

## Working capital, profit and profitability: An absolute and relational study of selected leading Indian pharmaceutical firms

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### ABSTRACT

The working capital of the business organization is the excess of current assets over current liabilities. The working capital (WC) governs sales of the business organization directly while sales define the profits. Working capital activates the fixed resources and utilizes the factors of production and it is a bases for the production of goods and services. Working capital is the factor that plays a vital role in the enhancement of sales turnover and profits, ultimately. The present study considers and covers the financial data of selected Indian pharmaceutical companies for the period 2013-2018 for the study of the impact of profitability of the working capital on sales and profits. Ratio analysis is the base of the study while some statistical techniques are to be used to get the mutual relationship, trend, and co-movement of the WC and sales, earnings before interest, depreciation, and tax (EBIDT), profit before tax (PBT), and profit after tax (PAT) of the selected Indian pharmaceutical companies. The combined inferences of the absolute and relational study explain that the WC governs the profit positively but not proportionately. There is a need to control the indirect expenses or non-manufacturing expenses of the business to enhance the profitability corresponding to WC movement.

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## 1. Introduction

In a narrow approach, working capital is the excess of current assets over current liabilities of a business organization and utilizes the factor of production to operate the business activities. There are three main size determinants of the business i.e. sales, total resources, and working capital (WC) while WC is the vital size determinant that utilizes the resources to produce goods and services for sale. So, working capital is the factor that activates the resources of the business to run the business activities to get the ultimate objectives of the business organization. Normally, it is expected that the enhancements of the WC increase the profits of the business if there are no constraints available. In the Indian pharmaceutical industry, it is found that the size of the firm governs the profitability and movement sensitivity of size on profitability is much stronger in smaller Indian pharmaceutical companies (Ali, A., 2020). Nastiti et al. (2019) explained that the conservative working capital policy has a positive impact on the profitability of the business. In the Indian pharmaceutical companies, working capital has a positive impact on profitability (Kumar, Srivastava, Sinha, & Goyal, 2016). Some other recent studies related the Indian pharmaceutical

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industry reflect that the profits or profitability not only governed by the working capital but also affected by research and development (R&D), total quality management (TQM), supply chain management (SCM), intellectual capital (IC), global joint ownership (GJO), size, turnover, and structural and human capital. There are so many studies of working capital (WC) and profitability relationship of Indian pharmaceutical companies available but there is lack of combined study of absolute WC and sales, EBIDT, PBT, and PAT, relational study (qualitative study based on ranking correlation of WC and sales, EBIDT, PBT, and PAT of selected Indian pharmaceutical companies), and short-term relative movement of WC to sales, EBIDT, PBT, and PAT ratio. The study will provide insights of relationship, short-term movability trend of the WC and sales, EBIDT, PBT, and PAT.

## 2. Literature review

### 2.1 Working capital and profitability positive relationship

Nguyen, Pham, & Nguyen (2020) found in their study that the firm can enhance profitability by proper management of working capital i.e. speedy recovery from the debtors, holding, and small payments to the account payables. Mehra (2013), Shari & Islam (2018) explained in their research that the profitability of the Indian pharmaceutical firms' can be enhanced by reducing the inventory conversion and accounts receivables collection period. The current liabilities of pharmaceutical firms should be more than current liabilities. Boțoc and Anton (2017) found a U-shape relationship between WC management and profitability in high growth firms. They advocated the special focus on working capital management in growing of cash deficit firms. Kumar (2017) revealed the positive effect of working capital on the profitability of the Indian pharmaceutical companies in India. He suggested the enhanced level of working capital to get profitability. Enough working capital utilizes the resources and leads towards profitability. Shah et al. (2018) found an insignificant relationship between WC and return on equity in pharmaceutical companies. They advised managing properly the components of working capital i.e. inventories, marketable securities receivables, and payables to enhance the profitability. Rahaman et al. (2018) observed that the effective management of WC enhances the profitability of pharmaceutical companies in Bangladesh. Efficient working capital management is necessary for the enhancement of the profitability in pharmaceutical companies of Bangladesh (Chowdhury, Alam, Sultana, & Hamid, 2018). The liquidity ratio or working capital ratio positively significantly affects the profit earning capacity of Indian pharmaceutical companies (Yameen, Farhan, & Tabash, 2019).

### 2.2 Working capital and profitability negative relationship

Muhammad, Rehman, & Waqas (2016) observed the tobacco industry of Pakistan and found that there is a negative relationship between WC and profitability. The profitability depends upon the cash conversion cycle of the business organization. The smaller cash conversion cycle affects profitability positively. Phuong and Hung (2020) found a negative relationship between ingredients of WC i.e. receivables, payables, and cash conversion cycle and profitability of the firm. Ofoegbu and Onodugo (2016) explained that the receivables ratio harms the profitability of the firm. Ahmed, Awan, Safdar, Hasnain & Kamran (2016) found that all variables of the working capital are negatively correlated with the profitability of the Pakistani pharmaceutical companies. In Indian pharmaceutical companies, liquidity or the higher proportional relationship of the current assets and current liabilities is necessary for the higher profitability or the smooth business activities operation (Panigrahi, Raul, & Gijare, 2018).

### 2.3 Weak or no correlation between working capital and profitability

Joshi (2020) revealed an insignificant relationship between WC indicators and profitability. There was no relationship seen in between profitability and working capital management in the pharmaceutical companies of India (Bhunja, & Das, 2015). Gupta (2020) advocated the mild and moderate relationship between working capital management and profitability in Indian pharmaceutical firms.

### 2.4 Conditional Relationship between working capital and profitability

There is a strong and positive relationship between financial performance, sound financial position, and working capital provided that the limited investment in account receivables and inventories (Palanisamy, & Sengottaiyan, 2015; Viswanathan, Palanisamy, & Mahesh, 2016).

### 2.5 Other Factors Affecting profitability and profits

#### 2.5.1 Total quality management (TQM) and Supply chain management (SCM)

Efficient Total quality management governs the operational performance positively in Indian pharmaceutical companies (Sharma, & Modgil, 2019). The TQM and SCM affect the operational performance in the pharmaceuticals industry of India (Mahajan, 2020). There is a positive relationship between intellectual capital and financial performance of the Indian pharmaceutical industry (Vishnu, & Gupta, 2014; Ferdaous, & Rahman, 2017).

### 2.5.2 Intellectual Capital

Profitability governed by the intellectual capital (IC) in the Indian pharmaceutical industry (Smriti, & Das, 2017). In the Indian pharmaceutical industry, physical capital and relational capital enhance profitability while there is a positive relationship between IC and profitability (Gupta, Goel, & Bhatia, 2020; Mehralian, Rajabzadeh, Sadeh, & Rasekh, 2012).

### 2.5.3 Research and Development

Research and development (R&D) positively affect total factor productivity (TFP) growth while the foreign-owned pharmaceutical companies were more concerned about R&D comparatively domestic firms (Sharma, 2012). There is a positive relationship between R & D and the financial performance of pharmaceutical companies' in India (Jaisinghani, 2016). The level of R & D activities and other related factors defines the level of export of the Indian pharmaceutical companies (Tyagi, & Nauriyal, 2017). The leading pharmaceutical companies earn more due to expenditure on enough funds for R & D and technological advancements (Boldeanu, & Pugna, 2014).

### 2.5.4 Size, turnover, global joint ownership, and structural and human capital

Enough capital is necessary for the investment in resources to uplift the level of production and profits while turnover of pharmaceutical companies can be considered as a strong measurement of the performance (Shivdas, & Ray, 2017). The global joint venture in the Indian pharmaceutical industry enhances the firm's financial performances but only up to a certain limit (Sivakumar, Roy, Zhu, & Hanvanich, 2011). The financial performances of the Indian pharmaceutical companies positively affected by the structural and physical capital but not by the human capital of the companies (Narwal, & Ramandeep, 2014).

## 3. Methodology

The analysis is based on the published data of the selected Indian pharmaceutical companies available on the websites of the concerned companies. There are seven leading Indian pharmaceutical companies namely, Dr. Reddy's Laboratories (Dr), Lupin limited (Lu), Cipla Limited (Ci), Cadila Healthcare Limited (Ca), and Glenmark Pharma Limited (Gl) Sun Pharmaceutical Industries Limited (Su), and Aurobindo Pharma Limited (Ar) selected for the relational study of the working capital (WC) and profits. The base of analysis of the present study is ratio analysis which is to be used in financial statement analysis of the selected Indian pharmaceutical companies. The following ratios are to be used to analyze the relationship of profits with the working capital (WC).

1. Sales to WC ratio =  $\frac{\text{Sales}}{\text{WC}} 100$ ;
2. EBIDT to WC ratio =  $\frac{\text{EBIDT}}{\text{WC}} 100$ ;
3. PBT to WC ratio =  $\frac{\text{PBT}}{\text{WC}} 100$ ;
4. PAT to WC ratio =  $\frac{\text{PAT}}{\text{WC}} 100$ ;

where, WC= working capital; EBIDT= earnings before interest, depreciation, and tax; PBT= profit before tax; and PAT= profit after tax. The coefficient of variations of all variables and correlation between WC and sales, EBIDT, PBT, and PAT calculated to get the comparative variability and correlation. The relational co-movement is based on relative ranks of the qualitative relationship of WC and sales to WC, EBIDT to WC, PBT to WC, and PAT of selected Indian pharmaceutical companies. The following formula is to be used to get a qualitative relationship among the selected pharmaceutical companies.

$$\text{Spearman's Rank Correlation } (r_s) = 1 - \frac{6 \cdot \sum(D^2)}{n(n^2-1)},$$

where, D = difference of rank, n = number of variables.

To get the short-term movement sensitivity, the chain based index numbers calculated:

$$\text{Chain based Index numbers (CBI)} = \frac{V_{cy}}{V_{py}} 100$$

where, V<sub>cy</sub> and V<sub>py</sub>, are variable of current year and variable of the previous year, respectively.

## 4. Analysis, results and interpretations

Working capital is the capital that is to be used to run the business activities of the business organization or utilizes the fixed assets of the concern. So, the utilization or the amount of working capital directly affects the production or sales turnover, profits, and movability sales turnover and profits. The relationship between WC and profits can be done in two ways i.e. absolute analysis and relational analysis.

### 4.1 Absolute Analysis

The variability of the variables and the relationship of variables between or among the variables explain the normal relationship or comparative variability of the variables. In business organizations, the working capital govern sales directly while EBIDT, PBT, and PAT, indirectly. In businesses, interest, depreciation, tax and other manufacturing, selling and administrative expenses,

etc. increases or decreases without the working capital governance, directly. In a manufacturing concern, the relationship of absolute amounts of WC and EBIDT, PBT, and PAT is to be expected high degree or moderate.

**Table 1**

Variability and correlation between average working capital and sales, EBIT, PBT, and PAT (amounts in Million Rs.) of selected leading pharmaceuticals companies of India

Years	WC	Sales	EBIDT	PBT	PAT
2013	30.656	84.662	22.200	15.347	14.568
2014	39.773	105.068	29.765	20.456	21.196
2015	43.919	136.207	33.403	24.687	22.327
2016	50.150	149.810	37.261	26.380	23.765
2017	50.135	161.245	40.202	29.075	26.446
2018	54.341	160.577	33.451	20.234	17.240
Average	44.829	132.928	32.714	22.697	20.924
$\sigma$	8651	31521	6277	4966	4349
CV (%)	19	24	19	22	21
Correlation(r)		0.97	0.86	0.67	0.51

Source: Yearly average of amounts (Rs. in Million) of the selected leading Indian pharmaceutical companies form the concerned websites.

From the above absolute analysis of the average of variables extracted from the financial statement of the Indian pharmaceutical companies, it can be explained that there is no significant variability seen in the average variables (WC, sales, EBIDT, PBT, and PAT) of selected Indian pharmaceutical companies. The relationship between the WC and other measures of the profits is expected and normal. The moderate relationship between PAT and PBT is due to indirect expenses i.e. selling, distribution, and administrative expenses, possibly. The selling, distribution, and administrative expenses of selected Indian pharmaceutical companies do not vary perfectly as per the WC movement.

#### 4.2 Relational Analysis

The relational analysis considers the qualitative relative study of the selected business organization and concludes the relationship based on variables of a business. In this study, the relational analysis establishes a qualitative relationship between WC and sales, EBIDT, PBT, and PAT of the selected Indian pharmaceutical companies.

##### 4.2.1 Relational co-movement of WC and sales

The sales volume of the business organization is directly governed and move as per the level of the working capital provided that demand for the product or services are not a constraint. Normally, a positive and perfect relationship is expected between absolute amounts of working capital (WC) and sales of the business organization. The relational co-movement of WC and sales to working capital (WC) ratio will measure the qualitative relationship of selected business organization based on quantitative rankings of WC and sales to WC ratio.

**Table 2**

Relational co-movement of working capital and sales to working capital ratio of selected leading pharmaceutical companies of India (2013-18)

Indian Pharma. Com.	WC	R <sub>1</sub>	Sales to WC Ratio	R <sub>2</sub>	D(R <sub>1</sub> -R <sub>2</sub> )	D <sup>2</sup>
Dr	37,184	4.0	383	3.00	1.00	1.00
Lu	55,724	2.0	246	6.00	-4.00	16.00
Su	130,960	1.0	184	7.00	-6.00	36.00
Ci	41,462	3.0	306	5.00	-2.00	4.00
Ar	21,521	6.0	558	2.00	4.00	16.00
Ca	7,593	7.0	1,186	1.00	6.00	36.00
Gl	19,358	5.0	375	4.00	1.00	1.00
			$\Sigma(D^2)$			110.00

Source: Average of WC amounts and sales to WC ratio (2013-18) calculated form the financial statements available at concerned websites of selected leading Indian pharmaceutical companies.

$$\text{Spearman's Rank Correlation } (r_s) = 1 - \frac{6 \cdot 110}{7(7 \cdot 7 - 1)} = 1 - 1.96 = -0.96$$

From the above relational co-movement, it is obvious that there is a highly negative co-movement relationship between the average absolute amount of WC and sales to the WC ratio. This implies that the turnover or salability of the pharmaceutical companies with massive investment in WC capital is lesser than the companies with a low amount of working capital. Low demand for the products and underutilization of resources and inefficient management of current assets and current liabilities are the probable reasons for the relatively low salability of the companies with huge WC. The sales to WC ratio sensitivity will explain the sensitivity trend of the Indian pharmaceutical companies.

#### Sales to WC ratio and sensitivity

The sensitivity of sales to the WC ratio explains the sensitivity or short-term movement of sales of business organizations in the WC context. The average sales to WC ratio and short-term movement (CBI) will define the average trend of short term movement.

**Table 3**

Sales to WC Ratio and sensitivity of Indian pharmaceutical companies

Pharm. Com.	Dr	Lu		Su		Ci		Ar		Ca		Gl		
Years	Sales to WC	CBI	Sales to WC	CBI	Sales to WC	CBI	Sales to WC	CBI	Sales to WC	CBI	Sales to WC	CBI	Sales to WC	CBI
2013	420	100	304	100	135	100	184	100	834	100	906	100	711	100
2014	300	71	283	93	131	97	338	183	576	69	1,395	154	394	55
2015	303	101	285	101	219	167	311	92	565	98	1,361	98	362	92
2016	320	106	225	79	164	75	1,314	422	557	99	1,055	77	488	135
2017	1,114	348	224	99	214	130	274	21	585	105	941	89	500	103
2018	400	36	219	98	232	109	241	88	473	81	1,682	179	220	44
Av.	383	127	246	95	184	113	306	151	558	92	1,186	116	375	88
Ranks	3	2	6	5	7	4	5	1	2	6	1	3	4	7

Sources: Sales to WC ratio calculated yearly from the available data in financial statements of the concerned Indian pharmaceutical companies.

The analysis of the ranks of the average Sales to WC ratio and its movement trend explains that there is no qualitative relationship ( $r_s=0$ ) between sales to WC ratio and trend of short-term movement of sale to WC ratio. This reveals that the ratio of utilization of WC in respect of sales does not govern the short movability of sales to the WC ratio in the Indian pharmaceutical industry. Hence, any Indian pharmaceutical company utilizes its WC for maximum sales or production will be fewer sales sensitive in respect to WC.

#### 4.2.2 Relational co-movement of WC and EBIDT

The EBIDT of the business organization is directly governed and move as per the level of the sales volume while sales volume governed by the WC provided that demand is not a constraint and there is no restrictions or ceiling limit of the sales of the products of the business organization. So, WC indirectly governs the EBIT of the business organization, if demand, ceiling limit, sales or turnover, and any other inputs are not the constraints. Normally, a positive and high degree relationship is expected between absolute amounts of working capital (WC) and EBIDT of the business organization. The relational co-movement of WC and EBIDT to the WC ratio will measure the qualitative relationship of selected business organization based on quantitative rankings of WC and EBIDT to WC ratio.

**Table 4**

Relational co-movement of working capital and EBIDT to working capital ratio of selected leading pharmaceutical companies of India

Indian Pharma. Com.	WC	$R_1$	Sales to WC Ratio	$R_2$	$D(R_1-R_2)$	$D^2$
Dr	37,184	4.0	87	3.00	1.00	1.00
Lu	55,724	2.0	63	5.50	-3.50	12.25
Su	130,960	1.0	60	7.00	-6.00	36.00
Ci	41,462	3.0	63	5.50	-2.50	6.25
Ar	21,521	6.0	128	2.00	4.00	16.00
Ca	7,593	7.0	256	1.00	6.00	36.00
Gl	19,358	5.0	74	4.00	1.00	1.00
$\Sigma(D^2)$						108.50

Source: Average of WC amounts and EBIDT to WC ratio (2013-18) calculated from the financial statements available at concerned websites of selected leading Indian pharmaceutical companies.

$$\text{Spearman's Rank Correlation } (r_s) = 1 - \frac{6 \cdot 108.50}{7(7 \cdot 7 - 1)} = 1 - 1.94 = -0.94$$

From the above relational co-movement, it is obvious that there is a highly negative co-movement relationship between the average absolute amount of WC and EBIDT to the WC ratio. This implies that the EBIDT of the pharmaceutical companies with massive investment in WC is lesser than the companies with a low amount of working capital. At a larger scale of production, proportionately excess manufacturing expenses, underutilization of resources, and inefficient management of current assets and current liabilities are the probable reasons for the relatively low EBIDT of the companies with massive WC. The EBIDT to WC ratio sensitivity will explain the sensitivity trend of the Indian pharmaceutical.

#### *EBIDT to WC ratio and sensitivity*

The sensitivity of EBIDT to the WC ratio explains the sensitivity or short term movement of EBIDT of business organizations in the WC context. The average of EBIDT to WC ratio and short-term movement (CBI) will define the average trend of short term movement.

**Table 5**  
EBIDT to WC and sensitivity

Pharm. Com.	Dr		Lu		Su		Ci		Ar		Ca		Gl	
Years	EBIDT to WC	CBI	EBIDT to WC	CBI	EBIDT to WC	CBI	EBIDT to WC	CBI	EBIDT to WC	CBI	EBIDT to WC	CBI	EBIDT to WC	CBI
2013	100	100	72	100	61	100	52	100	126	100	165	100	145	100
2014	75	75	77	107	59	98	78	148	153	121	240	146	72	50
2015	75	99	84	109	66	111	63	81	123	81	281	117	67	93
2016	84	113	60	72	51	77	252	401	134	109	263	93	94	139
2017	209	249	58	97	71	140	50	20	137	102	197	75	112	120
2018	70	33	45	77	55	77	46	92	110	81	413	209	41	36
Av.	87	112	63	94	60	100	63	140	128	99	256	123	74	90
Ranks	3	3	5.50	6	7	4	5.50	1	2	5	1	2	4	7

Sources: EBIDT to WC ratio calculated yearly from the available data in financial statements of the concerned Indian pharmaceutical companies.

The analysis of the ranks of the average EBIDT to WC ratio and its movement trend explains that there is a negligible positive qualitative relationship ( $r_s = 0.13$ ) between EBIDT to WC ratio and trend of short term movement of EBIDT to WC ratio. This reveals that the ratio of utilization of WC in respect of EBIDT does not govern the short-term movability of EBIDT to the WC ratio in the Indian pharmaceutical industry. Hence, any Indian pharmaceutical company utilizes its WC for maximum EBIDT will be less EBIDT sensitive with respect to WC.

#### *4.2.3 Relational co-movement of WC and PBT*

The PBT of the business organization is directly governed and move as per the level of the EBIDT volume while EBIDT volume governed by the sales provided that demand is not a constraint and there is no restrictions or ceiling limit of the sales of the business organization. WC of the business governs the sales of the business, indirectly. So, WC indirectly governs the PBT of the business organization, if demand, ceiling limit, sales or turnover, and any other inputs are not the constraints, and interest and depreciation of the business organization are negligible. Normally, a positive and high degree relationship is expected in between absolute amounts of WC and PBT of the business organization. The relational co-movement of WC and PBT to WC ratio will measure the qualitative relationship of selected business organization based on quantitative rankings of WC and PBT to WC ratio.

**Table 6**  
Relational co-movement of working capital and PBT to working capital ratio of selected leading pharmaceutical companies of India

Indian Pharma. Com.	WC	R <sub>1</sub>	Sales to WC Ratio	R <sub>2</sub>	D(R <sub>1</sub> -R <sub>2</sub> )	D <sup>2</sup>
Dr	37,184	4.0	60	3.00	1.00	1.00
Lu	55,724	2.0	51	4.50	-2.50	6.25
Su	130,960	1.0	50	6.00	-5.00	25.00
Ci	41,462	3.0	41	7.00	-4.00	16.00
Ar	21,521	6.0	101	2.00	4.00	16.00
Ca	7,593	7.0	204	1.00	6.00	36.00
Gl	19,358	5.0	51	4.50	0.50	0.25
			$\sum(D^2)$			100.50

Source: Average of WC amounts and PBT to WC ratio (2013-18) calculated from the financial statements available at concerned websites of selected leading Indian pharmaceutical companies.

$$\text{Spearman's Rank Correlation } (r_s) = 1 - \frac{6 \times 100.50}{7(7*7-1)} = 1 - 1.79 = - 0.79$$

From the above relational co-movement, it is obvious that there is a negative co-movement relationship between the average absolute amount of WC and PBT to the WC ratio. This implies that the PBT of the pharmaceutical companies with massive investment in WC is lesser than the companies with a low amount of working capital. At a larger scale of production, proportionately excess interest and depreciation expenses and inefficient management of current assets and current liabilities are the probable reasons for the relatively low PBT of the companies with massive WC. The PBT to WC ratio sensitivity will explain the sensitivity trend of the Indian pharmaceutical.

#### *PBT to WC ratio and sensitivity*

The sensitivity of PBT to the WC ratio explains the sensitivity or short term movement of PBT of business organizations in the WC context. The average of PBT to WC ratio and short-term movement (CBI) will define the average trend of short term movement.

**Table 7**  
PBT to WC and sensitivity

Pharm. Com.	Dr		Lu		Su		Ci		Ar		Ca		Gl	
	PBT to WC	CBI	PBT to WC	CBI	PBT to WC	CBI	PBT to WC	CBI	PBT to WC	CBI	PBT to WC	CBI	PBT to WC	CBI
2013	75	100	60	100	57	100	45	100	53	100	115	100	105	100
2014	58	77	70	116	56	99	61	137	109	205	184	161	46	44
2015	57	98	74	106	52	93	45	74	100	92	228	124	40	88
2016	54	94	52	70	42	81	162	362	108	108	226	99	66	163
2017	123	229	45	87	60	142	23	14	118	109	157	69	85	130
2018	37	30	28	61	38	63	25	111	92	79	325	208	27	31
Av.	60	105	51	90	50	96	41	133	101	115	204	127	51	93
Ranks	3	4	4.50	7	6	5	7	1	2	3	1	2	4.50	6

Sources: PBT to WC ratio calculated yearly from the available data in financial statements of the concerned Indian pharmaceutical companies.

The analysis of the ranks of the average PBT to WC ratio and its movement trend explains that there is a negligible positive qualitative relationship ( $r_s = 0.14$ ) between PBT to WC ratio and trend of short term movement of PBT to WC ratio. This reveals that the ratio of utilization of WC in respect of PBT does not govern the short movability of PBT to the WC ratio in the Indian pharmaceutical industry. Hence, any Indian pharmaceutical company utilizes its WC for maximum PBT will be less PBT sensitive with respect to WC.

#### *4.2.4 Relational co-movement of WC and PAT*

The PAT of the business organization is directly governed and move as per the level of the PBT volume while PBT governed by the EBIDT and sales provided that demand is not a constraint and there is no restrictions or ceiling limit of the sales of the business organization. WC of the business governs the sales and EBIDT of the business, indirectly. So, WC indirectly governs the PAT of the business organization, if demand, ceiling limit, sales or turnover, and any other inputs are not the constraints, and interest and depreciation of the business organization are negligible. Normally, a positive and high degree relationship is expected between absolute amounts of working capital (WC) and PAT of the business organization. The relational co-movement of WC and PAT to the WC ratio will measure the qualitative relationship of selected business organizations based on quantitative rankings of WC and PAT to the WC ratio.

**Table 8**  
Relational co-movement of working capital and PBT to working capital ratio of selected leading pharmaceutical companies of India

Indian Pharma. Com.	WC	R <sub>1</sub>	Sales to WC Ratio	R <sub>2</sub>	D(R <sub>1</sub> -R <sub>2</sub> )	D <sup>2</sup>
Dr	37,184	4.0	46	3.00	1.00	1.00
Lu	55,724	2.0	32	6.50	-4.50	20.25
Su	130,960	1.0	37	5.00	-4.00	16.00
Ci	41,462	3.0	32	6.50	-3.50	12.25
Ar	21,521	6.0	75	2.00	4.00	16.00
Ca	7,593	7.0	233	1.00	6.00	36.00
Gl	19,358	5.0	42	4.00	1.00	1.00
			$\sum(D^2)$			102.50

Source: Average of WC amounts and PAT to WC ratio (2013-18) calculated from the financial statements available at concerned websites of selected leading Indian pharmaceutical companies.

$$\text{Spearman's Rank Correlation } (r_s) = 1 - \frac{6 \cdot 102.50}{7(7 \cdot 7 - 1)}, \quad = 1 - 1.83, \quad = -0.83$$

From the above relational co-movement, it is obvious that there is a high degree negative co-movement relationship between the average absolute amount of WC and PAT to the WC ratio. This implies that the PAT of pharmaceutical companies with massive investment in WC is lesser than the companies with a low amount of working capital. At a larger scale of production, proportionately excess tax expenses, and inefficient management of current assets and current liabilities are the probable reasons for the relatively low PAT of the companies with huge WC. The PAT to WC ratio sensitivity will explain the sensitivity trend of the Indian pharmaceutical.

#### *PAT to WC ratio and sensitivity*

The sensitivity of PAT to the WC ratio explains the sensitivity or short-term movement of PAT of business organizations in the WC context. The average of PAT to WC ratio and short-term movement (CBI) will define the average trend of short-term movement.

**Table 9**  
PAT to WC and sensitivity

Pharm. Com.	Dr		Lu		Su		Ci		Ar		Ca		Gl	
Years	PAT to WC	CBI	PAT to WC	CBI	PAT to WC	CBI	PAT to WC	CBI	PAT to WC	CBI	PAT to WC	CBI	PAT to WC	CBI
2013	53	100	42	100	40	100	34	100	41	100	41	100	41	100
2014	43	81	46	110	31	76	46	136	83	201	132	321	41	100
2015	46	107	53	115	43	141	34	74	73	88	131	99	30	73
2016	43	93	35	66	33	77	131	386	78	108	126	96	13	45
2017	102	237	32	92	52	157	19	15	88	113	151	120	39	290
2018	26	26	3	11	22	43	20	106	69	78	207	138	27	68
Av.	46	107	32	82	37	99	32	136	75	115	233	145	42	113
Ranks	3	5	6.5	7	5	6	6.5	2	2	3	1	1	4	4

Sources: PAT to WC ratio calculated yearly from the available data in financial statements of the concerned Indian pharmaceutical companies.

The analysis of the ranks of the average PAT to WC ratio and its movement trend explains that there is a moderate positive qualitative relationship ( $r_s = 0.53$ ) between PAT to WC ratio and trend of short term movement of PAT to WC ratio. This reveals that the ratio of utilization of WC in respect of PBT governs positively and moderately the short movability of PAT to the WC ratio in the Indian pharmaceutical industry. Hence, any Indian pharmaceutical company utilizes its WC for maximum PBT will be moderately PBT sensitive in respect of WC.

## 5. Discussion

As expected, the relationship between the WC and other measures of the profits is expected and normal while there is a moderate relationship between PAT and PBT due to indirect expenses i.e. selling, distribution, and administrative expenses, probably. At larger production or a huge WC level, all the non-manufacturing or indirect expenses of selected Indian pharmaceutical companies do not vary perfectly as per the WC movement. The relational qualitative analysis of WC and sales, EBIDT, PBT, and PAT reflects the negativity of selected Indian pharmaceutical companies. This implies that the enhanced level of WC of Indian pharmaceutical companies does not generate sales or other measures of profit, proportionately. Hence, Indian pharmaceutical companies with huge WC are comparatively less productive than the smaller WC Indian pharmaceutical companies. There are no relationship sales to the WC ratio and its trend and very low positive correlation between EBIDT to WC ratio, PBT to WC ratio, and its trend. It reflects that there is no short-term sensitivity relationship between sales, profit measures, and WC. The absolute amount of the WC does not govern the relational profit measures.

## 6. Conclusion

Based on the absolute analysis it can be concluded that there is a positive relationship between absolute amounts of sales, EBIDT, PBT, and WC. The enhancement of WC of the Indian pharmaceutical companies enhances the absolute profits. The relational analysis concludes that the enhancement of WC of the selected Indian pharmaceutical companies decreases the relative profitability. The combined inferences of the absolute and relational study explain that the enhancement of WC increases the profits positively but not proportionately. There is no significant relationship between Sales to WC ratio, EBIDT and WC ratio, PBT, and WC ratio and its short-term movement trend. It reveals that the movement of WC and sales, other measures of profits is irrelevant. There is a moderate relationship between PBT to the WC ratio and its movement trend, which is negligible. So, Indian pharmaceutical companies should increase the WC provided that control on indirect expenses i.e. selling and distribution, and administrative expenses of the business. This study considers only a limited period (2013 to 2018) quantitative data while



the quantitative data converted into qualitative data for relational or comparative study. There is a need and scope for further studies to consider the indirect expenses and their relation with the WC of the Indian pharmaceutical companies for depth insights of the industry.

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