Impact of Working Capital Management on Profitability of Pharmaceutical and Chemical Companies: A Comparative Study of Pakistan and India

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Abstract

The current study has its focus on investigating the relationship between working capital management and profitability of Pakistani and Indian firms. In order to measure the profitability, ROA and ROE has been chosen as proxies for dependent variable, while current ratio (Cr), quick ratio (Qr), accounts receivable turnover (ARCTR), inventory turnover in days (INVTR), accounts payable turnover in days (APTR), assets turnover (ATR) and cash conversion cycle (CCC) have been utilized as independent variables. The same set of dependent and independent variables are selected for Indian firms as well. The focus of the study is pharmaceutical and chemical sectors of both these countries. Qr, ARCTR, INVTR and CCC are statistically, significant and positively related with ROA of the Pakistani firms while APTR is statistically, significant and negatively related with ROA. It has been observed that ATR, CR, ARCTR, are statistically, insignificant and positively related with ROE, while, Qr, INVTR and CCC are statistically significant and positively related with ROE of Pakistani firms. In Indian firms, Cr, Qr, CCC, INVTR, and ARCTR are statistically, significant and positively related with ROA, while APTR is statistically, insignificant and Inversely related with both ROA and ROE. The outcome of the study can be deployed by policy makers, financial analysts and financial managers.

Keywords: Working capital, Profitability, Quick ratio, Current ratio, Inventory, Turnover, Cash conversion Cycle, ROA and ROE.

Introduction

The term working capital (WC) refers to the amount of capital involved in day to day operations of business concern, it can be defined as the amount of fund confined in current assets of the company or the net current assets after deducting the current liabilities from the current assets of the business firm(Horne and Wachowicz, 2000). The management of WC is very essential for the success of any business venture either manufacturing or trading thus the importance of WC management cannot be over looked (Singh and Pandey, 2008)

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.Managing workingcapital effectively craves correct management of firm's current assets and its liabilities in such a simplest way that it'll cut back the incapability risk of meeting short term commitments on one hand, and therefore the application of excess investment within different hand (Rafuse, M. E.1996.: Eljelly, 2004: L. L. Lamptey et al 2017).

There are many constituents of working capital i.e. inventory, accounts receivables, cash, cash equivalents, short-term investment, prepaid expenses, and work in process. Current liabilities or trade credits can be found on owner equity and liability side or right hand side of the balance sheet. These liabilities are called short term liabilities and must be paid back within a year. These liabilities are trade credits, accrued liabilities and short term debt. There are mainly three parts of financial management of company i.e. capital structuring, capital budgeting and working capital management of firm. The foremost two components are related to long term financing and long term investment of firm while the working capital relates to short term financing and short term investment decision of Business Corporation (Sharma and Kumar, 2011: Al. Dalayeen, 2017).

Objectives of The Study

The aim is to achieve following objectives with regard to the profit and liquidity.

1. To investigate the impact of working capital components on profitability of Pakistan and Indian chemical and pharmaceutical firms.
2. To find out the difference in these WCM components in Pakistan and Indian chemical and pharmaceutical firms.

Research Contribution

This study would enhance the knowledge about the working capital determinants and how it affects the firm profitability especially in Pakistani and Indian context. This study will assist in how company can maximize shareholders wealth by effectively managing current assets which lead to better profitability and ultimately add into the price of common stock.

Literature Review

Hypotheses Development based on Literature Review

Liquidity

There are two ways to measure the liquidity of firm: A small part of the past literature have used these measures to indentify if there is any positive or negative association among shortest cash conversion cycle and profitability of firm. (Deloof2003: S. Jakpar investigated the impact of working capital on firm financial performance in the Belgium context. He inquired the listed firm of Belgium stock exchange. Using the multiple regression and secondary data of 223 listed firms, the Deloof found a significant positive impact of working capital on firm profitability in Belgium. The Deloof concluded thatthere exist a strong correlation between working capital management and firm financial performance. He further argued that Belgium firm can enhance and make healthier their business organization with shortening the cash conversion cycle and cutting the inventory volume and accelerating the accounts receivable process with shortening the number of days permitted to customer for payments.

$H_{1:}$ The quick ratio has impact on chemical and pharmaceutical firm's profitability

$H_{2:}$ The assets turnover ratio has impact on chemical and pharmaceutical firm's profitability

$H_{3:}$ The current ratio has impact on chemical and pharmaceutical firm's profitability

$H_{4:}$ The accounts receivable turnover has impact on chemical and pharmaceutical firm's profitability

Determinants Of Inventories

The literature in inventory and firm profitability relationship asserted that low inventory is very beneficial as with low inventory there must be high inventory turnover and hence has low inventory cost and high profitability. On the other hand some scholar asserted that low inventory is associated with inventory shortage risk in seasonal booms. Thus high level of inventory is preferable and contributes to high profitability. The level of inventory a business must hold depends on the nature of business firm. The most prominent motive of inventory management is cost minimization that is built on "Transactional Cost Theory" (Emery and Marques, 2011: T. V. Hoang, 2015).

Wang, Y. J. (2002) conducted research study on the working capital and corporate financial performance in Japanese context. They analyzed the 2123 listed firm of Tokyo stock exchange and used their penal data for analysis of the relationship among two variables. They study this non-financial corporation for the period of fourteen years from 1990 to 2004. They used the accounting measure return on assets (ROA) as a

proxy of profitability of stated firms. They argued that all the four elements of working capital were negatively correlated to financial performance of non-financial corporation's of Tokyo stock exchange listed firms except accounts payable which had positive impact on firm financial performance in Japan. They further asserted that managers can boost the profitability by simple technique of making short the inventory holding period, collecting in time the receivables.

$H_{5:}$ The inventory turnover has impact on chemical and pharmaceutical firm's profitability

$H_{6:}$ The accounts payable turnover has impact on chemical and pharmaceutical firm's profitability

Zariyawati et al. (2009) conducted a study in Malaysian context. They studied 148 listed firms of kulalampur stock exchange; they used operating income to total sale, current ratio, cash conversion cycle and leverage. They found a negative impact of cash conversion cycle on the corporate profitability of Malaysian firm. They further asserted that Malaysian firm can enhance their profitability by shortening the cash conversion cycle, accelerating collection of accounts receivable, minimizing inventory holding and waiting long to pay its short term liabilities.

$H_{7:}$The cash conversion cycle has impact on chemical and pharmaceutical firm's profitability

Methodology

This study investigates the relationship between the firm working capital management with profitability. The target market (population) for the study is the Pharmaceutical and Chemical Industry of Pakistan and India. Random sampling is conducted in both of the countries pharmaceutical and chemical industries. The sample of the study consists of 42 Pharmaceutical and chemical companies listed in Karachi Stock Exchange of Pakistan while 42 pharmaceutical and chemical companies listed in Mumbai Stock Exchange of India. The data of 5 years from 2012 to 2017 of each company is collected from their respective financial statements for Pakistani and Indian sampled Pharmaceutical and chemical companies.

Research Model

The following are the empirical models used for research problem: For illustrative purposes, problems were represented by static data panel fixed effects model equations. The study also tested the static data panel random effects model.

$ROA=\beta_0+\beta_1QR_{it}+\beta_2ASTTO_{it}+\beta_3CR_{it}+\beta_4INVTR_{it}+\beta_5ARTRR_{it}+\beta_6APTRD_{it}+\beta_7CCC_{it}+a_i+u_{it}$

$ROE=\beta_0+\beta_1QR_{it}+\beta_2ASTTO_{it}+\beta_3CR_{it}+\beta_4INVTR_{it}+\beta_5ARTRR_{it}+\beta_6APTRD_{it}+\beta_7CCC_{it}+a_i+u_{it}$

Analysis Of Indian Firms Roa and Roe Dependent Variables

Random-Effects (Roe Dependent Variable)

R-sq: within = 0.934 Wald chi2 = 2928.6
Prob > chi2 = 0.0000

Return on equity	Co-Ef	S.Err	Z	P>|z|
Current ratio	.0257773	.0245998	-1.05	0.295
Quick ratio	.0799399	.0088513	9.03	0.000
Cash conversion cycle	.0126662	.0138301	0.92	0..360
Accounts payable turnover	-.4094358	.0125645	-32.59	0.000
Inventory Turnover	.2191724	.0104129	21.05	0.000
Accounts Receivable Turnover	.0093604	.0034505	2.71	0.007
_cons	2.159166	.0910555	23.71	0.000

Random Effect Model
The R-sq value is 0.934, the wald chi2 is 2928.6 and p value is 0.000, this value indicates good model fitness with independent variables as model explains 93.4% change in ROE of pharmaceutical and chemical firms of organizations.

Random-Effects (Roa Is Dependent Variable)
R-sq: within = 0.917 Wald chi2 = 2257.59
Prob > chi2 = 0.0000

Return On Assets	Co-Ef	S.Err	z	P>|z
Current ratio	. 0.259	0.517	5.01	0.000
Quick ratio	0.223	0.186	11.99	0.000
Cash conversion cycle	0.138	0.029	4.77	0.034
Inventory	0.166	0.021	7.62	0.000

turnover ratio				
Accounts Payable Turnover	-0.445	0.026	-16.85	0.000
Accounts receivable turnover	0.334	0.034	9.823	0.000
_cons	2.354235	.4142264	5.68	0.000

Random-Effect Model

The R-sq value is .9193, the Wald chi^2 is 2301.1 and p value is 0.000, these values indicate good model fitness with independent variables as model explains 91.93% change in ROA of pharmaceutical and chemical organizations.

Analysis of Pakistani firms return on equity (roe) is dependent variable

Random-effects model

R-sq: within = 0.2958, Wald chi2(7) = 83.97 Prob> chi2 = 0.0000

Return on equity	CO-EF	S.ERR	Z	P>|Z|
Quick Ratio	.0324288	.0054967	5.90	0.000
Assets Turnover	.0009036	.0063995	0.14	0.888
Current Ratio	.0255251	.0219685	1.16	0.245
Accounts Receivable Turnover	.0129289	.0070855	1.82	0.068
Inventory Turnover	.0126687	.0058349	2.17	0.030
Accounts Payable turnover	-.0314167	.0207984	-1.51	0.131
Cash Conversion Cycle	.0765005	.0112064	6.83	0.000
_CONS	.860835	.1526387	5.64	0.000

Random Effect Model

The R-sq value is 0.2958, the wald chi^2 is 83.97 and p value is 0.000, these values indicate good model fitness with independent variables in

model, explaining 29.58% change in ROE of pharmaceutical and chemical firms of organizations.

Return on assets (roa) is dependent variable
Random-effects model
R-sq: within = 0.4650 Wald chi2(7) = 174.72 Prob> chi2 = 0.0000

Return On Assets	CO-EF	S.ERR	Z	P>|Z|
Quick Ratio	.0673844	.0087602	7.69	0.000
Assets Turnover	-.0041884	.0101991	-0.41	0.681
Current Ratio	.0680055	.0350117	1.94	0.052
Accounts Receivable Turnover	.0306908	.0112924	2.72	0.007
Inventory Turnover	.0191149	.0092992	2.06	0.040
Accounts Payable Turnover	-.246352	.0331469	-7.43	0.000
Cash Conversion Cycle	.1268252	.01786	7.10	0.000
_CONS	.7710778	.2432641	3.17	0.002

Random-Effect Model
The R-sq value is .4650, the Waldchi^2 is 174.72 and p value is 0.000, these values indicate good model fitness with independent variables in model explaining 46% change in ROA of pharmaceutical and chemical firms of organizations.

The Hausman test produced the prob> p value of 0.9826 that is not significant because it is above 0.05 the minimum value of p to be significant. And according to Hausman if the p value is not significant then it will be concluded that random effect model is more consistent and efficient for this particular research.

Discussion, Conclusion and and Recommendation

The key variables identified in this process are liquidity ratios (Current and quick ratios), asset turnover ratios (ARCTR, INTR, ATR), the short term solvency ratio (APTR) and the cash conversion cycle (CCC) of a firm.

After careful investigation and focused data analysis the researcher came to a conclusion that both in Pakistan and Indian, the

liquidity ratios i.e., Cr and Qr are positively related with the profitability of pharmaceutical and chemical firms. It means that the liquid an organization, the smoother will be its current operations and the better will be its profitability. We can find the support for our result from the literature. For instance; Charitou et al (2010) in his study have found the same positive relationship between Cr and profitability of the firms in Cyprus.

Moving further, Asset turnover is found to be negatively related with the ROA of the selected firms in Pakistan.. For example; the findings of the study of Muhammad and Saad (2010) have confirmed an inverse relationship between these two variables. ATR was dropped from regression analysis in Indian firms due to highly inflated variance values, therefore it doesn't appear in Indian firms' analysis. Moreover, the short term assets management ratios i.e., ARCTR, INVTR and CCC are found to be directly related with the profitability of the selected Pakistani and Indian firms. We can find the evidence in support of our study. For instance; the study conducted by Deloof (2003) have found the same positive relationship between INVTR, ARCTR, CCC and profitability of the firms. Similarly, dung and Su (2010) have confirmed a direct relationship between INVTR, ARCTR, CCC and profitability of the firms. On the other hand, Accounts payable turnover (APTR) is found to be inversely related with ROA and ROE of the selected firms both in Pakistan and India. The same data analysis procedure has been performed for Indian firms as well. The outcome from this section, have confirmed that Current ratio, quick ratio, inventory turnover in days, accounts receivable turnover in days and cash conversion cycle have positive relationship with profitability of the selected Indian firms, while Accounts Payable turnover in days has negative relationship with profitability of the selected Indian firms.

It is very clear that all the selected independent variables are statistically significant in relationship with profitability of the Pakistani firms except ATR and Cr. Moreover, ARCTRD is statistically significant in its relationship with ROA while insignificant with ROE. Similarly, APTR is statistically significant with ROA and statistically insignificant with ROE. In addition, Qr, INVTRD and CCC are statistically, significantly and positively related with profitability of the Pakistani firms while APTRD is statistically, significantly and negatively related with ROA of Pakistani. Its relationship with ROE is the same except that of statistically, insignificant relationship.

In the Indian context, the results are slightly different than Pakistani firms. Here the current ratio is statistically significant in its relationship with ROA while insignificant with ROE. Similarly, CCC is

statistically significant with ROA and insignificant with ROE. The results from Indian firms show that Qr, INVTR and ARCTRD and APTRD are statistically significantly related with both ROA and ROE

Recommendations

Therefore, based on research study the following important points are recommended.

1) Liquidity ratios such as quick ratio and current ratio have positive and significant impact on profitability of both Pakistani and Indian pharmaceutical companies. On the basis of the outcome of the study, financial managers, policy makers are recommended to have a sound focus on the liquidity ratio in order to have adequate cash available in the counter.
2) The study also recommends a narrow focus on the management of short term assets such as INVTRD, ARCTRD,and CCC because these are strongly positively and significantly related with profitability. Hence these should be carefully managed.

References

Al Dalayeen, B. (2017). Working Capital Management and Profitability of Real Estate Industry in Jordan: An Empirical Study. Journal of Applied Finance and Banking, 7(2), 49.

Charitou ,M. S., Elfani, M., and Lois. P., (2010). The effect of WorkingCapital Management on firms Profitability: Empirical evidence from an Emerging Market .Journal of Business and EconomicResearch, 8(12), 63 –68.

Deloof, M. (2003). Does working capital management affect profitability of Belgian firms?. *Journal of business finance & Accounting*, *30*(3-4), 573-588.

Eljelly, A. M. (2004). Liquidity-profitability tradeoff: An empirical investigation in an emerging market. *International journal of commerce and management*, *14*(2), 48-61.

Emery, G. W., & Marques, M. A. (2011). The effect of transaction costs, payment terms and power on the level of raw materials inventories. *Journal of Operations Management*, *29*(3), 236-249.

Jakpar, S., Tinggi, M., Siang, T., Johari, A., Myint, K., & Sadique, M. (2017). Working capital management and profitability: evidence from manufacturing sector in Malaysia. Journal of Business & Financial Affairs, 6(2), 1-9.

L. L. Lamptey, K. Frimpong, and A. B. Morrison,(2017) "Empirical study on the influence of working capital management on performance of SMEs in a developing economy," *British*

Journal of Economics, Management & Trade, vol. 17, no. 4, pp. 1-10.

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.

Rafuse, M. E. (1996). Working capital management: an urgent need to refocus. *Management Decision*, *34*(2), 59-63.

management on firm profitability: Empirical evidence from India. *Global Business Review*, *12*(1), 159-173.

Sharma, A.K., & Kumar, S. (2011). Effect of working capital management on firm Singh, P. (2008). Inventory and working capital management: An empirical analysis. *The IUP Journal of Accounting Research and Audit Practices*, *7*(2), 53-73.

Van Horne, J. C., & Wachowicz, J. M. (2000). Fundamentals of financial management. *FINANCE INDIA*, *14*(2), 621-622.

Wang, Y. J. (2002). Liquidity management, operating performance, and corporate value: evidence from Japan and Taiwan. *Journal of multinational financial management*, *12*(2), 159-169.

Zariyawati, M. A., Annuar, M. N., Taufiq, H., & Rahim, A. A. (2009). Working capital management and corporate performance: Case of Malaysia. *Journal of Modern Accounting and Auditing*, *5*(11), 47.