't deviate much more, consequently, these firms are actually quite strong when it comes to controlling the cash conversion cycle.

To check on the liquidity of the chemical, petrol, and plastic firms, the common measure of the liquidity which is the current ratio (CR) is used for the study in the form of control variable. The CR's mean value of the sampled manufacturing firms is 193.97 % which represents that the sampled firms' short-lived assets go beyond their short-lived debts by

1.94 with a standard deviation of 160.20% which also denotes the sampled firms can deviate from the mean to both sides by 1.60. The minimum and maximum values of the CR are 38.82% and 1164.71% respectively which can be converted into 0.39 and 11.65 respectively.

In order to learn the debt financing and its correlation with the profitability namely; the return of assets and return on equity of the sampled manufacturing firms in ISE, the debt ratio (DR) which is dividing total debts by total assets is used as being a control variable for the study. The DR's mean of the sampled manufacturing firms is 0.48 which equals 47.71 % of their financing is debt. As the result shown, the standard deviation of debt ratio is 17.38% which can be translated that the sampled firms can deviate from the mean to both sides by 0.17. The minimum and maximum values of the DR are 8.73% and 88.73% respectively which can be converted into 0.09 and 0.89 respectively.

To finally examine how sales raised or diminished from year to year, sales growth ratio (SG) is used to be a control variable which has an average value of 10.88% with standard deviation of 17.03%. This can be translated that the value of SG can deviate from the mean to both sides by 17.03%. The minimum value of SG is -12.34% where its maximum value is 85.60%. From the SG of the sampled manufacturing firms, it can also be understood that the chemical, petrol, and plastic firms are increased their sales by an average of 10.88% which is definitely a satisfactory growth from period to another and this growth probably can be based on the increase of customer satisfaction or customer loyalty.

### **3.12. Correlation Analysis**

The correlation analysis is basically the second step in the analysis stage of the study designed for researching the levels of correlation between dependent and independent variables on which the analysis is made. The Pearson correlation coefficient is hired for analyzing the gathered data to check out the correlation between working capital variables namely; accounts receivable period (ARP), inventory conversion period (ICP), accounts payable period (APP) and cash conversion cycle (CCC) and firm profitability variables which are; the ROA and ROE.



As the result presented in table below, the Pearson correlation coefficient is explored that the ROA has a positive correlation with ARP, CCC, CR, and SG while it has a negative correlation with ICP, APP, and DR. In addition to, the ROE has a positive correlation with ARP, APP, CR, DR and SG while it has a negative correlation with ICP and CCC.

The positive correlation between ARP and ROA asserts that there is a correlation coefficient of 0.072 with P-value of 0.479 and this result signifies that these two variables which are the ARP and ROA have an insignificant positive correlation. Additionally, this result shows that prolonged accounts receivable period has an extremely low probability to enhance the ROA of the sampled manufacturing firms.

As the result shown in the table below, there is also a positive correlation between the CCC and ROA with a correlation coefficient of 0.031 and P-value of 0.757 and this translates that the CCC and ROA have an insignificant positive correlation. Therefore, it signifies that the sampled manufacturing firms have a very low possibility to elevate their ROA when cash conversion cycle is lengthened.

The negative connection between the ICP and ROA notes that there is a correlation coefficient of -0.084 with P-value of 0.405 and this seems to indicate that the ICP has an insignificant negative correlation with the ROA. In addition, this conveys that preserving low-level of stocks or cutting down the period to convert the stocks into cash would have a small chance to boost the ROA of the sampled manufacturing firms.

Right down, the ultimate result of the Pearson correlation coefficient proves that the APP has a negative association with the ROA which indicates a correlation coefficient of -0.099 and P-value of 0.328, in addition to, this outcome highlights that the APP has an insignificant negative correlation with the ROA. This signifies that the lengthened accounts payable period has an extremely low likelihood to diminish the ROA of the sampled manufacturing firms.

The other profitability variable (ROE) has a positive association with the ARP which discloses that there is an insignificant positive correlation between both of these variables with an R-value of 0.109 and P-value of 0.282, aside from that, this outcome finds out that an extended accounts receivable period has a lower chance to maximize the ROE of the manufacturing firms.

The result makes clear that there is a positive association between the APP and ROE with an R-value of 0.091 and P-value of 0.368 and this claims that the APP and ROE have an insignificant positive correlation. In addition, this hints that the lengthened accounts payable period has a surprisingly low likelihood to level up the ROE of the manufacturing firms.

**Table 5**  
**Pearson Correlation Outcome**

		ROA	ROE	ARP	ICP	APP	CCC	CR	DR	SG
<b>ROA</b>	Pearson Correlation	1								
	Sig. (2-tailed)									
<b>ROE</b>	Pearson Correlation	.894**	1							
	Sig. (2-tailed)	.000								
<b>ARP</b>	Pearson Correlation	.072	.109	1						
	Sig. (2-tailed)	.479	.282							
<b>ICP</b>	Pearson Correlation	-.084	-.113	.179	1					
	Sig. (2-tailed)	.405	.264	.075						
<b>APP</b>	Pearson Correlation	-.099	.091	.157	.085	1				
	Sig. (2-tailed)	.328	.368	.120	.400					
<b>CCC</b>	Pearson Correlation	.031	-.052	.637**	.730**	-.307**	1			
	Sig. (2-tailed)	.757	.606	.000	.000	.002				
<b>CR</b>	Pearson Correlation	.219*	.038	.057	.303**	-.317**	.379**	1		
	Sig. (2-tailed)	.029	.707	.573	.002	.001	.000			
<b>DR</b>	Pearson Correlation	-.355**	.013	.205*	-.062	.533**	-.163	-.621**	1	
	Sig. (2-tailed)	.000	.899	.041	.540	.000	.105	.000		
<b>SG</b>	Pearson Correlation	.241*	.206*	.143	.080	.062	.109	.033	-.018	1
	Sig. (2-tailed)	.016	.040	.157	.427	.537	.280	.744	.861	
** . Correlation is significant at the 0.01 level (2-tailed).										
* . Correlation is significant at the 0.05 level (2-tailed).										

The end result also shows that there is a negative connection between the ICP and ROE with an R-value of -0.113 and P-value of 0.264 and this denotes that both the ICP and ROE have an insignificant negative correlation. This outcome describes that maintaining excessive inventories or extending the period to convert finished goods into sold goods

would have a highly poor chance to lessen the ROE of the manufacturing firms.

The outcome of the Pearson correlation matrix presents that there is a negative connection between the CCC and ROE with an R-value of -0.052 and P-value of 0.606 and both of these variables have an insignificant negative correlation. This seems to indicate that shortening the cash conversion cycle would have an extreme low probability to boost the ROE of the manufacturing firms.

The CR which is used to compute the liquidity of the sampled manufacturing firms testifies that it has a significant positive correlation with the ROA which shows a correlation coefficient of 0.219 and P-value of 0.029 while it has an insignificant positive correlation with the ROE which also shows a correlation coefficient of 0.038 and P-value of 0.707.

The DR which is used to check the extent of a firm's leverage discloses that it has a highly significant negative correlation with the ROA which displays a correlation coefficient of -0.355 and zero P-value (approximately 0.001) while it has an insignificant positive correlation with the ROE which also displays a correlation coefficient of 0.013 and P-value of 0.899.

Finally, the SG ratio which is used to find out the sales growth from period to another period reports that it has a significant positive correlation with the ROA which unveils a correlation coefficient of 0.241 and P-value of 0.016 while it has also a significant positive correlation with the ROE which also unveils a correlation coefficient of 0.206 and P-value of 0.040.

In a nutshell, the correlation analysis outcome accepts all the null hypothesis ( $H_0$ ) and reject all the alternative hypothesis ( $H_1$ ) of the study.

### **3.13. Regression Analysis**

As long as the Pearson correlation analysis did not enable to essentially determine the causes from effects, the researcher is employed the regression analysis to overcome that major drawback. The regression analysis is absolutely the third step in the analysis stage of the study to learn about the influence of working capital variables on profitability variables namely; return on assets (ROA) and return on equity (ROE).

According to Hair, Black, Babin and Anderson (2010), the collinearity statistics is undeniably employed to examine in cases where several predictors in the model are related and then present repetitive data regarding the responses. As a result, in case the variance inflation factor (VIF) is higher than 4.0 and the tolerance is lower than 0.2, then purely there exists a problem with multicollinearity. The adjusted  $R^2$  which is often known as the coefficient of multiple is definitely the % of the variance in the dependent variable which typically explains collectively or distinctively by the predictors. Hence, there exists a rule of thumb which is usually applied to decide on the Adjust  $R^2$  value as follows:  $< 0.1$  is a poor fit,  $0.11$  to  $0.30$  is a modest fit,  $0.31$  to  $0.50$  is a moderate fit, and  $>0.50$  is a strong fit (Muijs, 2004: 166).

The F-statistics is indeed employed to test out the overall degree of significance of the regression models for the study, meaning that it clearly shows the overall level of significance of the models which is developed to investigate the interconnection between predictors and dependent variable namely; ROA and ROE.

### 3.13.1. Regression Analysis Outcome (ARP and Firm Profitability)

A) The link between ARP and ROA is studied here by employing model 1 (A) in the analysis.

**Coefficients<sup>a</sup>**

Model 1 (A)	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			T.	VIF
(Constant)	13.195	3.118		4.231	.000		
ARP	.018	.014	.127	1.294	.199	.883	1.132
CR	-.002	.005	-.049	-.402	.689	.579	1.726
DR	-.167	.051	-.407	-3.301	.001	.556	1.799
SG	.091	.039	.218	2.338	.021	.977	1.023

a. Dependent Variable: ROA

**Model Summary<sup>b</sup>**

Model 1 (A)	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.442 <sup>a</sup>	.196	.162	6.51275

a. Predictors: (Constant), ARP, CR, DR, SG

b. Dependent Variable: ROA

**ANOVA<sup>a</sup>**

<b>Model 1 (A)</b>	<b>Sum of Squares</b>	<b>DF</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	980.256	4	245.064	5.778	.000 <sup>b</sup>
Residual	4029.506	95	42.416		
Total	5009.762	99			
a. Dependent Variable: ROA					
b. Predictors: (Constant), ARP, CR, DR, SG					

Based on the result of the coefficients, the ARP has a beta standardized coefficient of 0.127 and P-value of 0.199 which claims that the ARP has an insignificant positive association with the ROA. This simply means that shortening or lengthening the accounts receivable period will insignificantly have an influence on the ROA. Furthermore, the table also reveals that the ROA has an insignificant negative association with the CR where it has a significant negative and positive association with the DR and SG respectively. Under the collinearity statistics section, the tolerance and variance inflation factor (VIF) are 0.883 and 1.132 respectively for the ARP and this kind of result reports that there is absolutely no multicollinearity among the predictors of the model.

In line with the model summary, the R-value of 0.442 suggests that the predictors have an association with the ROA. Additionally, the Adjusted R Square is 0.162 (16.2%) which asserts that the executed formula is a modest fit for forecasting the ARP. This simply means 16.2% of the variance in the ROA is engaged by predictors of the model.

Considering the ANOVA, the executed model 1 (A) is fit for forecasting the ARP with F-value of 5.78 and zero P-value. In a nutshell, the exposed result proves that the model 1 (A) fits to clarify the interconnection between the predictors and the ROA of the sampled manufacturing firms on ISE since the overall level of significance is approximately 0.001. As a result, when the P-value is lower than 0.05, there exists a solid proof against the null hypothesis, thus the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_1$ ) is accepted.

B) The link between ARP and ROE is inspected here by employing model 1 (B) in the analysis.

**Coefficients<sup>a</sup>**

Model 1 (B)	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			T.	VIF
(Constant)	9.052	6.142		1.474	.144		
ARP	.018	.027	.072	.677	.500	.883	1.132
CR	.004	.011	.046	.354	.724	.579	1.726
DR	.023	.099	.030	.227	.821	.556	1.799
SG	.147	.077	.195	1.924	.057	.977	1.023

a. Dependent Variable: ROE

**Model Summary<sup>b</sup>**

Model 1 (B)	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.224 <sup>a</sup>	.050	.010	12.82709

a. Predictors: (Constant), ARP, CR, DR, SG  
b. Dependent Variable: ROE

**ANOVA<sup>a</sup>**

Model 1 (B)	Sum of Squares	DF	Mean Square	F	Sig.
Regression	823.609	4	205.902	1.251	.295 <sup>b</sup>
Residual	15630.755	95	164.534		
Total	16454.364	99			

a. Dependent Variable: ROE  
b. Predictors: (Constant), ARP, CR, DR, SG

Based on the coefficients, the ARP has a beta standardized coefficient of 0.72 and P-value of 0.500 which claims that the ARP has an insignificant positive relationship with the ROE. This signifies that lengthening or shortening the accounts receivable period will insignificantly have an effect on the ROE. Besides, the table proves that the ROE has an insignificant positive relationship with the CR, DR, and SG. Under the collinearity statistics section, the tolerance and the VIF are 0.883 and 1.132 respectively for the ARP and this kind of result realizes that there is indeed no multicollinearity among the predictors of the model.

In the above model summary, the R-value of 0.224 confirms that the predictors have a relationship with ROE. Additionally, the Adjusted R Square is 0.010 (1%) which declares that the implemented formula is an extremely poor fit for forecasting the ARP. This

simply means 1% of the variance in ROE is described by the predictors of the model.

Considering the ANOVA, the implemented model 1 (B) is definitely not fit for forecasting the ARP with 1.25 of F-value and 0.295 of P-value. In a nutshell, the exposed result proves that the model 1 (B) does not essentially fit to clarify the relationship between the predictors and the ROE of the sampled manufacturing firms in ISE since the overall level of significance is approximately 0.295 which is beyond 0.05. Eventually, when P-value is higher than 0.05, there exists a poor proof against the null hypothesis, thus the alternative hypothesis ( $H_1$ ) is rejected and the null hypothesis ( $H_0$ ) is accepted.

### 3.13.2. Regression Analysis Outcome (ICP and Firm Profitability)

A) The link between ICP and ROA is discovered here by employing model 2 (A) in the analysis.

**Coefficients<sup>a</sup>**

Model 2 (A)	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			T.	VIF
(Constant)	13.613	3.121		4.362	.000		
ICP	-.017	.012	-.139	-1.416	.160	.878	1.139
CR	.002	.006	.048	.386	.700	.545	1.835
DR	-.135	.049	-.330	-2.773	.007	.597	1.674
SG	.102	.039	.245	2.659	.009	.993	1.007

a. Dependent Variable: ROA

**Model Summary<sup>b</sup>**

Model 2 (A)	R	R Square	Adjusted R Square	Std. Error of the Estimate
(A)	.445 <sup>a</sup>	.198	.165	6.50169

a. Predictors: (Constant), ICP, CR, DR, SG  
b. Dependent Variable: ROA

**ANOVA<sup>a</sup>**

Model 2 (A)	Sum of Squares	DF	Mean Square	F	Sig.
Regression	993.919	4	248.480	5.878	.000 <sup>b</sup>
Residual	4015.843	95	42.272		
Total	5009.762	99			

a. Dependent Variable: ROA  
b. Predictors: (Constant), ICP, CR, DR, SG

Based on the above coefficients, the ICP has a beta standardized coefficient of -0.139 and P-value of 0.160 which proclaims that the ICP has an insignificant negative connection with the ROA. This simply means that keeping an excessive or low volume of stocks will insignificantly have an impact on the ROA. Besides, the table reveals that the ROA has an insignificant positive connection with the CR while it has a significant negative and positive connection with the DR and SG respectively. Under the collinearity statistics section, the tolerance and the VIF are 0.878 and 1.139 respectively for the ICP and this kind of outcome asserts that there is certainly no multicollinearity among the predictors of the model.

In line with the above model summary, the R-value of 0.445 suggests that the predictors have a connection with the ROA. Besides, the Adjusted R Square is 0.165 (16.5%) which asserts that the employed formula is a modest fit for forecasting the ICP. This simply means 16.5% of the variance in ROA is described by the predictors of the model.

Considering the ANOVA, the employed model 2 (A) is definitely fit for forecasting the ICP with F-value of 5.88 and zero P-value. In a nutshell, the found out result proves that the model 2 (A) fits to clarify the correlation between the predictors and the ROA of the sampled manufacturing firms in ISE since the overall level of significance is approximately 0.001. Consequently, when the P-value is lower than 0.05, there exists a solid proof against the null hypothesis, thus the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_1$ ) is accepted.

A) The regression between ICP and ROE is explored here by employing model 2 (B) in the analysis.

**Coefficients<sup>a</sup>**

<b>Model 2 (B)</b>	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>	<b>Collinearity Statistics</b>	
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>			<b>T.</b>	<b>VIF</b>
(Constant)	9.862	6.094		1.618	.109		
ICP	-.038	.024	-.166	-1.576	.118	.878	1.139
CR	.011	.011	.139	1.035	.303	.545	1.835
DR	.069	.095	.093	.723	.472	.597	1.674
SG	.164	.075	.216	2.179	.032	.993	1.007

a. Dependent Variable: ROE



### Model Summary<sup>b</sup>

Model 2 (B)	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.264 <sup>a</sup>	.070	.031	12.69324
a. Predictors: (Constant), ICP, CR, DR, SG				
b. Dependent Variable: ROE				

### ANOVA<sup>a</sup>

Model 2 (B)	Sum of Squares	DF	Mean Square	F	Sig.
Regression	1148.127	4	287.032	1.781	.139 <sup>b</sup>
Residual	15306.237	95	161.118		
Total	16454.364	99			
a. Dependent Variable: ROE					
b. Predictors: (Constant), ICP, CR, DR, SG					

Based on the above coefficients, the ICP has a beta standardized coefficient of -0.166 and P-value of 0.118 which affirms that the ICP has an insignificant negative association with the ROE. This undeniably means that keeping an excessive or low volume of stocks will insignificantly have an influence on the ROE. In addition, the table presents that the ROE has an insignificant positive association with the CR and DR while it has a significant positive association with the SG. Under the collinearity statistics section, the tolerance and the VIF are 0.878 and 1.139 respectively for the ICP and this kind of result confirms that there is absolutely no multicollinearity among the predictors of the model.

As per the model summary, the R-value of 0.264 approves that the predictors have an association with the ROE. Additionally, the Adjusted R Square is 0.031 (3.1%) which declares that the applied formula is an extremely poor fit for forecasting the ICP. This simply means 3.1% of the variance in ROE is described by the predictors of the model.

Considering the ANOVA, the applied model 2 (B) is totally not fit for forecasting the ICP with 1.78 of F-value and 0.139 of P-value. In a nutshell, the uncovered result proves that the model 2 (B) does not fit to clarify the correlation between the predictors and the ROE of the sampled manufacturing firms in ISE since the overall level of significance is approximately 0.139 which is beyond 0.05. Consequently, when the P-value is higher than 0.05, there exists a poor proof against the null hypothesis, hence the alternative hypothesis ( $H_1$ ) is rejected and the null hypothesis ( $H_0$ ) is accepted.

### 3.13.3. Regression Analysis Outcome (APP and Firm Profitability)

A) The link between APP and ROA is examined here by employing model 3 (A) in the analysis.

**Coefficients<sup>a</sup>**

Model 3 (A)	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			T	VIF
(Constant)	13.024	3.142		4.145	.000		
APP	.019	.020	.104	.948	.346	.710	1.408
CR	-.001	.005	-.013	-.112	.911	.614	1.628
DR	-.170	.054	-.415	-3.138	.002	.488	2.047
SG	.095	.039	.228	2.457	.016	.992	1.008

a. Dependent Variable: ROA

**Model Summary<sup>b</sup>**

Model 3 (A)	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.435 <sup>a</sup>	.189	.155	6.53908

a. Predictors: (Constant), APP, CR, DR, SG  
b. Dependent Variable: ROA

**ANOVA<sup>a</sup>**

Model 3 (A)	Sum of Squares	DF	Mean Square	F	Sig.
Regression	947.606	4	236.902	5.540	.000 <sup>b</sup>
Residual	4062.156	95	42.760		
Total	5009.762	99			

a. Dependent Variable: ROA  
b. Predictors: (Constant), APP, CR, DR, SG

Based on the result of the coefficients, the APP has a beta standardized coefficient of 0.104 and P-value of 0.346 which claims that the APP has an insignificant positive relationship with the ROA. This definitely means that prolonged or unprolonged the accounts payable period will insignificantly have an influence on the ROA. Besides that, the table reveals that the ROA has an insignificant negative association with the CR while it has a significant negative and positive relationship with the DR and SG respectively. Under the collinearity statistics section, the tolerance and the VIF are 0.710 and 1.408 respectively for the APP and this kind of result expresses that there is undoubtedly no multicollinearity among the predictors of the model.

In line with the model summary, the R-value of 0.435 specifies that the predictors have a relationship with the ROA. Besides, the Adjusted R Square is 0.155 (15.5%) which highlights that the utilized formula is a modest fit for forecasting the APP. This simply means 15.5% of the variance in ROA is described by the predictors of the model.

Considering the ANOVA, the utilized model 3 (A) is definitely fit for forecasting APP with F-value of 5.54 and zero P-value. In a nutshell, the found result proves that the model 3 (A) fits to clarify the connection between the predictors and ROA of the sampled manufacturing firms in ISE since the overall level of significance is approximately 0.001. As a result, when the P-value is lower than 0.05, there exists a solid proof against the null hypothesis, hence the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_1$ ) is accepted.

B) The link between APP and ROE is tested here by using model 3 (B) in the analysis.

**Coefficients<sup>a</sup>**

Model 3 (B)	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			T	VIF
(Constant)	8.709	6.157		1.414	.160		
APP	.032	.039	.096	.812	.419	.710	1.408
CR	.005	.010	.066	.516	.607	.614	1.628
DR	.004	.106	.006	.041	.967	.488	2.047
SG	.150	.076	.198	1.972	.052	.992	1.008

a. Dependent Variable: ROE

**Model Summary<sup>b</sup>**

Model 3 (B)	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.228 <sup>a</sup>	.052	.012	12.81357

a. Predictors: (Constant), APP, CR, DR, SG  
b. Dependent Variable: ROE

**ANOVA<sup>a</sup>**

Model 3 (B)	Sum of Squares	DF	Mean Square	F	Sig.
Regression	856.534	4	214.133	1.304	.274 <sup>b</sup>
Residual	15597.830	95	164.188		
Total	16454.364	99			

a. Dependent Variable: ROE  
b. Predictors: (Constant), APP, CR, DR, SG

Based on the above coefficients, the APP has a beta standardized coefficient of 0.096 and P-value of 0.419 which declares that the APP has an insignificant positive connection with the ROE. This clearly means that prolonged or unprolonged the accounts payable period will insignificantly have an effect on the ROE. Moreover, the table reveals that the ROE has an insignificant positive connection with the CR, DR, and SG. Under the collinearity statistics section, the tolerance and the VIF are 0.710 and 1.408 respectively for the APP and this kind of result approves that there is purely no multicollinearity among the predictors of the model.

In the model summary, the R-value of 0.228 determines that the predictors have a connection with ROE. Furthermore, the Adjusted R Square is 0.012 (1.2%) which declares that the exploited formula is a tremendously poor fit for forecasting APP. This basically means 1.2% of the variance in ROE is described by the predictors of the model.

Considering the ANOVA, the exploited model 3 (B) is completely not fit for forecasting the APP with 1.30 of F-value and 0.274 of P-value. In a nutshell, the uncovered result proves that the model 3 (B) does not fit to clarify the connection between the predictors and the ROE of the sampled manufacturing firms in ISE since the overall level of significance is approximately 0.274 which is beyond 0.05. As a consequence, when the P-value is higher than 0.05, there exists a poor proof against the null hypothesis, hence the alternative hypothesis ( $H_1$ ) is rejected and the null hypothesis ( $H_0$ ) is accepted.

#### 3.13.4. Regression Analysis Outcome (CCC and Firm Profitability)

A) The link between CCC and ROA is checked here by employing model 4 (A) in the analysis.

**Coefficients<sup>a</sup>**

Model 4 (A)	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			T.	VIF
(Constant)	13.332	3.141		4.245	.000		
CCC	-.005	.008	-.058	-.572	.569	.839	1.192
CR	.001	.006	.015	.116	.908	.536	1.867
DR	-.144	.049	-.351	-2.957	.004	.609	1.643
SG	.101	.039	.241	2.584	.011	.988	1.012

a. Dependent Variable: ROA

### Model Summary<sup>b</sup>

Model 4	R	R Square	Adjusted R Square	Std. Error of the Estimate
(A)	.429 <sup>a</sup>	.184	.150	6.55865
a. Predictors: (Constant), CCC, CR, DR, SG				
b. Dependent Variable: ROA				

### ANOVA<sup>a</sup>

Model 4 (A)	Sum of Squares	DF	Mean Square	F	Sig.
Regression	923.249	4	230.812	5.366	.001 <sup>b</sup>
Residual	4086.513	95	43.016		
Total	5009.762	99			
a. Dependent Variable: ROA					
b. Predictors: (Constant), CCC, CR, DR, SG					

Based on the above coefficients, the CCC has a beta standardized coefficient of -0.058 and P-value of 0.569 which claims that the CCC has an insignificant negative correlation with the ROA. This plainly means that increasing or decreasing cash conversion cycle will insignificantly have an influence on the ROA. Furthermore, the table displays that the ROA has an insignificant positive correlation with the CR while it has a significant negative and positive correlation with the DR and SG respectively. Under the collinearity statistics section, the tolerance and the VIF are 0.839 and 1.192 respectively for the CCC and this kind of outcome claims that there is totally no multicollinearity among the predictors of the model.

In line with the model summary, the R-value of 0.429 confirms that the predictors have a correlation with the ROA. Besides, the Adjusted R Square is 0.150 (15%) which remarks that the developed formula is a modest fit for forecasting the CCC. This essentially means 15% of the variance in ROA is described by the predictors of the model.

Considering the ANOVA, the developed model 4 (A) is purely fit for forecasting the APP with 5.37 of F-value and 0.001 of P-value. In a nutshell, the presented result proves that the model 4 (A) fits to clarify the relationship between the predictors and the ROA of the sampled manufacturing firms in ISE since the overall level of significance is precisely 0.001. As a result, when the P-value is lower than 0.05, there exists a solid proof against the null hypothesis, hence the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_1$ ) is accepted.

B) The link between CCC and ROE is exposed here by employing model 4 (B) in the analysis.

**Coefficients<sup>a</sup>**

Model 4 (B)	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			T.	VIF
(Constant)	9.310	6.126		1.520	.132		
CCC	-.016	.016	-.108	-.992	.324	.839	1.192
CR	.009	.011	.116	.852	.396	.536	1.867
DR	.053	.095	.071	.557	.579	.609	1.643
SG	.163	.076	.215	2.144	.035	.988	1.012

a. Dependent Variable: ROE

**Model Summary<sup>b</sup>**

Model 4 (B)	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.235 <sup>a</sup>	.055	.015	12.79189

a. Predictors: (Constant), CCC, CR, DR, SG  
b. Dependent Variable: ROE

**ANOVA<sup>a</sup>**

Model 4 (B)	Sum of Squares	DF	Mean Square	F	Sig.
Regression	909.277	4	227.319	1.389	.244 <sup>b</sup>
Residual	15545.087	95	163.632		
Total	16454.364	99			

a. Dependent Variable: ROE  
b. Predictors: (Constant), CCC, CR, DR, SG

Based on the above coefficients, the CCC has a beta standardized coefficient of -0.108 and P-value of 0.324 which determines that the CCC has an insignificant negative correlation with the ROE. This evidently means that increasing or decreasing cash conversion cycle will insignificantly have an effect on the ROE. Besides, the table explains that the ROE has an insignificant positive correlation with the both CR, DR while it has a significant positive correlation with the SG. Under the collinearity statistics section, the tolerance and the VIF are 0.839 and 1.192 respectively for the CCC and this kind of outcome agrees that there is entirely no multicollinearity among the predictors of the model.

In line with the model summary, the R-value of 0.235 confirms that the predictors have a

connection with the ROE. Besides that, the Adjusted R Square is 0.015 (1.5%) which expresses that the hired formula is a vastly poor fit for forecasting the CCC. This almost means 1.5% of the variance in ROE is described by the predictors of the model.

Considering the ANOVA, the hired model 4 (B) is fully not fit for forecasting the CCC with 1.39 of F-value and 0.244 of P-value. In a nutshell, the disclosed result proves that the model 4 (B) does not fit to clarify the connection between the predictors and the ROE of the sampled manufacturing firms in ISE since the overall level of significance is 0.244 which is beyond 0.05. Consequently, when the P-value is higher than 0.05, there exists a poor proof against the null hypothesis, hence the alternative hypothesis ( $H_1$ ) is rejected and the null hypothesis ( $H_0$ ) is accepted.

### **3.14. Interpretation of the Findings**

The fundamental target of the study is indeed to verify the level of influence of working capital management practice on firm profitability of the chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange for a period of five years from 2012 to 2016. With a purpose to accomplish that target, the study is completely based on secondary data gathered through financial reports of the sampled manufacturing firms on Istanbul Stock Exchange. Therefore, working capital components that is employed as proxy variables for the study are accounts receivable period, inventory conversion period, accounts payable period, and cash conversion cycle. In addition to that, current ratio, debt ratio, and sales growth ratio are designated to employ as control variables. On the other hand, profitability determinants that is assured to obviously use as dependent variables are both the return on assets and return on equity which is principally viewed as the ideal measurement of earnings since they indicate how properly the management personnel is exploited the resources of a firm. Aside from that, both of these profitability ratios are previously employed by a number of researchers that deemed the ROA and ROE as the perfect ratios for appraising the overall performance of the management such as; Jose, Lancaster and Stevens (1996), Lyroudi, McCarty, Lazaridis and Chatzigagios (1999), Uyar (2009) and Gorondutse, Ali and Ali (2016).

Accounts receivable period (ARP) is among the proxy variables of the working capital management that the study is employed to check out its correlation with the firm profitability. Handling accounts receivable in a proper way is definitely inevitable since

almost all of the transactions stick with selling goods or services on credit. Consequently, the outcomes from both the correlation and regression analysis is witnessed that the ARP has a positive association with the firm profitability namely; ROA and ROE. This uncovered result is inconsistent with the study conducted by Gorondutse, Ali and Ali (2016) whom are determined that the ARP has a negative association with both the ROA and ROE. Furthermore, the witnessed result of the study that claims ARP has a positive association with the ROA is also inconsistent with the study conducted by a couple of researchers such as; Şamiloğlu and Demirgüneş (2008), Şen and Oruç (2009), Mengesha (2014), Philip (2015) and also Gorondutse, Ali and Ali (2016). The implication of the final result is that prolonged or unprolonged accounts receivable period will probably have an effect on the firm profitability of the sampled manufacturing firms. This simply means that prolonged accounts receivable period will level up the profitability and unprolonged accounts receivable period will cut down the profitability.

Inventory conversion period (ICP) is another proxy variable which is used for the study to explore the impact of working capital management practice on firm profitability of 20 Turkish chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange. Controlling inventories is a fundamental task for manufacturing firms which practically can lead them to be successful and earn enough profits. Hence, keeping an adequate volume of inventory is a great strategy in order to avoid either excessive or scarcity of inventory. Subsequently, the outcomes from both the correlation and regression analysis noticed that the ICP has a negative connection with the firm profitability (i.e. ROA and ROE). This revealed result of the study is consistent with the study carried out by Gorondutse, Ali and Ali (2016) whom are discovered that the ICP has a negative connection with both the ROA and ROE. In the same way, the found result of the study which claims ICP has a positive correlation with the ROA is also consistent with the study carried out by a number of researchers such as; Şamiloğlu and Demirgüneş (2008), Şen and Oruç (2009), Mengesha (2014) and also Gorondutse, Ali and Ali (2016). Furthermore, the uncovered result of the study doesn't support the study carried out by Philip (2015) who observed that the ICP has a positive interconnection with the ROA.

Accounts payable period (APP) is the third proxy variable which is employed for the study to evaluate the level of impact of working capital management practice on firm



profitability of 20 Turkish chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange. In the current highly competitive ecosystems, paying items on credit turned into an inescapable means for boosting revenues. Therefore, a huge number of researchers is assumed that a sound APP is capable of having a major effect on firm profitability. Consequently, the outcome from the correlation analysis witnessed that the APP has a negative correlation with the ROA while it has a positive correlation with the ROE. This uncovered outcome of the study which claims APP has a negative correlation with the ROA is in line with the study carried out by Mengesha (2014) and inconsistent with the study carried out by Gorondutse, Ali and Ali (2016). Furthermore, the witnessed outcome of the study which asserts APP has a positive correlation with the ROE is in line with the study carried out by Gorondutse, Ali and Ali (2016).

Cash conversion cycle (CCC) is the fourth and last proxy variable which is chosen for the study to analyze the level of influence of working capital management practice on firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange. Cash is principally assumed to always be the seed corn within a firm which usually attaches the whole business assignments to one another in order to attain both the short and long-standing objectives, therefore, controlling the CCC effectively has an influence on overall business efficiency and also profitability. Consequently, the correlation analysis is found that the CCC has a positive relationship with the ROA while it has a negative relationship with the ROE. This identified outcome of the study which proclaims CCC has a positive relationship with ROA is in line with the study carried out by Karaduman, Akbaş, Çalışkan and Dürer (2011) and Philip (2015) but inconsistent with the study carried out by Jose, Lancaster and Stevens (1996), Lyroudi, McCarty, Lazaridis and Chatzigagios (1999), Uyar (2009), Şen and Oruç (2009) and Mengesha (2014). Furthermore, the uncovered outcome of the study which affirms CCC has a negative relationship with ROE is in line with the study carried out by Jose, Lancaster and Stevens (1996), Lyroudi, McCarty, Lazaridis and Chatzigagios (1999) and Uyar (2009).

## **RESULTS, CONCLUSION AND RECOMMENDATIONS**

The overall target of the study is assuredly to uncover how working capital management practice has an effect on the firm profitability of the 20 Turkish chemical, petrol, and plastic manufacturing firms on Istanbul Stock Exchange for a period of five years from 2012 to 2016.

### **Results**

The Turkish chemical, petrol, and plastic manufacturing firms have a mean value of 81.60 days for accounts receivable period (ARP) to collect their receivables from customers with a standard deviation of 50.55 days. The Pearson correlation coefficient result proved that ARP has an insignificant positive correlation with both the ROA and ROE. The multiple linear regression analysis result also proved that ARP has an insignificant positive relationship with both the ROA and ROE.

The inventory conversion period (ICP) expects an average of 83.02 days for the sampled manufacturing firms to transform the readily sellable goods into cash and then pay their debts without any penalty charges with a standard deviation of 56.92 days. The Pearson correlation coefficient result proved that ICP has an insignificant negative correlation with both the ROA and ROE. The multiple linear regression analysis result also proved that ICP has an insignificant negative relationship with both the ROA and ROE.

The accounts payable period (APP) needs an average of 75.01 days for the sampled manufacturing firms to pay off their short-lived debts which were incurred due to purchasing goods and services on credit with a standard deviation of 39.07 days. The Pearson correlation coefficient result proved that APP has an insignificant negative correlation with the ROA while it has an insignificant positive correlation with the ROE. The multiple linear regression analysis result proved that the APP has an insignificant positive relationship with both the ROA and ROE.

Finally, the cash conversion cycle (CCC) has a mean of 89.61 days for the sampled manufacturing firms to convert their short-lived assets and a variety of other resource inputs into cash with a standard deviation of 85.76 days. The Pearson correlation coefficient result proved that CCC has an insignificant positive correlation with the ROA

while it has an insignificant negative correlation with the ROE. The multiple linear regression analysis result proved that the CCC has an insignificant negative relationship with both the ROA and ROE.

## **Conclusion**

Regarding the interpreted findings which are mainly provided in part three and results, the study concludes as follows:

Working capital management proxy variables which are comprised of accounts receivable period, inventory conversion period, accounts payable period and lastly, cash conversion cycle are pivotal in getting a sufficient amount of income for manufacturing firms. Consequently, the manufacturing firms surely need to have a competent and strong system for handling these kinds of elements of the working capital. The statistically positive correlation between the ARP and firm profitability (i.e. ROA and ROE) signifies that increasing the accounts receivable collection period will probably level up the firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms or vice versa. The statistically negative correlation between the ICP and firm profitability signifies that if the chemical, petrol, and plastic manufacturing firms hold excessive stocks, these firms will generate insufficient earnings but if they shorten the ICP, they will boost their earnings. Furthermore, the statistical correlation between the APP and firm profitability signifies that if the Turkish chemical, petrol, and plastic manufacturing firms prolong the time period to pay off their outstanding payment balance, it will have an unfavorable effect on their ROA but oppositely it will have a favorable influence on their ROE. Finally, the statistical correlation between the CCC and firm profitability signifies that if the sampled chemical, petrol, and plastic manufacturing firms extend the time period to convert their resources into cash, it will have a favorable influence on their ROA but oppositely it will have an unfavorable effect on their ROE. As a result, financial managers or WC responsible personnel should certainly have huge attention for handling and managing these kinds of working capital management elements properly since they have an influence on firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms listed on Istanbul Stock Exchange.

## **Recommendations**

The study is exposed an adequate understanding of working capital variables and their particular influence on firm profitability of the sampled manufacturing firms. Consequently, this unique comprehension is going facilitate for financial managers to boost their firms' profitability and productivity which can be achieved by employing a powerful strategy for working capital elements. The management of the sampled manufacturing firms listed on ISE should intensify their level of understanding and awareness that working capital variables have an influence on the overall profitability and potentially enhance it. Thus, on the basis of the study results, the study recommends the following points for enhancing the profitability and entire operations of the sampled manufacturing firms:

Firstly, the study witnessed a negative correlation between the ICP and firm profitability of the Turkish chemical, petrol, and plastic manufacturing firms. This result signifies that if these firms preserve inadequate stocks, they will level up their overall profitability. Inventory is definitely the heart of the ongoing business activities, therefore, holding reasonable stocks is not an awful strategy since it may support the business in various ways to avoid unwanted expenses, for example; when a customer sent a purchase order or signed purchase agreement, the firm shouldn't have to double its expenses which can be incurred simply by shipping goods from supplier to the firm and once again from the firm to the customer. The other way of getting benefit from holding reasonable stocks is that when unexpectedly orders take place and there exists a scarcity of raw materials in the market but fortunately the firm holds enough stocks for unpredicted orders and conditions, thus, firms can fulfill that sort of orders and satisfy their customers if they hold sufficient volume of stocks. As a result, the researcher recommends building strong communication between purchasing, production, and marketing departments in order to strengthen the entire business operations and cut down needless expenses.

Secondly, the study witnessed a negative correlation between the APP and the ROA of the Turkish chemical, petrol, and plastic manufacturing firms. This uncovered outcome signifies that if they shorten the duration to pay off their outstanding unpaid balance, they will most likely boost their ROA. Shortening the APP has additionally several merits for the firms, for example; receiving early payment special discounts, mental benefits to be

free of debt for managers, avoiding to pay out interest fees, bettering the financial position for the firms, increasing the debt to income ratio and entire trustworthiness of the firms. As a result, the researcher recommends shortening accounts payable period in order to improve the credit scores and return on assets.

Thirdly, the study witnessed a negative correlation between the CCC and the ROE of the Turkish chemical, petrol, and plastic manufacturing firms. This revealed result signifies that if the firms cut down the duration to convert their resources into cash, they will probably boost their ROE. Cash is unquestionably like car engine that constantly takes care of the entire jobs and employed as being a medium of exchange. Consequently, the researcher recommends diminishing the CCC in order to receive cash quickly and generate a sufficient amount of profit for firms.

Finally, the researcher is examined only 20 Turkish manufacturing firms particularly chemical, petrol, and plastic firms. For future study, the researcher suggests for further considering to examine overall sectors of manufacturing firms listed on Istanbul Stock Exchange with the same variables that the researcher employed in this study in order to come up with more generalized conclusion upon the findings and recommendations for the entire Turkish manufacturing firms.

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## APPENDICES

### Appendix 1

#### Selected Manufacturing Firms for the Study

No.	Firm Code	Firm Name	Number of Years				
			2012	2013	2014	2015	2016
1	ACSEL	Acıselsan Acıpayam Selüloz Sanayi ve Ticaret A.Ş.	√	√	√	√	√
2	AKSA	Aksa Akrilik Kimya Sanayii A.Ş.	√	√	√	√	√
3	ALKIM	Alkim Alkali Kimya A.Ş.	√	√	√	√	√
4	AYGAZ	Aygaz A.Ş.	√	√	√	√	√
5	BAGFS	Bagfaş Bandırma Gübre Fabrikaları A.Ş.	√	√	√	√	√
6	BRKSN	Berkosan Yalıtım ve Tecrit Maddeleri Üretim ve Ticaret A.Ş.	√	√	√	√	√
7	BRISA	Brisa Bridgestone Sabancı Lastik Sanayi ve Ticaret A.Ş.	√	√	√	√	√
8	DEVA	Deva Holding A.Ş.	√	√	√	√	√
9	DYOBY	Dyo Boya Fabrikaları Sanayi ve Ticaret A.Ş.	√	√	√	√	√
10	EGGUB	Ege Gübre Sanayii A.Ş.	√	√	√	√	√
11	EGPRO	Ege Profil Ticaret ve Sanayi A.Ş.	√	√	√	√	√
12	GOODY	GoodYear Lastikleri T.A.Ş.	√	√	√	√	√
13	GUBRF	Gübre Fabrikaları T.A.Ş.	√	√	√	√	√
14	HEKTS	Hektaş Ticaret A.Ş.	√	√	√	√	√
15	MRSHL	Marshall Boya ve Vernik Sanayii A.Ş.	√	√	√	√	√
16	PETKM	Petkim Petrokimya Holding A.Ş.	√	√	√	√	√
17	POLTK	Politeknik Metal Sanayi ve Ticaret A.Ş.	√	√	√	√	√
18	SASA	Sasa Polyester Sanayii A.Ş.	√	√	√	√	√
19	SODA	Soda Sanayii A.Ş.	√	√	√	√	√
20	TUPRS	Tüpraş-Türkiye Petrol Rafinerileri A.Ş.	√	√	√	√	√

Source: Public Disclosure Platform Website (<https://www.kap.org.tr/tr/Endeksler>).

## **CURRICULUM VITAE**

Mohammed Bashir YUSUF was born in Gode, Ethiopia in 1988 and graduated from Khadija Primary and Secondary School. He received Bachelor of Arts in Accounting and Finance from New Generation University in Addis Ababa, Ethiopia. He also received Bachelor of Arts in Management and Leadership from Summit College of Leadership & Management in Addis Ababa, Ethiopia. He is currently pursuing Master of Business Administration in Management and Organization at Graduate School of Business, Sakarya University in Turkey.

