REVISITING THE ENIGMA OF WORKING CAPITAL, PROFITABILITY AND RISK: EVIDENCE FROM PAKISTAN

Sumaira Ahmad Malik, Research Scholar, University of Haripur, Pakistan.
Email: sumaira_malik95@yahoo.com
Asad Khan, Lecturer, University of Haripur, Pakistan.
Email: asadkhan@uoh.edu.pk
Zia ur Rehman, Assistant Professor, University of Haripur, Pakistan.
Email: zia.rehman@uoh.edu.pk
Abdul Qadir Shah, Lecturer, University of Haripur, Pakistan.
Email: aqshah@uoh.edu.pk

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Abstract. *This study investigates the relationship between working capital management and firm profitability. We incorporate moderating effect of systematic and unsystematic risk to ascertain the impact of risk on working capital decisions. The study uses secondary data of 244 listed non-financial firms over 10 years from 2009 to 2018. The findings reveal that inventory turnover, receivable collection period and cash conversion cycle negatively influence firm performance. However, accounts payable period has significant and positive effect on firm performance. Systematic risk negatively moderates the relationship between accounts payable period and return on assets and positively moderates relationship among accounts collection period, cash conversion cycle and return on assets. Unsystematic risk has insignificant effect on the relationship between working capital and profitability.*

Keywords: Working Capital Management, Market Risk, Business Risk, Return, CAPM

1. Introduction

Management of working capital is one of the key decision in corporate finance (Ali, Khan, & Nouman, 2010). Because, every firm has to manage working capital effectively, irrespective of its size, industry and nature of its operation (Raheman, Afza, Qayyum, & Bodla, 2010). The main purpose of effective management of working capital is to make sure that the company is capable of fulfilling its operating expenses and remains profitable to pay its short term liabilities (Ukaegbu, 2014). Effective management of working capital is essential for creating shareholders value, growth and most importantly for the survival of the firm. The way working capital is handled, has a significant

effect on firm's liquidity position and smooth operations (Dong & Su, 2010). The role of working capital is similar in nature to blood in the human body (Padachi, 2006). The capital invested in working capital is known as hidden reserve. It is used to fund the growth opportunities for firms (Aregbeyen, 2013). Working capital effects both of the aspects i.e. liquidity and profitability of a firm (Raheman et al., 2010). The decisions that maximize the profitability may not maximize adequate liquidity (Abuzayed, 2012). Thus, the main objectives of a firm are to generate profit that guarantee the flow of business and preserve liquidity which ensures the firm has an ability to pay its short term obligations (Padachi, 2006). In short, there must be a balance between these two objectives. The manager should pay attention to efficient working capital management to deal with these problems (Mun & Jang, 2015; Raheman & Nasr, 2007; Vahid, Mohsen, & Mohammadreza, 2012).

In previous researches, three major trends support the diverse views about the association of Working Capital Management (WCM) and firm performance. First stream of research that support the view of positive association argued that the larger investment in working capital management enhance firm profitability (Baker, Kumar, & Singh, 2019; Padachi, 2006; Sharma & Kumar, 2011; Singhania & Mehta, 2017). Large Cash Conversion Cycle (CCC) includes large inventory levels, generous credit policy to the customers and lower accounts payables. Large amount of inventory reduces supply cost, stock-out risk, price fluctuations risk and rent expense. The generous trade credit gives quality assurance of products to customers and thus they can assess quality of products before payment. It builds trust between seller and buyer and helps in creating a strong relationship with the customers. Similarly, the decrease in payable periods lower the cost of goods sold because the firm avail the opportunity of early payment discounts. Thus, larger investment results into increased profitability and reduced liquidity risk.

The second stream of research supports the view that shorter CCC maximizes firm performance (Ali et al., 2010; Dong & Su, 2010; Gill, Biger, & Mathur, 2010; Lyngstadaas & Berg, 2016; Pais & Gama, 2015; Raheman et al., 2010; Tauringana & Adjapong Afrifa, 2013; Tran, Abbott, & Jin Yap, 2017; Yazdanfar & Öhman, 2014). It includes holding lower level of inventory, shortening credit terms to customers and delayed credit payments to suppliers. The shortening of credit terms enable firm to collect money from customers earlier and thus minimize default risk. This stimulates cash flow in the firm. Similarly, more profitable firms delay their liabilities. In this way, the firm get plenty of time to assess the quality of products. This may result into higher sales and profitability.

The third stream of research confirm the presence of an optimum level of all components of WCM. At a level lower than optimum level, the WCM is positively linked with firm performance. Whereas, above the optimum level there exists a negative relationship. Thus, value above or below this level can impact the profitability of a firm (Afrifa, Tauringana, & Tingbani, 2014; Altaf & Shah, 2018; Baños-Caballero, García-Teruel, & Martínez-Solano, 2014; Boțoc & Anton, 2017; Pais & Gama, 2015; Singhania & Mehta, 2017).

These opposing views create a need for further empirical investigation of the relationship between WCM and profitability. Another dimension to this discussion is that how firm risk affects working capital decisions, is still under-researched. In case of Pakistan, high economic uncertainty prevails in the form of deteriorating balance of payment, high level of foreign debt, inflation, political instability, and lack of long-term financial strategies (Sikandar & Wahid, 2019). These economic uncertainties pose a serious threat and challenge to financial managers for efficient management of internal and external resources. In general, the existing uncertainty and economic development have not been covered in recent empirical research. Moreover, how this uncertainty will affect the choice of working capital is still under-researched. Hence, this study extends the existing literature on effects of WCM on the financial performance with moderating role of risk.

This research is significant in many ways. First, it provides recent empirical evidence on how working capital management influence firm profitability in Pakistan. Second, it helps in understanding effect of working capital decisions on firm profitability and how they change with the changes in business risk and market risk. Similarly, the working capital requirements are different for different industries. The impact of economic downturns like energy crises, inflation, price fluctuations risk, demand variability, and market competition may differ across various industries. Therefore, by exploring the industry effect will further help us identify industry needs and requirements regarding working capital decisions. Fourth, this study uses panel data methodology for estimation of regression analysis. Panel data helps to generate accurate results due to large number of observations. Lastly, it will help managers in understanding the components of WCM and its association with risk. How uncertain environment (business and market risk) affect the choice of the working capital components.

2. Literature Review

In last few decades the concept of working capital management has been extensively explored in different dimensions by researchers. There is a wide variety of literature that highlights the importance of WCM for organizations. Because WCM decisions are important for creating shareholders value,

increasing profit, and firm growth. On the other hand, researchers have identified more or less similar determinants of working capital management and reported diverse views about the association amongst working capital management and firm profitability.

2.1 Working capital management and firm profitability

Traditional measures of firm liquidity are current ratio and quick ratio. A firm's ongoing liquidity does not depend on its liquidation value of assets but depends on operating cash flow generated by these assets. That is why the concept of Cash Conversion Cycle (CCC) is important in working capital management (Abuzayed, 2012). Cash conversion cycle is a widely used measure of working capital management. It is a composite measure of inventory turnover in days, accounts collection period, and accounts payable period in days. Through efficient management of CCC, managers have better control over short-term investments. These investments affects firm profitability, risk and value (Yazdanfar & Öhman, 2014).

Inventory Turnover in Days (ITD) represents total days a corporation holds a stock. It is important for firms to efficiently manage inventory level in order to avoid to severe consequences (Tran et al., 2017). Large amount of the inventory reduces supply cost, stock out risk, increases sales, prevent company from emergency buying, price fluctuations and possible interruptions due to limited products. Positive relationship is supported by (Abuzayed, 2012; Baños-Caballero et al., 2014; Gill et al., 2010; Sharma & Kumar, 2011; Tran et al., 2017). Others have argued that if a firm hold large inventory its profitability will decrease, more capital is locked up in working capital at an expense of profitability. It also increase storage costs like warehouse rent, security, obsolesce, theft, insurance expense, chances of good not sold as per expectation and product expiration (Afrifa et al., 2014; Deloof, 2003; Ukaegbu, 2014). Thus, from the above discussion it is hypothesized that:

H1a: There is a significant negative association between inventory turnover days and Return on assets.

The Account Collection Period (ACP) represent the total number of days the company takes to collect the amount of credit sales granted to customers (Tran et al., 2017). The increase in trade credit, increases sales because it give quality assurance of products to the customers and they can assess quality of the products before payment. It builds trust between seller and buyer and helps in creating a strong relationship with customers (Abuzayed, 2012; Baños-Caballero, García-Teruel, & Martínez-Solano, 2010; Gill et al., 2010; Tran et al., 2017). It encourages customers to acquire merchandise even in the time of low demand and help in reducing asymmetric information between the seller and buyer. Emery (1984) suggests that trade credit to customers is a

profitable short-term investment as compared to the marketable securities. On the other hand firms offer trade credit to their customers for increasing sales volume and profitability, which may cause a cash flow problem because sometimes it takes longer to collect account receivables. There is always a chance of occurrence of bad debts that may result in decreased performance (Afrifa et al., 2014). The increase in account receivables may lead a firm to finance its operations through credit that increase accounts payable (Ukaegbu, 2014). If the account receivables collection in days increase, profitability decreases because customers need additional time to assess product quality (Deloof, 2003). Therefore, researchers stresses on the importance of early collection of trade debts that accelerate firm profitability (Deloof, 2003; Raheman & Nasr, 2007). Therefore, it is hypothesized that:

H1b: There is a significant negative association between average collection period and Return on assets.

The accounts payment period (APP) includes the total time required by firms to pay bills to the suppliers (Tran et al., 2017). Earlier payment to supplier increases profitability. In case of late payment, firms may forgo discount offers for making payment earlier. It may affect profitability, reputation, and creditworthiness, of the company (Moodley, Ward, & Muller, 2017; Ukaegbu, 2014). If firms take more time to pay liabilities, their credit ratings may also be affected. Decrease in trade credit lower cost of goods sold because of availing the opportunity of early payment discounts (Lyngstadaas & Berg, 2016). While, accounts payable and firm profitability is negatively associated because less profitable firms take more time to pay their bills. Decrease in profitability of firms generate less cash from operations and firms make sure their survival by pending payments to suppliers (Deloof, 2003). On the other hand, stronger and less risky firms have the ability to prolong the accounts payable period. Thus taking maximum benefit of these non-interest bearing loans by delaying payment of short-term obligations. It increases firm profitability and overcome financial constraints. Thus firms exercise a short-term flexible and inexpensive financing source for themselves. It helps firms to assess product quality being supplied (Abuzayed, 2012; Gill et al., 2010; Raheman & Nasr, 2007). Hence, third hypothesis is:

H1c: There is a significant positive association between average payment period and Return on assets.

CCC is widely used measure of working capital management (Deloof, 2003). CCC indicates the time difference between purchase of raw material to collection of trade debts (Abuzayed, 2012; Tran et al., 2017). It indicates how efficiently current assets can be converted into cash (Yazdanfar & Öhman,

2014). Larger CCC portrays larger investment in working capital. It increases sales volume and profitability due to holding large inventory and generous credit policy to customers that trigger repetitive buying behavior (Baños-Caballero et al., 2014; Singhania & Mehta, 2017). On the other hand profitability can decrease with large CCC if investment cost in working capital exceeds the benefits of granting generous trade credit policy to customers and holding inventory (Abuzayed, 2012; Sharma & Kumar, 2011). High level of working capital requires more capital that must be financed by the firm. Which may incur more interest expense, increased credit risk, chances of bankruptcy and financial distress. It also locks up great amount of capital and thus firm forgo the chance of investment in other value enhancing projects (Baños-Caballero et al., 2014; Gill et al., 2010; Tran et al., 2017). Thus, proposed hypothesis is:

H1d: There is a significant negative association between cash conversion cycle and Return on assets.

2.2 Moderating effect of risk

According to Capital Asset Pricing Model, total risk of the company comprises of systematic risk and unsystematic risk. Market risk is triggered by external factors that are uncontrollable, for example, outbreak of pandemic, high fuel prices, market recession, terrorist threat and war, political instability, and economic downturns (Lee & Jang, 2007). These uncertain conditions may affect the choice of working capital by firms. In uncertain environment, there are significant consequences for working capital decisions. In case of higher market risk, firms have to maintain large inventory in order to hedge price fluctuation risk, and stock out risk. Similarly, organizations take time in collection of accounts receivables to retain healthy relationship with customers, and delay payments of account payables. This may increase cost for the firm (Miller & Chen, 2003). Whereas, in stable environment when risk is low firms efficiently manage working capital like they hold low level of inventory, decreased accounts receivables, high payables that comprise of shorter cash conversion cycle. Thus, to test whether systematic risk effects the association between working capital and firm profitability, we hypothesize that;

H2a: Systematic risk moderates the relationship between inventory turnover days and return on assets.

H2b: Systematic risk moderates the relationship between average collection period and return on assets.

H2c: Systematic risk moderates the relationship between average payment period and return on assets.

H2d: Systematic risk moderates the relationship between cash conversion cycle and return on assets.

Similarly, business risk is known as company specific risk. It is caused by volatility of stock return due to firm specific factors like strike, poor management, product defects etc. According to Miller and Chen (2003) risk affects operating efficiency of firm. Variability in process flow enables firms to hold excess inventory during downturns that results into higher inventory turnover in days. Similarly, firms with high business risk expose suppliers to default on their obligations. It may be that high business risk compels firms to delay payment of their bills. Similarly, firms that hold high business risk face difficulty in early collection of receivables. Thus, companies with high unsystematic risk reduce products and services cost or even in some cases, they sell at loss to boost their sales. Thus, an increase in risk either increase sales costs or firm loses customers. On the other hand, Aaker and Jacobson (1987) argued that financial managers of firm receive incentives for reducing business risk. They get bonuses and job security for avoiding adverse consequences of business risk. The reduction in business risk may enhance firm quality of management. Investors may prefer this type of firm. Therefore, these uncertain firm specific circumstances have major impact on firm's working capital decisions. To test whether unsystematic risk effects association between working capital and firm profitability the anticipated hypothesis are:

H3a: Unsystematic risk moderates association between inventory turnover periods and return on assets.

H3b: Unsystematic risk moderates association between average collection period and return on assets.

H3c: Unsystematic risk moderates association between average payment period and return on assets.

H3d: Unsystematic risk moderates association between cash conversion cycle and return on assets.

From the discussion above in literature, we can safely conclude that although high or low investment in working capital management stimulates sales, maximize profitability, and shareholder's value. Managers should formulate strategies for efficient management of working capital. Managers should formulate strategies that minimize risks, ensure smoothness of day to day operations, helps to avoid insolvency risk, and enhance profitability (Ali, 2011). Efficient management of operating capital balance liquidity and profitability, risk and efficiency (Dong & Su, 2010).

3. Research Methodology

To examine the impact of working capital management on firm profitability, data for relevant variables is collected from State Bank of Pakistan (SBP) and annual reports of respective companies. Furthermore, moderating variables (i.e.

Systematic and business risk) date is acquired from Pakistan Stock Exchange (PSX), and website of investing.com. The macroeconomic variables data is obtained from World Bank website. This research uses panel data from 2009 to 2018 for 244 listed non-financial firms of Pakistan. Panel data is used because of its various advantages such as sample size is large, more informative data, less collinearity between variables, and it better detects, and measure effects (Damodar, 2004). Panel data reduces risk of biased results that arise due to heterogeneity or other issues (Baños-Caballero et al., 2016).

For computation of final sample, various filters are applied on data. Firstly, financial firms including banks, insurance firms etc. are omitted from the sample due their unique business nature (Deloof, 2003). Secondly, companies with missing data are excluded from the sample. The sample comprised of 276 firms due to availability of all variables (i.e. Working capital, profitability and control and moderating variables) data. Finally, companies with extreme outlying values are excluded from the sample to make sure unbiased results. Standardized values are calculated for all variables. Standardized values that are three or four standard deviation away from mean are removed from the sample. Data of 244 firms for 10 years with 2440 firm-year observations is used for analysis.

In past these variables were used by (Chun-Hao & Jian-Min, 2012; Lee & Jang, 2007; McAlister, Srinivasan, & Kim, 2007; Miller & Bromiley, 1990; Miller & Chen, 2003; Quijano, 2013). Table 1 includes the detail of variables i.e. Abbreviations and formula used for the measurement of variables.

Table 1: *Detail of Variables*

VR	Measurement	Variables used in literature
ROA	Net income/ Total assets	(Boțoc & Anton, 2017; Lyngstadaas & Berg, 2016; Pais & Gama, 2015; Vahid et al., 2012; Yazdanfar & Öhman, 2014)
ITD	Inventory/Cost of goods sold*365	(Afrifa et al., 2014; Ali et al., 2010; Pais & Gama, 2015; Singhania & Mehta, 2017; Tran et al., 2017; Ukaegbu, 2014; Vahid et al., 2012; Yazdanfar & Öhman, 2014)
ACP	Accounts receivables/ Sales*365	
APP	Accounts Payable/ Purchases*365	
CCC	ITD+ACP-APP	
LEV	Total debt to total asset ratio	(Abuzayed, 2012; Afrifa et al., 2014; Boțoc & Anton, 2017; Deloof, 2003; Ukaegbu, 2014)
FS	Logarithm of sales	
SG	Current sales – Previous year sales/ Previous year sales	
DR	Lending interest rate	(Lyngstadaas & Berg, 2016; Mun & Jang, 2015)

SR	$R_i = B_o + B_I R_M + \epsilon_I$	(Hsu & Jang, 2008; Lee & Jang, 2007; Miller and Bromiley, 1990; Quijano, 2013)
USR	σ_ϵ (Standard deviation of residuals)	

Abbreviations: ROA=return on assets; ITD=Inventory turnover in days; ACP=Average collection eriod; APP= Average payment period; CCC=Cash conversion cycle; LEV=Leverage; FS=Firm size; SG=Sales growth; DR=discount rate; SR=systematic risk; and USR=Unsystematic risk

Interaction terms of each working capital variable were generated with systematic risk and unsystematic risk to test for the moderating effect. While dummy variables were generated for each industry to capture industry specific effect. Therefore, to test relationship between working capital management and firm performance estimated models are as follow:

$$ROA_{it} = \beta_o + \beta_1 ITD_{it} + \beta_2 Lev_{it} + \beta_3 FS_{it} + \beta_4 SG_{it} + \beta_5 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....1}$$

$$ROA_{it} = \beta_o + \beta_1 ACP_{it} + \beta_2 Lev_{it} + \beta_3 FS_{it} + \beta_4 SG_{it} + \beta_5 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....2}$$

$$ROA_{it} = \beta_o + \beta_1 APP_{it} + \beta_2 Lev_{it} + \beta_3 FS_{it} + \beta_4 SG_{it} + \beta_5 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....3}$$

$$ROA_{it} = \beta_o + \beta_1 CCC_{it} + \beta_2 Lev_{it} + \beta_3 FS_{it} + \beta_4 SG_{it} + \beta_5 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....4}$$

$$ROA_{it} = \beta_o + \beta_1 ITD_{it} + \beta_2 SR + \beta_3 ITD_{it} * SR_{it} + \beta_4 Lev_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \beta_7 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....5}$$

$$ROA_{it} = \beta_o + \beta_1 ACP_{it} + \beta_2 SR + \beta_3 ACP_{it} * SR_{it} + \beta_4 Lev_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \beta_7 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....6}$$

$$ROA_{it} = \beta_o + \beta_1 APP_{it} + \beta_2 SR + \beta_3 APP_{it} * SR_{it} + \beta_4 Lev_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \beta_7 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....7}$$

$$ROA_{it} = \beta_o + \beta_1 CCC_{it} + \beta_2 SR + \beta_3 CCC_{it} * SR_{it} + \beta_4 Lev_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \beta_7 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....8}$$

$$ROA_{it} = \beta_o + \beta_1 ITD_{it} + \beta_2 USR + \beta_3 ITD_{it} * USR_{it} + \beta_4 Lev_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \beta_7 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....9}$$

$$ROA_{it} = \beta_o + \beta_1 ACP_{it} + \beta_2 USR + \beta_3 ACP_{it} * USR_{it} + \beta_4 Lev_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \beta_7 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....10}$$

$$ROA_{it} = \beta_o + \beta_1 APP_{it} + \beta_2 USR + \beta_3 APP_{it} * USR_{it} + \beta_4 Lev_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \beta_7 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....11}$$

$$ROA_{it} = \beta_o + \beta_1 CCC_{it} + \beta_2 USR + \beta_3 CCC_{it} * USR_{it} + \beta_4 Lev_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \beta_7 DR_{it} + \delta_i industry_i + \epsilon_{it} \quad \text{.....12}$$

3.1 Estimation Approach

For the calculation of results, following techniques and specification tests are applied:

3.1.1 Regression analysis

This research study calculated regression results by using OLS regression technique. According to Damodar (2004) OLS model is extensively used in regression analysis because it is mathematically much simpler than other models. Panel data test i.e. Hausman test is used for choosing suitable model i.e. fixed effect model or random effect model. Null hypothesis of Hausman test shows that conditional mean of disturbances is zero. If Hausman test statistics reject null hypothesis then fixed effect model is suitable for analysis. Otherwise, random effect model will be appropriate in case of null hypothesis is accepted (Baltagi, Bresson, & Pirotte, 2003). The p-value of Hausman test rejected the null hypothesis in all models. Thus, it is indicated that fixed effect model is more suitable for conducting analysis in this study. Table-2 shows results of Hausman test.

Table 2: *Hausman Test Statistics*

	Chi-square test value	**P-value**
Model I	19.091	0.002
Model II	14.525	0.013
Model III	23.559	0
Model IV	21.596	0.001
Model V	20.627	0.004
Model VI	16.651	0.02
Model VII	25.56	0.001
Model VIII	23.166	0.002
Model IX	26.857	0
Model X	22.908	0.002
Model XI	31.212	0
Model XII	29.277	0

3.1.2 Normality of data

The Jarque-Bera (Jb) test is applied for checking normality of data. The Jb test statistics depicts that data was not normally distributed. Thus, log transformation was applied to normalize data. Table 3 represents the values of Jarque-Bera test.

Table 3: *Jarque-Bera Normality Test Statistics*

	Model I	**Model II**	**Model III**	**Model IV**
Jarque-Bera Chi(2)	1448	1460	1420	1449
P-value	0.00	0.00	5.e-309	0.00

3.1.3 Multicollinearity

Multicollinearity specifies the presence of perfect or linear relationship between explanatory variables of the model. To test multicollinearity, Various Inflation Factor (VIF) values are calculated. The highest mean VIF value is 1.05 which is too low than the rule of thumb (i.e. the value must be lower than 10) (Damodar, 2004). Thus, this indicates the absence of multicollinearity problem in panel data. Table 4 illustrates variance inflation factor (VIF) values.

Table 4: *Multicollinearity Test Statistics*

	Model I	**Model II**	**Model III**	**Model IV**
Mean VIF value	1.05	1.03	1.04	1.04

3.1.4 Autocorrelation

Autocorrelation is identified as a correlation amongst the members of series of data that are organized in time or space. Durbin Watson (DW) test is applied to check the presence of autocorrelation. Initially, the value of DW was on average 0.84 that indicates the presence of autocorrelation. However, log transformation and fixed effect model increased the DW value from 0.8 to 1.8 in all models. This value represents that although autocorrelation was present in the data but it lies in acceptable range (i.e. 1.5 to 2.5) (Damodar, 2004). Table 5 depicts the initial values of Durbin Watson test and the values after application of fixed effect models.

Table 5: *Durbin Watson Test Statistics*

	Model I	**Model II**	**Model III**	**Model IV**
Initial d-statistic	0.84	0.84	0.84	0.84
After Fixed effect d-statistic	1.89	1.88	1.88	1.89

3.1.5 Heteroskedasticity

Heteroskedasticity is the unequal variance between the disturbance terms. Brushe Pagan test is applied to identify heteroskedasticity in panel data. Null hypothesis of homoskedasticity is rejected in all models. Thus, this indicated presence of heteroskedasticity in data. Log transformation of the data removed the problem of heteroskedasticity. Table 6 represents the initial values of Brushe-Pagan test and the values after application of log transformation.

Table 6: *Breusch-Pagan Test Statistics*

	Model I	**Model II**	**Model III**	**Model IV**
Initial Test Statistics				
Breusch-Pagan chi2(1)	97.64	97.20	104.43	99.22
Prob > chi2	0.000	0.000	0.000	0.000
After Log transformation Test Statistics				

Breusch-Pagan chi2(1)	0.51	0.60	0.18	0.01
Prob > chi2	0.4760	0.4401	0.6703	0.9399

4. Results and Discussion

4.1 Descriptive Statistics

Table 7 shows descriptive statistics for the data of 244 non-financial firms from year 2009 to 2018. The average return on asset is 6.57% and standard deviation is 10.46. On average, inventory turnover takes 80.71 days to be sold. Whereas, standard deviation value for inventory is 64. It takes 41.87 days to collect receivables on average and 90.5 days to pay due bills by a company. The standard deviation value for both is 49.35 and 81.39. The mean value of CCC is 32.07 days while the deviation from mean is 91.64. The average and standard deviation of unsystematic risk is 0.03 and 0.02. On average, the systematic risk is 0.99 with 0.01 value of standard deviation. The mean firm size for non-financial firms included in sample is 15.36. Whereas, deviation from mean is 1.59. The mean sales growth is 10.45% and standard deviation of 25.76. Leverage has a variation of 19.86 and average of 53.47%. On average, the discount rate is 11.59 whereas its deviation is 2.39.

Table 7: *Descriptive Statistics*

Variables	Obs	Mean	St.dev.	Min	Max
ROA	2440	6.57	10.46	-35.79	63
ITD	2440	80.71	64.00	1	608
ACP	2440	41.87	49.35	1	459
APP	2440	90.50	81.39	4	776
CCC	2440	32.07	91.64	-730	556
LEV	2440	53.47	19.86	4	141
FS	2440	15.36	1.59	9.84	20.53
SG	2440	10.45	25.76	-75	552
DR	2440	11.59	2.39	8.21	14.54
SR	2440	0.99	0.01	0.826	1.18
USR	2440	0.03	0.02	0.007	0.30

The results of Pearson's correlation analysis are shown in Table 8. According to Gupta (2016) the correlation method determines the association between the two variables. This association can be positive and negative. The return on asset (ROA) is negatively associated with the inventory turnover in days, and accounts collection period. It means that decrease in inventory days, and accounts receivable days increase return on assets. Similarly, payable period is insignificant and negatively associated with ROA. While the CCC is significant and negatively associated with the profitability measure. It shows that the shorter cash conversion cycle enhance profitability of the firms. Thus, all the correlation coefficients for components of working capital are significant at 1% and 5% level of the significance except accounts payable

period. There is a negative link between correlation coefficients of leverage and profitability. Decrease in leverage increases firm performance. Similarly firm size, sales growth measured by logarithm of sales, and discount rate is significantly positively connected with return on assets. Whereas systematic and unsystematic risk is, negatively associated to ROA. The coefficient values of all other independent variables are low. This indicate lack of multicollinearity issue.

Table 8: *Correlation Analysis*

Variables	ROA	ITD	ACP	APP	CCC	LEV	LNS	SG	DR	SR	USR
ROA	1										
ITD	-0.049**	1									
ACP	-0.080ψ	0.048**	1								
APP	-0.016	0.054ψ	0.161ψ	1							
CCC	-0.080ψ	0.580ψ	0.691ψ	-0.328ψ	1						
LEV	-0.276ψ	0.009	0	0.087ψ	-0.036*	1					
LNS	0.208ψ	-0.177ψ	-0.035*	-0.022	-0.116ψ	0.038*	1				
SG	0.016**	0.013	-0.078ψ	-0.036*	-0.033*	0.102ψ	-0.070ψ	1			
DR	0.155ψ	-0.044**	-0.037*	0.01	-0.057ψ	0.123ψ	-0.102ψ	0.142ψ	1		
SR	-0.011	0.013	-0.017	0.025	-0.017	-0.045**	0.080ψ	0.018	-0.166ψ	1	
USR	-0.184ψ	0.086ψ	-0.029	-0.009	0.032	0.247ψ	-0.473ψ	0.107ψ	0.213ψ	-0.078 ψ	1.000

Significance Levels: ψ p<0.01, ** p<0.05, * p<0.1

4.2 Regression Analysis

Table 9 reports results of working capital management and return on assets relationship. In model I, ROA is dependent variable and independent variables include inventory turnover in days, leverage, sales growth, firm size and discount rate. The results revealed that the regression coefficients of ITD are significantly negatively related with return on assets. It shows that the relationship between the inventory turnover period and firm's profitability is statistically significant. Hence, H1a is accepted. It supports the view that if the firms hold large inventory there profitability will be decreased if sales drop suddenly due to market conditions. In this way, more capital is tied up in working capital at an expense of profitability. It also increase storage costs like warehouse rent, security, obsolesce, theft, insurance expense, chances of good not sold as per expectation and go over expiration date (Afrifa et al., 2014; Aregbeyen, 2013; Deloof, 2003; Lyngstadaas & Berg, 2016; Ukaegbu, 2014). The adjusted R2 for this model is 14.4%. It means that 14.4% variation in profitability is explained by the above-mentioned explanatory variables. The value of F-statistics and its p-value is highly significant indicating perfect model fit.

The results of model II indicate that regression coefficients of ACP are statistically significant at 5%. The ACP is negatively associated with return on

assets. Hence, H1b is accepted. The results support the view that firms should accelerate collection of accounts receivable for efficient working capital management. The increase in ACP decrease profitability because customers require additional time to assess product quality (Deloof, 2003). Firm profitability can be increased by decreasing ACP. In order to accelerate the collection of accounts receivables firms must have policies like discount on earlier payments (Ukaegbu, 2014). The adjusted R2 for this model is 15.2%. It means that 15.2% change in return on asset is explained by the above-mentioned regressor. The value of F-statistics and its p-value is highly significant indicating perfect model fit.

Model III results show that regression coefficients of APP are highly significant and positively influence return on assets. Hence, H1c is accepted. These results support the view that increase in APP will increase firm profitability (Dong & Su, 2010). Delayed payments may result into reduction of transaction cost. It increases firm profitability and overcome financial constraints. It acts as a short-term flexible and inexpensive financing source for firms. It helps firms to assess product quality being supplied (Abuzayed, 2012; Gill et al., 2010; Raheman & Nasr, 2007). Suppliers may agree to extend credit term based on trust. Trust between firm and suppliers is built on basis of repetitive purchase and information gathered about them from the market (Padachi, 2006). The adjusted R2 for this model is 13.9%. It means that 13.9% change in response variable is caused by the above-mentioned explanatory variables. The value of F-statistics and its p-value is highly significant indicating perfect model fit.

The results of model IV reveal that the regression coefficients of CCC are highly significant and negatively associated with return on assets. Hence, H1d is accepted. These findings support the view that the profitability of firms can be increased by decreasing CCC (Raheman & Nasr, 2007). Firms maximize value by shortening CCC because firms with shorter CCC are highly profitable (Ukaegbu, 2014; Yazdanfar & Öhman, 2014). The adjusted R2 for this model is 14.4%. It means that 14.4% change in response variable is caused by the above-mentioned explanatory variables. The value of F-statistics and its p-value is highly significant indicating perfect model fit.

Table 9: *Fixed Effect Results*

	Model I ROA	**Model II ROA**	**Model III ROA**	**Model IV ROA**
ITD	-0.088**			
	(-2.575)			
ACP		-0.065**		
		(-2.323)		
APP			0.170***	
			(3.656)	

CCC				-0.097***
				(-4.803)
LEV	-0.651***	-0.673***	-0.743***	-0.672***
	(-8.811)	(-9.202)	(-9.921)	(-9.234)
LNS	0.317***	0.322***	0.386***	0.337***
	(7.280)	(7.415)	(8.411)	(7.812)
SG	0.079***	0.078***	0.081***	0.073***
	(3.731)	(3.668)	(3.834)	(3.477)
DR	1.176***	1.190***	1.262***	1.175***
	(13.201)	(13.428)	(14.139)	(13.332)
_cons	-3.377***	-3.552***	-5.377***	-3.655***
	(-4.062)	(-4.330)	(-5.965)	(-4.539)
R-squared	14.4	15.2	13.9	14.4

(T-values) Level of Significance: *** *p<0.01, ** p<0.05, * p<0.1*

(T-values) Level of Significance: *** p<0.01, ** p<0.05, * p<0.1

Independent variables used in all models, firm size; sales growth, discount rate, and leverage, are highly statistically significant. Leverage is negatively linked with profitability of firm. Increase in leverage potentially decreases firm profitability (Aregbeyen, 2013). Similarly, firm size is positively associated with return on assets. It means that larger firms are more profitable than the smaller ones and avail favorable opportunities. Sales growth positively affects return on asset. It suggests that organizations with high growth in sales are more profitable than low sales growth firms. Increase in levels of sale generate enormous cash flows and keeps liquidity high (Lyngstadaas & Berg, 2016; Vahid et al., 2012). Discount rate is positively associated with return on assets.

4.3 Moderating Effect of Systematic Risk

Table 10 reports results of moderating effect of systematic risk on the working capital management and profitability relationship. In model V the interaction term of inventory turnover in days with the systematic risk (i.e. ITD*SR) is incorporated and results revealed that regression coefficient of ITD*SR is statistically insignificant. This means that systematic risk does not affect association of inventory turnover in days with return on assets. Therefore, H2a is rejected.

Model VI shows results of interaction term of account receivable in days with systematic risk (i.e. ACP*SR). The results reveal that regression coefficient of ACP*SR is statistically significant at 5%. Systematic risk positively moderates association of accounts receivable period with return on assets. The main effect in this model is negative while marginal effect is positive. It means that increase in systematic risk weakens negative association between ACP and ROA. It also shows that market risk compel firms to relax collection period, in order to accommodate difficult market condition of their

customers, distributors, and wholesalers. In uncertain economic environment firms delay collection of receivables. They may use lenient receivable policy to gain trust of customers and repetitive buying behavior that boost. Therefore, H2b is accepted.

In model VII interaction term of account payable period with systematic risk (i.e. APP*SR) is incorporated. The results show that regression coefficient of APP*SR is statistically significant at 1%. Systematic risk negatively moderates accounts payable and return on asset association. The main effect is positive while the marginal effect is negative in this model. It means that decrease in systematic risk strengthen positive correlation of APP and ROA. It also means that decrease in systematic risk will force firms to pay earlier to their respective creditors. Thus, desired situation of extended payments periods of firms is negatively affected by market risk. Therefore, H2c is accepted.

In model VIII interaction term of cash conversion cycle with systematic risk (i.e. CCC*SR) is used and results reveal that regression coefficient of CCC*SR is statistically significant. Systematic risk positively moderates relationship between CCC and return on assets. The main effect is negative while the marginal effect is positive in this model. It means that increase in systematic risk weakens negative association between CCC and ROA. It also shows that during uncertain conditions firms have to extend cash conversion cycle to avoid stock out risk, price fluctuation risk, and thus enhancing profitability. Consequently, H2d is accepted.

Table 10: *Fixed Effect Model Results*

	Model V ROA	**Model VI ROA**	**Model VII ROA**	**Model VIII ROA**
SR	-1.521	-8.567**	25.784***	-7.791***
	(-0.353)	(-2.142)	(3.655)	(-3.013)
ITD	-0.086**			
	(-2.479)			
ITD*SR	0.217			
	(0.202)			
ACP		-0.058**		
		(-2.063)		
ACP*SR		2.384**		
		(2.008)		
APP			0.156***	
			(3.340)	
APP*SR			-6.766***	
			(-3.876)	
CCC				-0.089***
				(-4.371)
CCC*SR				2.243***
				(3.024)
LEV	-0.653***	-0.677***	-0.745***	-0.677***

	(-8.824)	(-9.258)	(-9.975)	(-9.309)
LNS	0.319***	0.326***	0.389***	0.340***
	(7.297)	(7.491)	(8.448)	(7.869)
SG	0.080***	0.080***	0.084***	0.075***
	(3.758)	(3.769)	(3.955)	(3.563)
DR	1.171***	1.186***	1.246***	1.177***
	(13.027)	(13.272)	(13.905)	(13.259)
_CONS	-3.407***	-3.624***	-5.320***	-3.724***
	(-4.088)	(-4.416)	(-5.906)	(-4.629)
OBS.	2440	2440	2440	2440
R-SQUARED	14.4	15.2	14.2	14.6

(T-values) Level of Significance: *** *p<0.01*, ** *p<0.05*, * *p<0.1*

Although the results suggest that in normal circumstance or environment, firms are required to maintain shorter cash conversion cycle for efficient management of working capital. Organizations maintain low level of inventory, collect accounts receivables earlier from customers and delay payment to suppliers. However, market risk has reverted these ideal conditions to some extent. Such as in highly uncertain environment when there is high systematic risk firms are required to maintain high level of inventory, diverted towards lenient payment policy and making earlier payment to their creditors or suppliers.

Other independent variables used in all models, firm size; sales growth, discount rate, and leverage, are highly statistically significant. Leverage is negatively linked with ROA. Similarly, size of firm is positively associated with profitability. Sales growth has a positive influence on firm profitability. Discount rate is positively associated with return on assets.

4.4 Moderating effect of Unsystematic risk

Table 11 reports the results of moderation effect of unsystematic risk on the association of working capital and firm profitability. In model IX the interaction term of inventory turnover in days with unsystematic risk (i.e. ITD*USR) is incorporated and results illustrate that regression coefficient of ITD*USR is not statistically significant. This means that unsystematic risk does not moderate relationship between inventory turnover period and ROA. Therefore, H3a is rejected.

Model 10 reports the results of interaction term of account receivable period and unsystematic risk (i.e. ACP*USR). It reveals that regression coefficient of ACP*USR is not statistically significant. This means that unsystematic risk does not act as a moderator between accounts receivable period and profitability. Therefore, H3b is rejected.

Table 11: *Fixed Effect Model Results*

	Model IX ROA	Model X ROA	Model XI ROA	Model XII ROA
USR	0.139	0.048	0.469**	-0.031
	(0.735)	(0.359)	(2.039)	(-0.318)
ITD	-0.172			
	(-1.040)			
ITD*USR	-0.024			
	(-0.521)			
ACP		-0.064		
		(-0.462)		
ACP*USR		0.000		
		(0.012)		
APP			-0.205	
			(-1.014)	
APP*USR			-0.107*	
			(-1.902)	
CCC				-0.014
				(-0.155)
CCC*USR				0.024
				(0.902)
LEV	-0.661***	-0.682***	-0.751***	-0.677***
	(-8.862)	(-9.247)	(-9.965)	(-9.227)
LNS	0.323***	0.329***	0.385***	0.341***
	(7.319)	(7.466)	(8.270)	(7.778)
SG	0.079***	0.077***	0.081***	0.073***
	(3.720)	(3.642)	(3.826)	(3.450)
DR	1.161***	1.173***	1.247***	1.158***
	(12.794)	(12.969)	(13.708)	(12.881)
_cons	-2.906***	-3.407***	-3.635***	-3.754***
	(-2.710)	(-3.672)	(-2.917)	(-4.374)
Obs.	2440	2440	2440	2440
R-squared	14.3	15	13.9	14.3

(T-values) Level of Significance: *** *p<0.01*, ** *p<0.05*, * *p<0.1*

Similarly, in model XI the interaction term of account payable period and unsystematic risk (i.e. APP*USR) is incorporated. Results reveal that regression coefficient of APP*USR is not statistically significant. It shows that unsystematic risk does not act as a moderator between APP and ROA. Consequently, H3c is rejected.

Lastly, in model XII the interaction term of the cash conversion cycle and unsystematic risk (i.e. CCC*USR) is used and results reveal that regression

coefficient of CCC*USR is not statistically significant. This elaborates that unsystematic risk does not act as a moderator between CCC and ROA. Therefore, H3d is rejected.

4.5 Robustness Check

One drawback of fixed effect is that it eliminates time invariant effects like industry dummy (Damodar, 2004, p. 646). Therefore, OLS regression is estimated to capture industry effect as well as to confirm robustness of results. All variables along with 12 industry dummies were used in models to capture the industry specific effect. Textile industry was omitted to avoid dummy variable trap. Table 12 shows that all OLS regression results are steady with the findings of fixed effect regression model. One exception is APP, which is insignificant in OLS model.

Table 12: *OLS Results*

	Model I ROA	**Model II ROA**	**Model III ROA**	**Model IV ROA**
ITD	-0.077**			
	(-2.555)			
ACP		-0.063***		
		(-2.599)		
APP			0.068*	
			(1.741)	
CCC				-0.073***
				(-4.161)
LEV	-0.671***	-0.683***	-0.710***	-0.689***
	(-10.965)	(-11.250)	(-11.445)	(-11.355)
LNS	0.224***	0.221***	0.237***	0.228***
	(8.659)	(8.517)	(8.965)	(8.809)
SG	0.080***	0.078***	0.082***	0.076***
	(3.855)	(3.769)	(3.958)	(3.674)
DR	1.113***	1.117***	1.144***	1.106***
	(13.263)	(13.329)	(13.652)	(13.234)
CEM	-0.067	0.054	-0.082	-0.080
	(-0.246)	(0.198)	(-0.298)	(-0.295)
CCPP	-0.292	-0.063	-0.241	-0.238
	(-1.254)	(-0.274)	(-1.038)	(-1.041)
CRPP	0.233	0.225	0.217	0.105
	(1.256)	(1.218)	(1.154)	(0.555)
EMA	-1.438**	-1.491**	-1.507**	-1.695**
	(-2.153)	(-2.236)	(-2.247)	(-2.521)
FOOD	0.508***	0.524***	0.466***	0.487***
	(3.848)	(3.974)	(3.481)	(3.679)
FE	-0.625	-0.512	-0.616	-0.617

	(-0.928)	(-0.763)	(-0.915)	(-0.915)
MANU	-0.232	-0.122	-0.286	-0.178
	(-0.688)	(-0.360)	(-0.843)	(-0.525)
MIN	0.619***	0.584***	0.594***	0.571***
	(2.818)	(2.665)	(2.702)	(2.595)
MVTA	0.221	0.299	0.141	0.206
	(0.853)	(1.150)	(0.532)	(0.792)
PPP	0.419***	0.387**	0.324**	0.383**
	(2.632)	(2.451)	(2.020)	(2.424)
SERV	0.198	0.231	0.166	0.174
	(0.764)	(0.891)	(0.635)	(0.671)
SUG	0.476***	0.456**	0.420**	0.434**
	(2.660)	(2.558)	(2.336)	(2.425)
_CONS	-1.935***	-1.970***	-2.639***	-1.969***
	(-3.604)	(-3.704)	(-4.746)	(-3.758)
OBS.	2440	2440	2440	2440
Adj R^2	21.5	21.7	21	21.5

*(T-values) Level of Significance: *** p<0.01, ** p<0.05, * p<0.1*
Cement (CEM), Chemical, chemical products and pharmaceuticals (CCPP), Coke and refined petroleum products (CRPP), Electrical machinery apparatus (EMA), Food (FOOD), Fuel & Energy (FE), Manufacturing (MANU), Mineral (MIN), Motor vehicles, trailers and auto parts (MVTA), Paper, paperboard and products (PPP), Service (SERV), Sugar (SUG)

The ITD, ACP, and CCC are statistically significant and negatively associated with profitability. It supports the argument that firm can increase profitability while holding low level of inventory, accelerate accounts receivable collections and shorten cash conversion cycle. Whereas, leverage is significant and negatively linked with profitability. The increase in leverage ratio decreases return on assets. Similarly, sales growth, firm size, and discount rate are positively linked with profitability.

The industry effect illustrate that industries including food, mineral, electrical, paper, and sugar industry maintain positive relationship among ITD, ACP, APP, CCC and financial performance. They hold high level of inventory to rescue themselves from price fluctuations and stock out risk. Similarly, they have linear credit policy from suppliers and to customers. Thus, they have a longer cash conversion cycle to remain profitable. Whereas other industries such as chemical, manufacturing, cement, motor & vehicles, fuel & energy, coke and refined products, do not significantly affect working capital and ROA relationship. This change in results is due different dynamics of each industry.

Table 13: *OLS Results for Moderation Effect of Market Risk*

	Model V ROA	Model VI ROA	Model VII ROA	Model VIII ROA
ITD	-0.075**			
	(-2.453)			
SR	-1.977	-7.879**	26.382***	-7.686***
	(-0.462)	(-1.987)	(3.756)	(-2.992)
ITD*SR	0.372			
	(0.349)			
LEV	-0.672***	-0.687***	-0.711***	-0.692***
	(-10.969)	(-11.291)	(-11.479)	(-11.406)
LNS	0.225***	0.222***	0.240***	0.229***
	(8.665)	(8.517)	(9.021)	(8.821)
SG	0.080***	0.080***	0.084***	0.077***
	(3.870)	(3.855)	(4.053)	(3.741)
DR	1.109***	1.112***	1.132***	1.109***
	(13.044)	(13.108)	(13.389)	(13.119)
ACP		-0.057**		
		(-2.361)		
ACP*SR		2.225*		
		(1.889)		
APP			0.054	
			(1.379)	
APP*SR			-6.825***	
			(-3.924)	
CCC				-0.066***
				(-3.728)
CCC*SR				2.282***
				(3.094)
_CONS	-1.947***	-1.981***	-2.590***	-2.008***
	(-3.618)	(-3.719)	(-4.658)	(-3.830)
Industry Effect	Yes	Yes	Yes	Yes
OBS.	2440	2440	2440	2440
Adj R^2	21.5	21.8	21.5	21.7

(T-values) Level of Significance: *** *p<0.01,* ** *p<0.05,* * *p<0.1*

Table 13 demonstrates the results of moderation effect of systematic risk on association of working capital and return on assets. The results demonstrate that systematic risk negatively moderates the association between accounts payable days and return on assets. It positively moderates the relationship between ACP, CCC, and profitability. Whereas systematic risk does not moderate inventory turnover period and return on assets relationship.

The other independent variables significantly affect return on assets. Leverage is significantly and negatively associated with profitability. Increase

in leverage ratio decreases return on assets. Similarly, sales growth, firm size, and discount rate are positively linked with profitability. The industry effect depicts that the industries including food, mineral, electrical, paper, and sugar industry maintain positive relationship between all the components of working capital and financial performance. Whereas, other industries chemical, manufacturing, cement, motor & vehicles, fuel & energy, coke and refined products, do not significantly affect the working capital and ROA relationship.

Table 14: OLS Results for Moderation Effect

	Model IX ROA	**Model X ROA**	**Model XI ROA**	**Model XII ROA**
ITD	-0.193			
	(-1.223)			
USR	0.147	0.040	0.434**	-0.034
	(0.810)	(0.314)	(1.977)	(-0.362)
ITD*USR	-0.033			
	(-0.749)			
LEV	-0.676***	-0.688***	-0.711***	-0.691***
	(-10.896)	(-11.170)	(-11.326)	(-11.223)
LNS	0.226***	0.224***	0.232***	0.228***
	(8.459)	(8.344)	(8.434)	(8.505)
SG	0.080***	0.078***	0.082***	0.076***
	(3.861)	(3.753)	(3.959)	(3.664)
DR	1.108***	1.110***	1.136***	1.100***
	(12.949)	(12.989)	(13.301)	(12.898)
ACP		-0.085		
		(-0.646)		
ACP*USR		-0.006		
		(-0.173)		
APP			-0.301	
			(-1.562)	
APP*USR			-0.104*	
			(-1.950)	
CCC				-0.018
				(-0.200)
CCC*USR				0.016
				(0.620)
_CONS	-1.412*	-1.837***	-0.993	-2.069***
	(-1.680)	(-2.718)	(-0.996)	(-3.476)
Industry Effect	Yes	Yes	Yes	Yes
OBS.	2440	2440	2440	2440
Adj R^2	21.5	21.7	21.2	21.4

(T-values) Level of Significance: *** *p<0.01,* ** *p<0.05,* * *p<0.1*

Table 14 illustrates the results of moderation effect of unsystematic risk on working capital and profitability relationship. The results demonstrate that unsystematic risk does not act as a moderator between working capital management and firm profitability. It means that all the OLS results are consistent with the fixed effect regression results. Thus, these results confirm robustness and significance of the results of this study.

5. Conclusion

This research examines the impact of working capital on profitability of 244 listed non-financial firms of Pakistan. The findings reveal that inventory turnover period and accounts collection in days are negatively associated with return on assets. It means that decrease in ITD and ACP increase profitability. On the other hand, APP is positively associated with firm profitability. It is argued that delaying payments to suppliers increases profitability and overcome financial constraints. The CCC is significantly negatively related with firm profitability. Thus companies maximize their value while shortening CCC. Because companies with shorter CCC are highly profitable. Systematic risk has a positive moderating effect on relationship of ACP, CCC, and ROA. Similarly, systematic risk negatively moderates the relationship between APP and profitability. While unsystematic risk does not significantly affect the relationship between working capital and firm profitability.

Therefore, it is concluded that working capital management is significant for financial health of organizations. Thus managers must efficiently manage all components of working capital to achieve maximum profitability. To ensure effective management of working capital financial managers can incorporate latest technology like ERP system or centralized system in organization. This will help them to keep record of accounts payable, accounts receivable, and track inventory level. This may result into efficient management of working capital.

This research includes all listed non-financial firms for analysis. Which enumerates to 244 firms due to availability of data and application of various filters. In future researches, sample size and time period can be extended to capture recent trends and more encompassing results. There is room for industry specific research. Furthermore, instead of systematic and unsystematic risk, specific component of risk like downside risk, credit risk, interest rate risk etc. can be used to check the moderating effect on relationship of working capital and profitability. In addition to this contrasting research can be conducted on the similarities and differences of working capital practices in two different sectors.

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