Underlying Relationship between Working Capital Management and Profitability of Pharmaceutical Companies in India

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Abstract: Purpose of the study: This research work investigates the underlying relationship between working capital management and profitability of pharmaceutical companies in India. Background of the study: Effective working capital management perks up firms' profitability and liquidity position, and as a result growing the firm's market value. Methodology: This study is based on secondary data obtained from centre for monitoring Indian economy database for the period from 2003 to 2013. In the course of examination, descriptive statistics, correlation statistics and multiple regression test have been used. Results: Multiple regression tests corroborate a lower degree of relationship between the working capital management and profitability under study. Findings of the study: The company manger would anxiety on working capital management performance, mainly unexplained variables in justification of making shareholder wealth.

Keywords: Working Capital Management, Liquidity, Profitability, Pharmaceutical Company, India, Multiple Regression Test

1. Introduction

Working capital management efficiency can have a noteworthy shock on both the liquidity and profitability of a company (Shin and Soenen, 1998). Deficient working capital can give an explanation for ineffectiveness of a maneuver when the company is not capable to bribe its complete commitments for the purpose of liquidity. At the same time, the company is not capable to give necessary goods or services to its customers owing to lack of liquidity for purchase materials in support of production of goods. However, the company's profitability endanger accordingly.

There are lots of studies that point out that working capital management is crucial to company's profitability, however more particularly, manufacturing companies owing to their be short of right to use to credit from the financial markets, such as, Karaduman et al, 2010, Padachi, 2006; Mathuva, 2010; Chary et al, 2011; Bhunia and Das, 2012; Shubita, 2013, Mehta 2014, there is no compromise on the character of this association. Again, one filament of writing proposes that cash conversion cycle is positively associated with firm's profitability (Gill et al, 2010; Akoto et al, 2013); entailing that lengthier cash conversion cycles augment the firm's

profitability. The other filament of writing, on the other hand, recommends that smaller cash conversion cycles augment the firm's profitability (Lazaridis and Tryfonidis, 2006; Mathuva, 2010).

Again, working capital management is a significant means in financial management so as to a good number of the finance managers expend an enormous covenant of their moment on working capital management choices (Brigham and Houston, 2003). Appropriate working capital management perks up firms' profitability and liquidity position, and consequently growing the firm's market value (Ali, 2011). Nevertheless, liquidity and profitability are two surfaces of the similar coin for the reason that they exertion in reverse routes. Rising firm's liquidity will decrease firm's profitability and vice versa. As a result finance managers necessitate maintaining an echelon of working capital to facilitate will make certain the firm's liquidity but not diminish its profitability. Current studies identify the survival of a best possible echelon of working capital, confined in the course of a curved in affiliation between working capital management and profitability, demonstrating that firms follow an optimal working capital level that maximizes profitability (Baños-Caballero, et al., 2012). Also, the non-linear association is positive when firms grasp stumpy levels

of investment in working capital and turns out to be negative for elevated levels (Baños-Caballero, et al., 2010; Gomes, 2013). However, these associations have not recognised for pharmaceutical companies in India. In other way, there has been no research made regarding the causal relationship between working capital management and profitability of pharmaceutical companies in India.

2. Literature Review

Working capital management is vital on account of its upshots on the firm's profitability and risk, and accordingly its value (Smith, 1980). Agarwal (1988) formulated the working capital decision on importance to liquidity, by targeting the current ratio and quick ratio. The model comprised three liquidity goals, two profitability goals, and, at a lower priority level, four current asset sub-goals and a current liability sub-goal (for each component of working capital). Specifically, the profitability limitations were designed to arrest the opportunity cost of excess liquidity (in terms of reduced profitability). Working capital management is an exceptionally responsive area in the pasture of financial management (Joshi, 1994). A finance manager in any business has to take part in three purposes. These purposes are (a) long-term assets management, (b) long-term capital management and (iii) short-term assets and liabilities management. Short term assets and liabilities management talks about management of working capital (Rahman, 2011). To create the optimal returns, the firm should maintain no fruitless assets and should finance with the economical obtainable resources of funds. Usually, it is habitually beneficial for the firm to spend in short-term assets and to finance with short-term liabilities (Scherr, 2007). Well-organized working capital management engages preparation and scheming current assets and current liabilities in an approach that eradicates the jeopardy of incapacity to meet up matured short-term commitments on the one hand and pass up too much investment in these assets alternatively (Eljelly, 2004). Ghosh and Maji (2003) observed the effectiveness of working capital management of the Indian cement companies between 1992–1993 and 2001 –2002 using performance indices, utilization indices, and overall efficiency indices instead of widespread working capital management ratios. They designated that the Indian cement industry all together did not execute amazingly healthy. Shin and Soenen (1998) emphasized that well-organized working capital management was crucial for making worth for the shareholders. The approach working capital was controlled had a noteworthy shock on equally profitability and liquidity. Smith (1997) highlighted that profitability and liquidity comprised the most important aims of working capital management. The difficulty started due to the maximization of the firm's returns could critically pressure its liquidity, and the detection of liquidity had an inclination to weaken revolves.

Chakraborty (2008) investigated the association between working capital management and profitability of Indian pharmaceutical companies. He showed that there survive two divergent schools of thinking, that is, (i) working capital is not an issue of recovering profitability and there may be a negative association between working capital management and profitability and (ii) investment in working capital acts a very important position to perk up company profitability, in addition to if not there is a lowest echelon of working capital investment, production and sales cannot be sustained. These two paths in creative writing are in brief checked. Samiloglu and Demirgunes (2008) examined the association between working capital management and profitability among Istanbul firms and created that sales growth influences firms' profitability optimistically. The empirical results habitually hold up the outlook that liquidity and profitability are unswervingly connected in view of the fact that liquidity is augment through sales growth. Ben-Caleb (2009) examined the association between the elements of working capital and profitability using a sample of 25 manufacturing firms in Nigeria for the period from 2005 and 2006 period and established that just debtors' collection period was a major negative relationship with profitability. In the same way, Falope & Ajilore (2009) illustrated a sturdy negative relationship between working capital indicators and profitability indicator amongst Nigerian companies. Bhunia and Khan (2011) examined liquidity management effectiveness of selected Indian steel companies based on secondary data with 230 companies for 9 years period between 2002 and 2010 using statistical techniques. They established a diminutive relationship between the liquidity indicators of liquidity and profitability. Again, Bhunia, Khan and Mukhuti (2011) furthermore initiated that working capital in terms of liquidity is responsible for under-utilisation of production capacity and poor consumption of steel in India. They illustrated that there survive a high positive association between liquidity and profitability. Hasan, Halil, Arzu and Salih (2011) examined panel data of selected companies in the Istanbul Stock Exchange for the period from 2005 to 2009 to get rid of glow on the pragmatic association between competence of working capital management and corporate profitability. The findings disclosed that lower cash conversion cycle as a measure of working capital management optimistically influences return on assets as a measure of profitability. Rahman (2011) examined the influence of working capital management on profitability of Bangladesh textile industries. It was observed that profitability and working capital management position of the textiles industry are not satisfactory. The study also disclosed that correlation survived between working capital management and profitability and working capital management has a positive shock on profitability.

Chatterjee (2012) evaluated the shock of working capital on the profitability for a sample of 100 Indian companies listed in the Bombay Stock Exchange for a period of 2 years from 2010-2011 using descriptive statistics, Pearson's correlation and regression analysis. The results described that there was a strong negative relationship between the components of the working capital management and the

profitability ratios of the Indian firms that indicated when cash conversion cycle increased, the profitability of the company decreased. It was moreover examined that the negative relationship persisted between the liquidity and the profitability of the Indian firms. On the other hand, there was a positive affiliation between the size and the profitability of the firm, which indicated when the size of the firm increased the profitability of the firm, furthermore increased. At last a negative association was observed between the debt and profitability of the Indian firms, which signified that the managers might proficient to raise their profits by failing the time period for the debtors and inventories with the intention that, time period for payables, would increase. Arshad and Gondal (2013) examined the association between working capital management and profitability of 21 listed Pakistan cement companies for the period between 2004 and 2010. They demonstrated that there was a momentous negative association existed between working capital management and profitability. Ben-Caleb and Olubukunola (2013) explored the association between liquidity and profitability based on a sample of 30 manufacturing companies listed on the Nigeria Stock Exchange for the period between 2006 and 2010. The empirical results suggested that current ratio and liquid ratio are positively linked with profitability at the same time as cash conversion period is negatively associated with profitability of manufacturing companies in Nigeria. The relationship in the entire cases was though, statistically irrelevant, signified low degree of persuade of liquidity on the profitability of manufacturing companies in Nigeria. They recommended that more sensible credit policy and shorter cash conversion period may have a positive shock on the profitability. Bose (2013) also observed the association between working capital management and profitability and indicated that simply cash position ratio was positively persuade on return on total assets and the residual six ratios were negatively correlated with return on total assets. He furthermore established that return total assets is negatively connected with days of working capital. Mogaka and Jagongo (2013) investigated the association between working capital management and firms profitability and established that the negative relationship exist between return on assets and accounts receivables and operating cycle at the same time as positive relationship exist with stock turnover, accounts payables. He wrapped up that working capital management has a noteworthy shock on firms' profitability and act as a input responsibility in value creation for shareholders because large operating cycle was negative shock on firms' profitability. Babu and Chalam (2014) examined the association between working capital components and firms profitability of Indian Leather Industry for 14 years period and showed that profitability was inconsequential positive association with inventory management and noteworthy positive association with receivables. Although, payable management and working cycle were noteworthy negatively associated with profitability and concluded that working capital management has significant impact on profitability of overall leather firms.

Bukhari and Malik (2014) assessed the impact of working capital management on company performance of selected cement firms and established that there were positive and irrelevant association exist between receivables management and profitability at the same time as negative and irrelevant association exist between profitability and management of inventory in addition to he initiated that the affiliation between the payable management and profitability was negative and noteworthy. Additionally, working capital cycle has positively and irrelevantly correlated with profitability. However, they recommended that managers of cement companies should expend more time to supervise working capital cycle of cement firms and create plans of competent working capital management. Butt (2014) examined the association between working capital management and profitability of chemical sector in Pakistan for the periods from 2006 to 2010 using regression analysis and demonstrated that aggressiveness of the working capital policy is negatively related with the profitability. Iqbal et al (2014) measured the shock of working capital management on profitability of Pakistani firms listed in Karachi Stock Exchange. They established a noteworthy negative association between net operating profitability and the receivables period, inventory turnover in days, payable period and operating cycle. The empirical results pointed out that the coefficient of account receivable is negative; specifically, the augment or diminish in average collection period were appreciably influence the profitability of the firm. In keeping with inter-item correlation template the association of account receivables, account payables and inventory with profit demonstrated positive association however cash conversion cycle, financial debt and financial assets demonstrated negative connection with profitability. Inventory illustrated the positive affiliation with dependent variable that confirmed that working capital management has a positive consequence on firm's probability. Agha (2014) examined the influence of working capital management on profitability of selected pharmaceutical companies and established that three important activity ratios creditors' turnover ratio, debtors' turnover ratio and inventory turnover ratio have a positive noteworthy shock on profitability and also there is no momentous shock of current ratio on profitability. Gulia (2014) explored the shock of working capital management on the profitability of leading pharmaceutical firms using correlation and multiple regressions. The result identified that there existed association among working capital management indicators and profitability in addition to the net working capital and debt ratios of the firms have important shock on the profits of the firms.

The conclusive sum of this retrospective review of relevant literature produced till date on the offered subject reveals wide room for the validity and originates of this work and reflects some decisive evidences that affirm its viability, as may be marked here it. Nor has any previous research examined the causal relationship between working capital management and profitability of the large number of public

sector and private sector pharmaceutical companies in India. No study has incorporated in this fashion before the present one.

3. Methodology of the Study

This research work is based on secondary data only which is obtained from CMIE (Centre for Monitoring Indian Economy) database for the periods from 2004 to 2013. This study selects 140 pharmaceutical companies in India whose data is available in the CMIE database. To fulfill the relationship between working capital management and profitability, eight working capital management indicators, that is, current ratio (CR), quick ratio (QR), cash position ratio (CPR), debt equity ratio (DER), stock turnover ratio (STR), debtors" turnover ratio (DTR), creditor's turnover ratio (CTR) and working capital cycle (WCC) and one profitability indicator, return on capital employed (ROCE) have been taken for the study. In the course of analysis, descriptive statistics (mean, S.D., C.V. (%), skewness and kurtosis), Pearson's correlation statistics and multiple regression test method have been used.

4. Empirical Results and Analysis

4.1. Descriptive Statistics

For determining working capital position in terms of level, proper level of working capital is essential with which contrast can be prepared. By itself, grand industry average or industry average has been computed on the basis of the selected pharmaceutical companies in India. Comparison of 140 selected companies' diverse working capital ratios with grand industry average/industry average, which is considered as a yardstick, would undeniably support in probing the pros and cons of the management of working capital. Again, comparison of year-wise working capital ratios with year-wise grand industry average/industry average has also been performed that furthermore unquestionably hold up in searching the pros and cons of the management of working capital. Working capital position of each of the pharmaceutical companies in India under study is outlined in the following sub-sections.

4.1.1. Descriptive Statistics on Current Ratios

Current ratio is an assessment of overall liquidity and is basically used to make the interpretation of liquidity of firm in the short-run. A relatively high current ratio is a pointer that the firm has huge liquidity and has the ability to pay the matured obligation in time. Table 1 shows the descriptive statistics of current ratio of selected pharmaceutical companies in India.

Mean of current ratios of 140 pharmaceutical companies under study is slightly higher and satisfactory as its average are 1.77 which is to some extent higher than grand industry average (1.75) that is taken as benchmark. Coefficient of variation of current ratio of industry as a whole is 28.32%. Coefficient of variation of current ratio is 129.53% in case of

selected pharmaceutical companies, which is less than grand industry average. In the matter of the working capital management, it moreover displays less reliability under study as higher variability confirms less reliability. More variability in the current ratio points out inefficient management of fund inasmuch as the excess liquidity could have otherwise been utilised for investment purposes thereby enabling the company to lead a path of growth, as supported in, (Bhunia et al, 2011). Simultaneously the particular companies under study and the industry as a whole does not pursue the normal distribution for the reason that skewness and kurtosis does not meet up the thumb rule of statistics, that is, skewness is equal to zero and the value of kurtosis is equal to three.

4.1.2. Descriptive Statistics of Quick Ratios

Quick ratio is more specific test of liquidity than current ratio. A high quick ratio is an indication that the company has liquidity and ability to meet its current liabilities in time. But a low quick ratio represents that liquidity position of the company is not good. Liquid ratios of pharmaceutical companies under study are portrayed in table 1.

Mean of quick ratios of 140 pharmaceutical companies under study is somewhat higher and satisfactory as its average are 1.23, which is to some extent higher than grand industry average (1.20), which is taken as standard. Coefficient of variation of quick ratio of industry as a whole is 40%. Coefficient of variation of quick ratio is 69.22% in case of selected pharmaceutical companies, which is higher than grand industry average. In the matter of the working capital management, it moreover displays less dependability under study as higher unpredictability corroborates less dependability. More variability in the quick ratio points out incompetent management of fund inasmuch as the surplus liquidity could have otherwise been used for investment purposes in this manner enabling the company to direct a course of expansion. At the same time the exacting companies under study and the industry as a whole does not follow the normal distribution for the basis that skewness and kurtosis does not get together the thumb rule of statistics.

4.1.3. Descriptive Statistics of Cash Position Ratios

Cash and cash equivalent is the most liquid asset. Cash position ratio is further perfect analysis of working capital and liquidity than current and quick ratio. It is meticulous as most useful indicator to test the unconditional working capital as well as liquidity position of any organisation. In determining the cash, inventories and accounts receivable are deducted from current assets. This ratio of certain 140 pharmaceutical companies is exposed in table 1.

Average of cash position ratio of selected Indian pharmaceutical companies under study is somewhat higher and satisfactory as its average are 0.35 that is moderately higher than grand industry average (0.31) that is occupied as standard. Coefficient of variation of cash position ratio of industry altogether is 19.35% but coefficient of variation in case of selected pharmaceutical companies is 232.93%, which is very much higher than grand industry average. In the issue of the working capital management, it likewise

exhibits less constancy under study as higher randomness supports less constancy. More changeability in the cash position ratio shows ineffectual management of finance inasmuch as the remaining liquidity could have otherwise been utilized for outlay rationales like so allowing the company to express a path of development. In unison the rigorous companies under study and the industry as a whole does not tag on the normal distribution for the base that skewness and kurtosis does not convene the thumb rule of statistics.

4.1.4. Descriptive Statistics of Debt-Equity Ratios

Short-term debt-equity ratio is an indicator of working capital and liquidity position and also important for reliability of financial position as well as financial policies in a short period of the firm. It is measures the direct proportion of debt capital to Equity capital. It is a proportion of outside liabilities and tangible net worth relating to short period of the company. It also indicates the proportion of owners' stake in the business. In other words, this indicates the amount to which the firm depends upon outsiders for its survival. The ratio provides a margin of safety to the creditors. If the ratio is over 100%, it is indicates a highly geared company and any prudent lender will not be will to extend loan finance to such business. Debt-equity ratios of selected pharmaceutical companies under the study are shown in table 1.

Average of debt-equity ratio of particular Indian pharmaceutical companies under study is fairly higher and unsatisfactory as its average are 1.40 that is reasonably higher than grand industry average (1.18) that is occupied as standard. Coefficient of variation of debt-equity ratio of industry on the whole is 86.41% but coefficient of variation in case of particular pharmaceutical companies is 309.17%, which is greatly higher than grand industry average. In the

question of the working capital management, it similarly demonstrates less fidelity under study as elevated unpredictability sustains less fidelity. In unison the precise companies under study and the industry on the whole does not mark on the normal distribution for the stand that skewness and kurtosis does not set up the thumb rule of statistics.

4.1.5. Descriptive Statistics of Stock Turnover Ratios

Stock turnover ratio establishes the relationship between the costs of goods sold and average stock. This ratio indicates the velocity of conversion of stock into sales. Usually, a high inventory turnover indicates efficient management of inventory because more frequently the stock is sold, the less amount of money is needed to finance inventory. A low inventory turnover ratio shows inefficient management of inventory, over investment in inventories, slow business, and poor quality of goods that lead to lower profit as compared to total investment. Stock turnover ratio indicates duration of inventory in organization.

It shows moving position of inventory during the year. If time of inventory turnover is minimum it means companies activity position are acceptable, they are able to sell their product within shorter period of time which indicate sound liquidity position of the company. On the contrary, if time of inventory turnover is too high, it indicates slow moving of stock due to lower demand of product or excessive production by company, due to stocking policy, which affected directly liquidity position of company. Inventory is one of the major items in current assets, which shows investment of working capital in stock. The stock turnover ratio of selected pharmaceutical companies is shown in table 1.

Table 1. *Descriptive Statistics of Selected Working Capital Management Ratios under Study.*

	Minimum	Maximum	Mean	S. D.	C.V. (%)	Skewness	Kurtosis
CR	.30	24.99	1.77	2.29	129.53	8.11	78.38
QR	.19	22.46	1.23	2.07	69.22	8.28	80.74
CPR	.01	7.60	.35	.81	232.93	6.21	48.96
DER	.00	49.45	1.40	4.34	309.17	10.08	110.1
STR	.00	3524.1	59.87	306.1	511.25	10.68	120.4
DTR	.00	24.94	5.41	3.33	61.55	2.61	10.9
CTR	.00	48.15	6.40	5.35	83.55	4.54	29.01
WCC	-5293	10793	271.2	1216.1	448.4	5.60	51.46
Industry average							
CR	1.49	3.22	1.75	.50	28.32	3.12	10.02
QR	.96	2.67	1.20	.48	40.00	3.17	10.29
CPR	.27	.43	.31	.06	19.35	-.21	-1.24
DER	.83	4.91	1.18	1.02	86.41	3.16	10.22
STR	18.5	190.6	59.90	49.8	83.16	2.22	4.93
DTR	4.88	5.92	5.82	.27	4.64	-.06	1.47
CTR	5.68	7.15	6.03	.54	8.96	.02	-1.40
WCC	131	485.8	258.6	115.6	44.71	.61	-.81

Source: Author's calculation on CMIE data

Average of stock turnover ratio of particular Indian pharmaceutical companies under study is to some extent lower and satisfactory since its average are 59.87, specifically, almost lesser than grand industry average (59.90), explicitly,

in use as norm. Coefficient of variation of stock turnover ratio of industry on the whole is 83.16% but coefficient of variation in case of exacting pharmaceutical companies is 511.25%, which is seriously higher than grand industry

average. In the enquiry of the working capital management, it in the same way expresses very much less faithfulness under study because prominent volatility maintains less faithfulness. In accord the specific companies under study and the industry on the whole does not blotch on the normal distribution for the get up that skewness and kurtosis does not set up the thumb canon of statistics.

4.1.6. Descriptive Statistics of Debtors' Turnover Ratios

Trade debtors are expected to be converted into cash within a short period time and are included in current assets. Hence, the working capital and liquidity position of concern to pay its short term liabilities in time depends upon the quality of its trade debtors. It indicates the rate at which debtors are converted to cash, helps in formulating the credit policy by indicating whether investment in debtors is within limits, and indicates if capital is blocked in slow paying debtors. A high DTR indicates a moderate credit policy, over investment in debtors or slow paying debtors. However it may also result in higher sales. The higher the value of debtors' turnover the more efficient is the management of debtors or more liquid the debtors are. Similarly, low debtors' turnover ratio implies inefficient management of debtors or less liquid debtors. It is the reliable measure of the time of cash flow from credit sales. There is no rule of thumb which may be used as a norm to infer the ratio as it may be different from firm to firm. Debtors' turnover ratio of the selected pharmaceutical companies under the study is shown in the following table 1.

Average of debtors' turnover ratio of particular Indian pharmaceutical companies under study is to some extent lower and satisfactory since its average are 5.41, specifically, almost lesser than grand industry average, 5.82, unambiguously, in use as standard. Coefficient of variation of debtors' turnover ratio of industry on the whole is 4.64% but coefficient of variation in case of demanding pharmaceutical companies is 83.55% that is significantly higher than grand industry average. In the study of the working capital management, it equally articulates really less legitimacy under study for the reason that significant precariousness upholds less legitimacy. In consensus the unambiguous companies under study and the industry on the whole does not imperfection on the normal distribution for the outfit that skewness and kurtosis does not entity the thumb rule of statistics.

4.1.7. Descriptive Statistics of Creditors' Turnover Ratios

Creditors' turnover ratio is an indication of efficiency of the credit and payment policy of the company and working capital as well as liquidity position that directly depends on this. Higher the credit payment period the longer is the age of creditors as well as better is the management of liquidity whereas shorter the age of creditors shows inefficient and poor payment policy that is accountable to decrease current liabilities (credit) burden and suffering condition of working capital as well as liquidity position. Creditors' turnover ratio of 140 pharmaceutical companies in India under the study is furnished in table 1.

Average of creditors' turnover ratio of particular Indian pharmaceutical companies under study is to some extent more and unsatisfactory since its average are 6.40, in particular, more or less higher than grand industry average, 6.03, unambiguously, in use as benchmark. Coefficient of variation of creditors' turnover ratio of industry on the whole is 8.96% but coefficient of variation in case of demanding pharmaceutical companies is 61.55%, which is critically higher than grand industry average. In the investigation of the working capital management, it likewise articulates truly less authenticity under study because important volatility maintains less authenticity. In concurrence the explicit companies under study and the industry on the whole does not blemish on the normal distribution for the attire that skewness and kurtosis does not unit the thumb norm of statistics.

4.1.8. Descriptive Statistics of Working Capital Cycle

The working capital cycle is the time duration between disbursing for raw materials and goods to facilitate were procuring to manufacture products and the ultimate receipt of cash so as to business make on selling the products. Consequently in effect, it indicates the time necessary by the business operations to transfer the current assets and current liabilities into cash. The shorter the working capital cycle, the more efficient is the working capital. If the working capital cycle is too lengthy, in that case business capital obtains occupied in the working cycle without earning returns. Consequently, companies attempt to accomplish shorter working capital cycles to enhance their business effectiveness's. Working capital cycle of 140 pharmaceutical companies in India under the study is provided in table 1.

Average of working capital cycle of exacting Indian pharmaceutical companies under study is somewhat more and unsatisfactory since its average are 271.20, particularly relatively higher than grand industry average, 258.6, unequivocally, in effect seeing that yardstick. Coefficient of variation of working capital cycle of industry on the whole is 44.71% but coefficient of variation in case of demanding pharmaceutical companies is 448.4%, which is significantly higher than grand industry average. In the investigation of the working capital management, it similarly articulates truly less faithfulness under study because important unpredictability maintains less faithfulness. In accord the explicit companies under study and the industry on the whole does not imperfection on the normal distribution for the attire that skewness and kurtosis does not entity the thumb norm of statistics.

4.2. Correlation Statistics

By and large, correlation analysis endeavors to find out the degree and direction of association between two variables under study. In a bivariate distribution, if the variables have the cause and effect relationship, they have high degree of correlation between them. The co-efficient of correlation is denoted by "r".

The correlation is studied using Karl Pearson's correlation

formula.

$$r = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{(N\Sigma x2 - (\Sigma x)2)\,(N\Sigma y2 - (\Sigma y)2)}}$$ (Karl Pearson's correlation formula)

Table 2. Correlation Statistics under Study.

	CR	QR	CPR	DER	STR	DTR	CTR	WCC	
CR	1								
QR	.99(**)	1							
Prob.	.00								
CPR	.63(**)	.65(**)	1						
Prob.	.00	.00							
DER	-.07	-.05	-.03	1					
Prob.	.41	.54	.73						
STR	-.04	-.04	-.04	.02	1				
Prob.	.68	.61	.60	.84					
DTR	.04	.04	.45(**)	.34(**)	.01	1			
Prob.	.64	.67	.00	.00	.93				
CTR	.11	.12	.24(**)	-.04	.04	.07	1		
Prob.	.18	.15	.005	.61	.66	.43			
WCC	.05	.04	.06	-.02	-.01	.04	.01	1	
Prob.	.56	.60	.47	.81	.90	.69	.91		
ROCE	-0.014	-0.014	0.13	0.11	-0.06	0.37**	0.16	0.10	1
Prob.	0.87	0.87	0.12	0.20	0.49	0.00	0.06	0.23	

** Correlation is significant at the 0.01 level (2-tailed).

Table 2 discloses that conventional current ratio and profitability is negatively slightly (0.014) associated with higher profitability. However other two traditional liquidity ratios of QR and CPR are negatively and positively associated (0.014 and 0.13) with higher and lower probability respectively. This means the result is hold up the belief that conventional liquidity ratios are inadequately influence the profitability. Yet again, DER is furthermore linked of lower positive correlation coefficient with lower profitability. This means that effect is holding up the expectation that debt is linked with lower probability. In addition, the results of correlation coefficient corroborate a very low (negative, positive and positive) relationship among three indicators of efficiency (STR, DTR and CTR) and profitability. The consequence of correlation coefficient illustrates a very low positive association (0.16) between WCC and profitability. This means that effect is holding up the belief that a working capital cycle (WCC) is linked with lower profitability. This divulges that WCC is measuring liquidity in a different way from the conformist liquidity ratios.

4.3. Multiple Regression Statistics

Most stylish multiple regression methods have been useful to study the joint persuade of all the selected ratios indicating company's working capital management and performance on the profitability and the regression coefficients have been tested with the help of the most popular 't' test. In this study, current ratio, quick ratio, cash position ratio, debt equity ratio, inventory turnover ratio, debtors' turnover ratio, creditors' turnover ratio and working capital cycle have been taken as the explanatory variables and return on capital employed has been used as the dependent variable. The regression model used in this analysis is: ROCE = £ + β_1CR + β_2 QR + β_3 CPR + β_4 DER + β_5 STR + β_6 DTR + β_7 CTR + β_8 WCC + ε_t (unexplained variables or error terms) Where £, β_1, β_2, β_3, β_4, β_5, β_6, β_7 and β_8 are the parameters of the ROCE line.

Table 3. Multiple Regression Test Results.

Model	Unstandardized B Coefficients	S. E.	t	Prob.	VIF
(Constant)	-7.39	4.08	-1.81	.07	
CR	-1.52	5.36	-.28	.78	76.87
QR	1.84	6.08	.30	.76	81.48
CPR	-2.64	2.93	-.90	.37	2.87
DER	-.14	.36	-.37	.71	1.27
STR	-.004	.005	-.87	.39	1.01
DTR	2.25	.57	3.99	.00	1.82
CTR	.51	.27	1.90	.06	1.07
WCC	.001	.001	1.17	.24	1.01
R = 0.42	R² = 0.18	Adjusted R² = 0.13			
S. E. of the estimate = 16.47		Durbin-Watson = 2.11			
F = 3.55 (Prob. = 0.001)					

a. Dependent Variable: ROCE

Table 3 reveals that multiple regression results between the dependent and independent variables has been unauthenticated because the result of tolerance and variance inflation factor cannot satisfy the model (even rule of thumb of statistics), that is, VIF value exceeds 2 and also exceeds10 (rule of thumb of statistics) or tolerance level of 0.50 (rule of thumb in statistics is 0.10). However, first of all, we remove CR and from the regression model and set a new model of linear regression. The new regression model used in this analysis is: ROCE = £ + ß₁CPR + ß₂ DER + ß₃ STR + ß₄ DTR + ß₅ CTR + ß₆ WCC + εₜ (unexplained variables or error terms)

The power of the association between the dependent variable, ROCE and all the independent variables taken together except CR and QR and the impact of these independent variables on the profitability are given in Table 4. It was pragmatic from the above that an increase in CPR by one unit; the ROCE decreased by 2.18 units that were statistically significant at 5 per cent level. When DER is increased by one unit, the ROCE of the company is also decreased by 0.11 units that were not significant at 5% level. Over again, three important indicators of efficiency, STR, DTR and CTR, increased by one unit, ROCE decreased, increased and increased by 0.004, 2.19 and 0.51 units respectively which was statistically insignificant, significant and insignificant respectively at 5 per cent level. It was observed from the above that an increase in WCC by one unit; the ROCE increased by 0.001 units that were statistically insignificant at 5 per cent level. The multiple correlations among the dependent variable ROCE and the independent variables taken together were 0.42. It indicates that the profitability was moderately responded by its independent variables. It is also evident from the value of R2 that 0.18 per cent of variation in ROCE was accounted by the joint variation in independent variables. Adjusted R Square (R2) signifies that 14 per cent of the variations in the ROCE are explained by the independent variable Standard Error of regression coefficients being not very high, reveals that there survives actually line of estimates among the variables. VIF was less than 2, which indicates there was no multicollinearity problem. Also Durbin-Watson statistics indicates that residuals were not serially correlated. F statistics with profitability indicates that the regression model is perfectly fitted. An insignificant variability in profitability could be the result of the combined upshot accepted in the study and numerous other working capital management connected unexplained variables.

***Table 4.** Multiple Regression Test Results.*

Model	Unstandardized B Coefficients	S. E.	t	Prob.	VIF
(Constant)	-7.68	3.20	-2.40	.02	
CPR	-2.18	2.03	-1.07	.29	1.39
DER	-.11	.35	-.31	.76	1.19
STR	-.004	.005	-.90	.37	1.01
DTR	2.19	.51	4.32	.00	1.49
CTR	.51	.27	1.92	.06	1.06
WCC	.001	.001	1.17	.24	1.01
R = 0.42	R² = 0.18	Adjusted R² = 0.14			
S. E. of the estimate = 16.36		Durbin-Watson = 2.12			
F = 4.78 (Prob. = 0.00)					

a. Dependent Variable: ROCE

5. Conclusions

The underlying principle of this study is to investigate the working capital management efficiency and profitability relationship. A descriptive statistics discloses that liquidity and solvency position was very pleasing and sensibly competent working capital management was found however liquidity position has no shock on profitability. This study moreover shows there was no significant relationship between working capital management and profitability. The study additionally demonstrates a small connection between WCM in terms of working capital cycle and profitability and working capital cycle has no significant shock on profitability. Multiple regression tests corroborate a lower degree of relationship between the working capital management and profitability. As a result, company manger should anxiety on working capital management, mainly unexplained variables in justification of making shareholder wealth. But this study was not free from a few limitations, that is, special ratios used in this study were taken from CMIE data base, only eight working capital management indicators were considered and all pharmaceutical companies were not considered. This may be our future study.

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