Impact of Working Capital Investment Strategies on Efficiency of Working Capital in the Pharmaceutical Industry

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Abstract

The study examined the impact of working capital investment policies on the WC efficiency index in different economic situations and was based on the premise that despite having a mathematical difference in the working capital efficiencies of domestic and multinational pharmaceutical companies (DPCs and MNPCs), statistically there was no significant difference between the different periods. The analysis revealed that the majority of the companies had been practicing an aggressive working capital investment policy. Similarly, the difference between the efficiencies and investment policies of DPCs and MNPCs was also not statistically significant. The regression coefficients found in the study provide directions to managers to reduce the ratio of aggressive investment policy and conservative investment policy and enhance the working capital efficiency during the boom period. The negative coefficients of correlation also supplemented this finding. The value of *R*-square showed that the major variations in the efficiency index during the boom period were caused by investment policies. During recession and recovery periods, because of positive beta coefficients, the management of the DPCs should infuse more investments in current assets.

Keywords : **aggressive investment policy, conservative investment policy, impact of working capital, working capital efficiency, pharma companies**

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Working capital management (WCM) is recognized as a grey area of corporate finance (Jain & Godha, 2014), and it is well understood that the prosperity and progress, stability, and financial health of a business or an industrial organization largely depends upon the efficient management of various facets of the working capital (Mathur, 2003). Ali and Ali (2012) stated that WCM refers to applying investment and financing decisions to current assets. Ray (2014) mentioned that the share of current assets to the total assets varied from 40% to 83%. Chiou et al. (2006) demonstrated that many businesses are forced to close down due to bad WCM. Perhaps, due to such reasons, 70%–80% of the time of finance executives are consumed by decisions concerning the working capital.

Working Capital Investment Policy

Working capital investment relates to any decision regarding investment in current assets, and the policies usually undertaken for working capital investment are categorized as follows :

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(1) Aggressive Investment Policy : As per this policy, to garner higher profits, the corporates maintain a high level of fixed assets and a small investment in current assets, causing a low level of cash, inventories, and receivables and limited credit to customers (Pais & Gama, 2015). Such types of firms have ample funds to invest in profitable investment opportunities rather than in current assets (Kapil, 2011). This type of policy has a high degree of risk because of insufficient funds for routine operations and to discharge short-term debts (Van Horne & Wachowicz, 2008).

(2) Conservative Investment Policy : In this policy, investment in fixed assets is less than in current assets, resulting in higher levels of cash balance, inventory, receivables, and trade payables which add value for the corporate (Nazir & Afza, 2009). This policy is also called a risk aversion strategy.

Efficiency in Working Capital Management

The resources available with any economy and entity are often scarce and costly. Therefore, the available resources must be efficiently utilized to accomplish the objectives of the concern. Efficient WCM is very important to create value for the shareholders (Afeef, 2011). Efficient management is also conducive to avoiding financial difficulties (Ramiah et al., 2014). Besides enhancing profitability and improving firm value, working capital's efficient management also helps avoid financial crises (Kaur & Singh, 2013a, 2013b).

Review of Literature

Studies carried out by Nazir and Afza (2009), Ramachandran and Janakiraman (2009), and Manjhi and Kulkarni (2012), which explored the relationship between profitability and working capital, revealed that there existed a significant relationship between working capital and profitability. Studies (Kaur & Singh, 2013a, 2013b; Kasiran et al., 2016) on WCM efficiency were based on three indices, that is, performance index, utilization index, and efficiency index, and the results showed that some companies were not able to efficiently utilize their current assets for sales. Goel et al. (2015) examined the impact of corporate governance indicators on working capital efficiency (WCE) and concluded that these indicators had a significant bearing on the performance of WCE. Some studies examined the WCM during and after the financial crisis (Haron & Nomran, 2015; Kesimli & Günay, 2011; Simon et al., 2017), and their results reveal that investment in WCM was significantly affected during the financial crisis, which ultimately led to low performance. Prasad et al. (2019) introduced a new model to measure the efficiency of working capital. This WCE multiplier involved the multiplication of (a) weighted average cost of capital, (b) ratio of the sum of inventories and trade receivables to trade payables, and (c) ratio of net working capital to net sales. The authors proposed that the suggested model can be used in the selection of a suitable investment opportunity.

Wang et al. (2020) examined the impact of WCM and working capital strategy (WCS) on a firm's financial performance across different stages of the corporate life cycle (CLC). This empirical study showed that WCM was negatively associated with firm performance, and this association was not across different stages of a firm's life cycle. WCS also causes varying effects on the financial performance across the CLC. A conservative strategy at the introduction, growth, and decline stages negatively affects firm performance, suggesting that these firms should adopt an aggressive strategy.

Research on WCM is relatively neglected, which has been observed in many existing research studies (Kwenda & Holden, 2014). While only a few dimensions of WCM have been focused upon, Singh and Kumar (2014) observed that WCM activities relating to the management of debtors, inventory, and creditors are routine and inevitable. Ikpefan et al. (2014) also stated that before the crisis of 2007–08, working capital was merely a

concern for business survival and operational stability and was not focused as a measure that could provide liquidity in the form of free cash flows. The study by Simon et al. (2017) also mentioned that a host of studies have recognized working capital as a non-focus area.

Research Gap

The literature survey revealed that no study had linked working capital investment strategies to WCE. Moreover, none of the research has studied the relation of working capital investment policies and WCE of domestic pharmaceutical companies (DPCs) and multinational pharmaceutical companies (MNPCs) under different economic situations. The present study endeavors to fill these gaps.

Objectives of the Study

The present study has the following objectives:

(1) To study the working capital investment policies of DPCs during boom, recession, and recovery periods.

(2) To study the working capital investment policies followed by MNPCs during boom, recession, and recovery periods.

(3) To examine the impact of working capital investment policies on the WCE of DPCs and MNPCs during boom, recession, and recovery periods.

Research Methodology

Study Universe and Sample Size

The universe of the study consists of all the pharma companies listed in the healthcare sector of the Bombay Stock Exchange (BSE). A sample of the top 50 companies listed at BSE consisting of 25 DPCs and 25 MNPCs was selected on the basis of market capitalization.

Database

This study is based on secondary data that were collected from (a) Prowess Database and (b) annual reports of the respective pharma companies.

Test of Normality of the Data

The secondary data were tested for normality by applying logarithm.

Period of the Study

The study covered a period of 14 years consisting of three periods corresponding to three different economic situations: (a) Boom Period (2004 – 05 to 2007 – 08), (b) Recession Period (2008 – 09 to 2009 – 10), and (c) Recovery Period (2010 – 11 to 2017 – 18).

The Rationale of Classification of Period

Hamel and Välikangas (2003) observed that no company could afford to view the current strategy as valid forever. The quest for corporate resilience demands a strategy that is forever latching on the emerging environmental challenges. Chiou et al. (2006) forecasted that firms might face problems in arranging external finance for their operating activities during a recession. The global financial crisis directed researchers and practitioners to focus on the existing studies about the phenomenon of WCM (Enqvist et al., 2013). Baker et al. (2017) mentioned that there had been a paradigm shift in the studies of WCM after the global financial crisis of 2007–08. Another study by Ramiah et al. (2014) stated that little effort had been made to assess the impact of the 2007–08 crisis, specifically to understand the two distinct phases: during the crisis and after the crisis. Simon et al. (2017) summed up that the crisis directly affected the financial sector, which tightened the credit standard and indirectly led to recessionary effect rippling across the global economy.

The changing economic scenario has definitely affected the WCE of the pharmaceutical sector. Therefore, the present study took up the pharmaceutical sector as the case and examined the WCE of the three different periods separately.

Tools of Analysis

The WCE was computed with the help of the following indices :

↳ ***Utilization Index (UI).*** The utilization index expresses the ability of a company to utilize all current assets to generate sales (Bhattacharya, 1995 ; Ghosh & Maji, 2004 ; Kasiran et al., 2016 ; Kaur & Singh, 2013a, 2013b).

$$UI_{WCM} = \frac{A_{t-1}}{A_t}$$

where, A = (current assets)/sales.

↳ ***Performance Index (PI).*** It is widely acknowledged that if the performance index is more than one, then the firm has efficiently managed its working capital (Bhattacharya, 1995; Ghosh & Maji, 2004; Kasiran et al., 2016; Kaur & Singh, 2013a, 2013b). It is computed as:

$$PI_{WCM} = \frac{I_S \sum_{i=1}^{n} \frac{W_{i(t-1)}}{W_i}}{N}$$

where, I_S is the sales index defined as S_t / S_{t-1}; W_i = individual group of current assets – Number of current assets group; and $I = 1, 2, 3 \ldots N$.

↳ ***Efficiency Index (EI).*** EI is computed by multiplying the PI with UI (Bhattacharya, 1995; Ghosh & Maji, 2004; Kasiran et al., 2016; Kaur & Singh, 2013a, 2013b).

The formula for calculating EI is as follows:

$$EI_{wcm} = PI_{wcm} * UI_{wcm}$$

Classification of Companies Based on Efficiency Index

The arithmetic mean of EI is computed for each company's boom, recession, and recovery periods, and companies whose index value is more than 1 are classified as efficient companies and vice-versa.

↳ ***Working Capital Investment Policy.*** The degree of working capital investment policy (WCIP) is measured as:

$WCIP$ = Total Current Assets (TCA)/Total Assets (TA)

Classification of Companies on the Basis of Investment Policy

On the basis of the mean of WCIP of each company for the three different economic situations, the grand mean (benchmark mean) is calculated. The companies which have a higher ratio than the benchmark mean are relatively considered as firms practicing conservative investment policy and vice versa. This methodology was used by Raheman and Nasr (2007), AL- Shubiri (2011a, 2011b), Taani (2012), Mbawuni et al. (2016), Ahmed (2016), and Altaf and Ahmad (2019) in their studies.

Statistical Tools

The statistical tools applied to analyze the data are:

↳ ***Arithmetic Mean.*** The arithmetic mean was calculated separately, for the period of study, for utilization index, performance index, efficiency index, and working capital investment policies in the study.

↳ ***Grand Mean.*** The comparison among the boom period, recession period, and recovery period was made by the grand mean of the working capital investment policies.

↳ ***ANOVA***. The ANOVA test was applied to examine the significance of variation in the independent variables of efficiency.

↳ ***Correlation and Test of Significance of Correlation.*** The coefficient of correlation was tested at a 5% level of significance.

↳ ***R-Square and Adjusted R-Square***. In order to confirm whether the efficiency index of the working capital and other variables were affected during the different economic situations, R-square (Adjusted) should be greater in the subsequent situations.

↳ ***Regression Analysis***. The regression analysis was applied to study the impact of (a) aggressive investment policy and (b) conservative investment policy on the efficiency index of the working capital. The following regression model was used in this context:

$$\text{Efficiency Index} = I + \beta X$$

where,
Efficiency Index = Dependent variable,
I = Intercept,
β = Coefficient of the regression line,

X = Independent variable, which may be aggressive investment policy or conservative investment policy.

The softwares used for the analysis of data are MS Excel and SPSS.

Hypotheses of the Study

- **H_1:** There is a statistically significant difference between the efficiency indices of DPCs in the boom period, recession period, and recovery period.
- **H_2:** There is a statistically significant difference between the efficiency indices of MNPCs in the boom period, recession period, and recovery period.
- **H_3:** There is a statistically significant difference in the working capital investment policies of DPCs in different economic situations.
- **H_4:** There is a statistically significant difference in the working capital investment policies of MNPCs in different economic situations.
- **H_5:** There is a statistically significant difference in the working capital investment policies of DPCs and MNPCs in different economic situations.
- **H_6:** There is a statistically significant impact of the aggressive investment policy of working capital on the efficiency index of DPCs in different economic situations.
- **H_7:** There is a statistically significant impact of the conservative investment policy of working capital on the efficiency index of DPCs in different economic situations.
- **H_8:** There is a statistically significant impact of the aggressive investment policy of working capital on the efficiency index of MNPCs in different economic situations.
- **H_9:** There is a statistically significant impact of the conservative investment policy of working capital on the efficiency index of MNPCs in different economic situations.

Analysis and Results

Efficiency Index of DPCs

As depicted in Table 1, the efficiency index of DPCs declined from 84% (i.e., 21/25*100) to 76% (i.e., 19/25*100) from boom to recession. However, the efficiency indices of four companies during the recession are 0.98, 0.97, 0.95, and 0.98, which are almost equal to 1. If these are indeed considered as 1, then the efficiency index becomes an impressive 100%. During recovery, the efficiency index of 72% (18/25*100) of the companies registered efficiency of more than 1, and the remaining 28% of the companies recorded their efficiency index in the range of 0.94 to 0.99, which is also considered good.

The variations in the efficiency index of DPCs in boom, recession, and recovery periods do not prove to be statistically significant as ANOVA's p-value of 0.85 is more than $\alpha = .05$, leading to rejection of H_1. So, it is inferred that recession has not affected the WCE of DPCs.

Table 1. ***EI of DPCs and MNPCs (Numbers and Percentage)***

	Boom Period		Recession Period		Recovery Period	
	DPCs	MNPCs	DPCs	MNPCs	DPCs	MNPCs
Efficiency Index	21 (84%)	17 (68%)	19 (76%)	17 (68%)	18 (72%)	22 (88%)
Efficiency Index	4 (16%)	8 (32%)	6 (24%)	8 (32%)	7 (28%)	3 (12%)
Total	25 (100%)	25 (100%)	25 (100%)	25 (100%)	25 (100%)	25 (100%)

ANOVA : EI of DPCs

Variation Source	SS	*df*	MS	*F*	*p*-value	*F* crit
BG	0.002	2	0.001067	0.160733	0.851824	3.124
WG	0.478	72	0.006639			
Total	0.48	74				

ANOVA : EI of MNPCs

Source of Variation	SS	*df*	MS	*F*	*p*-value	*F* crit
BG	0.01	2.00	0.01	1.07	0.35	3.12
WG	0.38	72.00	0.01			
Total	0.40	74				

Efficiency Index of MNPCs

As shown in Table 1, the average efficiency index of 17 (i.e., 68%) MNPCs in the boom period being greater than 1 reveals that these companies managed their current assets efficiently. During the recession, the average efficiency index of 17 MNPCs is also greater than 1, depicting that MNPCs were able to withstand such an economic situation. During the recovery period, the efficiency index of 22 (i.e., 88%) of MNPCs is also greater than 1, showing that the multinationals not only recovered but scaled up the situation.

The variations in the efficiency index of the MNPCs in boom, recession, and recovery periods do not prove to be statistically significant as the *p*-value of 0.85 is higher than $\alpha = .05$, confirming the rejection of H_2. The analysis leads to the conclusion that in the recession period, MNPCs managed to maintain the WCE.

WCIP of DPCs

Table 2 reveals that the number of companies following an aggressive investment policy increased from 12 (48%) in the boom period to 17 (68%) in the recession period. The number, however, reduced from 17 (68%) in the recession period to 13 (52%) in the recovery period.

This result reveals that during the recession and the recovery periods, companies practicing an aggressive investment policy exceeded the companies following a conservative investment policy. This finding conforms with that of Botoc and Anton (2017), who inferred that in the 21st century, the business model has undergone a change from a significant level of WC to a minimum level of WC. As the *p*-value (0.68) is greater than $\alpha = 0.05$, hence it is concluded that there is no change in the WCIPs of DPCs during different economic situations (confirming the rejection of H_3).

Table 2. ***Working Capital Investment Policies of DPCs and MNPCs (Numbers and Percentage)***

		Boom Period	Recession Period	Recovery Period
DPCs	AIP	12 (48%)	17 (68%)	15 (60%)
	CIP	13 (52%)	8 (32%)	10 (40%)
	Total	25 (100%)	25 (100%)	25 (100%)
MNPCs	AIP	10 (40%)	13 (52%)	17 (68%)
	CIP	15 (60%)	12 (48%)	8 (32%)
	Total	25 (100%)	25 (100%)	25 (100%)

ANOVA : WC Investment Policies of DPCs

Variation Sources	SS	*df*	MS	*F*	*p-value*	*F crit.*
BG	0.86	2	0.43	0.38	0.68	3.12
WG	8.04	72	0.11			
Total	8.132	74				

ANOVA : WC Investment Policies of MNPCs

Variation Sources	SS	*df*	MS	*F*	*p-value*	*F crit.*
BG	0.03	2	0.16	0.232	0.794	3.124
WG	4.81	72	0.67			
Total	4.844	74				

WCIPs of MNPCs

Table 2 depicts that except for the boom period, companies have more or less followed an aggressive WCIP during the recession period (52% of the companies) and recovery period (68% of the companies). Similarly, the number of companies following an aggressive WCIP increased from boom period to recession period (from 10 to 13 companies) and from recession to recovery period (from 13 to 17 companies). It emerged that the aggressive WCIP is the most preferred option among corporate finance managers. The finding of the present study is in line with the results obtained by Lyngstadaas and Berg (2016).

Although there is a difference between the number of companies adopting an aggressive WCIP and those adopting a conservative WCIP, this difference is not significant. This is evident as the *p*-value of ANOVA 0.79 is greater than $\alpha = 0.05$; hence H_4 is rejected. This shows that statistically, there is no significant difference in the WCIP followed during the boom, recession, and recovery periods.

Comparison of Investment Policies of DPCs and MNPCs

Table 3 shows that the number of DPCs following an aggressive investment policy is more than MNCPs following the same during the boom and recession periods, respectively. While the number of DPCs was 12 for the boom period and 17 for the recession period, the same for MNPCs were 10 and 13, respectively, for the same periods. However, during the recovery period, the number MNPCs following an aggressive investment policy (17 companies) was more than that of DPCs (13 companies). The analysis also reveals that, by and large, the number of companies practicing aggressive investment policy exceeded the number of companies following conservative investment policy.

Table 3. ***Comparison Between DPCs and MNPCs of WCIP***

Periods	Mean Difference	Standard Error	*t*-statistics	*df*	*p*-value	Reject H_0 at α = .050?
Boom	–0.0184	0.04072	–0.4518	48	0.65	No
Recession	0.09	0.110056	0.8178	48	0.42	No
Recovery	–0.02	0.0875	–0.2285	48	0.82	No

In the boom, recession, and recovery periods, the respective *p* - values (i.e., 0.65, 0.41, and 0.82, respectively) as opposed to the value of α = .05 leads to rejection of hypothesis H_5 ,which means that statistically there is no significant difference in the WCIP of DPCs and MNPCs.

Impact of Aggressive Investment Policy on WC Efficiency of Domestic Companies

The effect of an aggressive investment policy (AIP) on the efficiency of WC of the DPCs has been presented in Table 4.

Impact During Boom

The estimated regression equation is as follows:

$$EI = 1.2147 + (-.4120)* \text{Ratio of } AIP \qquad (1)$$

Since the *p*-value of 0.0007 is less than α = .05, hypothesis H_6 is accepted. The negative value of $\beta = -0.4120$ implies that during the boom period, a higher degree of aggressiveness (i.e., a lower ratio of total current assets to total assets) can improve the WCE. The negative value of the correlation coefficient (i.e., –.84) also strengthens this finding. The negative correlation demonstrates that as the ratio of current assets to total assets declines, the efficiency index will surge upward. This finding is validated by *R*-square, as it explains that 70% of the variations in the EI are explained by the ratio of total current assets to total assets. So, the analysis proposes a strategy to the managerial world, which is to slide down the volume of current assets. This will also unleash the funds blocked in the current assets, resulting in reduced carrying cost, and help in the deployment of realized funds for comparatively productive use in the boom period. This will subsequently lead to the enhancement of profits and profitability of the companies.

Table 4. ***Impact of AIP on EI of DPCS***

	Boom Period			Recession Period			Recovery Period		
Variables	***B***	***t*-statistics**	**Sig.**	**β**	***t*-statistics**	**Sig.**	**β**	***t*-statistics**	**Sig.**
Constant	1.2147	33.6	0.00	10.0031	25.23	0.00	1.0645	13.80	0.00
TCA/TA	–.4120	–4.85	0.0007	.0458	0.002	.61	–.0893	–.48	0.004
R	–.84			.13			–.14		
R- Square	.70			.017			.020		
R- Square (Adjusted)	.67			.047			.0684		

Impact During Recession

The estimated regression equation obtained for the recession period is as follows:

$$EI = 10.0031 + (.0458)* \text{ Ratio of } AIP \qquad (2)$$

Since *p*-value 0.002 is lesser than α = .05, hypothesis H_6 is accepted. It means that the aggressive investment policy influences the EI during the recession period. The analysis highlights different managerial implications compared to the boom period, advocating that finance managers should increase the investment in current assets during the recession period as the β coefficient value .0458 is positive. It means that a lower degree of aggressiveness will improve the EI during this period. Based on the positive coefficient of regression of the recession period, the study proposes a strategy that warrants DPCs to surge the volume of current assets to improve the working capital efficiency.

Impact During Recovery

The estimated regression equation provided for the recovery period is as follows:

$$EI = 1.0645 + (-.0893)* \text{ Ratio of } AIP \qquad (3)$$

Since the *p*-value of 0.004 is less than the alpha value, hypothesis H_6 is accepted. The analysis directs finance managers to reduce the aggressiveness ratio in the recovery period, which means increasing the investment in current assets. Reduction in this ratio can lead to improvement in the efficiency of the working capital. *R*-square states that 20% variations in working capital efficiency during the recovery period are explained by the ratio of current assets to total assets. In the recovery period, the negative coefficient of the ratio of aggressive investment suggests a strategy to the corporate to reduce the quantum of current assets. The reduction shall reduce the working capital financing cost and consequently enhance the profits and profitability of the companies.

Impact of Conservative Investment Policy on WCE of DPCs

The effect of a conservative investment policy (CIP) on the efficiency of working capital of the DPCs has been presented in Table 5.

Impact During Boom

The regression equation related to the dependence of EI on the conservative investment policy is as follows:

$$EI = 1.15 + (-0.17)* \text{ Ratio of } CIP \qquad (4)$$

Since the *p*-value of 0.003 is lesser than α = .05, hypothesis H_7 is accepted. The analysis suggests that the CIP significantly influences the efficiency of working capital during the boom period. This is evident from the value of β (i.e., –.17). The negative value of the coefficient of correlation (i.e., –0.74) also gives a clear signal about the relation of EI and the ratio of current assets to total assets. The value of *R*-square further supplements this finding, as 56% of the variations in the EI are explained by conservative investment policy. So, it is recommended that finance managers slash down the value of current assets to enhance working capital efficiency during the boom period.

Table 5. ***Impact of CIP on EI of DPCs***

	Boom Period			Recession Period			Recovery Period		
Variables	***B***	***t*-statistics**	**Sig.**	**β**	***t*-statistics**	**Sig.**	**β**	***t*-statistics**	**Sig.**
Constant	1.15	8.92	0.00	1.12	26.09	0.00	1.14	6.18	0.00
TCA/TA	–0.17	0.003	0.003	.17	0.004	0.0004	–.13	0.003	0.003
R	–.74			–.60			.33		
R - Square	.56			.36			.58		
R - Square (Adjusted)	.028			.2520			.0701		

Impact During Recession

The regression equation related to the dependence of EI on the conservative investment policy is as follows:

$$EI = 1.1253 + (-.0636)* \text{Ratio of } CIP \qquad (5)$$

Since the *p*-value of 0.004 is lesser than the value of $\alpha = 0.05$. hypothesis H_7 is accepted. It means that CIP influences the value of the EI during the recession period. The study found that because the value of the β is negative, managers should reduce investment in current assets to lower the ratio. The negative value of the coefficient of correlation (i.e., –0.60) also shows the relation of EI and the ratio of current assets to total assets. The value of *R*-square confirms that 36% of the variations in WCE can be attributed to the conservative investment policy. To improve the WCE, the regression analysis of DPCs (pursuing conservative working capital policy) directs to cut the volume of current assets to spare funds for other productive purposes.

Impact During Recovery

The estimated regression equation provided for the recovery period is as follows:

$$EI = 1.14 + (-.13) * \text{Ratio of } CIP \qquad (6)$$

In this case too, the *p*-value of 0.003 is lesser than the value of $\alpha = 0.05$, and so hypothesis H_7 is accepted. It means that the WCIP impacts the EI. The study suggests that finance managers of DPCs adopting the CIP during the recovery period should also endeavor to slash down the ratio of current assets to total assets to improve working capital efficiency. This is evident from the negative value of the β (i.e., 0.13). The negative value of the coefficient of correlation (i.e., –.0.76) emphasizes the need for cutting the volume of current assets. The value of *R*-square explains that 58% of variations in the WCE are due to the CIP in the recovery period. During the recovery period, the strategy suggested by the analysis directs to cut the amount invested in current assets. This shall lead to improving the operating and financial position of the companies.

Impact of AIP on WCE of MNPCs

The effect of the AIP on the WCE of MNPCs has been presented in Table 6.

Table 6. ***Impact of AIP on EI of MNPCs***

	Boom Period			Recession Period			Recovery Period		
Variables	***B***	***t*-statistics**	**Sig.**	**β**	***t*-statistics**	**Sig.**	**β**	***t*-statistics**	**Sig.**
Constant	1.4848	17.09	0.00	.9796	22.59	0.00	.9766	26.55	0.00
TCA/TA	–1.059	–5.29	0.0007	.094	.8777	.39	.0982	1.11	.28
R	–0.88			.26			.28		
R - Square	.77			.065			.076		
R - Square (Adjusted)	.75			.019			.015		

Impact During Boom

The regression equation related to the dependence of EI on the AIP is as follows:

$$EI = 1.4848 + (-1.0596)* \text{ Ratio of } AIP \qquad (7)$$

Since the *p*-value of 0.0007 is less than the value of $\alpha = .05$, hypothesis H_8 is accepted. The analysis provides a clue to finance managers of MNPCs about the maximization of WCE. The value of $\beta = -1.0596$ hints at the direction of the action. Further, the negative value of the coefficient of correlation strengthens the strategy to control the ratio of AIP. It means that pharmaceutical companies can improve their turnover during the boom period by slashing investments in current assets. Therefore, finance managers of these companies should apply the strategy of reducing investment in current assets to reduce this ratio and consequently maximize WCE. The value of *R*-square further strengthens this argument as 75% of the variations in the working capital index are explained by the ratio of AIP.

Impact During Recession

The regression equation related to the dependence of EI on AIP is as follows:

$$EI = .9796 + (0.094)* \text{ Ratio of } AIP \qquad (8)$$

Since the *p*-value of .39 is more than the value of $\alpha = 0.05$, hypothesis H_8, which states that the slope is zero, is not rejected. The analysis suggests a strategy to enhance the value of the ratio of current assets to total assets in order to maximize the value of EI, as the value of the β (i.e., 0.094) is positive. *R*-square explains that only 6.5% of the variations in EI are caused by the ratio of aggressive investment policy. Similar to the DPCs, the analysis proposes to the MNPCs as well to increase the volume of current assets to improve WCE during the recession period.

Impact During Recovery

The regression equation of the straight line relating to EI and AIP is estimated as follows:

$$EI = 0.9766 + (.0982)* \text{ Ratio of } AIP \qquad (9)$$

Since the *p*-value of .28 is greater than the value of $\alpha = 0.05$, hypothesis H_8 is not rejected. It means that the AIP in the case of MNPCs does not influence the value of EI. The 0.0982 value of the β is not significantly impacting the value of EI, but mathematically it positively affects the WCE index. So, finance managers must introduce additional amounts in current assets to optimize and improve WCE.

Impact of CIP on WCE of MNPCs

The effect of the CIP on the WCE of MNPCs has been presented in Table 7.

Impact During Boom

The regression equation of the straight line relating to EI is estimated as follows:

$$EI = 0.89 + (-0.22) * \text{Ratio of } CIP \qquad (10)$$

Since the *p*-value of .49 is more than the value of $\alpha = .05$, hypothesis H_9 is rejected. It signifies that WCE is not significantly influenced by WCIP. Because of the β value of −0.22, it can be inferred that although not statistically significant, CIP negatively influences the working capital index. Therefore, mathematically the equation offers scope/strategy to reduce the volume of current assets to enhance EI.

Impact on WCE During Recession

The regression equation related to the dependence of EI on CIP is as follows:

$$EI = 0.95 + (.088) * \text{Ratio of } CIP \qquad (11)$$

Since the *p*-value of 0.36 is greater than the value of $\alpha = 0.05$, hypothesis H_9 is rejected. This shows that CIP does not significantly impact the WCE of MNPCs. Although not statistically significant, the equation mathematically provides a lesson to the managers of MNPCs to increase investment in current assets, as it leads to enhancement in the efficiency of the working capital index. This opinion is supported by the positive value of β, which is equal to .088. During the recession period, the value of *R*-square explains that just 8.6% of variations in the WCE index are due to investments in current assets. Managers should also endeavor to explore and manage other factors that influence the WCE of MNPCs during the recession period. In this situation, the managements of pharmaceutical companies are also required to infuse additional investments in current assets to ameliorate WCE.

Table 7. ***Impact of CIPs EI of MNPCs***

	Boom Period			Recession Period			Recovery Period		
Variables	***B***	***t*-statistics**	**Sig.**	**β**	***t*-statistics**	**Sig.**	**β**	***t*-statistics**	**Sig.**
Constant	.89	4.42	0.0007	.95	15.62	0.00	10.00	8.80	0.00
TCA/TA	.22	.69	.49	.089	.9700	.35	0.004	.343	.74
R	.19			.29			.14		
R - Square	.036			.086			.019		
R - Square (Adjusted)	.038			0.0054			.144		

Impact During Recovery

The regression equation related to the dependence of EI on CIP is as follows:

$$EI = 10.0075 + (0.0041) * \text{Ratio of } CIP \qquad (12)$$

Since the *p*-value of 0.74 is greater than the value of $\alpha = .05$, hypothesis H_0 is rejected. The analysis provides that conservative investment does not affect WCE because the value of $\beta = 0.0041$ is not statistically significant. This is further proved by the value of the coefficient of correlation, which is just .14. The value of *R*-square also explains that 1.93% of the variations in EI are because of CIP. It signifies that managers of MNPCs should explore and focus on other factors that influence EI.

Implications of the Study

The study is useful for various stakeholders of the pharmaceutical industry on the following counts:

(1) The statistical analysis reveals that during different economic situations, there are no significant variations in EI of both DPCs and MNPCs. Therefore, it can be inferred that (a) the profits of pharmaceutical companies are sustainable, (b) the shareholders can expect regular and stable dividends, and (c) the market price of the shares of these companies can be lesser volatile if it primarily depends on earnings. These implications are also a good signal to prospective shareholders to commit to more investment in these companies' shares.

(2) In case of economic downturns, some governments have to provide subsidies in the form of cheaper rates of interest, lower tax rates, and tax holidays to make the industries sustainable. As the WCE of the pharmaceutical industry is not influenced by the recession, governments need not worry about supporting the pharmaceutical industry during turbulent times.

(3) Bankers and financial institutions always intend to recover the interest as well as the principal amounts from the borrower, and the pharmaceutical industry is a safe investment in this regard. Even during economic downturns, the EI of a majority of these companies was more than 1.

(4) Employees in the pharmaceutical industry can plan and prolong their fortunes with this sector, as it is proved to be recession-free. So, the employees of this industry can expect regular salaries, commissions, and bonuses.

Conclusion

The study concludes that the EI of DPCs is better than that of MNPCs. Aggressive investment policy has been the favorite of the majority of DPCs and MNPCs. During the boom period, all the companies, irrespective of their WCIP, are required to cut down investments in current assets to optimize the WCE. During the recession period, except for the domestic companies, all the companies should inject the additional amount in current assets; whereas, the DPCs can continue to follow the conservative investment policy. DPCs should increase investments in current assets during the recovery period, and MNPCs should infuse more capital.

Limitations of the Study and Scope for Further Research

The study has limitations on account of dependence on secondary data and limited sample size. It offers scope for

other studies as the study includes a fairly large sample size. Further studies can also be conducted to carry out a comparison with other sectors.

Author's Contribution

Dr. Prabhpreet Kaur was curious to explore the application of the principle "Management is a dynamic process" to the management of working capital under different economic situations. The author was also anxious to find whether there existed a variation in the managerial practices of the Indian and multinational companies. The author surveyed the literature and sorted the paper based on keywords. The literature scanning highlighted scanty studies on working capital management under various economic situations. The analysis carried by the author revealed that the Indian companies are ahead in maintaining working capital efficiency.

Conflict of Interest

The author certifies that she has no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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