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Efficiency of Working Capital Management by Firms Listed in BSE SENSEX

Waseem Bashir[1*], N. Gunasegari[2], N. Periyasami[1]
[1]Department of Commerce, Annamalai University, Annamalainagar, Chidambaram, Tamil Nadu, India; [2]Department of Commerce, Government Arts and Science College, Vanur, Tamil Nadu, India
[*]Email: waseemkhan974@gmail.com

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Abstract

Working capital management assesses a company's short-term financial health by examining daily short-term assets and liabilities. Efficient working capital management involves planning and administration of current obligations and assets in such a way that excessive investments in current assets are avoided and also avoids the risk of meeting short-term commitments on time. Efficient working capital management entails a trade-off between profitability and liquidity risks and ensures that firms may have an optimum working capital that maximizes their value. The study is intended to analyze the efficiency of working capital management by firms listed in the BSE SENSEX. Correlation and regression analysis has been used to study the relationships between working capital efficiency, profitability and liquidity. One-way ANOVA has also been used to see that the means of components of working capital are significantly varying and Turkey's HSD test has been used to see which component is varying significantly. The study's finding shows that employing the Working capital cycle does not provide any significant forecast of profitability. The relationship between DSO and CCE is not significant enough to predict the efficiency of management in converting its profits into cash. According to the study, profitability and liquidity are positively associated, but liquidity is inversely related to WCC. There is evidence that working capital management in companies listed in BSE SENSEX is poor. The study suggests that companies listed on the BSE SENSEX should focus on DPO to improve their working capital management efficiency and secure more credit from suppliers.

Keywords: Working Capital Management Efficiency, BSE SENSEX, Turkey's HSD Test, ANOVA, Correlation, Regression

Introduction

Working capital management (WCM) assesses a company's short-term financial health by examining the mix of short-term assets and liabilities daily (Bhattacharya, 2021). WCM aims to solve the problem of how much short-term assets like inventory, receivables, cash and short-term commitments like account payables a company should keep at any one time to optimize profits. (Braimah et al., 2021). Working capital optimization involves reducing working capital requirements while maximizing revenue potential (Devalkar & Krishnan, 2019). Improved free cash flow increases a company's growth potential and returns to shareholders through effective WCM (Goel & Sharma, 2015). Despite the fact that companies have typically focused on long-term capital budgeting and capital structure, many organizations across many industries are now focusing on the efficiency of WCM (Ganesan, 2007)

The excess of company's current assets over current liabilities is known as working capital, indicating how well it can support any rise in turnover from other sources (Hill, 2013). The amount and composition of current assets and the method by which these assets are financed are all consi-

dered in WCM decisions. A large number of current assets may be beneficial to a company's liquidity, but it may also be detrimental to its profitability. According to Padachi (2006), the proper management of asset-liability mismatch is one of the most critical functions of WCM in order to maximize shareholder wealth. Managers can create value for their shareholders by increasing the efficiency of their WCM. The primary purpose of the WCM is to maintain working capital at an optimal level in order to maximize shareholder wealth (Shin & Soenen, 1998; Pass & Pike, 1984). As a result, a WCM decision that includes a trade-off between efficiency and profitability is a critical component of a company's financial management strategy and implementation (Drangay & Periyasami, 2018).

Planning and administering current obligations and assets in such a way that excessive investments in current assets are avoided and the risk of meeting short-term obligations on time is at the core of effective WCM (Eda & Mehmet, 2009). Efficient WCM entails a trade-off between profitability and liquidity risks and ensures that firms have an optimum working capital that maximizes their value (Akgun & Karatas, 2020). WCM is a critical component of a company's financing decisions because it acts as a significant motivator for its performance. For many years, the importance of managing working capital in a company's long-term success was emphasized throughout corporate finance courses (Aktas, Croci & Petmezas, 2015). An essential part of a company's long-term strategy is having a good handle on its working capital (Padachi, 2006). Its goal is to make a positive impact on the creation of a company's value (Nazir & Afza, 2009). A firm's growth and long-term viability depend on its ability to effectively manage working capital, ensuring that each working capital component operates at its peak efficiency (Tsagem, Aripin & Ishak, 2014). The study of long-term financial decisions, such as investments, capital structure, dividends and firm valuation, has traditionally emphasized corporate finance studies (Ramachandran & Janakiraman, 2009). Short-term assets and liabilities, which are essential components of overall assets, have recently gained greater attention from many industries as they converge toward WCM efficiency. As a result, effective WCM also entails keeping track of current assets and obligations in order to reduce prospective debt and prevent companies from overspending on assets (Eljelly, 2004).

Literature Review

The study done by Hassan et al. (2014) on working capital management and its effect on the performance of non-financial Pakistani firms found a positive and insignificant relationship between gross profit margin and return on assets and also a positive and significant relationship between average payables period with gross profit margin and return on assets. In contrast, the negative and insignificant relationship between firm size, leverage, age towards gross profit margin, return on equity and return on assets. Anton & Nucu (2021) investigated the relationship between working capital and profitability of 719 polish firms over nine years spanning from 2007 to 2016 and found an inverted U-shaped relationship between working capital levels and profitability of firms, indicating that the positive relation of working capital on firms performance. Whereas Vijayakumaran (2019) examines the correlation between the firm's value and efficiency of working capital management in Chinese listed firms and uses day’s sales outstanding, day’s inventory in hand, day’s payable outstanding and net trade outstanding to represent the efficiency of working capital. Meanwhile, Tobin’s Q is used to measure the firm's value. Results of the study show that the net trade cycle is negatively associated with Tobin’s Q and day’s accounts payable are also negatively associated with Tobin’s Q. The study suggests that in order to generate value for shareholders, the firms must reduce the number of day’s accounts receivables and inventories to a minimum level.

The study done by Ganesamoorthy & Rajavathana (2013) on the relationship between profitability and working capital of select Indian automobile companies by using return on assets to

measure the profitability and average collection period, average payment period, inventory conversion period, current ratio, cash conversion cycle used as a measure of working capital and discovered that there is an insignificant association between profitability and working capital management in select Indian automobile companies. In contrast, the study conducted by Chand et al. (2019) on the effect of working capital management on the profitability of seasonal and non-seasonal firms in Pakistan found that working capital management and profitability are negatively related to each other. There is no difference between seasonal and non-seasonal firms in terms of profitability and working capital management. A similar study was done by Nguyen, Pham & Nguyen (2020) on the effect of working capital on the profitability of Vietnam firms and shows that working capital has a negative and significant impact on the firm's profitability. It suggests that businesses can boost profits by optimizing working capital management which involves reducing the time it takes to collect money from customers, expediting inventory movement and maintaining a low payment time to creditors. Furthermore, the growth rate in sales, business size, leverage and firm age all impacted firm profitability.

By Using DSO, DIO, DPO, DWC and current ratio as proxies for working capital efficiency, Ganesan (2007) emphasized the efficiency of WCM in the USA telecommunication equipment industry from 2001 to 2007. The current ratio and CCE are used as a proxy for liquidity. Meanwhile, income to total assets and income to sales are used as a proxy for profitability. The findings depicted that profitability and liquidity are negatively associated with inefficient working capital management in the USA telecommunication industry. The telecommunication industry can improve the efficiency of working capital management by reducing inventory and improving DPO to obtain more credit from suppliers. Singhania, Sharma & Rohit (2014) investigated the link between profitability and working capital management in Indian manufacturing firms and discovered that the cash conversion cycle is negatively associated with profitability. According to the findings, managers may increase performance by reducing the number of days receivable and increasing the number of days payable. Furthermore, results showed that strategies should be developed in light of global macroeconomic conditions. Whereas Adam, Quansah & Kawor (2017) investigated the effect of aggressive current asset investment and aggressive current asset financing policies on the return of manufacturing firms listed on the Ghana stock exchange over 13 years. The results showed that the current assets investment and financing policy have a positive but significant effect on shareholders in the long run. The results suggest that conservative current asset investment policies increase firm returns while conservative financing policies produce negative returns. Firms that pursue conservative current asset investment policies should balance them with aggressive current asset financing policies to increase profitability and create value for their shareholders. Moussa (2018) investigated the influence of WCM performance and the value of Egyptian firms. The findings show that high-performing companies pay less attention to WCM and investors in Egyptian stock exchange value companies with a longer cash conversion cycle. The impact of WCM on business profitability, shareholder wealth and working capital strategies has been studied in the literature. WCM and its impact on business profitability were the focus of most studies. The influence of WCM efficiency on profitability and liquidity has only been studied in a few pieces of research, particularly relating to BSE SENSEX. So the researcher tries to fill this critical gap left by the earlier researchers.

Methodology

The scope of this study is limited to the companies listed in BSE SENSEX as of 19 January 2021. These companies have been studied for 15 years spanning from 2005-06 to 2019-20. The financial statements of the companies were used as data sources. The data were extracted from CMIE

Prowess. The final sample consists of 20 non-financial firms. The firms that had incomplete financial information were eliminated from the study. This study looks into the link between working capital management efficiency, profitability and liquidity. Data analysis has been performed using M.S. Excel and SPSS. Various financial ratios listed in Table 1 have been used in this study and were calculated from the financial statements of respective firms.

Table 1. List of Ratios

Days Sales Outstanding	$\frac{\text{Receivables}}{\text{Sales}} \times 365$
Days Inventory Outstanding	$\frac{\text{Inventory}}{\text{sales}} \times 365$
Days Payable Outstanding	$\frac{\text{Payables}}{\text{Sales}} \times 365$
Working Capital Cycle	DSO + DIO - DPO
Liquidity	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
Cash Conversion Efficiency	$\frac{\text{Cash Flow From Operations}}{\text{Sales}}$
Operating Profit Ratio	$\frac{\text{Operating Profit}}{\text{Sales}}$
Return on Assets	$\frac{\text{Net Profit after Tax}}{\text{Total Assets}}$

Results and Discussion

Table 2 depicts the descriptive statistics of companies listed in BSE SENSEX for 15 years. The proxies used are: Days Sales Outstanding (DSO), Days Inventory Outstanding (DIO), Days Payable Outstanding (DPO), Working Capital Cycle (WCC), Cash Conversion Efficiency (CCE), Return on Assets (ROA), Operating Profit Ratio (OPR) and Liquidity (LIQ).

Table 2. Descriptive Statistics

	Mean	Median	S.D	Minimum	Maximum	Confidence Level (95.0%)
DSO	49.86	29.26	44.77	3.26	219.58	5.09
DIO	38.23	30.79	40.57	0.00	329.22	4.61
DPO	57.13	48.94	33.99	0.70	190.76	3.86
WCC	30.96	25.08	58.87	-112.53	285.81	6.69
CCE	20.31	16.19	19.94	-80.28	122.43	2.27
ROA	0.13	0.12	0.09	-0.19	0.36	0.01
OPR	0.27	0.23	0.17	-0.31	0.82	0.02
LIQ	2.05	1.41	2.21	0.24	17.06	0.25

The higher Standard Deviation of WCC 58.87 days depicts that the deviation is wider in companies Listed in BSE SENSEX, which indicates that data is spread widely throughout the study. The sample companies receive payments from their credit sales averagely after 49.86 days with a median value of 29.26 days. On average, sample companies take 38.23 days (median value is 30.79

days) to sell their inventories and 57.13 days (median value 48.94 days) to pay their suppliers. DSO and DIO also show wider variations, whereas DIO is moderately variated from the mean value.

The mean and median values of CCE are 20.31 and 16.19, respectively, indicating the efficiency of management in converting profits into cash. The average ROA and OPR are 0.13 and 0.27, respectively. The average liquidity proxied by current assets over current liabilities is 2.05 (1.41). The minimum was found in WCC (-112.53 days). It can be beneficial for the firms because the firms with negative working capital can effectively borrow from their suppliers and customers to fund their sales growth. Such firms also do not offer credit and constantly expand their sales. The maximum value was found in the Days inventory outstanding (329.22 days), which is unsuitable for the sample companies. The sample companies may have too much inventory or take too much time to convert their inventory into sales.

Correlation Analysis

The correlation analysis investigates the relationship between the efficiency of working capital management, liquidity and profitability. Pearson's correlation was used to examine the relationship between the variables. Table 3 shows the correlation matrix with Pearson's correlation coefficient.

Table 3. Pearsons Correlation Matrix

	DSO	DIO	DPO	WCC	CCE	ROA	OPR	LIQ
DSO	1							
DIO	-.028	1						
DPO	.275**	.145*	1					
WCC	.582**	.584**	-.268**	1				
CCE	-.016	-.153**	.171**	-.217**	1			
ROA	-.137*	-.096	-.286**	-.005	-.051	1		
OPR	.180**	-.147*	.015	.027	.795**	.063	1	
LIQ	.251**	.060	-.328**	.422**	-.029	.281**	.197**	1

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

*. Correlation is significant at the 0.05 level (2-tailed).

An effective WCM is supposed to improve the profitability and liquidity of the company. The WCC is negatively associated with cash conversion efficiency and return on assets, whereas it is positively associated with the operating profit ratio and liquidity. There is statistical evidence that profitability and liquidity are positively related, but this relationship is statistically significant. The cash conversion efficiency is negatively associated with ROA and liquidity but is positively associated with the operating profit ratio. DSO is negatively associated with cash conversion efficiency and ROA but is positively associated with operating profit and liquidity. DIO is negatively associated with operating profit ratio, cash conversion efficiency and return on assets and is positively associated with liquidity. DPO is positively associated with cash conversion efficiency and OPR, whereas it is negatively associated with ROA and liquidity.

Regression Analysis

To study the further link between the measures of working capital, profitability and liquidity, a simple regression analysis was performed on CCE, ROA, OPR and LIQ with DSO, DIO, DPO and WCC. Liquidity and profitability indicators are employed as dependent variables, while working

capital measures are used as independent variables. The regression results are shown in Table 4 with the P-value in parenthesis.

Table 4. Regression of Components of Working Capital with Liquidity and Profitability Measures

	DSO	DIO	DPO	WCC
CCE	-0.02	-0.15	0.17	-0.22
	(0.79)	(0.01)	(0.00)	(0.00)
ROA	-0.14	-0.10	-0.29	0.00
	(0.02)	(0.10)	(0.00)	(0.93)
OPR	0.18	-0.15	0.02	0.03
	(0.00)	(0.00)	(0.80)	(0.64)
LIQ	0.25	0.06	-0.33	0.42
	(0.00)	(0.30)	(0.00)	(0.00)

The regression result shows that WCC is positively related to liquidity and profitability measures. Although profitability indicators are favourably associated with WCC, the relation is not statistically significant, indicating that the association of WCC with ROA and OPR does not provide any considerable forecast of profitability by using WCC. The results also indicate that OPR is positively related to DSO, DPO and WCC. The relation between DPO and OPR is not significant enough to predict the OPR by using DPO. The cash conversion efficiency is negatively related to DSO, DIO and WCC, but the relation between DSO and CCE is not significant enough to predict the efficiency of management in converting its profits into cash. However, the effect of managing the DPO is not enough to predict the profitability and the efficiency of management is significant enough to predict the efficiency of management. So there is evidence from the sample companies that the accounts payables management is poor, and management is inefficient in managing cash conversion efficiency. The liquidity of the sample companies is positively associated with the WCC, DSO and DIO but is statically significant.

Analysis of Variance (ANOVA)

The single-factor analysis is done on the working capital components-DSO, DIO and DPO in order to determine whether the means of working capital are significantly different. The results of the ANOVA are shown in table 5.

Table 5. ANOVA Result of DSO, DIO, DPO

	Sum of Squares	D.f	Mean Square	F	Sig.
Between Groups	54534.802	2	27267.401	17.021	.000
Within Groups	1436981.756	897	1601.986		
Total	1491516.558	899			

The findings show statistically significant differences in the means of working capital components. This indicates that the measures taken by enterprises in managing the DSO, DIO and DPO differ significantly among BSE SENSEX companies. Since there is a vast difference in the means of DSO, DIO and DPO, the analysis is extended to determine which one is substantially different from the others. As a result, Turkey's HSD Test is conducted on the DSO, DIO and DPO given in table 6.

Table 6. Multiple Comparisons

WCC		Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
DSO	**DIO**	11.62636*	3.26801	.001	3.9544	19.2984
	DPO	-7.27479	3.26801	.067	-14.9468	.3972
DIO	**DSO**	-11.62636*	3.26801	.001	-19.2984	-3.9544
	DPO	-18.90115*	3.26801	.000	-26.5731	-11.2291
DPO	**DSO**	7.27479	3.26801	.067	-.3972	14.9468
	DIO	18.90115*	3.26801	.000	11.2291	26.5731

*. The mean difference is significant at the 0.05 level.

The results show that the means of DSO do not significantly differ from each other. Whereas means of DPO and DIO significantly differ from each other. This suggests that the DSO significantly contributes to working capital management efficiency. The difference between DIO and DPO shows the inefficiency of management in managing both DIO and DPO. This could be related to credit policies being more liberal and higher revenues are coming from credit sales.

Conclusion

In this study, working capital efficiency was analyzed on non-financial firms listed in BSE SENSEX for 15 years, from 2005-2006 to 2019-20. The association between efficiency of WCM, profitability and liquidity was scrutinized using correlation and simple linear regression analysis. One way ANOVA has been done on components of working capital is to study that these components significantly differ and Turkey's HSD Test has been done to examine which one is substantially different from the other.

The study shows that a higher standard deviation was found in WCC of 58.87 days. The variation is wider in companies Listed in BSE SENSEX, which indicates that data is spread widely throughout the study. The study found that profitability and liquidity are positively related to each other but liquidity is negatively related to WCC, whereas profitability and liquidity are positively correlated. The study also found that the relation of WCC with ROA and OPR does not provide any significant forecast of profitability by using WCC. The association between DSO and CCE is not significant enough to predict the efficiency of management in converting its profits into cash. There is also evidence that there is poor management of accounts payables and the management is inefficient in managing the working capital. The means of components of working capital differ significantly. DSO is the only component that contributes to the efficiency of working capital. Overall there is evidence that working capital management in sample companies is poor. So it is suggested that the companies listed in BSE SENSEX should enhance their working capital management efficiency by focusing on DPO in order to obtain more credit from suppliers.

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