The impact of Working capital Management drives on Profitability in the chemical Sector of Pakistan

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Abstract

The aim of this study is to find out the impact of working capital management's drives on profitability in the Chemical Sector firms listed on the Pakistan Stock Exchange for the period of 2019-24. The positive and significant relationship between average collection period and profitability shows that chemical sector of Pakistan offer more time to customer for collection of debts amount, which in turn increases the levels of profitability. The negative and significant relationship between cash conversion cycle and profitability shows that shorter period in cash conversion cycle increases the chances of profitability.

Keywords: Working Capital Management, GMM, Collection Period, Profitability

Introduction

Working capital refers to the funds businesses require to finance their day-to-day operation, ensuring they can meet their short-term financial obligation and invest in growth opportunities (Ponsian, 2007). It represents the excess of current assets over current liabilities. The working component includes current assets, Non-current assets, current liabilities, and non-current liabilities. Current assets are assets that are expected to be converted into cash or used up within one year or within the company's normal operating cycle whichever is longer. Current assets are important for the company's liquidity and ability to

meet its short-term obligations. They are also used to calculate various financial ratios, such as the current ratio, and quick ratio which help assess a company's financial health. The current assets include cash and cash equivalents, Accounts receivable, inventory, prepaid expenses, marketable securities, and short-term investments, Current liabilities are a company's debts or financial obligations that must be paid within a year or a normal operating cycle, and they include, Accounts payable, Dividends payables, Notes payables, Income taxes, Accrued expenses, Taxes payable, unearned revenue, and interest payables. The term working capital is the difference between current assets and current liabilities. When current assets are greater than current liabilities then, there is positive working capital whereas, when current liabilities are greater than current assets means negative working capital. Positive working capital prevails in this organization having excess cash flow to pay its liabilities. Working capital is one of the most important tools to deal with unpredictable situations. Furthermore, as the names suggest working capital management that business strategy that helps companies manages their current assets and liabilities and optimize cash flow.

The goal of working capital management is to ensure that the business can meet its short-term financial obligations and expenses while also contributing to its long-term goals some key aspects of working capital management include. Cash flow management ensures that the company has enough cash to meet its financial obligation and investment in growth. Account receivable management maintains the credit policies, monitors customer payments, and improves collection practices. Account Payable management is responsible for managing payments to suppliers and taking advantage of credit terms. Inventory management maintains an adequate level of inventory to meet demand without tying up too much capital. Short-term financing management ensures access to liquidity to finance short-term operations without taking on excessive risk. Effective working capital management can help companies, improve their cash flow, reduce the need for external borrowing, and free up cash for growth and investment. In developing and emerging economies, where there is significant volatility and widespread pricing instability due to the erratic nature of the financial markets and the uncertainty surrounding the state of the economy, working capital management is even more crucial.

Problem Statements:

The current research gap of the study is maximizing operational efficiency by maintaining a balance between growth, profitability, and liquidity. Effective Working capital Management can help maintain smooth operations and improve a company's earnings and profitability. Poor working capital management can lead to a lower credit score, financial insolvency, legal troubles, liquidation of assets, and potential bankruptcy. In developing countries, Working capital Management faces challenges such as limited access to credit, high interest rates, and inadequate financial infrastructure. SMEs in developing countries often have limited access to working

capital and face challenges in managing their working capital effectively.

The Chemical Industry is one of the largest and fastest-growing sectors in the world and in Pakistan, offering immense potential for further growth. The industry is a significant contributor to Pakistan's GDP and is considered a vital sector for the country's overall industrial development and self-reliance. The Industry provides key linkages in terms of product technology to several industries, such as automotive, engineering, consumer durables, food processing, and petrochemicals. The growth of the chemical sector in Pakistan is directly proportional to the growth of the overall manufacturing sector. The industry has had significant growth in recent years, with a market size of around $trillion and over 70000 products. Pakistan's chemical industry is diverse and includes mining, chemicals, oil and gas, cotton textile and apparel, machinery, fertilizer, cement etc.

Objective of the study

To find out the drives of working capital management on profitability listed on the Chemical Sector of Pakistan Stock Exchange.

To find out the directions (Positive or Negative) of working capital management drives on profitability listed on the Chemical Sector of Pakistan Stock Exchange.

To investigate the theoretical contribution in the light of the mentioned theories that have affected the impact of working capital management drives on profitability in the chemical sector of Pakistan.

Research Question:

What was the impact of working capital management drives on profitability listed on the Chemical Sector of Pakistan Stock Exchange?

What was the impact of the direction (Positive/Negative) working capital management on profitability listed in the chemical sector of the Pakistan Stock Exchange?

What are the theoretical contributions in the light of the mentioned theories that have affected the impact of working capital management drives on profitability in the chemical sector of the Pakistan stock exchange?

LITERATURE REVIEW
Related Theories
Cash Flow Management Theory

Cash flow Management theory pretends to maintain the efficient process of monitoring, and optimizing the inflow and outflow of cash in a business. Further, cash Flow management theory states that firms should use effective policies to manage Their cash flow by balancing customer satisfaction and service costs. The Baumol Model is used in cash management and inventory management. Firms can use Working capital to manage their cash flow by balancing liquidity and profitability Cash flow is essential for businesses, especially in countries with restricted access to External capital markets Effective management of working capital can enhance firm Profitability, liquidity, and value Firms can increase their financial performance by manipulating cash flow.

Working capital Management Theory:
The working capital management theory also known as the working capital management model, aims to optimize a company's working capital levels to maximize its value and minimize costs. The Theory suggests that a company should manage its working capital efficiently to maintain liquidity to meet short-term obligations. Minimize cost associated with excess inventory; maximize returns on non-investments in working capital. Enhance their competitive position and values..

Hypothesis Development:
Return on Equity (Dependent Variable)
The return of equity is also defined by the Corporate Finance Institute (2015) as the combination of a company's net income (annual return) and the value of its entire shareholders' equity, expressed as a percentage. The outcome perfectly captures the overall return on shareholders' investment. And
shows how well the company can convert the investment of its owners into profit. In a nutshell, ROE displays net profit per cedi of equity held by shareholders. ROE may provide insight into how management of a company uses equity capital to grow the company. Additionally, a steadily rising ROE could indicate that the business is effective at maximizing shareholder wealth. ROE is a measure of import profitability that examines the company's key components (returns less all expenses) to gauge overall profitability for the outcome perfectly captures the overall return on shareholders' investment.

Average Collection Periods:
The average collection period is the time it takes for a company to receive payments for its accounts receivable. The average collection period shows how efficient a company is at collecting payments from its clients, how strict the company's credit terms are, and how the company compares to its competitors. The average collection period is calculated in days and is arrived at by dividing the average balance of accounts receivable for the year by the total net credit sales for the year and multiplying that figure by 365 days. The positive link between average collection periods and profitability stems from efficient cash flow management. A shorter collection period means quicker receipt of revenue, which can be reinvested or used to meet financial obligations. This efficiency can lead to improved liquidity, reduced borrowing costs, and potentially high profits due to better capital utilization. Whereas, the negative link between average collections periods results in cash flow constraints. This delay in receiving payments can lead to increased borrowing costs, liquidity issues, and missed investment opportunities, ultimately impacting profitability negatively. The same result is found by (Lazaridis and Tryfond, 2006; Mansoor and Muhammad, 2002; Rehman and Nasr, 2007; and Dong 2010.
Hyp 1: There is Negative association is found between average collection periods and profitability.
Average Payments Periods:

The average payment period refers to the average length of time a company takes to pay its suppliers or creditors for goods or services received. It's a measure of how long a company holds onto its cash before using it to settle its accounts payable. A shorter average payment period indicates that a company is paying its bills more quickly, while a longer average payment period suggests that the company is taking longer to pay its suppliers. The positive result was estimated by some other scholars (Ruichao, 2013; Naumulbari, 2012; and Gill et al., 2012)

Hyp 2: There is positive association is found between average payments periods and profitability.

Cash Conversion Cycle:

The cash conversion cycle (CCC) is a financial metric that measures how long it takes for a company to convert its investments in inventory and other resources into cash flow from sales (Naimulburis, 2012). It calculates the period between when a company spends cash on production and when it receives cash from sales. The short cash conversion cycle indicates that a company is more efficient in managing its working capital. Typically, there are inverse relationship between the cash conversion cycle and profitability. The shorter cash conversion cycle means that a company converts its investments into more cash quickly, which generally improves liquidity and can enhance profitability. The other researcher may also found negative results as (Azam and Haider, 2011; Mansoor and Muhammad, 2012; Mekonnon, 2011; Dr. Ray, 2012; Hashmi and Hussain; and Naimulburis, 2012)
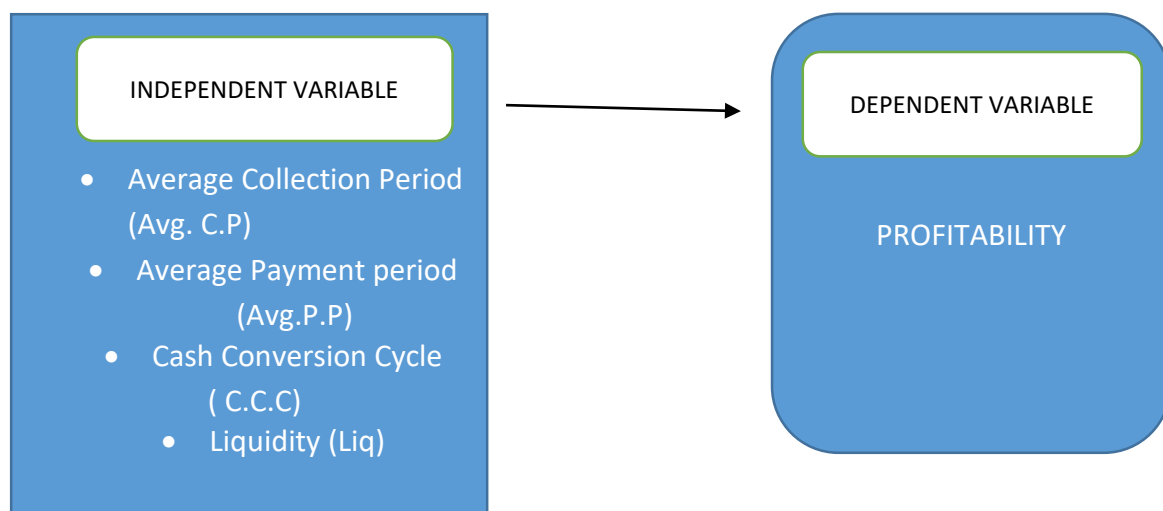
Hyp 3: There is Negative association is found between Cash Conversion Cycle and profitability.

Liquidity

Availability of liquid cash may reduce the Top management pressure, to pay its obligations quickly; being a Chief Financial Manager/Officer, sometimes may take severe financial decisions to retain some alternate source of liquidity to pay its debts. If they do not retain some liquidity for survival then they will be faced with liquidation or bankruptcy. The impact of Financing from external sources may reduce profitability. Funds of a company may bring high returns; therefore, one increase other reduces. (Brigham and Houston, 2003). A positive relationship is found by other researchers (Naimulbari, 2012; Azam and Haider; 2011). Furthermore, Mekonnen (2011) revealed a negative relationship between liquidity and profitability. The same result is found in (Eljelly, 2002).

Hyp 4: There is Negative association is found between Liquidity and profitability.

Figuare: 1 Conceptual Framework

INDEPENDENT VARIABLE	DEPENDENT VARIABLE
• Average Collection Period (Avg. C.P) • Average Payment period (Avg.P.P) • Cash Conversion Cycle (C.C.C) • Liquidity (Liq)	PROFITABILITY

Research Methodology
Research Design:
Before selecting the research design we must keep in mind the objectives of the study. So, for this research, a quantitative approach will be used for the analysis of the result. For estimation of good results, correlation will be used among independent variables. Furthermore, empirically testing the hypothesis, this study will adopt the Two-Step System GMM. Two-Step System GMM is an estimation model that will be used to remove the autocorrelation, heteroscadicity, and endogeneity problems (Roodman, 2009).

Regression Model
$Y = \beta\alpha + B1\text{-}1 + \beta2 + \beta3 + \beta4 + \beta5 + \varepsilon,$
Return o.1n Equity (ROE) = $\beta\alpha + \beta1$ Return on Equity-**1** + **β2** Cash Conversion Cycle + **β3** Cash Payments periods + **β4** Cash conversion cycle + **β5** Liquidity + **ε,**

Population and Sample
In this study, we examined the chemical Sector listed on the Pakistan Stock Exchange for the periods 2019-24.

Variable Measurement
In this study, the proxy of the dependent and independent variables is as follow:

S.NO	VARIABLE	EXPECTED SIGN	PROXIES
1	Profitability		Net Income divided Shareholder equity Micheal et. al (2020)
1	Average Collection Period	_	Account Receivable /Sales * 365Raheman and Nasr (2007)
2	Average Payment periods	+	Account Payable/Purchases * 365 Raheman and Nasr (2007)
3	Cash Conversion Cycle	+/-	Average Collection Periods + Inventory turnover in days –Average Payment Periods Raheman and Nasr (2007)
4	Liquidity	+/-	Current Asset / Current Liability Ponsian (2014)

Data Collection and Analysis

The required data was collected from secondary source from the Chemical Sector listed in the Pakistan Stock Exchange for the period from 2019-2024. To find out the result, advance techiniques i-e., System GMM model will be used. Furthermore, we will also adopting other econometrics techniques such as Descriptive statistics, Pearson correlation matrix, and Regression analysis (GMM model). Descriptive Statistics will be used for summarize the data, Pearson correlation will be used to find out the relationship among variables. And last regression model (Two-Step System GMM model) will be used for estimation of results.

Descriptive Analysis

In Table 1: descriptive statistics provide us with a summary of the basic information about the variables. The basic components of Descriptive statistics include observation, mean, standard deviation, minimum and maximum values. The average value of Profitability is 0.62 with a standard deviation is 0.462. Average Collection period means value is 215.339 with a standard deviation is 403.90, the average value of Average Payment Period is 283.35 with a standard deviation is 424.48, the average value of Cash Conversion Cycle is 1033.95 with a standard deviation is 2846.13, and the average value of liquidity is 14.10 with a standard deviation is 29.20.

Table: 1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Profitabiity	60	0.462	0.462	-0.160	1.6800
Average collection period (ACP)	60	215.339	403.901	05.79	1866.58
Average Payment period (APP)	60	283.356	424.481	11.38	1675.52
Cash conv: cycle (CCC)	60	1033.95	2846.139	08.01	10938.71

| Liquidity (Liq) | 60 | 14.108 | 29.206 | 0.000 | 117.89 |

Correlation Analysis

In Table 2, clarify the correlation between dependent and the independent variables. The dependent variable is Profitability while independent variable is Average Collection Period (Avg C P), Average Payment Period (APP), Cash Conversion Cycle (CCC), and Liquidity (Liq). So, there is Low Negative relationship among ROE and Avg.C.P, and C.C.C is found while there is negative negligible relationship is found among ROE with C.C.C and Liq.

Table: 2 Matrix of correlations

Variables	Profitability	Avg C P	A. P.P	C.C.C	Liq
Profitability	1.000				
Avg C P	-0.347	1.000			
A.P.P	-0.205	0.800	1.000		
C.C.C	-0.321	0.913	0.872	1.000	
Liq	-0.178	-0.121	-0.258	-0.143	1.000

Regression Model

In table 3 clarify the impact of independent variable on dependent variable. The estimation result prevails that there is positive and significant Coefficient 1.120 (P=0.035) relationship between ROE and Avg.C.P, means that offer more times to customer, may increase the profitability of a company. The result is consisted with (Arunkmar and Ramanan, 2013).

The estimation result of negative and significant Coefficient -0.001(P=0.029) between C.C.C and profitability prevail that shorter cash conversion cycle period may increase the profitability in chemical Sector Pakistan. The estimated result is consisted with (Azam and Haider, 2011; Mansoor and Muhammad, 2012; Mekonnon, 2011; Dr. Ray, 2012; Hashmi and Hussain; and Naimulburis, 2012). Unfortunately, There is insignificant relationship is found among Avg. P.P, Liquidity and profitability.

Furthermore, in Table 3 there is no autocorrelation or serial correlation is found in AR (1) and second-order AR (2). The null hypothesis of AR (1) and AR (2) represent no serial or auto-correlations. The Hansen test value 0,897 which is distributed as a chi-square represents the null hypothesis of instrument validity. Statistical significance of 10%, 5%, and 1% is indicated by ***, **, and *, respectively.

Table: 3 Regression Estimation Result

Profitability	Coef.	p-value	Sig
Profitability	1.120	0.000	***
Avg C.P	0.010	0.035	**
Avg P.P	-0.001	0.292	
C.C.C	-0.001	0.029	**
Liq	0.012	0.199	

Constant		-.0848	0.092		*

*** p<.01, ** p<.05, * p<.1

Observation		**50**
AR(1)		**0.479**
AR(2)		**0.442**
Hansen		**0.897**

CONCLUSION AND RECOMMENDATION

Conclusion

The aim of this study is to find out the impact of working capital management's drive's and profitability in the Chemical Sector listed in the Pakistan Stock Exchange for the period of 2019-24 with total 50 number of observation. The positive and significant relationship between Average collection period and profitability prevails that in Chemical Sector of Pakistan offer more times to customer for collection of debts amount may increase the ratio's of profitability. The negative and significant relationship between cash conversion cycle and profitability prevail that shorter period in cash conversion cycle may increase a chance of profitability. The null of AR(1) and AR (2) prevail that there is no autocorrelation or serial correlation problem in a model.

Recommendation

We recommend for future direction is as under:

We try best to enhance the efficiency of result by using Second generation Econometrics model i.e., the Two-Step System GMM estimation model, some other estimation models may also be applied for further research.

In this research analysis, we have taken Four independent variables, Average Collection period, Average payment period, Cash Conversion Cycle, and Liquidity, so for further research, they may also investigates the result with other variables like Envirmental, Social, and Corporate governance, Firms size, capital expenditure, Intangible asset.

In this study covered the period from 2019-2024. So, further periods may be extending for research.

In this study, the researcher has covered the Chemical Sector listed with Pakistan Stock Exchange. It may be extending to other sector like Textile sector, manufacturing sectors, banking sector, and manufacturing sector in Pakistan.

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