

**MANAGING WORKING CAPITAL:  
THE CASE FOR PROFITABILITY IN INDIAN PHARMA SECTOR**

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**ABSTRACT:** The study intended to analyse the management of working capital and its impact on profitability of selected Indian pharmaceutical companies. Present study used panel data methodology and also employed analytical and descriptive research designs. Financial statements of pharmaceutical firms were utilized as the primedata sources. The study used ROTA as dependent variable to evaluate profitability and ARP, SCP, APY, CCP, LAR, CUR and LR as independent variables to measure firms' working capital. The study employed purposive sampling and data was gathered from sample firms' annual report. The data covered a period of 10 years from 2009-10 to 2018-19. Findings indicated that certain variables had significant correlation with other variables. In this way, APY and SCP had significant and positive correlation. CCP had positive and significant correlation with SCP. Regression results revealed that APY, CUR and LR were statistically significant among the seven independent variables. However, the other variables were statistically insignificant. Therefore, findings had several implications for Indian pharmaceutical firms.

**Keywords:** Pharmaceutical Firms, Profitability, Management of Working Capital, Return on total assets, Cash Conversion Period.

**Abbreviations:** ROTA, Return on Total Assets; ARP - Average Receivable Period; APY, Average Payable Period; SCP, Stock Conversion Period; CCP, Cash Conversion Period; LAR, Liabilities to Assets Ratio; CUR, Current Ratio; LQR, Liquid Ratio;  $\beta_0, \beta_1, \beta_n$ , Coefficients;  $\epsilon_t$ , Error term.

## 1. INTRODUCTION

Management of working capital (MWC) is concerned with maintenance of optimum balance among different components such as receivables, stock, cash and payables. Working capital management is the basic element of business strategy to make value and act as a main source to foster competitive advantage in businesses. Determination of optimum working capital may increase business firms' performance and profitability (Ng et al, 2017). In corporate finance, MWC is a crucial component because it has direct impact on firms' profitability parameters. Working capital concept can be bifurcated into two: gross concept and net concept. Gross working capital is the accumulation of total current assets whereas net working capital is the value of current assets less current liabilities. Excess level of current assets can simply affect business firm's leading to poor return on investment. On the other hand, business firms with low level of current assets may face fund deficiency in maintaining smooth operations. Stock is a short-lived asset that is frequently being converted into other forms like cash or receivables. Current liability is the responsibility of the firm to pay for raw material or short-term credit obligations.

An effectual MWC concerned with planning and managing current assets and current liabilities in a way that removes the risk of failure to honour short-term obligations. On the contrary, it helps to avoid excess investment in current assets. It is also concerned with the application of proper method(s) for risk elimination and lack of ability to pay short term debt commitments. It prevents over investment by proper planning and managing of current assets and liabilities. The capability of a business firm to earn income is denoted as profitability; it depends on efficiency of its operations and availability of resources (Al-Mawshaki et al, 2019). MWC affects firms' profitability in myriad ways. The management of stock, receivable and cash affects the profit generated by a business firm. Maintaining excess stock leads to high handling costs, damage, obsolescence, theft / pilferage and wastage. Insufficient stock leads to stock out, loss of firm reputation, and loss. Maintenance of excess current assets and liabilities may affect the profitability level of firms (Mahmood et al, 2019).

## 2. NEED FOR THE STUDY

The pharmaceutical sector is the most prominent sector and it ensures good quality indispensable drugs that are made available at affordable cost to the masses of the nation. In fact, they compete with popular firms at the global level. Pharmaceutical sector is an intellectual and science-based sector with huge investments in research and development. It constantly ranks high in terms of range of drugs and medicines, quality of medicine and use of technology for production. It provides various medicines for simpler ailments to complicated antibiotics and other formulations to combat myriad diseases and deficiencies. Pharmaceutical sector requires huge investment for both fixed asset purchase and working capital needs. The sector needs more funds which should be lodged in working or circulating capital. Optimum use of working capital in such firms will maximise its ability to pay-off its short-term debt commitments at the earliest. MWC deals with short-term financing decision of firms that acts as a facilitator to earn income through routine operations. Poor MWC apropos bills receivables, stock, bills payables, and cash conversion will lead to difficulty in operation and consequently diminished profitability level.

### **3. STATEMENT OF THE PROBLEM**

Corporate finance practice ensures a perfect and successful framework for asset management. Investment of funds in working capital has gained more attention so as to enhance profit level of the firm. The prime objective of a corporate firm is to generate and maximise profit that will eventually determine its business growth and it can be achieved by effective MWC. Working capital has many components and it has direct impact on determining firms' profitability. Thus, to measure impact of MWC on profitability, the study assumed that return on total assets as a measure of profitability. Return on total assets is assumed as the profitability ratio, it evaluates the net profit generated by employment of total assets and often is believed to be the most trustworthy measure of profitability. Working capital components are average receivable period, stock conversion period, average payable period, cash conversion period, liabilities to assets ratio, current ratio and liquid ratio. However, average receivable period determines firms' cash flow and it deals with days of credit provision and its collection. Stock conversion assesses the time to convert stock to sale. Average payable period deals with time taken to pay credit obligations. Cash conversion period deals with conversion period between purchase and sale of goods. Liabilities to assets

ratio measures debt position against assets of firm. Current ratio assesses the firms' financial ability to pay off its current debt obligations. Liquid ratio measures the liquidity position of the firm.

### **4. LITERATURE REVIEW**

Literature review emphasises the aspects of MWC and its influence on profitability. Accordingly, empirical and theoretical considerations are presented. Azeez et al. (2016) divulged the need for managing current assets and liabilities to make sure sound financial health of the firm. The study also observed that employment of funds in working capital is usually more in line with the total assets employed; careful investigation of working capital management is required. Kumari & Anthuvan (2017) revealed that current assets are a significant part of a firms' total investment. Altaf & Shah (2018) revealed that MWC had positive and strong connection with profitability of firms. Panda & Nanda (2018) showed that the changes in input of working capital had direct effect on changes in firms' profitability. Akoto et al. (2013) showed that working capital was the main element in financial management of a firm due to its influence on risk, firm's value and profitability. Nandom et al. (2017) disclosed that MWC had direct influence on financial condition of the business firms.

Iqbal et al. (2016) stressed that the necessity of investment in working capital to make sure that products get to the customers in a time-bound manner and its efficient management had positive impact on profitability. Wanguu & Kipkirui (2015) revealed that inventory collection, receivable collection, leverage, firm size, and liquidity had positive effect on firms' profitability whereas payable collection had negative effect on firms' profitability. Bulin et al. (2016) showed that there was insignificant association found between working capital turnover, stock turnover, average collection, and return on total assets. Significant association existed between return on total assets and cash conversion of the firm. Yeboah & Yeboah (2014) revealed that ineffective MWC was the most significant obstruction to the growth of profitability. Among the different components of working capital, cash conversion period was inversely connected with profitability. Raza et al. (2015) observed that inadequate working capital harmed the credit worthiness and routine activities of the firms.

Nastiti et al. (2019) demonstrated that MWC had significant relationship profitability of the firms. Moreover, MWC had significant impact on sustainable growth through firms' profitability. Hoang (2015) emphasised that working capital fostered more profitable utilisation of current assets to increase profitability. Makori & Jagongo (2013) revealed that MWC had direct connection with influencing the profitability standing of the firms. Chowdhury et al. (2018) divulged that effective control of working capital was critical for firms' profitability. Jean (2019) disclosed that profitability was influenced by cash balance management, bills receivables management, bills payables management, and stock management. Sarkar & Sarkar (2013) stated that working capital should ensure that business firm must be able to carry on operations with sufficient funds and profitability.

The research questions as well as the hypotheses stem from the review of literature already presented.

#### **4.1. Research Questions**

The present work will endeavour to explore answers to:

1. What is the association between MWC and profitability in pharma firms?
2. What is the profitability position of pharmaceutical firms? Is there any variation in profitability among pharma firms?

#### **4.2. Hypotheses Development**

The following null hypotheses have been proposed:

H<sub>01</sub>: There is statistically no significant association between MWC and profitability of pharmaceutical firms.

H<sub>02</sub>: There is no significant variation in profitability among pharmaceutical firms

### **5. RESEARCH OBJECTIVES**

The present study comprises the following objectives:

1. To investigate the association between MWC and profitability in pharmaceutical firms.
2. To measure the profitability position of pharmaceutical firms.

## 6. METHODOLOGY

### *A. Sample & Data*

The study explores the impact of MWC on profitability of chemical and pharmaceutical firms listed at the Bombay Stock Exchange in India. The study had widely implemented panel data methodology along with descriptive and analytical research design. The target population consists of ten companies engaged in production of pharmaceutical products in India. The study used purposive sampling and data was collected from annual reports of the pharmaceutical firms. The companies were identified due to availability of secondary data since they are required to publish their financial reports to the public. In view of that, Sun Pharmaceutical Industries Limited (SPIL), Piramal Enterprises Limited (PEL), Dr.Reddy's Laboratories (DRL), Cipla Limited (CL), Lupin Limited (LL), Aurobindo Pharma Limited (APL), Glenmark Pharmaceuticals (GP), Cadila Healthcare Limited (CHL), Sterling Biotech Limited (SBL) and Torrent Pharmaceuticals Limited (TPL) were chosen. The data for the study ranged for ten financial years (2009-10 to 2018-19).

### *B. Variables & Conceptual Framework*

Variables (dependent as well as independent) were:

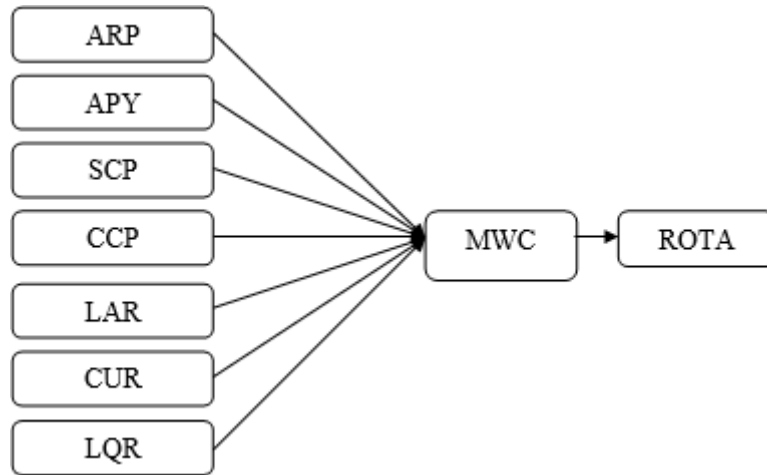
- ROTA[Profit prior to interest and tax/ Total assets of the firm].
- APY[Average account payables/ Net credit purchase x 365].
- ARP[Average account receivables/ Net credit sale x 365].
- SCP[Average Stock/ Cost of goods sold x 365].
- CCP[Average receivable period+Stock conversion period– Average payable period]
- CUR[Current assets/ Current liabilities]
- LQR[Liquid assets / Current liabilities]
- LAR [Total liabilities/ Total assets]

Return on total assets denotes the profitability of the firm and was assumed to be the dependent variable for its dependence on working capital dimensions such as ARP, APY, SCP, CCP, LAR, CUR and LQR (independent variables)(Figure1).

### *C. Statistical Tools*

Correlation and regression techniques were used to establish association between MWC and profitability in pharmaceutical firms. The data gathered was analysed using descriptive statistics, Karl Pearson correlation and multiple linear regression analysis. Further, profitability position of pharmaceutical firms has been analysed by using trend analysis and one-way ANOVA employed to measure differences in profitability of firms. SPSS tools have been used to carry out the analysis.

**Figure 1: Conceptual Framework**



The regression model can be expressed as:

$$ROTA_t = \beta_0 + \beta_1 ARP_t + \beta_2 SCP_t + \beta_3 APY_t + \beta_4 CCP_t + \beta_5 LAR_t + \beta_6 CUR_t + \beta_7 LR_t + \varepsilon_t$$

## 7. RESULTS AND DISCUSSION

### 7.1. Impact of MWC on Profitability

Impact of MWC on profitability is examined by using statistical tools such as descriptive statistics, Karl Pearson correlation and multiple regression analysis.

#### A. Descriptive Statistics

Descriptive statistics results are presented in Table-1. The dataset was consisted of 100 observations for the sample firms during period from 2009-10 to 2018-19.

**Table 1: Descriptive Statistics**

Variables	Low	High	Mean	SD	Skewness		Kurtosis	
					Statistic	SE	Statistic	SE
ROTA	0.069	0.245	0.184	0.051	-0.252	0.59	0.326	1.126
ARP	12.256	48.984	34.267	9.623	0.387	0.59	-1.001	1.126
SCP	21.285	43.529	34.574	12.119	0.753	0.59	-1.497	1.126
APY	13.262	87.126	47.583	16.264	0.500	0.59	2.559	1.126
CCP	-6.923	105.231	38.652	41.563	0.547	0.59	-1.521	1.126

LAR	0.324	0.561	0.428	0.045	0.872	0.59	-0.241	1.126
CUR	1.025	5.219	2.846	1.616	1.215	0.59	0.104	1.126
LR	0.378	4.099	1.599	1.292	1.146	0.59	-0.284	1.126

Table1 disclosed thatROTA measures the efficiency of firm management in terms of assets utilisation. The ROTA had a lowest value of 0.069 and a highest value of 0.245. However, the value of mean ROTAduring the period was 0.184. It confirmed that on an average, the firms generated 18.4% asreturn on total assetsin its operation.Alternatively, ARP had a mean value of 34.267 days with standard deviation value was9.623. The lowest and highestreceivable period were found at 12.256 days and 48.984 days respectively. Therefore, average receivable period stood at 34.267 days for credit sales. SCP measured how quickly the firm converted its raw materials into finished stock. Hence, SCP had a lowest value of 21.285 days and a highest value of 43.529 days with a mean value of 34.574 days. APYrevealed the mean value of 47.583 days and was skewed to the right (the value of skewnesswas 0.5), with a lowest value of 13.262 days and a highest value of 87.126 days. The mean value of CCP was 38.652 days, with a lowest value of -6.923 days and a highest of 105.231 days. Therefore, the firms took 38.652 days on average as cash conversion period.The mean value of LAR was 0.428 with a standard deviation of 0.045. Finally, firms' liquidity indicators such as, CUR and LR had a mean value of 2.846 and 1.599respectively.

### B. Correlation

Pearson correlation was implemented to confirm the relationship (multi-collinearity) among the variables. Table2 helped to examine the MWC and its impact on profitability measured by return on total assets.

**Table2: Pearson Correlation**

Variables		ROTA	ARP	SCP	APY	CCP	LAR	CUR	LR
<b>ROTA</b>	Pearson corr. Sig. value	1							
<b>ARP</b>	Pearson corr. Sig. value	0.028 0.912	1						
<b>SCP</b>	Pearson corr. Sig. value	0.019 0.941	-0.249 0.346	1					
<b>APY</b>	Pearson corr. Sig. value	0.196 0.476	-0.162 0.534	0.675** 0.004	1				
<b>CCP</b>	Pearson corr. Sig. value	-0.041 0.863	-0.126 0.589	0.947** 0	0.445 0.079	1			
<b>LAR</b>	Pearson corr. Sig. value	-0.281 0.282	-0.273 0.272	-0.342 0.200	-0.165 0.536	-0.41 0.126	1		
<b>CUR</b>	Pearson corr. Sig. value	-0.253 0.343	-0.248 0.302	0.843** 0	0.509 0.048	0.841** 0	-0.315 0.229	1	
<b>LR</b>	Pearson corr. Sig. value	-0.183 0.512	-0.263 0.309	0.877** 0	0.561* 0.024	0.851** 0	-0.346 0.187	0.991** 0	1

\*\* . Significant at 0.10 level (2-tailed).

\* . Significant at 0.05 level (2-tailed).

Table2 depicted that APY and SCP had significant and positive correlation with each other at 10% level of significance (p=0.675). Similarly, CCP had positive and significant

correlation with SCP (0.947) at 10% level of significance. It meant that increase in one unit of SCP, will increase CCP by 0.947. It confirmed that if stock conversion enhanced, CCP would get enhanced and all other variables were held constant. In the same way, CUR had significant and positive correlation with SCP and CCP at 10% significant level with p values of 0.843 and 0.841 respectively. Furthermore, LR had positive and significant relationship with SCP (0.877), CCP (0.851) and CUR (0.991) at 10% significant level and with APY (0.561) at 5% significant level. Other variables were not observed to have significant correlation with other variables. Further, it was found that SCP and LR had significant correlation with more variables.

### C. Regression Analysis

H<sub>01</sub>: There is statistically no significant association between MWC and profitability of pharmaceutical firms.

Table 3 depicted the multiple regression analysis; it was administered to test the association between dependent and independent variables. It determines the association between profitability of pharmaceutical firms measured by ROTA (dependent variable) and MWC components (independent variables).

**Table 3: Regression Analysis**

Variables	Unstandardised Coefficients		Standardised Coefficients $\beta$	t-stat	p-value
	$\beta$	S.E.			
(Constant)	.422	.056		7.562	.000
<b>ARP</b>	-.002	.001	-.145	-1.126	.283
<b>SCP</b>	-.001	.001	-.452	-2.563	.006
<b>APY</b>	-.003	.001	-.853	-3.436	.008
<b>CCP</b>	.000	.000	-.124	-.542	.586
<b>LAR</b>	-.073	.115	-.091	-.626	.523
<b>CUR</b>	-.321	.051	-13.268	-6.358	.000
<b>LR</b>	.401	.064	13.685	5.785	.000
F-value 18.562					
R <sup>2</sup> .911					
Adjusted R <sup>2</sup> .887					
p-value .000					

Table 3 revealed that R-square value was 0.911, which indicated that 91.1% of the difference in return on total assets was explained by the MWC variables. However, the residual 8.9% was explained by other variables external to the model. Among the seven independent variables, only three variables such as, APY, CUR and LR were significant since p-value was value 0.05. First, profitability as measured by ROTA had negative and significant relationship with APY with a p-value of 0.008. The beta coefficient connected with APY was -0.03. This showed that 1% increase in APY will reduce ROTA by 0.0003%. However, the degree of its impact is little and was found to be significant (p value = 0.008). Second, there was a significant and negative association found between ROTA and CUR (p = 0.000). Similarly, the beta coefficient linked with CUR was -0.321. Therefore, 1% increase in CUR will reduce ROTA by 0.03%. Third, a significant and positive relationship was found between ROTA and LR (p = 0.000). The beta coefficient with LR was 0.401, which showed that 1% increase in LR will boost profitability by 0.004%.



Findings confirmed that only three variables such as APY, CUR and LR were significant among the independent variables. The remaining four variables such as ARP, SCP, CCP and LAR values had statistically insignificant relationship. Profitability position of pharmaceutical firms as denoted by ROTA had significant and negative association with APY. Similarly, there was significant and negative association found between ROTA and CUR besides the positive and significant association was found between ROTA and LR. Findings also showed that ARP, SCP, CCP and LAR had statistically no significant relationship with ROTA, therefore, this phenomenon lead to accept the null hypothesis for these variables. However, APY, CUR and LR had statistically significant relationship between with ROTA; therefore, this phenomenon leads for rejection of null hypothesis to these variables.

## 7.2. Profitability Position

Profitability of the firms is computed by deducting total expenses from total revenues (PBIT). The position of profitability was presented in Table-4.

**Table-4: Trend Analysis of Profitability**

(Rs.in Crores)

Year	SPIL	PEL	DRL	CL	LL	APL	GP	CHL	SBL	TPL
<b>Mean</b>	2148.52	1521.36	3247.95	1463.83	889.26	1856.41	778.44	963.53	175.75	246.39
<b>SD</b>	358.21	310.01	411.47	125.66	117.68	287.17	168.94	164.73	44.90	48.86
<b>CV</b>	35.72	24.35	70.53	62.92	15.85	105.51	81.07	100.18	132.33	12.35
<b>LGR</b>	292.079*	169.139*	65.997*	693.900*	161.069*	475.344*	94.791**	211.410*	22.809*	25.634*
<b>t-value</b>	4.304	4.144	8.163	5.957	5.098	2.621	2.189	10.094	0.103	2.635
<b>CAGR</b>	14.798**	6.396*	32.843*	20.683*	4.707*	18.787*	12.637*	17.400*	6.290*	5.687*
<b>t-value</b>	3.265	4.113	6.155	6.907	5.142	3.305	0.986	2.512	0.515	1.258

\* Significant at 1% level; \*\* Significant at 5% level

CV: Co-efficient of Variation; SD: Standard Deviation; LGR: Linear Growth Rate; CAGR: Compound Average Growth Rate

Table Value @5%= 2.26, @1%=3.25

Table4 disclosed that profitability during this period was Rs.2148.52 crores with standard deviation of Rs.358.21 crores and co-efficient of variance at 35.72% to SPIL. Mean profit of PEL was 1521.36 crores with standard deviation of Rs.310.01 crores and co-efficient of variance at 24.35%. Mean profit of LARL was 3247.95 crores with standard deviation of Rs.411.47 crores and co-efficient of variance at 70.53%. Mean profit of CL was 1463.83 crores with standard deviation of Rs.125.66 crores and co-efficient of variance at 62.92%. Mean profit of LL was 889.26 crores with standard deviation of Rs.117.68 crores and co-efficient of variance at 15.85%. Mean profit of APL was 1856.41 crores with standard deviation of Rs.287.17 crores and co-efficient of variance at 105.51%. Mean profit of GP was 778.44 crores with standard deviation of Rs.168.94 crores and co-efficient of variance at 81.07%. Mean profit of CHL was 963.53 crores with standard deviation of Rs.164.73 crores and co-efficient of variance at 100.18%. Mean profit of SBL was 175.75 crores with standard deviation of Rs.44.90 crores and co-efficient of variance at 132.33%. Mean profit of TPL was 246.39 crores with standard deviation of Rs.48.86 crores and co-efficient of variance at 12.35%. The growth trend of profitability was assessed through LGR and CAGR. The higher LGR growth values were found at 693.900 to LL and lower LGR growth values were found at 22.809 to SBL. CAGR measured the overall growth and accordingly it revealed high growth

of 32.843 to LARL and low growth of 4.707 to LLAs profitability in this period. The average profitability showed satisfactory level during the period.

Therefore, considerable difference existed in terms of generating profitability among pharmaceutical firms. In order to find the significant differences in profitability position of pharmaceutical firms, one-way ANOVA is employed to test the hypothesis proposed below:

H<sub>02</sub>: There is no significant variation in profitability among pharmaceutical firms.

**Table5: ANOVA for Profitability**

Source	Sum of Squares	df	Mean Square	F value	p value
Between Groups	194593204.931	9	24324150.616	17.559	.000
Within Groups	112207651.356	90	1385279.646		
Total	306800856.287	99			

Table5 revealed that the variance of profitability exhibited F value of 17.559 and p values of 0.000 thereby indicating significance. Rejection of null hypothesis leads to the inference that there is significant variation in profitability among pharmaceutical firms.

## 8. CONCLUSION

Proper MWC is an indispensable part of financial management in corporate finance. It is based on the concept that investment in working capital represents a sizable portion of overall investment in the corporate firms. Thus, the study sought to determine MWC and its impact on profitability of pharmaceutical firms listed at the Bombay Stock Exchange in India. The findings had numerous implications for pharmaceutical firms in Indian perspective. Particularly, firms should pay attention to APY, CUR and LQR, if the firms are interested to increase their profitability level. MWC deals with effective control of firms' current assets and liabilities so as to maintain efficiency at a satisfactory level. Improper MWC may lead to collapse of firms and subsequent insolvency.

Results found that a negative relationship was found between average payable period and return on total assets. Firms should make effort to reduce the average payable period so as to increase profitability level. It may consist of negotiating friendly credit terms with suppliers and alleviation of delayed payments. There was a negative relationship that was observed in the case of current ratio. Firms should make sure that they decrease the current ratio by reducing current assets. On the other hand, liquid ratio revealed a significant and positive association with firms' return on total assets, which validated that firms should enhance liquid assets so to foster enhanced profitability. In this scenario, firms should enhance their cash and cash equivalent position directly or indirectly in the form of receivables and short-term securities. Optimum level of stock should be kept in reserve at all times so as to increase profitability of pharmaceutical firms. However, efficient stock handling methods should be established; for instance, constant decrease in lead times and making successful resource planning strategies.

Profitability position of firms was observed in trend analysis. The pharmaceutical firms were earning sufficient amount of profit from operations. The growth values of profitability were found at satisfactory level which was based on competent MWC. The average firms' profitability was also found to be at a satisfactory level. The significant

differences in profitability position of pharmaceutical firms was ascertained. There was a statistically significant variation found between profitability of firm in the pharmaceutical sector. The findings have thrown light on the criticality of MWC practices and are beneficial in identifying areas where firms can concentrate on fostering increased profitability.

## 9. SCOPE FOR FURTHER RESEARCH

The study focussed on ten pharmaceutical firms for a decade from 2009-10 to 2018-19. Further studies with extended dataset might assist in further measuring the influence of working capital on profitability. The current sample set was constrained by comprising only ten firms engaged in production and distribution of medical products. Inclusion of larger sample size or inclusion of all listed companies in pharmaceutical sector may yield more depth. Further, comparison of Indian firms with foreign firms may further the cause of identifying the deficiencies in working capital management among Indian firms. It may also enable imbibing good practices followed by foreign firms. Future research can explore other sectors to assess similarities or otherwise in management of working capital.

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