

Does Working Capital Management Play a role in fostering Financial Growth of Business Enterprises?

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Abstract:

This study investigates the efficiency of working capital management (WCM) and its role in fostering financial growth in the Indian textile industry. Moving beyond conventional ratio analysis, the study employs the Bhattacharya Index Method to evaluate WCM efficiency through the Performance Index (PI), Utilization Index (UI), and Efficiency Index (EI). Using a balanced panel dataset of 78 textile firms listed in the BSE 500 over 12 years (2008–09 to 2019–20), the study applies descriptive statistics and non-parametric techniques to ensure robustness. The results indicate that the industry demonstrates overall efficiency (mean EI = 2.11), though significant disparities exist across firms. Normality tests confirm non-normal distribution, necessitating the use of the Friedman test, which reveals statistically significant temporal variations in efficiency. The findings highlight a structural “Performance–Utilization Gap,” suggesting that while firms excel in generating sales, inefficiencies persist in asset utilization. The study contributes to the literature by offering a refined methodological framework and provides implications for managers and policymakers to enhance financial sustainability.

Keywords: Working Capital Management, Performance Index (PI), Utilization Index (UI), Efficiency Index (EI), Textile Industry, Firm Performance.

1. INTRODUCTION

Working capital management (WCM) represents a critical dimension of corporate financial strategy, governing the balance between liquidity and profitability in firm operations. As firms operate within increasingly volatile and competitive environments, the efficient allocation and utilization of short-term assets—such as cash, receivables, and inventories—becomes essential for sustaining operational continuity and enhancing firm value. Theoretically, WCM is anchored in the liquidity–profitability trade-off, where excessive investment in current assets may safeguard solvency but depress returns, while insufficient investment may enhance profitability at the cost of liquidity risk. In emerging economies, the significance of WCM is particularly pronounced in sectors characterized by high operational intensity and extended production cycles. The Indian textile industry exemplifies such a context, given its substantial contribution to industrial output, employment generation, and export earnings. Despite its economic importance, the sector is structurally constrained by issues related to inventory accumulation, delayed receivables, and fluctuating input costs, all of which intensify the complexity of working capital decisions. These characteristics necessitate a more nuanced and dynamic assessment of WCM efficiency.

Existing empirical literature has predominantly relied on traditional ratio-based measures—such as the current ratio and cash conversion cycle—to evaluate working capital performance. While informative, these measures often provide fragmented insights and fail to capture the multidimensional nature of efficiency. In response to these limitations, Bhattacharya (1997) proposed an index-based framework that integrates performance and utilization dimensions into a composite measure of working capital efficiency.

However, the application of such index-based approaches remains limited, particularly in the context of the Indian textile industry and within longitudinal analytical frameworks. Moreover, few studies have incorporated robust statistical validation techniques to examine temporal variations in efficiency under non-normal data conditions.

Against this backdrop, the present study aims to evaluate the efficiency of working capital management in the Indian textile industry using the Bhattacharya Index Method. Specifically, it examines the performance, utilization, and overall efficiency of working capital across firms over twelve years. Furthermore, the study investigates whether temporal variations in efficiency are statistically significant using non-parametric techniques, thereby providing a more robust understanding of the role of WCM in fostering financial growth.

2. LITERATURE REVIEW

A significant amount of financial research addresses the management of working capital. This topic has been extensively investigated from both theoretical and empirical angles. The majority of research concerning working capital management focuses on its impact on profitability.

Vishnani and Shah (2007) examined how working capital management policies influence the profitability of the consumer electronics industry in India. The analysis is conducted using secondary data obtained from the Prowess database provided by CMIE. A sample of 23 listed companies of the Indian consumer electronics industry during the time period ranging from 1994–95 to 2004–05 i.e. 10 years has been considered. The research methodology used in this paper is simple regression analysis and simple correlation analysis and statistical tests like p-values and t-stat values are used. The result shows that a company's inventory management policy, debtors' management policy and creditors' management policy have played a major role in its profitability performance. The concerned managers have given due attention towards policy formulation in this regard as well as implementation of such working capital policies.

Falope and Ajilore (2009) assessed the relationship between working capital management and profitability performance for a panel comprising a selection of non-financial firms listed on the Nigerian stock exchange. This study is based on secondary data and data are collected from the FACTBOOK, the annual publications of the Nigerian Stock Exchange. A sample of 50 out of the 100 listed non-financial firms was selected as a sample for this research that covers a time frame of 10 years, from 1996 to 2005. The research utilized panel data econometrics in a pooled regression analysis, combining time series and cross-sectional observations for estimation. The results demonstrate a significant inverse relationship between net operating profitability and key variables such as the average collection period, inventory turnover in days, average payment period, and cash conversion cycle. Moreover, the study found no significant differences in the effects of working capital management across large and small firms.

Raheman et al. (2010) explored the impact of working capital management on the performance of firms in Pakistan. The sample consisted of 204 manufacturing firms selected from the Karachi Stock Exchange, covering a period of ten years from 1998 to 2007. A panel data methodology was applied to evaluate the impact of working capital management on the performance of the manufacturing sector. The findings revealed that proficient working capital management has a significant positive influence on the profitability of firms and plays a crucial role in creating value for shareholders. However, it was observed that a prolonged Cash Conversion Cycle (CCC) and Net Trade Cycle (NTC) negatively impact a firm's Net Operating Profitability.

Bieniasz and Golaś (2011) carried out a study that looked at the impact of effective working capital management on the food industry in Poland and a few other Eurozone nations. Two data sources provided the information used in the study. The European Central Bank disclosed aggregated financial accounts

pertaining to the food sector businesses of the European Union of specific Eurozone nations in the first source, and the Polish Central Statistical Office provided unpublished materials from 2005 to 2009. Descriptive statistics, regression analysis, correlation analysis, and other techniques were used to analyze and interpret the data that was gathered. The study found that comparatively greater rates of profitability were achieved in the food industry sectors with the shortest working capital cycles.

Afza and Nazir (2011) emphasized the significance of effective working capital management by analyzing the efficiency of working capital management within the cement sector in Pakistan from 1988 to 2008. The study applied the Bhattacharya (1997) efficiency indicator, which consists of three parts: the performance index, the utilization index, and the efficiency index of working capital management. The results revealed that the industry demonstrated commendable efficiency performance throughout the examined timeframe.

Kaur and Singh (2013) investigated the working capital management efficiency by using Index method during the period of 2000-2010. The study used a sample of 14 firms operating in capital goods sector in India. The investigation revealed that the firms under discussion managed their working capital efficiently and utilized from their current assets in generating sales.

Marie and Azhagaiah (2016) aimed to evaluate the efficiency levels of working capital management among 15 listed firms in the Indian fast-moving consumer goods sector. They employed the Index method to evaluate the efficiency levels of working capital management from 2003 to 2015. The results revealed that the working capital management practices of these firms were commendable, as the average sector efficiency index was greater than 1 for 9 of the 12 years examined.

Kandil Goker (2019) conducted a study to analyze the changes in working capital management efficiency for a sample of 19 firms that have been part of the Borsa Istanbul Sustainability Index since 2015. The study aimed to assess the efficiency before and after their inclusion in the sustainability index and to ascertain whether the observed mathematical differences were statistically significant. The results obtained through the Index method revealed a reduction in working capital efficiency among the firms after they joined the sustainability index.

Despite the extensive body of literature examining the relationship between working capital management (WCM) and firm performance, the present study adopts a multidimensional and longitudinal approach by employing the Bhattacharya Index Method to evaluate performance, utilization, and overall efficiency of working capital in the Indian textile industry. Furthermore, it incorporates non-parametric statistical techniques to capture temporal variations, thereby providing a more comprehensive and robust understanding of the role of WCM in fostering financial growth.

3. RESEARCH METHODOLOGY

This study examines the efficiency of working capital management practices of the selected firms in Textile industry using the index method developed by Bhattacharya (1997). 78 textile companies has been selected on the basis of availability of data from BSE 500 list of companies as a sample for conducting the study. The data used for the study are secondary in nature and the proposed study will be covered for a period of 12 years from 2008-2009 to 2019-2020.

The present study applies Bhattacharya's efficiency method to evaluate and measure the effectiveness of working capital management. Bhattacharya's efficiency method is known as total efficiency index method that was develop from the performance index, and utilization index. The total efficiency index is obtained by multiplying the performance index with the utility index.

The following theoretical construct articulates the complete analysis undertaken to elucidate the functions of the Index.

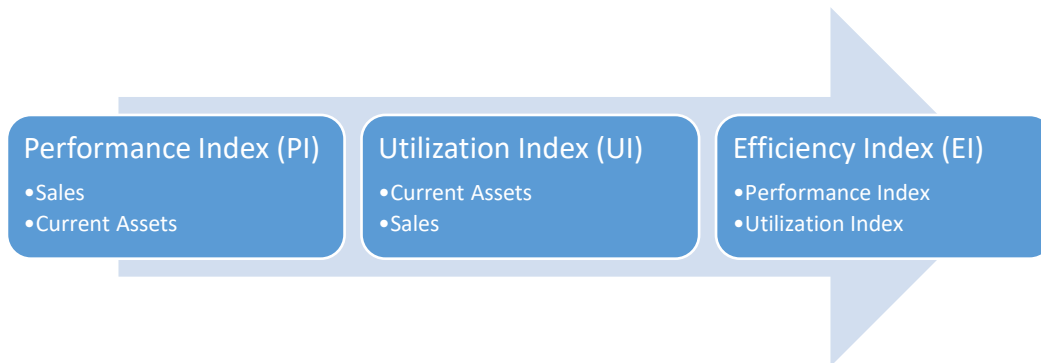


Figure.1: Research Model

The performance index (PI) and utilization index (UI) are calculated based on the company's current assets and sales figures. The combination of these two indices results in the Efficiency Index (EI).

1.
$$PI = \frac{I_s \sum_{i=1}^n \frac{W_i (t-1)}{W_i}}{N}$$
 [The performance index of working capital (PI)]
2.
$$UI = \frac{A_{t-1}}{A_t}$$
 [The utilization index (UI) for working capital utilization]
3.
$$EI = PI \times UI$$
 [The overall efficiency index (EI) for working capital]

Where,

I_s = Sales index define as = S_t / S_{t-1} (sales in the current period by sales in the previous period)

W_t = It is the different elements of the current assets of the “i” company in the year “t”

N = Number of current assets

A = Current assets / Sales

To ensure the scientific rigor of the results, a multi-stage validation framework was executed using SPSS. Initially, the dataset was subjected to descriptive analysis (Mean, SD, and CV) and formal tests of normality. The Kolmogorov-Smirnov and Shapiro-Wilk tests yielded significance values of $p < 0.05$ for the Performance Index (PI), Utilization Index (UI), and Efficiency Index (EI), confirming a non-normal distribution. Consequently, the study moved beyond traditional One-Way ANOVA. To account for the non-parametric nature and the related-samples design of the 12-year longitudinal panel (78 firms), the Friedman Test was employed to determine the significance of temporal fluctuations.

The test evaluates whether there are statistically significant differences in working capital efficiency across the study period.

Hypotheses:

H₀: There is no statistically significant difference in the mean ranks of management efficiency across the study period.

H₁: There is a statistically significant difference in management efficiency over time, indicating the impact of macroeconomic shifts.

Component	Description
1. Research Design	Empirical, Longitudinal, and Descriptive study.
2. Study Period	12 Years (2008-09 to 2019-20).
3. Sample Size	78 Textile companies listed on BSE 500.
4. Data Source	Secondary data from Capitaline Plus Database.
5. Core Methodology	Bhattacharya (2014) Index Method: Performance Index (PI), Utilization Index (UI), and Efficiency Index (EI).
6. Normality Testing	Shapiro-Wilk & Kolmogorov-Smirnov (Confirmed non-normal distribution, $p < 0.05$).
7. Validation Test	Friedman Test (Non-parametric test for related samples to verify temporal significance).
8. Software Used	IBM SPSS (Version 25.0) & MS Excel.

4. DISCUSSION AND RESULTS

4.1. Performance Index (PI) of working capital management

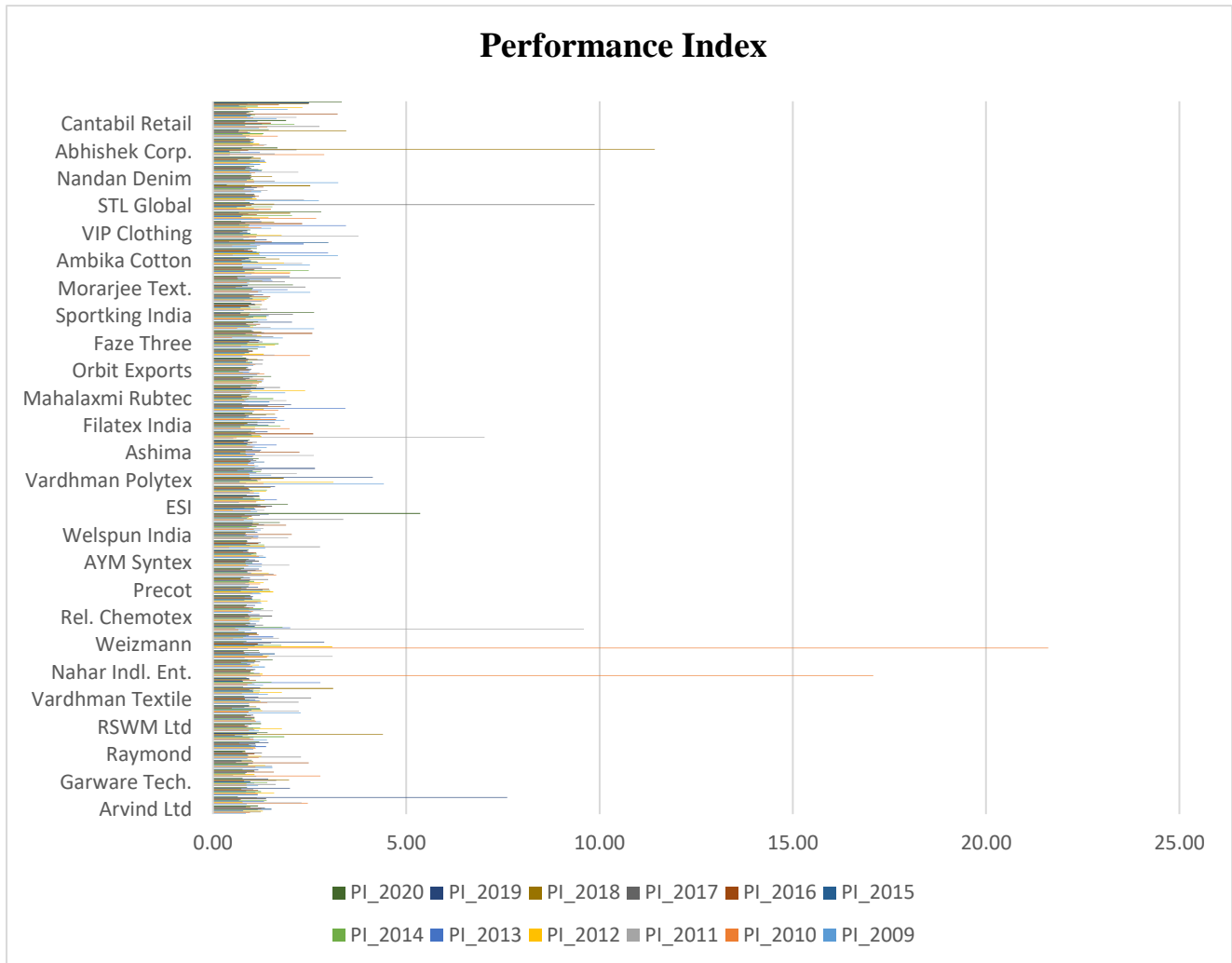
The performance index (PI) of working capital management serves as an indicator of the average performance of various current asset components. A company can be considered to have effectively managed its working capital if the increase in sales is greater than the increase in current assets during the specified study periods. Generally, a performance index higher than **1** suggests that the management of working capital is being executed properly.

$$PI = \frac{I_s \sum_{i=1}^n \frac{W_i (t-1)}{W_i}}{N}$$

Where,

I_s is the sales index (SI), calculated as S_t / S_{t-1} (sales in the current period by sales in the previous period),
 W is the individual group of current assets and

N is the number of current asset groups included in the analysis.

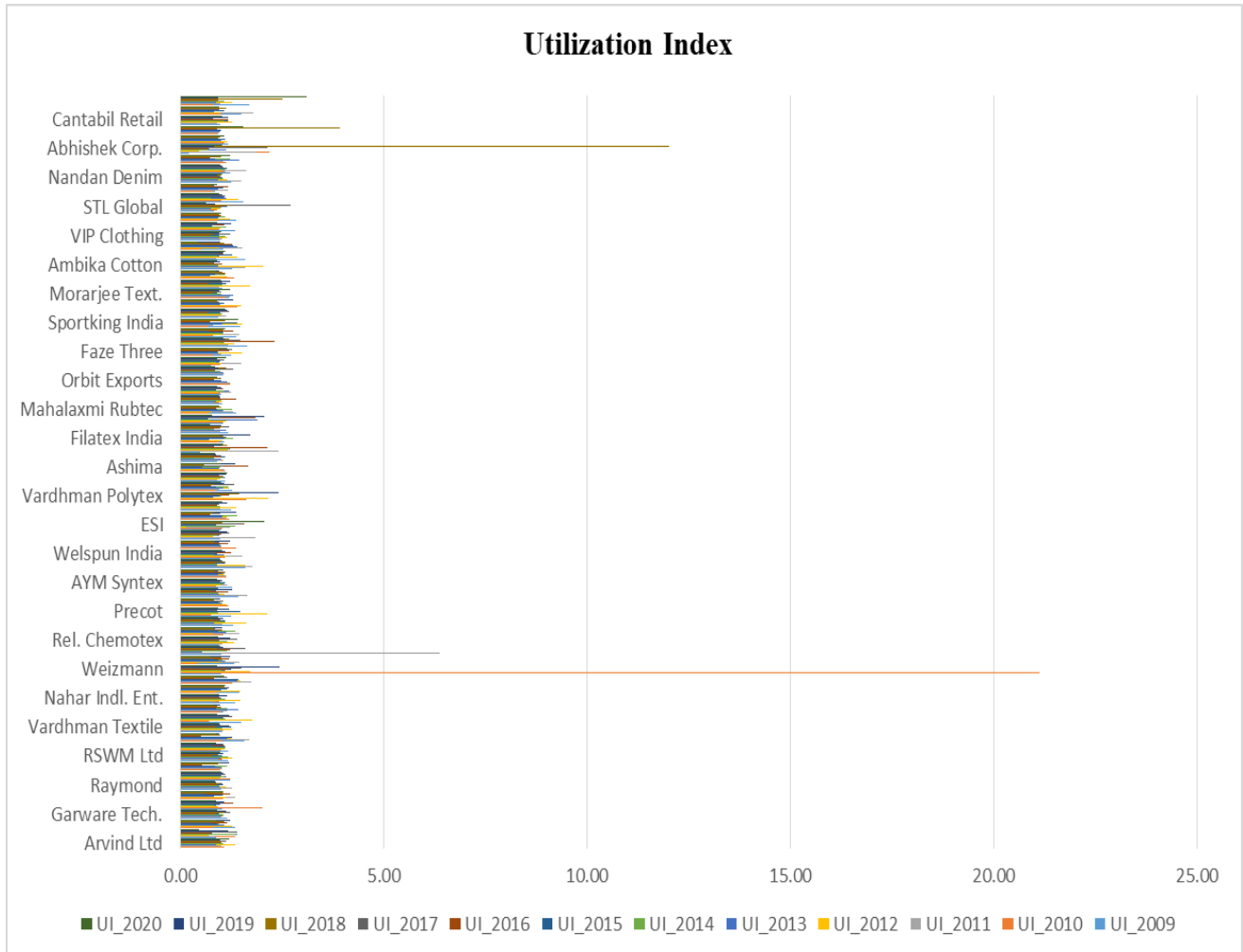


In this study, total current assets have been classified into four components, which are inventories, Sundry debtors, cash & bank, and loan & advances.

The **performance index** of the 78 textile companies in India selected for the research period from 2008-09 to 2019-20 is presented in the table above. The average performance index for all the selected textile companies in the industry is greater than 1 or close to one, with an average of 1.29. On a company-wise basis, the average ranges from 3.09 to 0.97. This suggests that all the selected textile companies are able to effectively manage their current assets, except for Orbit Exports Ltd., where Weizmann Ltd. has the highest Index of 3.09, followed by Nahar Indl. Ent. and Abhishek Corp. with an Index of 2.39 and 2.05, respectively, and Orbit Exports Ltd. has the lowest Index of 0.97.

4.2 Utilization Index (UI) of working capital management

Performance Index (PI) signifies the average performance level in the management of current assets. Utilization Index (UI) reveals the organization's ability to effectively use its current assets as a whole to generate sales. If the total current assets grow at a rate that exceeds the proportional



increase in sales, it signifies the degree of utilization of current assets will increase compared to sales. As a result, increasing the utilization degree will facilitate a reduction in the length of the activity cycle for companies. Thus, it is essential for the utilization index to be greater than 1.

$$UI = \frac{A_{t-1}}{A_t}$$

Where,

A_{t-1} = Previous current assets / Current sales

A_t = current assets / Current sales

The diagram displays the **Utilization Index** of 78 chosen textile companies in India during the research period spanning from 2008-09 to 2019-20. The majority of these textile companies in the industry exhibit an average utilization index exceeding 1 or close to 1, with an average of 1.08. However, exceptions include Bombay Dyeing, JBF Industries, T.T., Suryalak Cott., Aarvee Denims, Nagreeka Exports, Bhandari Hosiery, Orbit Exports, Mohit Industries, Lovable Lingerie, Vardhman Acrylic, and VIP Clothing, resulting in company-wise average ranges from 2.83 to 0.88. This suggests that the selected textile companies, with the exception of the aforementioned ones, are proficient in utilizing their current

assets collectively to drive sales. Weizmann Ltd. boasts the highest Index of 2.83, while Bombay Rayon exhibits the lowest Index of 0.88.

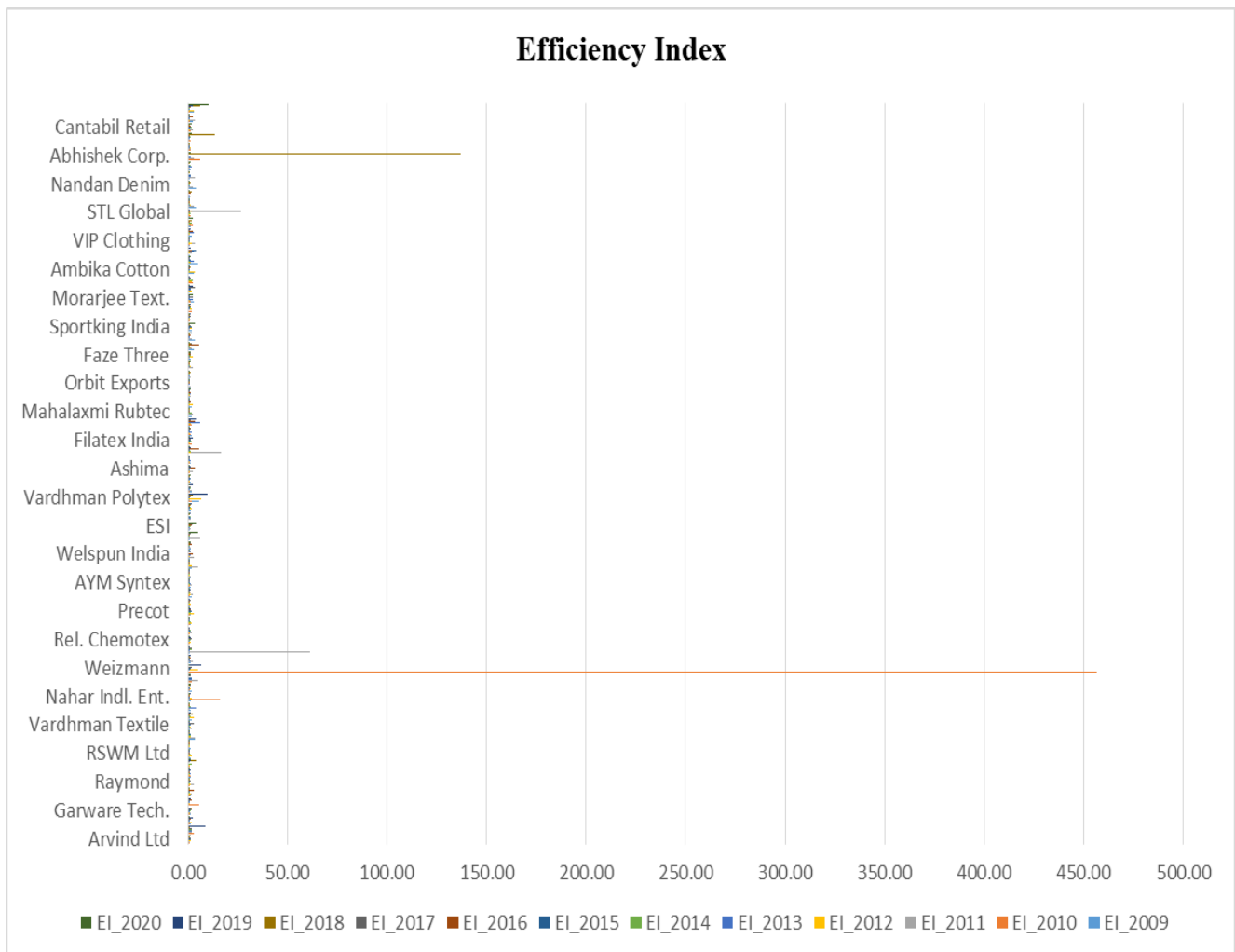
4.3 Efficiency Index (EI) of working capital management

The Efficiency Index (EI) is an indicator of the maximum efficiency level, originating from the performance and utilization indices. In the context of Working Capital Management, the Efficiency Index is determined by multiplying the Performance Index (PI) by the Utilization Index (UI), thereby offering a clear assessment of efficiency in this domain.

$$EI = PI \times UI$$

Where,

Efficiency Index = Performance Index (PI) of working capital management \times Utilization Index (UI) of working capital management



The above diagram displays the comprehensive **Efficiency Index** of 78 textile companies in India during the research period spanning from 2008-09 to 2019-20. The average efficiency index for each company ranges from 39.94 to 0.97, with a mean of 2.11. This suggests that the textile companies in India are generally effective in managing their Working Capital, with the exception of Weizmann, which has the highest Index of 39.94, followed by Abhishek Crop. with an Index of 13.03, and Orbit Export Ltd. with the lowest Index of 0.97.

4.4 Establishing Data Robustness (Normality Testing)

Before conducting inferential analysis, the distribution of the calculated indices (PI, UI, and EI) was examined. The normality of the distribution for PI, UI, and EI was assessed using the ‘Kolmogorov-Smirnov and Shapiro-Wilk tests’. As shown in Table-1, the p-values across all indices were found to be .000 ($p < 0.05$). This statistically confirms that the data follows a non-normal distribution, likely due to the inherent volatility and performance variance within the Indian textile sector.

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PI	.270	936	.000	.345	936	.000
UI	.281	936	.000	.221	936	.000
EI	.447	936	.000	.042	936	.000

a. Lilliefors Significance Correction

This non-normality reflects the inherent heterogeneity within the Indian textile industry, where firm-level disparities and extreme observations lead to skewed distributions. Such characteristics are typical of financial panel data, particularly in sectors marked by uneven operational efficiency. Consequently, the violation of normality assumptions necessitates the adoption of non-parametric techniques for longitudinal validation.

4.5 Descriptive Analysis of WCM Efficiency

The descriptive analysis provides the foundational evidence for the industry's working capital health. The descriptive analysis (Table-2) reveals that the Indian textile sector maintained a robust Performance Index (Mean = 1.286), indicating successful sales-generation efficiency. However, the Utilization Index (Mean = 1.082) remained lower, suggesting a need for tighter control over asset volume. Most notably, the observed Mean Efficiency Index (EI) of 2.10 indicates a robust management environment; however, the high standard deviation (15.71) reveals deep disparities in operational efficiency across the sampled firms.

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
PI	936	.0900	21.6100	1.286603	1.1615259	1.349
UI	936	.0400	21.1200	1.082927	.8235121	.678
EI	936	.0000	456.4700	2.108301	15.7129587	246.897
Valid N (listwise)	936					

This indicates that the industry is characterized by pronounced heterogeneity, where a small number of highly efficient firms disproportionately influence the aggregate performance, while a majority of firms operate at comparatively lower efficiency levels. Such inequality highlights the uneven adoption of effective working capital practices within the sector.

4.6 Validating Temporal Significance (Friedman Test)

To test the significance of efficiency fluctuations over the 12-year period, the Friedman Test was employed for related samples. The test revealed a statistically significant difference in management efficiency across

the study period. The test results yielded a Chi-square value of 52.093 with a significance level of $p < 0.05$, leading to the rejection of the null hypothesis. This statistically confirms that the fluctuations in working capital management efficiency in the Indian textile industry from 2008-09 to 2019-20 are not random but represent statistically significant temporal shifts.

N	936
Chi-Square	52.093
df	2
Asymp. Sig.	.000
a. Friedman Test	

This confirms that the firms' ability to generate sales (Performance) is statistically distinct from their ability to manage asset volume (Utilization). The high Chi-Square value underscores the 'Performance-Utilization Gap' identified in the descriptive statistics, suggesting that textile enterprises prioritize sales-driven efficiency over lean asset management. This implies that the financial growth of textile enterprises is not solely dependent on internal discipline but is significantly influenced by external macroeconomic cycles, necessitating a dynamic rather than static approach to working capital management.

The Friedman test Mean Ranks provide a clear hierarchy of efficiency dimensions. The **Performance Index (PI)** exhibited the highest mean rank of **2.10**, while the **Utilization Index (UI)** trailed significantly at **1.81**. This indicates that firms are relatively more proficient in generating sales compared to their ability to efficiently utilize current assets.

	Mean Rank
PI	2.10
UI	1.81
EI	2.09

The table-4 establishes a clear hierarchy of efficiency types within the Indian textile industry: Performance > Overall Efficiency > Utilization. The disparity between PI and UI reinforces the presence of a structural "Performance–Utilization Gap," suggesting that operational focus is skewed toward revenue expansion rather than asset optimization.

The combined statistical evidence provides a coherent picture of working capital management dynamics within the Indian textile industry. The non-normal distribution of efficiency indices reflects substantial heterogeneity and the presence of outliers, while the descriptive statistics confirm that overall efficiency is driven by a limited number of high-performing firms. Furthermore, the Friedman test establishes that these efficiency levels vary significantly over time, indicating sensitivity to external economic conditions. The mean rank analysis further reveals a structural imbalance between performance and utilization, highlighting that firms prioritize sales generation over efficient asset deployment. Collectively, these findings suggest that although the industry demonstrates aggregate efficiency, underlying structural inefficiencies persist, constraining the translation of operational performance into sustainable financial growth.

5 CONCLUSIONS

The present study provides a comprehensive evaluation of working capital management efficiency within the Indian textile industry from 2008–09 to 2019–20. By transitioning from traditional ratio analysis to the Bhattacharya Index Method, this research captured a more nuanced view of operational health through the Performance (PI), Utilization (UI), and Efficiency (EI) indices. The empirical evidence demonstrates that while the industry is generally effective in its management practices—maintaining a mean Efficiency Index above the critical threshold of 1.0—this efficiency is not uniform across the sector. The substantial standard deviation and extreme positive skewness identified in the descriptive statistics reveal a polarized industry, where financial growth and management excellence are concentrated among a select group of market leaders.

The statistical rigor of these findings is anchored by the successful application of non-parametric validation techniques. The rejection of the normality assumption via the Shapiro-Wilk test and the subsequent execution of the Friedman Test provide conclusive proof that the fluctuations in management efficiency over the twelve-year period were statistically significant rather than random. This longitudinal variation suggests that the financial growth of textile enterprises is deeply intertwined with broader macroeconomic shifts and policy transitions. Specifically, the "Performance-Utilization Gap" identified in the mean ranks indicates that while the industry excels at sales-generation, it faces persistent challenges in streamlining the volume of current assets, which remains the primary bottleneck for maximizing liquidity.

Ultimately, this study contributes a robust methodological framework for stakeholders to assess sectoral financial performance. For corporate managers, the findings underscore the necessity of moving toward lean asset management to ensure that sales growth translates into sustainable cash flows. For policymakers, the significant temporal volatility validated by the Friedman test highlights the need for consistent credit support and stable regulatory environments to buffer the industry against cyclical downturns. By balancing sales performance with asset optimization, Indian textile enterprises can foster a more resilient path toward long-term financial growth and global competitiveness.

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