What Determines the Efficiency of Working Capital Among Rajasthan MSMEs?

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Abstract

Purpose : This research aimed to gather insights into working capital management (WCM) practices and the factors that influence its efficiency inside the Indian MSMEs' manufacturing sector using organization variables.

Methodology : For the research, the paper used panel regression methodologies on 147 MSMEs of the most critical production and manufacturing industries from 2012–2021.

Findings : Several firm-specific variables, including leverage, tangibility, firm size, profitability, human capital, asset turnover ratio, and firm growth, were found to have a significant effect on working capital management efficiency (WCE); whereas, the age of the firm and salary expenses were found to have an insignificant impact on working capital management efficiency.

Practical Implications : The study results will facilitate stakeholders to make informed decisions for maintaining the liquidity scenario of the MSMEs by identifying the factors most important for small businesses in Rajasthan. The state can also frame policies concerning the management of the short-term financial position of small businesses.

Originality : Unlike prior research on working capital, the current work explores WCM efficiency comprehensively by including organization factors in Rajasthan manufacturing MSMEs by utilizing two efficiency metrics, that is, the cash conversion cycle (CCC) and cash conversion efficiency (CCE), which have not been studied earlier, especially in the context of Rajasthan.

Keywords : **working capital efficiency, MSMEs, Rajasthan, cash conversion efficiency, cash conversion cycle, manufacturing**

JEL Classification Codes : C23, D22, G30

Paper Submission Date : August 30, 2022 ; Paper sent back for Revision : March 15, 2023 ; Paper Acceptance Date : April 16, 2023 ; Paper Published Online : June 15, 2023

In today's dynamic corporate landscape, corporate survivability drives an enterprise to outperform its competitors. Sustainability in the current era will be attainable if a company has adequate financial resources to confront its future and existing commitments. Management of working capital is a crucial aspect of financial management. The success of a business in a given period is contingent on its working capital management efficiency. Consequently, working capital management has assumed the center stage in contemporary business growth. Today's businesses concentrate on fundamental operation and investment

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DOI : https://doi.org/10.17010/ijf/2023/v17i6/171942

linkages (Liu et al., 2021). Working capital efficiency (WCE) is a metric that quantifies how well a company manages the funds trapped in trade receivables with its payables on the acquisition of inventories. Specifically, this metric compares enterprises of a similar kind (e.g., size, industry, etc.) depending on the proportion of capital deployed to fulfill their regular operating requirements (Aktas et al., 2015). In addition, the WCE of a company indicates its credibility and influences an investor's perception of the company's financial health. High working capital efficiency reduces short-term borrowing and enables a business to prepare for long-term borrowing when growing or investing in new projects. Sustaining desirable aspects of working capital efficiency compels firm managers to make quick judgments regarding investments in current assets and short-term finance. Such choices are crucial for operating capital management (WCM) (Prasad et al., 2019). WCM has been a quasi-concern in businesses, with many financial planners finding it challenging to identify the critical variables of working capital and determine the ideal liquidity position. Most research on the working capital practices of enterprises is from industrialized countries; whereas, only a handful of studies represent the same for firms from growing economies, for example, India.

Finance management has long been the lifeblood of businesses. Consequently, financial decisions have always been considered by the body's head. Capital structure (financing) decisions, investment/capital budgeting decisions, and working capital fall under the long-term category of corporate financial decisions (Kasozi, 2017). Working capital represents the difference between an organization's assets and liabilities. It has been recognized for some time that, considering the significance of finance, less theoretical progress has been made on the subject of working capital. Arunkumar and Sonwaney (2019) stated that the omission of working capital has been the cause of numerous corporate failures to date. Thus, paying close attention to this area can aid in maintaining liquidity and paying off existing bills, thereby ensuring timely payments. The available literature on working capital management has been conducted with more giant corporations in mind, with data accessibility being the most critical and apparent reason (Abbadi & Abbadi, 2013; Mutua Mathuva, 2014; Yousaf et al., 2021).

Despite the presence of work in the field of working capital on larger corporate houses, it would not aid in overcoming the issues encountered by SMEs, as the smaller enterprises have fewer ways to receive funds, necessitating the efficient and effective use of their limited funds (Padachi et al., 2012). Hence, there is a need for a comprehensive study on the working capital efficiency of MSMEs.

The Make in India project – "Atmanirbhar Bharat Abhiyan" — has considerably boosted smaller businesses, increasing India's domestic manufacturing industry. Under this effort, MSMEs are the backbone of the Indian economy. Analyses on the importance of working capital for MSMEs are lacking in the extant literature on the working capital management of SMEs. According to numerous studies, the performance of larger companies differs from that of SMEs. Likewise, the versions of micro, small, and medium-sized businesses differ.

Our current study evaluates the effect of determinants of working capital management components such as cash conversion efficiency, cash conversion cycle, and inventory holding period for micro, small, and medium-sized businesses. Firm characteristics include the firm's age, the tangibility of assets, financial leverage, asset turnover ratio, salary, human capital, and firm's size. Over time, a sample of MSMEs has been examined.

For the sake of sample selection, we filtered the firms on the basic definition given by the government. The MSMED Act of 2020 defines micro, small, and medium enterprises as follows:

> An enterprise whose investment in plant and machinery or equipment does not exceed ₹ 1 crore and whose turnover does not exceed ₹ 5 crores is classified as a micro-enterprise; an enterprise whose investment in plant and machinery or equipment does not exceed ₹ 10 crores and whose turnover does not exceed ₹ 50 crores is classified as a small enterprise. In contrast, an enterprise whose turnover does not exceed ₹ 250 crores and investment in plant and machinery is less than ₹ 50 crores is termed a medium enterprise.

Government, financial institutions, banks, and other interested organizations will be aided in formulating policies/schemes by these firms' size disparity and working capital management practices.

Literature Review and Hypotheses

Determinants of Working Capital Efficiency

Size

Numerous studies support that the firm's size affects the working capital efficiency. Larger firms have more efficient working capital than smaller firms (Dalci et al., 2019). In order to increase sales, larger businesses either invest more in working capital or use their size to strengthen their relationships with suppliers, which results in lower working capital investments (Kieschnick et al., 2006). In addition, the most significant advances and digitalization in supply chain management systems make it easier for corporations to engage in such processes, communicate with all stakeholders, and efficiently administer each strategy, including WCE (Seth et al., 2020). Small organizations may find it challenging to apply such practices due to a lack of resources, funding, and knowledge.

Subsequently, smaller businesses are more likely to fail than bigger ones since the latter are much more diverse (Baños-Caballero et al., 2016). Because large companies are subject to increased analyst scrutiny and have less information asymmetry than smaller businesses, this impacts the trade credit (Hill et al., 2010). Similarly, Niskanen and Niskanen (2006) claimed that companies would grant better credit facilities if they had more significant funding opportunities and could manage their cash flow. They discovered that the firm's size impacted the amount of trade credit issued.

Elbadry (2018) highlighted that large enterprises could accept flexible inventory and receivables policies due to low financial limitations, reduced information asymmetry, and significant borrowing capacity. Smaller enterprises face higher funding costs when investing in current assets, which hurts their working capital efficiency. Due to more substantial financial constraints or fewer funding sources, small businesses also use trade credit through their vendors as a source of funding, which benefits the CCC.

- **H01 :** The size of the firm does not affect working capital efficiency.
- **H1 :** The size of the firm affects working capital efficiency.

Firm Age

A company's age reveals how well it can compete with and outperform its competitors. Investor confidence and a company's age are positively correlated. This is so because more seasoned employees and business partners tend to work for older companies, which increases their efficiency. Customers also like the more established businesses. This has an impact on the company's credibility with its stakeholders as well. Comparatively speaking, older businesses have better access to working capital than newer ones, reducing the cost of acquiring working capital and enhancing efficiency (Chitta et al., 2019). Similarly, Seth et al. (2020) discovered age's favorable and significant effect on the firm's working capital efficiency.

- **H02 :** The age of a company does not affect its working capital efficiency.
- **H2 :** The age of a company affects its working capital efficiency.

Growth Opportunity

Growth opportunities can be expressed in terms of growth in the firm's sales compared with last year's sales (Nyeadi et al., 2018). Sales growth can be achieved by extending credit on their products, increasing the investment in receivables, and, consequently, their working capital. Singh and Kumar (2017) proposed a positive relationship between sales growth and working capital. The pecking order theory suggests that organizations anticipating greater demand need more significant investment and, thus, greater internal finance (Seth et al., 2020). This expectation would lead businesses to increase their cash and short-term investments. In addition, companies may amass massive inventories in anticipation of expansion possibilities, which would offset the effects of trade credit. However, the association between overall sales and working capital may be subject to endogeneity issues, as sales volumes stimulate working capital and affect sales growth (Hill et al., 2010). Similarly, Roy (2022) demonstrated that potential sales growth has a favorable impact on a corporation's cash conversion cycle and thus suggested that firms may increase their inventory levels in expectation of future overall sales.

- **H03 :** There is no relationship between growth opportunities (firm growth) and working capital efficiency.

- **H3 :** There is a positive relationship between growth opportunities (firm growth) and working capital efficiency.

Asset Tangibility

Prior studies show that investment in fixed assets negatively affects the efficiency of working capital (Baños-Caballero et al., 2010; Kieschnick et al., 2006; Singh & Kumar, 2017). They reasoned that, in the case of financial restrictions, increased expenditure on tangible fixed assets reduces the available funds for working capital. Consequently, SMEs must implement an active policy toward working capital. This result is consistent with Jaworski and Czerwonka (2022) and Yousaf et al. (2021), finding an inverse relationship between tangibility and the cash conversion cycle.

- **H04 :** There is no relationship between asset tangibility and working capital efficiency.

- **H4 :** There is a negative relationship between asset tangibility and working capital efficiency.

Leverage

The ratio of total debt to capital is financial leverage (Kieschnick et al., 2006). Due to the cost of debt element, leverage has a detrimental effect on a company's profitability (Mutua Mathuva, 2014). Moreover, Baños-Caballero et al. (2013) highlighted that firms with increased costs from external funding tend to have a short cash conversion cycle, as they will suffer greater interest expenses due to their borrowing. Consequently, the cost of investment in working capital would also increase. Small and medium-sized enterprises are frequently harmed by asymmetric information, which reduces the opportunities for acquiring debts. Since small and medium-sized enterprises (SMEs) have a more challenging time obtaining long-term loans than multinational corporations, they are compelled to maintain their expenditure on current assets as low as feasible; it has been reported that SMEs tend to support a low cash conversion cycle to minimize outflows of cash in the form of interest costs to reduce the cost of external borrowing. Thus, with the increased bulk of research levels, an effective WCM will assist these businesses in avoiding increased capital needs that trigger external funding (Moussa, 2019). The overwhelming research has discovered an inverse relationship between debt level and

working capital efficiency (Akinlo, 2012; Eldhose & Santhosh Kumar, 2019; Ur Rehman et al., 2017). Therefore, we anticipate a negative relationship between leverage and the cash conversion cycle. Firms with high external financing have trouble obtaining the funds necessary for day-to-day operations, leaving borrowings as their only option for meeting their requirements.

- **H05 :** There is no relationship between leverage (debt level) and working capital efficiency (CCC).
- **H5 :** There is a negative relationship between leverage (debt level) and working capital efficiency (CCC).

Cash Conversion Cycle (CCC)

Several researchers have investigated the cash conversion cycle as a metric for quantifying working capital efficiency (Abbadi & Abbadi, 2013; Baños-Caballero et al., 2013; Chauhan & Banerjee, 2018; Moussa, 2019). The cash conversion cycle gauges the period between cash inflow from finished goods sales and cash outflow for inventory purchases. A longer cash conversion cycle (CCC) improves the enterprise's earnings by giving customers more time to pay off their debts, giving them time, and increasing sales. In addition, this assists businesses in gaining customers over their competitors (Krishna Kumar et al., 2018), thereby developing a further beneficial relationship between a firm's profitability and cash conversion cycle (Sharma et al., 2020). However, depending on the situation, a negative association can also be observed between firm performance and the cash conversion cycle (Hill et al., 2010; Mutua Mathuva, 2014; Singh & Kumar, 2017). If the cash conversion cycle is reduced, there will be less demand for cash, which will lessen the need for external borrowing. This reduces the cost of financing (Baños-Caballero et al., 2010). In contrast, according to Aktas et al. (2015), the potential of both a negative and positive association demonstrates the presence of a set-off or trade-off, indicating a nonlinear relationship between the cash conversion cycle and the profitability of SMEs.

- **H06 :** There is no relationship between the cash conversion cycle (CCC) and endogenous variables.
- **Ha6 :** There is a bidirectional relationship between the cash conversion cycle (CCC) and endogenous variables.

Human Capital

Human capital is important for measuring firm performance. Two firms having the same economic resources may differ in terms of social resources. Firms that invest more in their human resources get sustainable benefits over the future. Very few studies (Seth et al., 2020) have explored the effect of human capital as the determinant of working capital. Still, it has been proved from the literature as one of the most crucial dimensions for differentiation among competing firms. In this study, we have taken training and development expenses as the proxy of firm performance and assume that human capital significantly affects the efficiency of working capital. There is a need for measuring human capital and firm efficiency, especially in MSMEs in Rajasthan, given limited physical and economic resources.

- **H07 :** There is no relationship between human capital (measured by training and development expenses) and working capital efficiency (measured by CCE and CCC).
- **H7 :** There is a relationship between human capital (measured by training and development expenses) and working capital efficiency (measured by CCE and CCC), which can either be positive or negative.

Cash Conversion Efficiency (CCE)

Very few researchers have also considered cash conversion efficiency as the measures of the efficiency of the firm. Cash conversion efficiency is the average net cash flow from operations to sales (Filbeck et al., 2017), which means it measures operating activities' effectiveness in total sales. Prior studies have also considered cash conversion efficiency moderators for short-term financial decisions. The study of Kindermann et al. (2022), Salawu and Alao (2014), Sharma et al. (2020), and Joshi (2021) also used cash conversion efficiency as the proxy for WCME. Accordingly, Yousaf et al. (2021) used it as the representation of WCE. Furthermore, Seth et al. (2020) used it in one of the models out of three models developed to measure working capital effectiveness among Indian firms.

↳ **H08 :** There is no relationship between cash conversion efficiency (CCE) and the exogenous variables.

↳ **H8 :** There is a bi-directional relationship between cash conversion efficiency (CCE) and the exogenous variables.

Data and Methodology

The sample consists of 147 micro, small, and medium manufacturing enterprises in Rajasthan, of which 16 are micro-enterprises, and 69 and 62 are small and medium enterprises, respectively. The sample comprises industries: industrial, chemical, energy, consumables, real estate, discretionary, etc. The data were collected from Prowess IQ, a fetching data tool from the CMIE prowess database. Initially, we fetched results for 229 companies in Rajasthan. Still, due to the non-availability of data in some variables, we excluded 82 companies from our data set. Finally, we derived a sample of 147 enterprises with 1,470 observations for 10 years. The data were collected for 10 years (2012–2021) to address the issue of skewness in the data set.

Interpretation of Variables

Cash conversion cycle and cash conversion efficiency are the significant model terms used to measure the working capital efficiency of India MSME's manufacturing enterprises. The cash conversion cycle (CCC) is computed by summing up closing inventory and accounts receivables (AR) and deducting accounts payables (AP) from the sum (Moussa, 2019). Cash conversion efficiency is determined by dividing operating income by revenues (Filbeck et al., 2017). This study examines the connection amongst working capital management (WCM) efficiency and the firm's external factors. Age of the firm, denoted as the firm's life compared to the current year; tangibility, borrowing level indicated by leverage; firm size, denoted by the total assets of the firm; profitability, the firm's growth, characterized by the difference between the current and past year sales; salary expenses calculated as total expenses in the salary of employees; and asset turnover ratio is the ratio of total income to assets comprises the collection of the predictor factors.

Table 1 shows the variables used in this study. All explanatory variables in this study's equation are subjected to the redundancy test to determine their reliability. The redundancy test findings demonstrated that all explanatory factors are statistically meaningful and must be incorporated into the formula. Table 1 also shows the outcomes of tests for the multicollinearity of causal variables. Variance inflation factor (VIF) assesses multicollinearity (Habib & Kayani, 2022). The fact that the VIF test results are less than 2 suggests that there is no significant correlation between the independent variables (Habib & Mourad, 2022) and that multicollinearity does not exist. Additionally, the results of the test for heteroskedasticity in both models show that the data is homoskedastic as the *p*-value is more than 0.05.

Table 1. ***Variables and the Corresponding Variance Inflation Factor***

Variables	Source	VIF
Salary *(Sal)*	Kieschnick et al. (2006)	1.165
Firm Size *(Fsiz)*	Naser et al. (2013)	1.914
Human Capital *(Hcap)*	Sapra & Jain (2019)	1.33
Profitability *(Prof)*	Habib & Huang (2018)	1.213
Leverage *(Lever)*	Moussa (2019)	1.055
Tangibility *(Tang)*	Panda (2012)	1.048
Firm Age *(Age)*	Salehi (2012)	1.04
Asset Turnover Ratio *(ATR)*	Vaidya (2011)	1.026
Firm Growth *(FG)*	Naser et al. (2013)	1.01
Cash Conversion Cycle *(CCC)*	Ahmad et al. (2017)	_
Cash Conversion Efficiency *(CCE)*	Filbeck & Krueger (2005)	_

Table 2. ***Heteroskedasticity Test***

Source	chi^2	*df*	*p*
Heteroskedasticity	79.750	65	0.103
Skewness	6.460	10	0.775
Kurtosis	–1.20e+08	1	1.000
Total	–1.20e+08	76	1.000

Table 2 shows the results of White's test for homoskedasticity. The test yielded a chi-square statistic of 79.75 with 65 degrees of freedom, resulting in a *p*-value of 0.1030. As the *p*-value exceeds the significance level of 0.05, we fail to reject the null hypothesis of homoskedasticity. Therefore, there is no significant evidence of heteroskedasticity in the regression model according to White's test.

Analysis and Results

The descriptive statistical analysis of all the predictor factors analyzed in this study utilizing data from all companies is provided in Table 3. The findings of descriptive and inferential statistics reveal high variation in the

Table 3. ***Descriptive Statistics***

Variable	Obs	Mean	Std. Dev.	Min.	Max.
Leverage	1470	.413	.407	1.64	3.5
Tangibility	1470	.511	.208	.232	.972
Firm Size	1470	4.01	1.582	.095	9.737
Profitability	1470	0.315	59.918	–28	386
Human Capital	1470	–.043	1.717	–4.711	5.455
Salary	1470	1.829	1.747	–2.303	6.765

Asset Turnover Ratio	1470	2.806	4.861	–.006	103.167
Firm Age	1470	4.111	.524	.693	4.344
Firm Growth	1470	9.662	41.606	–2.039	132

Table 4. ***Pairwise Correlation***

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Cash Conversion Cycle	1.000									
(2) Leverage	–0.346	1.000								
(3) Tangibility	0.433	0.144	1.000							
(4) Firm Size	–0.242	–0.143	0.117	1.000						
(5) Profitability	–0.287	–0.317	–0.363	–0.010	1.000					
(6) Human Capital	–0.266	–0.522	0.528	0.366	0.428	1.000				
(7) Salary	–0.143	–0.464	0.335	0.670	0.250	0.493	1.000			
(8) Firm Age	–0.239	0.348	–0.451	–0.257	0.143	0.217	0.583	1.000		
(9) Asset Turnover Ratio	0.431	0.226	–0.123	–0.374	0.349	–0.259	–0.346	0.458	1.000	
(10) Firm Growth	0.461	0.476	0.118	–0.129	0.231	–0.312	–0.149	0.239	–0.235	1.000

Table 5. ***Hausman (1978) Specification Test***

	Coef.
Chi-square test value	48.278
p-value	0.00

data that require further analysis. The pairwise correlation is shown in Table 4. The correlational analysis illustrates the association between all the variables employed in this study. It is a potent instrument for summarizing data and discovering the model's correlation coefficients for predictor factors. Table 5 shows the results of the Hausman test, where we found that the *p*-value is less than 0.05, rejecting the null hypothesis and using the fixed effect model for estimation.

Tables 6 and 7 illustrate the corrected *R*-squared values for MSME's sector as a whole, as determined using linear regression with pooled data fixed effect analysis for both cash conversion cycle (CCC) and cash conversion efficiency (CCE). By observing Table 6 and Table 7, it can be noticed that the *r*-square for the MSME's sectoral data is substantial, indicating that the prediction models adopted in this research have significant explanatory power. We also found most of the variables, including leverage, firm size, firm growth, tangibility, and human capital, to be significant at a 5% significance level. In contrast, the profitability and asset turnover ratio is significant at 1% and 10% levels with model 1 represented in Table 6, which implies that tangibility, leverage, firm size, profitability, expenses in human capital, ATR, and firm growth affect the cash conversion cycle in both positive and negative ways. The salary and age of the firm are not significant from the results shown in the table.

Leverage and cash conversion cycle have a negative association; so, we can infer that an increase in the firm's debt level will reduce the working capital's efficiency. This finding is supported by previous research (Seth et al., 2020). This can be supported by the fact that debt level enhances the burden by reducing the firm

Table 6. ***Regression Results for CCC***

CCC	Coef.	St. Err.	*t*-value	*p*-value	[95% Conf.	Interval]	Sig
Leverage	–1460.519	634.994	–2.30	.022	–2706.117	–214.92	**
Tangibility	1421.125	637.989	2.23	.013	–1007.303	3849.554	**
Firm Size	–410.952	220.017	–1.87	.030	–822.535	40.632	**
Profitability	22.43	4.626	4.85	0	13.356	31.503	***
Human Capital	–275.556	168.935	–1.63	.05	–356.937	305.826	**
Salary	235.498	211.941	1.11	.267	–180.244	651.24	
Asset Turnover Ratio	78.294	52.434	1.49	.068	–28.56	177.147	*
Firm Age	–202.378	489.279	–0.41	.679	–1162.145	757.388	
Firm Growth	.942	.536	1.76	.040	–.91	1.194	**
Constant	1489.293	2014.538	0.74	.46	–2462.407	5440.994	
Mean dependent var		–749.712	*SD* dependent var			1100.589	
Overall *r*-squared		0.815	Number of obs			1470	
Chi-square		21.656	Prob > chi^2			0.010	
R-squared within		0.785	*R*-squared between			0.742	

Note. *** $p < .01$, ** $p < .05$, * $p < .1$.

liquidity as businesses have to make the timely payment of interest which reduces the cash and bank reserves from the business.

Tangibility, as denoted by the portion of fixed assets in the overall assets, is positively significant with the cash conversion cycle. Fixed assets' proportion in the firm size is negatively significant with the cash conversion cycle. From this, we can infer that as the size of the firm increases, it is tough to manage the overall assets as they have varieties of tasks to be performed. In contrast, small firms have limited operational work, and hence, they can utilize their assets in a more effective way which will indirectly lead to efficient working capital. This view is also supported by prior research (Chauhan & Banerjee, 2018; Kasozi, 2017).

The profitability of the firm affects the cash conversion cycle in a positive way. One way for the firm to be profitable is that its income should be more than its expenses. In the case of the MSME sectors, firms have limited resources, and very few sources of financing, and their growth depends more upon the company's profitability. Furthermore, most affairs are managed by short-term funding; hence, the firm needs to reduce the receivable and inventory period to generate more revenues in said period of time, which in turn enhances the intensity of profitability in the firm. The study (Enqvist et al., 2014) found a negative association between the cash conversion cycle and the firm's profitability. Human capital is negatively correlated with the efficiency of the cash conversion cycle, as the MSMEs are resource constraint firms that cannot invest more in training and development expenses of the employees when compared with the large firms. If a firm invests more in training and has less working capital, it will negatively affect the cash conversion cycle of the firm. When compared to prior work (Kaur, 2021), the current research gives conflicting results. The asset turnover ratio is found to be positively significant at the 0.1 level, which suggests a linear relationship among ATR and the cash conversion cycle. The firm with a high ATR is more liquid and is able to use more external financing to enhance the firm's short-term efficiency. Also, they can avail of longer credit lines from their vendors due to better ATR.

The growth of the firm positively affects the cash conversion cycle. Growing firms always feel positive about the affairs of the business. They can make more purchases in credit and avail deferral payment conditions from their suppliers, which enhances the WCME. This is also supported by previous studies (Seth et al., 2020).

Table 7. ***Regression Results for CCE Model***

CCE	Coef.	St. Err.	*t*-value	*p*-value	[95% Conf.	Interval]	Sig
Leverage	–.106	.399	–0.27	.79	–.889	.677	
Tangibility	.045	.003	17.08	0	.04	.051	***
Firm Size	.648	.079	0.83	.045	–2.174	.878	**
Profitability	.25	.138	1.81	.071	–.021	.521	*
Human Capital	–.038	.106	–0.35	.724	–.246	.171	
Salary	–.006	.033	–0.17	.866	–.07	.059	
Asset Turnover Ratio	–.139	.133	–1.04	.296	–.4	.122	
Firm Age	.656	.308	2.14	.032	–.539	.667	**
Firm Growth	.546	.065	–0.05	.963	–.001	.001	
Constant	–.901	1.267	–0.71	.477	–3.384	1.583	
Mean Dependent Var		0.103	*SD* dependent var			6.636	
Overall *r*-squared		0.769	Number of obs			1470	
Chi-square		297.951	Prob > chi^2			0.000	
R-squared within		0.714	*R*-squared between			0.762	

Note. *** $p < .01$, ** $p < .05$, * $p < .1$.

Table 7 illustrates the regression results of pooled data by applying a fixed effect model. In the table, cash conversion efficiency is observed as a dependent variable. In contrast, leverage, tangibility, firm size, profitability, human capital, salary, asset turnover ratio, firm age, and firm growth are taken as independent variables. We find firm age, firm size, tangibility, and profitability are significant at varying levels. Tangibility does positively affect the cash conversion efficiency. The reason can be heavy investment in fixed assets will lead to following an aggressive policy trend in working capital. Moreover, firms will rely less on current assets for future development projects. This leads to efficient management of short-term capital.

Moreover, firm size also has a positive effect with the second model of working capital efficiency (i.e., CCE). Abundant investment in fixed assets leads to lesser amounts of the remaining portion in assets. This, in turn, will

Table 8. ***Hypotheses Results***

Hypothesis Type	Hypotheses	Results	Relationship
Null	**H01 :** The size of the firm does not affect working capital efficiency (measured by CCE and CCC).	Rejected	Negative relationship at a 5% level of
Alternate	**H1 :** The size of the firm affects working capital efficiency (measured by CCE and CCC).	Partly Accepted	significance with CCC.
Null	**H02 :** The age of a company does not affect its working capital efficiency (measured by CCE and CCC).	Rejected	Positive relationship at a 5% level of
Alternate	**H2 :** The age of a company affects its working capital efficiency (measured by CCE and CCC).	Partly Accepted	significance with CCE.
Null	**H03 :** There is no relationship between growth opportunities (firm growth) and working capital efficiency (measured by CCE and CCC).	Rejected	Positive relationship at a 5% level of

Alternate	**H3 :** There is a positive relationship between growth opportunities (firm growth) and working capital efficiency (measured by CCE and CCC).	Partly Accepted	significance with CCC.
Null	**H04 :** There is no relationship between asset tangibility and working capital efficiency (measured by CCE and CCC).	Rejected	Positive relationship at 5% and 1% significance levels with CCC and CCE, respectively.
Alternate	**H4 :** There is a negative relationship between asset tangibility and working capital efficiency measured by CCE and CCC).	Fully Accepted	
Null	**H05 :** There is no relationship between leverage (debt level) and working capital efficiency (measured by CCE and CCC).	Rejected	Negative relationship at a 5% level of significance with CCC.
Alternate	**H5 :** There is a negative relationship between leverage (debt level) and working capital efficiency (measured by CCE and CCC).	Partly Accepted	
Null	**H06 :** There is no relationship between the cash conversion cycle (CCC) and exogenous variables.	Rejected	Majority of the variables are accepted at 1%, 5%, and 10% levels of significance with CCC.
Alternate	**H6 :** There is a bidirectional relationship between the cash conversion cycle (CCC) and exogenous variables.	Fully Accepted	
Null	**H07 :** There is no relationship between human capital (measured by training and development expenses) and working capital efficiency (measured by CCE and CCC).	Rejected	Negative relationship at a 5% level of significance with CCC.
Alternate	**H7 :** There is a relationship between human capital (measured by training and development expenses) and working capital efficiency (measured by CCE and CCC), which can be positive or negative.	Partly Accepted	
Null	**H08 :** There is no relationship between CCE and the exogenous variables.	Rejected	Few variables were accepted at different levels of significance with CCE.
Alternate	**H8 :** There is a bi-directional relationship between CCE and the exogenous variables.	Partly Accepted	

result in following a conservative approach for financing in a short span, thereby enhancing the efficiency of day-to-day capital requirements (short-term capital).

Profitability also significantly affects the working capital. Small businesses are less dependent on external financing; hence, their primary sources remain the owner contributions and leftover profit. Firm age also affects working capital efficiency (WCE). Newer and smaller firms are primarily dependent upon unsolicited sources of finance, mainly venture capitalists, owners' contributions, and retained earnings (Rao et al., 2023). This has tremendous pressure on them to use the funds with them cautiously. In contrast, more prominent firms have the liberty of using varieties of funds as they are mature enough and thus have access to both formal and informal sources. The hypotheses testing results are depicted in Table 8.

Conclusion

From the above discussion, we identify the determinants that affect MSMEs' working capital in Rajasthan. We used two models for the same by taking various exogenous variables. In the first model, where the cash conversion cycle is the dependent variable, we find that tangibility, profitability, asset turnover ratio, and firm growth are found to be positively contributing to the cash conversion cycle; whereas, leverage, firm size, and human capital are negatively related with the cash conversion cycle. Few variables like firms' age and salary are insignificant with the cash conversion cycle. In the second model, we have only four significant variables, that is, tangibility,

firm size, profitability, and asset turnover ratio contributing both ways to the cash conversion efficiency. Additionally, firm growth, firm age, salary, human capital, and leverage are insignificant with the CCE.

The findings from the study provide insights into the determining factors for working capital management in Rajasthan MSMEs; hence, it will add to the literature on the working capital efficiency management of small businesses. The study provides an understanding for practitioners and decision-makers to make better decisions and formulate concrete plans. The study is vital for effectively analyzing the core factors affecting the day-to-day requirements of firms (working capital) and effectively managing them. The study can also help the MSMEs' owners and top executives enhance the firms' productivity by inculcating the above findings.

Implications

Managerial Implications

The findings of this research have several managerial implications for practitioners in the MSME manufacturing sector in Rajasthan. Firstly, understanding the factors that influence working capital management efficiency (WCE) can assist managers in making informed decisions regarding resource allocation and strategy implementation. Managers can improve their working capital management practices and optimize liquidity by focusing on variables such as leverage, tangibility, firm size, profitability, human capital, asset turnover ratio, and firm growth. They can allocate resources more effectively and develop strategies that address the specific needs of their organizations.

Secondly, the insignificant impact of firm age and salary expenses on WCE suggests that managers should not solely rely on these factors when formulating working capital management strategies. Instead, they should emphasize the variables identified as significant in the study. By prioritizing these factors, managers can enhance their working capital management practices and improve overall financial performance.

Thirdly, the research highlights the importance of reducing the cash conversion cycle (CCC) and enhancing cash conversion efficiency (CCE) to improve liquidity and profitability. Managers should implement measures that reduce the time between cash outflows for inventory purchases and cash inflows from finished goods sales. Managers can reduce borrowing costs, improve liquidity, and increase profitability by optimizing the CCC and CCE.

Practical Implications

The practical implications of this research are relevant for various stakeholders involved in the micro, small, and medium enterprise (MSME) manufacturing sector in Rajasthan. Firstly, policymakers can utilize the findings to develop targeted policies that address MSMEs' specific working capital management needs. These policies can focus on improving access to funding, providing support for training and development programs, and facilitating collaborations between MSMEs and financial institutions. Policymakers can also consider introducing measures that incentivize efficient working capital management practices and reward organizations that demonstrate improved liquidity.

Secondly, financial institutions can leverage the insights from this research to assess MSMEs' working capital management practices better when considering loan applications. By incorporating the factors identified in the study into their evaluation criteria, financial institutions can better evaluate the creditworthiness of MSMEs and tailor their financial products and services to meet these organizations' specific working capital requirements. This can help bridge the financing gap and provide MSMEs with the necessary resources to enhance their working capital efficiency.

Lastly, business owners and managers of MSMEs in the manufacturing sector in Rajasthan can use the research findings as a benchmark for their working capital management practices. By comparing their current methods against the factors identified as significant, they can identify areas for improvement and develop strategies to enhance working capital efficiency. This may include implementing efficient inventory management systems, improving receivables and payables processes, investing in human capital development, and leveraging technology to streamline working capital operations.

Limitations of the Study and Future Research Directions

Despite the valuable insights and implications this research provides, it is essential to acknowledge certain limitations that should be considered when interpreting the findings. Firstly, the study focuses on the micro, small, and medium enterprise (MSME) manufacturing sector in Rajasthan, which may limit the generalizability of the results to other industries or regions. The specific characteristics and dynamics of the manufacturing sector in Rajasthan might influence the relationships between the variables differently compared to other industries or areas. Therefore, caution should be exercised when applying the findings to different contexts.

Secondly, the research employed panel regression methodologies on 147 MSMEs from 2012–2021. While this approach allows for a comprehensive analysis of the factors influencing working capital management efficiency (WCE), the results are still subject to potential selection bias and sample size limitations. It is essential to recognize that the findings might not capture the full diversity of the MSME manufacturing sector in Rajasthan.

Furthermore, the research relied on secondary data sources for the investigated variables. While efforts were made to ensure the accuracy and reliability of the data, there may be limitations and potential measurement errors inherent in the data sources. Researchers should consider using primary data collection methods or alternative data sources to validate the results further.

Lastly, the study focused on two efficiency metrics, namely the cash conversion cycle (CCC) and cash conversion efficiency (CCE), as measures of WCE. While these metrics provide valuable insights into the effectiveness of working capital management practices, they do not comprehensively capture all WCE aspects. Future research could consider incorporating additional measures or exploring alternative approaches to assessing WCE in order to provide a more holistic understanding of working capital management in MSMEs.

Despite these limitations, the research contributes to the existing literature on working capital management in MSMEs and provides valuable insights for practitioners and policymakers. It sets a foundation for further research in this area, encouraging scholars to explore additional factors, methodologies, and contexts to deepen our understanding of working capital management efficiency and its implications for MSMEs.

Authors' Contribution

Saurabh Chadha : Conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, writing – review & editing.

Deepak Kumar Tripathi : Conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, writing – review & editing.

Ankita Tripathi : Conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, writing – review & editing.

Conflict of Interest

The authors certify that they have 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.

Funding Acknowledgement

This research is part of the funding project of ICSSR sponsored Research project (Ref No. 02/11676/GN/ 2021-22/ICSSR/RP/MJ) entitled "Determining Short Term Financing for Make in India Initiative: A Case Study of Small and Medium Enterprises in Rajasthan" of Dr. Saurabh Chadha, Department of Management, Birla Institute of Technology and Science Pilani, Rajasthan.

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