DETERMINANTS OF WORKING CAPITAL "EVIDENCE FROM PRODUCTION AND SERVICE SECTOR OF PAKISTAN"

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Abstract

Purpose: Basic purpose of this study is to explore the factors or determinants of working capital. The effect of this research is threefold as its first aim is to explore the determinants of working capital in the service sector, second is to find the determinant of working capital in the production sector and third is to make a comparison between the findings of both sectors.

Research Methodology: Quantitative technique of data collection has been used under explanatory research method and working capital has been taken as dependent variable while return on assets, return on equity, leverage, sales growth, firm size of total assets and firm size of total sales have been taken as independent variables from production and services sector of Pakistan. A sample of 34 companies listed at KSE for 5 years (2007-2011) has been selected with a total observation of 170. Data were collected from balance sheets of these companies from official site of State Bank of Pakistan.

Findings: The finding of this research shows that the same selected variables are not a significant predictor of working capital in both sectors. In the service sector, all selected variables are significant predictor or working capital except for short term debt to total assets variable. However, in the production sector, only sales growth and return on assets is a significant predictor of working capital requirement.

Unique contribution to theory, practice and policy: In a developing country like in Pakistan, very little work has been done on working capital determinants. In developed countries and other developing countries, enough work has been done in that area, however, not previously study covers the comparison of the diverse sectors to determine working capital. This study will add a new dimension to the existing literature and cover the gaps in existing literature by adding the comparison of diverse nature sectors into the existing literature.

Key variable: *Working Capital, Determinants of working capital, Profitability, Leverage, Firm size*

1.0 INTRODUCTION

In an enterprise working capital is the availability of net current assets used to run the business operations. It is the disparity of current assets and current liabilities. Due to increase credit risk, financial crises, and low convenience to bank loans it is immense important for organizations to manage the requirement of working capital. (Rehan & Nasir, 2007). Working capital is the financial necessities that are needed to fulfill the day to day

operations of an enterprise (Sulemain & Abidi,2012). In financial management, working capital is the most important area as it involves the maturity of less than one-year assets and liabilities. More particularly it affects the profitability and liquidity of the firm. Firms engage in long productions chain usually take time, in that manufacturing process working capital help organizations to manage the disparity occur during the cost of production and revenue generated from sales (Kim & Shin, 2013). Working capital running mode effect principally to liquidity, profitability, and efficiency of an enterprise. It is immense Important to manage the financial needs of a business. These financial needs ultimately affect the profits and liquid assets of the firm. It is important to analyze the short term assets and liability carefully so that the liquidity of the firm could be managed because the management of working capital help to managers to direct the firm's operations through utilizing available cash for the payment of short term debt, the maturity of long term debt and to manage the day to day process of the enterprise. So, it is necessary for smooth working to maintain an optimal level of working capital for a trade-off between return and risk.

The main objective of capital management is to optimize the cash conversion cycle which in turn affects the efficiency of working capital. According to (Mansoori & Muhammad, 2012) if a firm poorly manages its working capital or its working capital is too low, then it may lose many profitable investment opportunities. It is worth important for firms to keep the optimal level of working capital and its management for their endurance (Abbadi & Abbadi, 2013). As working capital and its effective management have a greater impact on the profitability of firms so it is worth able for companies to understand what the key drivers, determinants, or component of working capital are. More specifically what variables affect working capital in any company. As companies can minimize risk and pick up the overall performance by understanding the role and drivers of working capital.

A firm may adopt an aggressive Working capital management strategy with a low level of current assets as a percentage of total assets or it may use high level of current liabilities as a proportion of total liabilities. Excessive levels of current assets may have negative consequences on the firm's profitability whereas a low level of current assets may lead to a lower level of liquidity and stock-outs resulting in difficulties in maintaining smooth operations. The main objective of working capital management is to maintain the most advantageous balance between each of the working capital components.

As various studies have been done on working capital determinants in both developed and developing countries but in developing countries like in Pakistan no study has been done to understand the determinants of working capital in diverse sectors such as the production and services sector. In present research, the focus is to determine the components in production and services sector and analyze the findings of both sectors to identify whether determinants of working capital are the same in both sectors and not. This research has unique contribution to existing literature both for Pakistan as well as for international markets because it will help business managers to understand what are the determinants of working capital in industries as well as in services sectors which ultimately enable them to boost up their business.

Hypothesis

H₁: There is a relationship between the profitability of firms and their working capital requirements.

H₂: There is a relationship between the leverage of firms and their working capital requirements.

H₃: There is a relationship between the size of firms and their working capital requirements. **H₄:** There is r elationship between the growth of firms and their working capital requirements.

2.0 LITERATURE REVIEW

The working capital management and profitability in the textile sector in Pakistan has been research by (Bagh et al., 2016) and data is collected from the Karachi stock exchange for a period of 2001 to 2006 in the textile sector. Correlation and regression analysis were practical, and the result of their study shows that there is a strong positive relationship between profitability and cash and cash, accounts receivable, and inventory while there is a negative liaison between profitability and accounts payable.

The influence of working capital management components on corporate prosperity in Kenya has been research by (Mathuva, 2015) and a sample of 30 companies listed at Nairobi stock exchange for a period of 1993-2008 has been selected. OLS pooled and fixed regression analysis has been used for test purpose. F i n d i n g s shows that there is a highly significant negative relationship between the cash collection period and profitability. However, there is a highly significant positive relationship between the inventory conversion period and sales and there is a highly significant relationship between cash payment period and profitability.

The relationship between working capital management, cost structure, and profitability of Sri Lankan companies has been investigated by (Bandaranayake & Jayasinghe, 2014). For checking that relationship researcher used correlation and regression analysis and take 65 Sri Lankan companies as a sample for 5 years. The result shows that increasing the creditor's payable day's companies can minimize the length of the working capital cycle.

In Palestinian Industrial corporation (Abbadi & Abbadi, 2013) research the determinants of working capital requirement. They took 11 industrial firms from the Palestinian stock exchange for e period of 2004-2011 with 88 observations. The working capital ratio has been selected as the dependent variable and the Cash conversion cycle, operating cash flows, leverage, firm size, profitability, and real GDP have been taken as an independent variable. The result of this study shows that cash conversion cycle, operating cash flow, firm size, return on assets and leverage are the significant predictor of working capital requirement in Palestinian industrial firm whereas Interest rate and GDP has no predictor of working capital determinants.

The factors that influence the working capital requirements for the firms in Malaysia, for that intention select 285 companies as a sample for three years from 2006 to 2008 and using structured equation modeling techniques for analysis (Saarani & Shahadan, 2012). The researcher uses the working capital as a dependent variable and growth of the firm, profitability, debt, and size as an independent variable.

The effects of working capital management on firm profitability on Swedish companies. CCC, DIO, DPO, and DSO have been taken as an independent variable (Rehn, 2012). A sample of 612 companies has been taken for 9 years. The result of this study shows that

there is a significant relationship between working capital management variables and profitability.

The determinants of working capital management in the Brazilian market has been research by (Palombini & Nakamura, 2012) and selects 93 companies as a sample for the period from 2001 to 2004, the researcher takes debt level, management monitoring mechanisms, and free cash flow, etc. as an independent variable. The result of this study is that there is no significant relationship between management monitoring mechanism and working capital, a negative relationship between a high level of debt and working capital, and free cash flow and working capital.

Research determinants of working capital management on Greek stock exchange has been examined by (Abuzayed, 2012) and they took a sample of 211 companies listed at Athens stock exchange for a period of 2005 to 2010. They find the effects of the working capital management factors by taking gross operating profit, return on assets and Tobin's Q as independent variables. The finding of this research shows that there is an important negative correlation between the variables of working capital and business performance.

Trends in working capital management and its impact on a firm's performance in Malaysian small manufacturing firms has been examined by (Mohamad & Saad, 2010) research and data covers 348 observations with 58 firms and 6 years of data. The cash conversion cycle selects as a reliant variable and, firm size, gearing ratio, gross working capital turnover ratio, and the ratio of current assets to total assets has been selected as an independent variable. Findings of this study shows that there is a highly significant relationship between ROTA and CCC. The firm's profitability increases with firm size, gross working capital efficiency.

The relationship between working capital management and profitability from Indian companies have been research by (Bagchi & Khamrui, 2012). A sample of 10 fast-moving consumer goods has been taken for a period of 2000-1 to 2009-10. ROA, CCC, interest coverage ratio, age of inventory, age of creditors, age of debtors and the debt-equity ratio has been taken as an independent variable. The results show that there is a strong negative relationship between variables of the working capital management and profitability of the firm. As CCC increases the productivity of the firm decreases and there is a negative association between debt and profitability.

To researches the determinants of working capital management and its effects on Singapore firm's profitability (Archavli et al., 2012) conducted a research and panel data analysis pooled OLS and fixed effect estimation analysis are applied on the data (from 2003 to 2010). The outcome of the study concluded that by shorten the receivable and inventory conversion period into sales, management can improve its profitability. Aminu (2012) investigates the determinants of inventory management as a constituent of working capital in ensuring corporate profitability. The result of this study shows that effective working capital management through proper inventory management creates a balance between liquidity and profitability of a company.

The factors that affect the working capital requirement in Nigeria using panel data as a sample for the period 1997-2007(Akinlo, 2012) conducted the researches and the result of this study shows that there is a positive relationship between sales growth, operating cycle, economic activity, permanent working capital and working capital policies, and a negative relationship between leverage and working capital policies.

On working capital management on firms' (Azam & Haider, 2011) conduct a research performance and they took 21 firms listed at KSE-30 from a period of 2001-2010. Independent variables are collection period, inventory turnover, payment period, cash conversion cycle, current ratio, and current assets to total assets ratio. The result of this study shows that WCM has a significant impact on a firm's performance and it is concluded that managers can increase the value of shareholders and return on assets by reducing their inventory size, cash conversion cycle, and net trading cycle.

To understand the working capital management in the Swiss chemical industries.(Seeger et al., 2011) and a sample of 18 companies listed at six Swiss exchanges has been selected. They took DSO, DIO, DWC, and DPO as independent variables. The result shows that a successful working capital management strategy leads firms to competitive advantage.

To understand the relationship between working capital management and profitability in United States firms a sample of 88 firms listed on the USA stock exchange for a period of 2005-2007 has been selected(Gill et al., 2010). Research findings show that there is a statistically significant relationship between the cash conversion cycle and profitability measure through gross operating profit.

A research on working capital management, market valuation, and profitability in Malaysian firms has been conducted and a sample of 172 companies listed at the Malaysian stock exchange for a period of 2003-2007 has been selected. CCC, CR, CATAR, CLTAR, and debt to assets ratio has been taken as an independent variable and profitability as a dependent variable (Edi & Saad, 2010). The results show that there is a significant negative association between working capital variables with firm performance.

Examines the factors that affect working capital management in Latin American companies, for that purpose researchers take nonfinancial companies as a sample from Argentina, Brazil, Chile, Mexico, and Peru for the period 1996-2008 (Mongrut & Winkelried, 2019). The results of this study show that the industry cash conversion cycle, the company market power, its future sales, and the risk of the country have a greater effect on the way companies manage their capital.

3.0 RESEARCH METHODOLOGY

3.1 Research Design:

Aim of this research is to explore the relationship between independent (Profitability, leverage, Growth, Firm size) and dependent (working capital) variables. For such exploration purposes, explanatory kind of research has used in the underlying study. Convenience sampling technique were used under exploratory research design for selection of companies.

3.2 Sample Size

A sample of 34 companies listed at KSE for 5 years (2007-2011) has been selected with an observation of 170. Two diverse products and services sector has been selected for comparison purpose and firms are equally selected from both sectors. 17 companies from each sector listed at KSE were selected as a sample.

3.3 Data collection source

Quantitative data was collected from the annual balance sheets of companies from the official site of the State bank of Pakistan. From balance sheets the values of firm's profitability, values of leverage, growth rate of company and size of the firm were taken.

3.4. Data analysis techniques

For analysis purpose multiple regression analysis has been used for data which is based on cross-sectional observations.

Statistical Test and Model

The ordinary least square regression analysis has been applied as a statistical tool and E-views software has been used for analysis purpose.

First Model *for the Service Sector:*
$WCR_{it}=\alpha+\beta1ROA_{it}+\beta2ROE_{it}+\beta3DTE_{it}+\beta4SDA_{it}+\beta5LGS_{it}+\beta6LGA_{it}+\beta7 SG_{it}$

Second Model *for the Production Sector:*
$WCR_{it}=\alpha+\beta1ROA_{it}+\beta2ROE_{it}+\beta3DTE_{it}+\beta4SDA_{it}+\beta5LGS_{it}+\beta6LGA_{it}+\beta7 SG_{it}$

Dependent Variable *Working Capital*

As on the dependent variable, the impact of independent variables has been check so through this study the determinants of working capital are measured because working capital has been taken as the dependent variable. It is calculated as

Variable 1: *WCR= (current assets- current liabilities)/ total assets*

Independent

factors *Firm*

Size

Moussawi (2006) verify that the size of the company influences the overall working capital policy and approach. To measure the size of the firm two sub-variables have been taken. These are

Variable 2: Logarithm of total

sales *Variable 3:* Logarithm of

total assets

Through these, it is measure whether these effects working capital or not. These are measure as

SIZE=Log (Total Assets)

SIZE=Log (Total sales)

Profitability: The firm's profitability has been taken as a determinant of working capital. Profitability determines the extent of ready finance to meet the liability requirements. A firm's profitability can be measure through various variables. To measure the profitability of firms again two indicators or ratios selected, these are

Variable 4: Return on

Assets **Variable 5:** Return

on Equity

These ratios calculated as

$$ROA= \text{ Net Income/ Total Assets} \quad ROE= \text{ Net Profit/ Equity}$$

Leverage (LEV): **T**o maintain the relationship between the external financing and the firm's assets the leverage ratio has been calculated. As working capital involves the management of finance to meet the short-term liabilities so here it takes as an indicator of working capital determinants

To measure leverage two variables have been selected. These

are **Variable 6:** Debt to Equity Ratio

Variable 7: Short term debt to Total Assets

Ratio These ratios of leverage are calculated as

$$LEV= \text{ (Short Term Loans+ Long Term Loans)/Total Equity}$$
$$LEV= \text{ (Short Term Loans /Total assets)}$$

Growth: The growth of a firm also has a significant impact on the requirement of its working capital. To measure the growth of the firm its sales growth has been taken. It is

Variable 8: The growth rate of

firm It is calculated as

$$G= \text{ (Sales of t period – Sales of } t\text{-}1 \text{ period/ Sales of the } t\text{-}1 \text{ period)}$$

4.0 FINDINGS FOR SERVICE SECTOR

4.1. Table 1 Description

The above table of Regression analysis states that the value of $R^2 = 0.999994$ which shows that the dependent variable is 0.999994 percent depends on independent variables. It shows that the working capital requirement is almost fully dependent on the above selected variables. The constant value is 0.1313 which is also the significant value. In present research the "P" value selected for significance predicter was 0.05. a significant "P" value show that profitability is positively correlated with working capital requirements.

As the value of both profitability variables that are ROA and ROE shows a significant result with "0.0000" P values so we can say that profitability is the significant predictor of working capital requirements in the service sector.

However, from the size of the firm the variable firm size of total assets is a significant predictor of working capital with the p. value of "0.0011". However, the firm size of total sales is not a significant predictor of working capital with p. values of "0.5277".

From leverage Total debt to equity is the significant predictor of working capital with p. values of "0.0005". However, if we check the leverage through short term debt to total assets than it is not a significant predictor of working capital requirements with a p. value of "0.9966". the Growth size variable shows that the growth of firms in service sectors is a significant predictor of working capital requirements.

4.2. For Production Sector
Table 2 Description

Analysis shows the findings of production sectors that the R^2 value is "0.546344" which shows that in that sector dependent variable rely 54.6344% on selected independent variables. However, from the profitability factor, only ROA is a significant predictor of working capital with a p. value of "0.0111" but ROE in the production sector is not a significant predictor of working capital with a "P" value of 0.8426.

However, in the production sector leverage is not s significant predictor of working capital. As both total debts to equity and short-term debt to assets show an insignificant result which is greater than 0.005. From firm size factor its shows that firm size also not a significant predictor of working capital in the production sector as the value of both firm size measure through assets and firm size measure through total sales shows insignificant results which are greater than the alpha value which is "0.005". From the growth factor, it shows that firm's growth in the production sector is a significant predictor of working capital in the production sector with a p. value of "0.1103".

5.0 CONCLUSION

Through that research, it is trying to find out the factors that can affect the requirements in two diverse sectors. The production and services sector have been selected to determine whether the same selected variables are the significant predictor of working capital requirements in Pakistani companies or not. The findings of that research show that the variables return on assets, return on equity, total debt to equity, short term debt to total assets, firm size of total assets, firm size of total sales, and Sales growth does not simultaneously effect to the requirements of working capital in production and services sector. These variables though the significant predictor of working capital in the services sector but not work the same in the production sector. It shows that in the production sector beyond these selected variables some other factors affect the requirements of working capital.

REFERENCES

Abbadi, S. M., & Abbadi, R. T. (2013). The determinants of working capital requirements in Palestinian industrial corporations. *International Journal of Economics and Finance, 5*(1), 65-75.

Abuzayed, B. (2012). Working capital management and firms' performance in emerging markets: the case of Jordan. *International Journal of Managerial Finance*.

Akinlo, O. O. (2012). Determinants of working capital requirements in selected quoted companies in Nigeria. *Journal of African Business, 13*(1), 40-50.

Aminu, Y. (2012). Determinants of inventory managements as a component of working capital in ensuring corporate profitability-a conceptual approach. *Research Journal of Finance and Accounting, 3*(11), 58-61.

Archavli, E., Siriopoulos, C., & Arvanitis, S. (2012). Determinants of working capital management. *Available at SSRN 2179907*.

Azam, M., & Haider, S. (2011, 09/24). Impact of Working Capital Management on Firms' Performance: Evidence from Non-Financial Institutions of KSE-30 index.

Bagchi, B., & Khamrui, B. (2012). Relationship between working capital management and profitability: A study of selected FMCG companies in India. *Business and Economics Journal*.

Bagh, T., Nazir, M. I., Khan, M. A., Khan, M. A., & Razzaq, S. (2016). The impact of working capital management on firms financial performance: evidence from Pakistan. *International Journal of Economics and Financial Issues, 6*(3).

Bandaranayake, S., & Jayasinghe, P. (2014). Factors influencing the efficiency of commercial banks in sri lanka. *Sri Lankan Journal of Management, 18*(1).

Edi, N., & Saad, N. (2010, 10/20). Working Capital Management: The Effect of Market Valuation and Profitability in Malaysia. *International Journal of Business and Management, 5(11)*. https://doi.org/10.5539/ijbm.v5n11p140

Gill, A., Biger, N., & Mathur, N. (2010, 01/01). The Relationship Between Working Capital Management And Profitability: Evidence From The United States. *Business and Economics Journal*, 1-9.

Mathuva, D. (2015). The Influence of working capital management components on corporate profitability.

Mohamad, N. E. A. B., & Saad, N. B. M. (2010). Working capital management: The effect of market valuation and profitability in Malaysia. *International Journal of Business and Management, 5*(11), 140.

Mongrut, S., & Winkelried, D. (2019). Unintended effects of IFRS adoption on earnings management: The case of Latin America. *Emerging Markets Review, 38*, 377-388.

Palombini, N. V. N., & Nakamura, W. T. (2012). Key factors in working capital management in the Brazilian market. *Revista de Administração de Empresas, 52*(1), 55-69.

Rehn, M.-E. (2012). *Effects of Working Capital Management on Company Profitability-An industry-wise study of Finnish and Swedish public companies (Available on Internet)* Svenska handelshögskolan].

Saarani, a. n., & Shahadan, F. (2012, 01/01). The Determinant Factors of Working Capital Requirements for Enterprise 50 (E50) Firms in Malaysia: Analysis Using Structural Equation Modelling. *Scottish Journal of Arts, Social Sciences and Scientific Studies, 5*, 52-66.

Seeger, S., Locker, A., & Jergen, C. (2011, 01/01). Working capital management in the Swiss chemical industry. https://doi.org/10.5167/uzh-58453

Table 1: *For the Service sector*

Dependent Variable: WC					
Method: Panel Least Squares					
Date: 06/16/2019 Time: 10:21					
Sample: 2007 2011					
Periods included: 5					
Total panel (balanced) observations: 85					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	3337.071	2187.884	1.525250	0.1313	
ROE	-80.31696	9.368347	-8.573227	0.0000	
ROA	-291.3038	30.20826	-9.643184	0.0000	
FZA	-733.9229	464.0330	-1.581618	0.0011	
FZS	285.3570	449.8418	0.634350	0.5277	
SG	22489.18	13.90526	1617.315	0.0000	
TDE	28.49542			0.0005	
SDA	3.125743			0.9966	
		Mean dependent var			77829.71
R-squared	0.999994				
		S.D. dependent var			717554.2
Adjusted R-squared	0.999993				
		Akaike info criterion			17.97089
S.E. of regression	1847.910				18.20078
Sum squared resid	2.63E+08	Schwarz criterion			
		Hannan-Quinn criter.			18.06336
Log-likelihood	-755.7627				

Table 2: *For the Production sector:*

Dependent Variable: WC				
Method: Panel Least Squares				
Date: 06/16/13 Time: 10:24				
Sample: 2007 2011				
Periods included: 5				
Cross-sections included: 17				
Total panel (balanced) observations: 85				
C	-2.42E+08	33723133	-7.165503	0.0000
TDE	11584.65	46913.16	0.246938	0.8056
STA	16154948	19716159	0.819376	0.4151
SG	-89348550	55309166	-1.615438	0.1103
ROE	11706.20	58771.83	0.199181	0.8426
ROA	1533848.	589732.8	2.600920	0.0111
FZS	18795397	13534957	1.388656	0.1689
FZA	16859547	14183620	1.188663	0.2382
R-squared	0.546344	Mean dependent var		26916569
Adjusted R-squared	0.505102	S.D. dependent var		44512504
S.E. of regression	31314084	Akaike info criterion		37.44642
Sum squared reside	7.55E+16	Schwarz criterion		37.67632
Log-likelihood	-1583.473	Hannan-Quinn criteria.		37.53889
F-statistic	13.24744	Durbin-Watson stat		0.206730
Prob(F-statistic)	0.000000			

Table 3: Overall comparison

ROA	1533848	589732.8	2.60092	0.0111
FZS	18795397	13534957	1.388656	0.1689
FZA	16859547	14183620	1.188663	0.2382
		Mean dependent var		
R-squared	0.546344			26916569
Adjusted R-squared	0.505102	S.D. dependent var		44512504
S.E. of regression	31314084	Akaike info criterion		37.44642
Sum squared reside	7.55E+16	Schwarz criterion		37.67632
		Hannan-Quinn criteria.		
Log-likelihood	-1583.473			37.53889
F-statistic	13.24744	Durbin-Watson stat		0.20673