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NEXUS BETWEEN WORKING CAPITAL MANAGEMENT (WCM) AND FIRM PERFORMANCE: EMPIRICAL EVIDENCE FROM MANUFACTURING SECTOR OF PAKISTAN USING GMM APPROACH

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ABSTRACT

Centered on the empirical evidence of Pakistani firms, this study aims to examine the relationship between working capital management and the performance of a company. A sample of 40 manufacturing firms listed on the PSX for the five-year period (2015-2019) were selected for analysis. Since working capital plays a major role in improving business performance, managers must find the effect of WCM on the performance of the company and manage WCM efficiently to improve profitability performance (ROA). Panel data regression is used to investigate the relation of WCM to the performance of a firm. As a result, the empirical findings of the regression analysis show that there is a significant negative relationship between ROA and CCC, and APP of manufacturing firms. Which is consistent with the earlier studies that longer the CCC and APP decline the profitability of the firm. On the other hand, ACP and InvTD have an insignificant effect on ROA for manufacturing firms. Conclusively, WCM has a substantial effect on the performance of manufacturing firms. Also, Due to endogeneity bias, the result of our analyses indicates significant differences in findings reported under the ordinary least square (OLS) approach, fixed effects, and the generalized method of moments (GMM) estimations.

Keywords: Working Capital Management (WCM), Return on Asset (ROA), Cash Conversion Cycle (CCC), Regression, Generalized Method of Moments (GMM).

1. INTRODUCTION

1.1 Background

A firm's performance is a vital measure to predict the ability of the firm in the market. Firm performance is all about the financial health of a particular firm. Firm performance can be measured in different ways which depend on the nature of industries to evaluate the performance such as revenue, return on asset, return on equity, profit margin, sales growth, and liquidity. These financial ratios will be more meaningful to measure the performance than others. Whereas the firm's performance has a significant proxy that is called working capital. Working capital is one of the important components to make fundamental decisions in corporate finance. After capital structure decisions and capital budget decisions, effective management of working capital results in a company reacting rapidly and appropriately to unforeseen market changes. Prices of raw material and gaining a competitive advantage among competitors are such variables to be considered (Appuhami, 2008).

Working capital is continually a significant issue while making a financial decision since it is a part of an investment in an asset that requires a reasonable financial investment. However, working capital is always neglected in financial decisions as it involves short-term investments and funding. Besides, it also hurts the financial performance of a firm as working capital does not contribute to return on equity (M. A. Zariyawati, 2009). Given its crucial position in the industry, the significance of cash as a pointer to proceeded financial health should come as no surprise. It requires the business to be run productively and beneficially. "In order to finance in the capital, accounts receivable, inventories, and supplies; these companies would be more reliant on owner's equity capital, mortgage loans, and short-term bank credit" (Abuzayed, 2012).

The effective administration of working capital for most companies is very important. The components of working capital are accounts receivables, inventories, accounts payable, and the efficient use of cash for operations on daily basis. An optimal level of working capital helps to reduce the need for working capital, which increases the free cash flow of companies. An incompetent working capital management strategy, which is actuated by poor corporate administration negatively affects shareholder's wealth. Effective corporate governance assists in controlling the management of company resources (V.Ganesan, 2007).

This paper focuses on the relationship between working capital and the performance of a firm that how the performance of any firm can be influenced by the management of working capital, and does it have a significant value? In addition, this paper will discuss empirically the manufacturing sector of Pakistan. Manufacturing is one of

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the largest industrial sectors of Pakistan with a share of around 12.13% of GDP. The manufacturing sub-sector is further divided into three segments: Large-scale industry (LSM) with a portion of 79.6% in the manufacturing sector, the share of small-scale manufacturing contributes 13.8% in manufacturing, and slaughtering in manufacturing makes up 6.5%. Large-scale manufacturing is a rapidly developing sector in Pakistan's economy. Since the manufacturing sector has the largest contribution to the economy of Pakistan, this sector still is investigated for a better understanding of the impact of working capital on a firm's performance. In addition, we employed the generalized method of moments (GMM) to control potential endogeneity issues. When dealing with structural equation modeling, endogeneity in regression models refers to the condition in which an explanatory (endogenous, e.g., research and development expenditure) variable correlates with the error term, or if two error terms correlate. As a result of endogeneity bias, estimates can be inconsistent (i.e., they don't always tend to be the true value as the sample size grows), which can lead to inaccurate inferences, misleading conclusions, and incorrect theoretical interpretations (Subhan Ullah, 2017).

1.2 Problem Statement

Working capital is known to be an important power for any business entity, and the management of working capital is seen as one of the main elements of running a business. Each entity needs the necessary amount of working capital regardless of the size and type of business. The most significant factor in looking after profitability, liquidity, and growth is working capital. Hence, this study focuses on the impact of the management of working capital on the performance of Pakistani manufacturing firms and validates the results of previous study.

1.3 Justification

Working capital management, a significant factor that influences the firm's performance. So, it would be important for corporate managers to understand the connection between a firm's performance and working capital. Increasing competency in the market requires an efficient strategy of working capital since it is highly associated with a firm's performance. Hence, to tackle with current needs of the market, this study will be helpful for the growth of the business. This study can be beneficial for the manufacturing sector and the financial managers to manage day-to-day operations in a more specialized and efficient way. This study used to validate the previous studies results.

2. LITERATURE REVIEW

Financial performance is a qualitative assessment of the potential of a company to use and generate income from the assets of its primary mode of operation. Working capital management also been defined as the "management of current assets and current liabilities and financing these current assets". As the Working Capital requirement decides profitability by meeting a company's short-term financial needs, working capital is a crucial factor in increasing sales and rising the company's financial health. A significant number of studies have been done to determine the effect of working capital on a company's performance, which establishes almost identical WCM determinants. Louw et al., (2022) examined and contrasted a long run relationship between working capital management and profitability of retail and construction industries of South Africa. It has been indicated in this research that working capital management has a greater impact on retail industry than construction industry. Bieniasz & Gołaś (2011), conducted research and found that the there is a significant association between working capital management and firm profitability. It is also suggested that the shortest working capital obtains higher rate of profitability in food industry.

According to Sonia Baños-Caballero (2014), for a sample of non-financial UK enterprises, their paper investigates the relationship between working capital management and corporate performance. Because of the costs of going away from the ideal working capital level, the findings suggest that managers should be worried about working capital.

According to Mohammad Tahir, (2016), the data is analyzed using the dynamic panel generalized technique of moments. "Reducing the cash conversion cycle, which will prevent firms from seeking external financing, resulting in lower borrowing and interest costs and, as a result, increased textile firm profitability".

Doan, (2020) conducts a study on a similar ground of study with a sample of 20 fishery enterprises listed on Vietnam's stock market, for the period of 2010-2018. "The findings demonstrate that the accounts receivable period (AR), inventory period (INV), accounts payable period (AP), and cash conversion cycle hurts the profitability (ROA) of companies (CCC). Furthermore, the significant impact of firm size (SIZE), leverage (LEV), economic growth (GDP), and inflation (INF) on profitability (ROA) was found in this study". Yasir et al., (2014) also conducted research on cement industry of Pakistan and found a negative relationship between cash conversion cycle and firm performance.

In summary of the above past studies, this has been a controversial issue across the world. Some researchers argue that WCM has a significant positive effect on performance, while other researchers argue that WCM and profitability have a significant negative relationship. However, the topic remains open to further research. In the context of Pakistan, this paper will further examine the relationship of working capital management and the performance of the company empirically evidence from the manufacturing sector registered in the Karachi Stock Exchange.

2.1 Working capital and the performance of a firm

Several studied validate the relationship between working capital and performance of the firm. "The WCM and profitability show a positive relationship" (Kumar, 2011; Ali, 2011; Le, 2019). A conservative WCM negatively affects firm performance (Zanxin Wang, 2020). "There is a significant impact of working capital management on the profitability of selected real estate companies" (Dalayeen1, 2017). "The findings show that working capital and company performance have an inverted-U shape association" (Sung Gyun Mun, 2015; Nufazil Ahangar, 2017).

2.2 Average Collection Period and the performance of a firm

According to Daniel Mogaka Makori and Ambrose Jagongo, (2013); Panigrahi, (2020); Doan, (2020) "there is a negative correlation between the return on assets and the company's average payback period and the cash conversion cycle". This means the longer the credit period is given by the companies to their customers, the lower the profitability of the companies would be. "Account receivables have a positive impact on firm profitability" (Akinlo, 2011). "Accounts receivable strategy is an essential part of working capital management for the financial performance of Pakistani non-financial corporations" (Mohsin Siraj, 2019).

2.3. Average Payment Period and the performance of a firm

There is a positive correlation between the payroll duration and the ROI of manufacturing and construction companies in Kenya (Daniel Mogaka Makori and Ambrose Jagongo, 2013) Account payable has a negative impact on firm profitability (Deloof, 2003),(Mrs Akinlo, 2011), (Doan, 2020).

2.4 Inventory Turnover and the performance of a firm

According to Abdul Raheman, (2010); Doan, (2020) "there exists a negative association between Inventory Turnover in Days and Profitability for the manufacturing sector as a whole, which implies that keeping lesser inventories will increase profitability". "Inventory period has a positive impact on firm profitability" (Daniel Mogaka Makori and Ambrose Jagongo, 2013; Akinlo, 2011; Panigrahi, 2020).

2.5 Cash Conversion Cycle and the performance of a firm

According to (Tryfonidis, 2006; Nadeem Iqbal, 2013) CCC significantly affects the profitability of firms. According to Kumar (2011) and Akinlo (2011) the result shows the positive value of CCC of the coefficient. "This implies that a decrease in the cash conversion cycle will generate lesser profits for a company. Reducing the cash conversion cycle results increase in profitability of a firm" (Mohammad Tahir, 2016; Panigrahi, 2020; Doan, 2020).

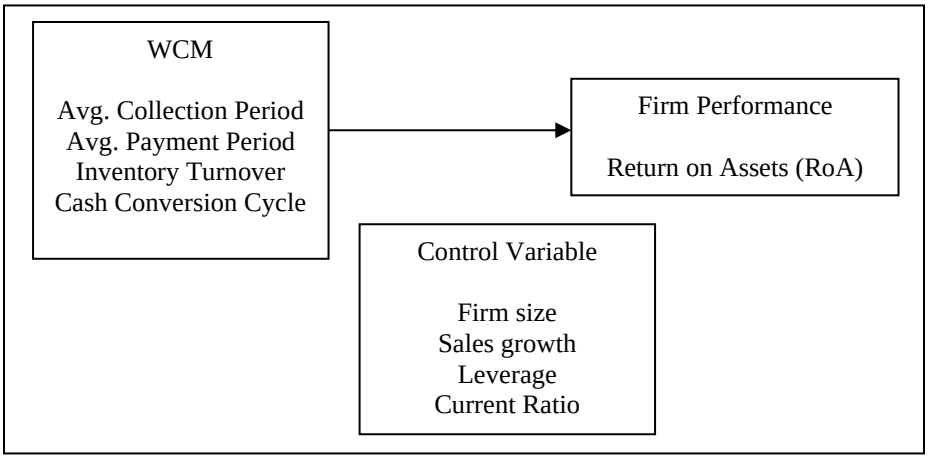
2.6 Hypothesis

The following hypotheses are formulated to be tested in our study:

H1: Working capital has a significant impact on the performance of manufacturing firms of Pakistan.
H2: Average collection period (ACP) has a significant effect on performance of manufacturing firms of Pakistan.
H3: Average pay period (APP) has a significant effect on the performance of manufacturing firms of Pakistan.
H4: Inventory turnover in days (InvTD) has a significant effect on the performance of manufacturing firms of Pakistan.
H5: Cash conversion cycle (CCC) has a significant effect on the performance of manufacturing firms of Pakistan.
H6: Current ratio has a significant effect on the performance of manufacturing firms of Pakistan.

2.7 Conceptual Framework

Figure 2.1: Conceptual Framework



3. RESEARCH METHODOLOGY

This study used quantitative research methodology as secondary data of 5 years (2015 to 2019) of the manufacturing companies listed on PSX has been extracted. Data has been collected from the annual reports of the targeted firms.

3.1 Variables

To define the impact of WCM on firm performance, the following independent variables, dependent variables, and control variables must be considered.

3.2 Independent variable

Average Collection Period (ACP):

Account receivable policy is a key component of WCM for financial performance. Therefore, the ACP is also considered as a component of the independent variable. The calculation method is as follows: the ratio between accounts receivable (AR) and sales multiplied by 365.

ACP = (AR / sales) * 365

Average payment period (APP):

Current liabilities directly affect the working capital which results in the change of a firm's performance. We use the average payment period (APP) as part of the independent variable that comes from dividing accounts payable (AP) by cost of goods sold (COGS) and multiplied by 365.

APP = (AP / COGS) * 365

Inventory turnover in days (InvTD):

Inventory is one of the significant components of working capital which plays role in day-to-day operations. Inventory level varies according to the nature of the business to meet the requirement and generate revenue. We also considered Inventory Turnover in Days (InvTD) as an independent variable in our study. The Inventory Turnover in Days (InvTD) rate is calculated as a ratio of total inventory to cost of goods sold (COGS) and multiplied by 365.

Inventory Turnover in days (InvTD) = Total Inventory / COGS *365

Cash conversion cycle (CCC):

This metric explains how long it takes to convert assets to cash flow. This is another independent variable used as an aggregate measure of WCM. It is measured as days on inventory turnover plus the ACP and APP is deducted.

CCC = (Inv. Turnover + ACP) – APP

3.3 Dependent variable

Return on Assets (ROA):

ROA discusses the company's financial performance. The ROA is a dependent variable considered to be. The ROA is calculated by dividing the (EBITDA) from total assets.

ROA = EBITDA / total assets

3.4 Control variable

Firm size:

Depending on size, working capital varies from company to company. Firm size of the business is an important part of working capital. Therefore, in our study, firm size is considered as a control variable. Natural log of total assets is used to calculate the size of the firm.

Size = Log*(total assets)

Sales growth:

Growth of a business depends on the sales growth of a particular business. We use sales growth as a control variable. We can calculate sales growth as the ratio of the change in sales to last year's sales.

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

Leverage:

Leverage is the ratio of total liabilities to total assets. Leverage is considered as control variable in our study.

Leverage = total liabilities / total assets

Current Ratio (CR):

It tests a company's liquidity or its capacity to fulfill its short-term liabilities. It is measured as the ratio of current assets to current liabilities. Another part of our studies is the following.

Current ratio (CR) = current assets / current liabilities

3.5 Model Specification

Balanced panel data is used to determine the impact of WCM on business performance. The following regression equation models are developed to obtain the results:

$$ROA_{it} = \beta_{\circ} + \beta_1 ACP_{it} + \beta_2 APP_{it} + \beta_3 InvTD_{it} + \beta_4 CCC_{it} + \beta_5 GR_{it} + \beta_6 LEV_{it} + \beta_7 SIZE_{it} + \beta_8 CR_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots (1)$$

Where:

ε = Random disturbance (Epsilon, a constant, whose mathematical value is 2.7183)

3.6 Research Design

This is a basic study that is designed for explanatory research as we will see the connection between a dependent variable (ROA) and an independent variable (WC). This study will follow a quantitative approach by the mono method. Secondary data is being used to conduct this research in which the time horizon will be cross-sectional.

3.7 Procedure and estimation approach

When researchers attempt to study the impact of a dependent variable (ROA) and multiple independent variables (working capital), the type of research tool will be panel data regression. Controlling for observable heterogeneity is easier with panel data. It provides additional data, increases variability, improves efficiency, and reduces collinearity among variables. Also, it makes it easier to model technological efficiency by allowing complex models to be built. To avoid the problem of endogeneity, we adopt the instrumental variable estimating method. We apply the two-step generalized approach of moments in particular (GMM). Data was collected from the Karachi Stock Exchange and the financial statement of the sample companies. The collected data was entered to verify the authenticity of the data in E-Views applications. Then to statistically test and interpret the research, different instruments and methods are applied to the results.

3.8 Population

The total population size in this study includes all manufacturing companies of Pakistan that are listed on the PSX.

3.9 Sample design and sampling technique

There are 220 manufacturing companies listed on PSX. Simple random sampling has been selected for the selection of companies. 140 companies had been selected but data of only 40 companies has been gathered due unavailability of data.

3.10 Analysis of data and software employed.

MS Excel and E-Views are used to analyze, edit, correlate, and classify data. The MS Word was used in the reporting process.

4. DATA ANALYSIS AND FINDINGS

To begin a descriptive statistical study, descriptive statistics and data normality are evaluated using descriptive analysis and histogram (Standard deviation, Kurtosis, Skewness, and Jarque-Bera), followed by the Unit root test, Hausman test, and Regression analysis. Multicollinearity, auto-correlation, and data stationery are all addressed in the next sections, and corrective measures are adopted. These explanatory variables include, for their study and interpretation, ROA, ACP, InvTD, APP, CR, CCC, company size, sales growth, and leverage.

4.1 Descriptive statistics

The findings of manufacturing companies obtained from the use of descriptive statistical instruments, such as mean, median, maximum, and minimum values, and standard deviation, are described in Table 4.1.

Table 4.1. Descriptive Statistics of Manufacturing companies of Pakistan

	Mean	Median	Max.	Min.	Std.Dev.	Skewness	Kurtosis	Jarque.bera	Prob.
ROA	10.618	9.95	53.5	-15.84	10.3664	0.4089	4.3920	21.7225	0.000
ACP	29.322	16.235	243.26	0.000	33.0626	2.3928	12.169	891.5747	0.000
Log-APP	2.2336	2.2526	3.1534	1.5269	0.2918	0.1699	3.3717	2.1142	0.3474
Log-InvTD	1.9358	1.9306	3.0192	0.6954	0.2934	-0.1115	5.7837	64.9915	0.000
CCC	-77.52	-35.038	143.29	-1117	139.1303	-2.8397	18.039	2153.6620	0.000
Growth	0.0927	0.0784	1.5976	-0.634	0.2427	1.5349	11.432	671.0458	0.000
Log-Lev.	-0.345	-0.3149	0.3487	-0.845	0.2093	-0.3024	2.7647	3.5099	0.1729
Size	10.186	10.1820	11.190	8.9276	0.5379	-0.0785	2.3470	3.7585	0.1527
Log-CR	0.1269	0.1238	2.1399	-1.154	0.3218	0.6667	10.833	526.1195	0.000

No. of total observations = 200
Cross-sections included = 40
Source output: E-Views 10

In above table, as series of ROA has JB P-value < 0.05, also after taking log of ROA didn't bring improvement in the normality hence, we used it as the same which has sk=0.4 and kurtosis=4.39. Similarly, ACP also has JB P-value < 0.05 and it is used as same because log of ACP didn't improve the P-value as well as skewness and kurtosis which are 2.39 and 12.16 respectively. As series APP has JB p-value < 0.05 hence log of APP is applied on the data which makes p-value > 0.05 (0.3474). Further, the skewness and kurtosis are also improved in the series APP (sk=-0.16 and krt=3.37). Similarly, log of InvTD is also used although p-value remains < 0.05 but skewness and kurtosis are

improved (sk=-0.11, krt=5.78). Series of CCC and Growth are taken in the absolute form due to several negative values although they have JB P-value < 0.05. Further, leverage is transformed into logarithm form because log of leverage makes the p-value > 0.05 (0.1729), also improved the skewness and kurtosis in the series of leverage (sk=-0.30 and krt=2.76). As far as, series of Size has JB p-value > 0.05 (0.1527) which means data is normally distributed. Moreover, skewness and kurtosis are -0.07 and 2.34 respectively. Also, as CR is concerned JB p-value < 0.05, hence it is transformed into logarithm. Although p-value remains < 0.05 but skewness and kurtosis have improved (sk=0.66 and krt=10.83).

Hence, the following equation 2 is formulated:

$$ROA_{it} = \beta_{\circ} + \beta_1 ACP_{it} + \beta_2 \log (APP)_{it} + \beta_3 \log (InvTD)_{it} + \beta_4 CCC_{it} + \beta_5 GR_{it} + \beta_6 \log (LEV)_{it} + \beta_7 SIZE_{it} + \beta_8 \log (CR)_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots (2)$$

4.2 Correlation

To investigate the collinearity in the data we tested the correlation among all variables. Following table shows the tendency of the relationship of the variables.

Table 4.2: Correlation Matrix

	ROA	ACP	Log-APP	Log-InvTD	CCC	Growth	Log-Lev.	Size	Log-CR
ROA	1								
ACP	-0.0099	1							
Log-APP	-0.2135	0.3148	1						
Log-Invtd	0.0518	0.3659	0.4047	1					
CCC	0.1318	0.0700	-0.6943	0.1273	1				
Growth	0.1879	0.0199	-0.1248	-0.0984	0.0994	1			
Log-Lev.	-0.3327	-0.1131	0.4177	-0.1418	-0.4461	0.0130	1		
Size	0.0614	-0.1986	0.2712	0.0351	-0.2797	0.0757	0.1828	1	
Log-CR	0.2957	0.1953	-0.4625	0.2363	0.5313	0.0693	-0.6146	-0.1747	1

No. of total observations = 200
Cross-sections included = 40
Source output: E-Views 10

The above table shows the correlation analysis which shows that log of APP is highly negatively correlated independent variable with dependent variable (ROA). Whereas ACP is also negatively correlated with ROA. Log of InvTD and CCC is positively correlated independent variable with ROA. Among the controlled variables only log of LEV is negatively correlated with ROA. Growth, size, and log of CR is positively correlated with ROA.

4.3 Unit Root Test – ADF

To diagnose the unit root test of the variables, the Augmented Dickey Fuller (ADF) test is applied. It defines that if the p-value < 0.05, the null hypothesis is accepted. Which implies that series has no unit root hence, the data is stationary. On contrary, if p-value > 0.05 this means that the series has a unit root hence the data is not stationary.

Table 4.3: Unit Root Test – ADF

Variable	Level	1st Difference	2nd Difference
ROA	0.0000	0.0000	0.0000
ACP	0.0000	0.0000	0.0000
Log-APP	0.0000	0.0000	0.0000
Log-InvTD	0.0000	0.0000	0.0000
CCC	0.0000	0.0000	0.0000
Growth	0.0000	0.0000	0.0000
Log-Leverage	0.0000	0.0000	0.0000
Size	0.0001	0.0000	0.0000
Log-CR	0.0000	0.0000	0.0000

In table 4.3, all the variables have p-value < 0.05, which are tested at level, 1st difference, and 2nd difference. Hence all the series has no unit root. This employs that the data is stationary and there is no need to take 1st or 2nd differences since data are already stationary at the level.

4.4 Autocorrelation

By testing the ordinary least square (OLS), the value of Durbin-Watson was investigated to observe the autocorrelation among the variables. The Durbin-Watson value i.e., 0.863379 suggests that the variables are negatively correlated. Hence, this confirms the existence of autocorrelation. To eliminate this problem, we used lag of dependent variable i.e., LROA as a remedial measure. After taking LROA as an independent variable the Durbin-Watson value becomes 1.844093. This value shows that now the auto-correlation issue has been resolved. On the other hand, LROA makes the most important independent variable (CCC) insignificant that is why we did not add LROA as an independent variable. However, we found the best result for regression and GMM.

4.5 Regression Analysis

This study employs the Panel Data Multiple Regression Model to investigate the impact of working capital on the profitability of manufacturing firms of Pakistan. Panel data allows us to control for variables we cannot observe or measure like cultural factors or differences in business practice across firms, or variables that change over time. Thus, it accounts for heterogeneity. There are two commonly used Panel Model Techniques viz. the Random Effect Model and the Fixed Effect Model. The choice of these techniques depends on the Hausman specification test. In order to decide, the model to be employed for the study using the Hausman test, the null hypothesis states that the random effect is consistent, whereas the alternative hypothesis said, the random effect is not consistent, and it implies fixed effect is an appropriate model.

Table 4.4: Hausman Test Result for Manufacturing Firm

Test Summary	Chi Sq.Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	20.588082	7	0.0044

By running the Hausman specification test for manufacturing companies the results showed the Chi2 value is less than 0.05. This implies the Hausman test supports the use of the FE model where the data failed to show the existence of a correlation between the individual heterogeneity and the regresses leading to accept the null hypothesis. Based on the results from the Hausman test the null hypothesis, which said that FE is consistent which is highly accepted for this study implies FE is appropriate than the RE model for the study.

Table 4.5: Regression Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ACP	0.011269	0.026433	0.426324	0.6704
LOG_APP	-12.919	5.740591	-2.25047	0.0256
LOG_INVTD	6.326138	3.603742	1.755436	0.0808
CCC	-0.02124	0.009139	-2.32433	0.0212
GROWTH	7.494355	2.843131	2.635951	0.0091
SIZE	2.482143	1.383329	1.794326	0.0743
LOG_LEVERAGE	-12.475	4.214281	-2.96018	0.0035
LOG_CR	2.741829	3.173948	0.863854	0.3888
C	-5.38993	14.65207	-0.36786	0.7134
R-squared	0.198921		F-statistic	5.928548
Adjusted R-squared	0.165368		Prob (F-statistic)	0.000001
Durbin-Watson stat	0.863379			

The above result shows that the average payment period (APP) has a significant negative impact on return on assets since the p-value is less than 0.05 and the t-value is less than 2. Therefore, the null hypothesis is also accepted here. Moreover, the cash conversion cycle has a significant negative impact on return on assets as the p-value is less than 0.05 and the t-value is greater than 2. This means that increase in the length of the cash conversion cycle (CCC) will lead to a decrease in firms' profitability or vice versa. Hence, the null hypothesis is accepted. This result is consistent

with the findings by (Deloof, 2003; M. A. Zariyawati, 2009; Nadeem Iqbal, 2013; Daniel Mogaka Makori & Ambrose Jagongo, 2013; Panigrahi, 2020). However, few researchers showed contradictory results Kumar 2011; Abuzayed, 2012; Asif Iqbal and Wang Zhuquan 2014).

Concerning the control variables, growth has a positive significant impact and log leverage has a significant negative impact on profitability having p-value 0.0091 and 0.0035 respectively. Also, the explanatory power of this model is 19.8921% which shows a good strength of the model.

4.6 The Generalized Method of Moments (GMM) model

The GMM model for dealing with endogeneity, demonstrating how this resilient strategy can control for many types of endogeneity difficulties and so provide unbiased estimates. Lagged values (ROA) are used as regressors in the two-step dynamic model below. In the estimator, these lagged levels of the dependent variable are used as instruments to cope with endogeneity. Lag (ROA) also refers to the number of lags researchers want to add to the model. Using the GMM system reduces the number of observations due to the internal transformation process.

Table 4.6: GMM Model – Two Step Test Result for Manufacturing Firm

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ACP	0.041273	0.022621	1.824586	0.0696
LOG_APP	-7.80061	4.929735	-1.58236	0.1152
LOG_INVTD	0.402849	3.125831	0.128878	0.8976
CCC	-0.0077	0.007912	-0.97367	0.3315
GROWTH	8.732092	2.41255	3.619446	0.0004
SIZE	2.517203	1.170706	2.150159	0.0328
LOG_LEVERAGE	-10.0425	3.575776	-2.80849	0.0055
LOG_CR	0.159016	2.701795	0.058856	0.9531
LROA	0.528222	0.059853	8.825251	0
C	-10.0614	12.48658	-0.80577	0.4214
R-squared	0.431134		J-statistic	189
Adjusted R-squared	0.404045		Prob(J-statistic)	0
Durbin-Watson stat	1.844093			

In the above table, GMM two-step model makes the independent variables insignificant. However, growth is positively associated, and log leverage is negatively associated with profitability. This model has 43.1134% strength to explain the relationship which is a good percentage of explanatory power.

5. DISCUSSION

The main purpose of this research is to investigate the relationship between the management of working capital and the profitability of 40 manufacturing firms listed on the Pakistan Stock Exchange (PSX) for the period of 5 years from 2015 to 2019. The panel data was estimated using fixed effects as the technique more fits with the data collected. The hypotheses are finally formulated to examine the relationship between working capital management and firm profitability, which is measured by return on assets. The results of regression analysis and GMM are compared with the results of descriptive analysis for testing the hypothesis designed for the study.

6. CONCLUSION

This study seeks to investigate the relationship between the management of working capital and the company's performance. For analysis, a sample was selected of forty (40) manufacturing firms of Pakistan over the five-year period from 2015 to 2019. Sample data on Ms. Excel was obtained from the Stock Exchange of Pakistan (PSX). For the various descriptive statistical analyses, the assistance of statistical software, version E-Views 10, is taken. In running and evaluating the findings, descriptive statistics, correlation coefficient analysis, unit root test, auto-correlation, panel regression, and GMM were used.

As a result, the empirical outcome of the Panel Regression Analysis showed that the outcome of the regression analysis also shows that the inventory turnover in days is strongly and negatively associated with the manufacturing company's performance. As a result, inventory turnover increases, manufacturing business profitability will decline, or vice versa. In addition, the CCC has a substantial negative effect on the output of manufacturing companies. Therefore, the profitability of manufacturing companies would be hurt by a longer cash conversion cycle.

In addition, the growth in sales indicates a good relationship with the performance of the company, indicating that it will contribute to more profit as the sales growth increase. This means that relative to smaller businesses, larger corporations also have good earning power. However, leverage is negatively associated with the performance in both the sector.

Conclusively, WCM has a substantial effect on the performance of manufacturing firms therefore managers of the firm must have to use effective strategies of management of working capital to enhance the performance of a business.

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