







# “Drivers of working capital efficiency in Indian hospitality sector”

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# DRIVERS OF WORKING CAPITAL EFFICIENCY IN INDIAN HOSPITALITY SECTOR

## Abstract

This paper investigates the determinants of working capital management in the Indian hotel sector, focusing on factors influencing financial efficiency and sustainability. Using a dynamic panel model, the study analyzes data from 67 publicly listed Indian hotels over ten years from 2013 to 2022. The data were obtained from the Refinitiv database, the World Bank, and the Sustainable Development Index. The system generalized method of moments estimator was applied to ensure the robustness of results. The study results indicate that firm-specific factors, including return on assets, leverage, asset tangibility, and board structure, significantly impact working capital needs. Additionally, macroeconomic elements such as GDP play a crucial role in shaping working capital management. A notable positive relationship was identified between return on assets and working capital requirements. Conversely, leverage exhibited a strong negative association with working capital needs. These results emphasize the importance of both internal financial characteristics and broader economic conditions in effective working capital management. The study highlights the importance of integrating governance and economic conditions into working capital management strategies.

## Keywords

financial efficiency, dynamic modeling, governance mechanisms, economic conditions, firm characteristics, working capital optimization

## JEL Classification

G30, C33, L83, M41

## INTRODUCTION

Recent economic disruptions have highlighted the critical importance of working capital management in ensuring corporate financial stability. In times of financial uncertainty, many institutions and corporations have faced significant challenges due to constrained credit availability, which has compelled organizations to optimize the use of internal financial resources. Working capital management emerged as a crucial area for enhancing liquidity and cash flow, yet it has remained underexplored in academic literature despite its practical significance.

India's liberalized economy has driven growth in various sectors, including hospitality, which now accounts for approximately 7% of the country's GDP. With an anticipated market value of \$460 billion by 2028, this sector is a key contributor to foreign investment and employment. However, the dynamic nature of the hospitality industry poses unique challenges for managing working capital, underscoring the need for sector-specific insights into working capital management practices. While corporate finance research extensively addresses capital structure and investment decisions, working capital management has received comparatively less attention. Existing studies largely fo-

cus on its impact on organizational performance, neglecting the determinants of working capital management in sector-specific contexts. The Indian hotel industry, despite its economic importance, lacks dedicated research on the variables influencing working capital management practices.

## 1. LITERATURE REVIEW AND HYPOTHESES

The academic literature on working capital management identifies two primary approaches for evaluating working capital, net liquidity balance and working capital requirements. Table 1 categorizes academic literature on working capital management factors into these two main sections. In the first part, working capital is evaluated using either net liquidity balance, working capital requirements, or both. Narender et al. (2008) found that economic cycles significantly and negatively influence both net liquidity balance and working capital requirements, the determinants of net liquidity balance and working capital requirements have been shown to vary across industries, underscoring the importance of sector-specific factors in effective working capital management. Conversely, Chiou et al. (2006), in their study of Taiwanese firms, determined that firm-specific characteristics influence net liquidity balance and working capital requirements, whereas macroeconomic conditions such as economic recessions do not exert direct effects. This suggests that company-specific internal strategies may have a more substantial impact on working capital than broader economic fluctuations. Further research focusing exclusively on working capital requirements as the primary metric includes Hill et al. (2010), who examined a sample of 3,343 U.S. firms and revealed that operational cash flow and firm size positively influence working capital requirements, whereas sales volatility, financial distress, and the market-to-book ratio negatively affect them. Similarly, Gill (2011) analyzed 166 Canadian firms and found that working capital requirements are positively associated with operational cash flow, return on assets (ROA), and internationalization but negatively correlated with firm size and growth opportunities. Salawu and Alao (2014), investigating 60 Nigerian firms, demonstrated that sales growth, firm size, and GDP positively impact working capital requirements, whereas leverage has a negative influence. These findings reinforce the notion that firm-level financial policies and growth prospects

play a pivotal role in determining working capital requirements.

Rehman et al. (2017), using a two-step GMM estimation method in developing economies, established that profitability and growth opportunities positively affect working capital requirements, while leverage, firm size, operational cash flow, asset tangibility, economic conditions, board independence, and board size negatively impact them. Moreover, Çetenak et al. (2017) analyzed 1,253 firms across 14 developing countries, concluding that firm-specific attributes, industry characteristics, and country-level variables collectively determine working capital requirements. The interplay between microeconomic and macroeconomic factors suggests a dynamic and multi-layered process influencing working capital management decisions. Another stream of research employs the cash conversion cycle (CCC) as a proxy for working capital requirements. In this approach, the second part of the analysis utilizes the cash conversion cycle as a proxy for working capital requirements (Table 1). Studies in this category frequently apply panel data methodologies such as GMM, GLS, and OLS. Baños-Caballero et al. (2013) examined the determinants of CCC and firms' speed of adjustment toward their target CCC, utilizing a two-step GMM estimator on a sample of 60 Spanish firms. They found that financial distress, GDP, and cash flows positively influence the net trade cycle, while the cost of external financing, growth opportunities, profitability, and fixed asset investment negatively impact it. Their findings further suggest that firms' speed of adjustment varies based on bargaining power and financing constraints, indicating that access to capital markets and internal liquidity buffers is critical in maintaining working capital efficiency.

Empirical evidence from Egypt also supports the role of firm and economic factors in working capital management efficiency. Moussa (2019) analyzed 68 industrial companies listed on the EGX100 index, finding that industry type, firm performance, and economic conditions influ-

**Table 1.** Summary of the literature

Author (year)	Observations	Study period	Sample size (listed firm)	Methodology	WCM for proxy	Independent variable	Key finding
Zariyawati et al. (2010)	Malaysia	2000–2006	119	The panel OLS includes both fixed and random effects	CCC	The variables under consideration include firm size, debt ratio, sales growth, total number of directors, independent directors, GDP, and inflation	GDP positively determines CCC, whereas firm size, sales growth, and inflation rate significantly negatively impact CCC
Abbadı and Abbadı (2012)	Palestine	2004–2011	11	Panel OLS	WCR	CCC, GDP, OCF, ROA, and leverage	CCC, ROA, and OCF all have a positive influence on WCR, whereas GDP and leverage have a negative impact
Akinlo (2012)	Nigeria	1997–2007	66	The panel OLS includes both fixed and random effects	WCR CCC	The variables under consideration include the OC, sales growth, size, GDP, and leverage	The OC, size, and sales growth have a positive impact. Leverage and GDP have a negative influence. WCR
Palombini and Nakamura (2012)	Brazil	2001–2008	96	Panel GLS with a fixed effect	WCR CCC	The variables under consideration are debt, number of directors, sales growth, and free cash flow	Debt, sales growth, and free cash flow have a negative impact on WCR, but they have a positive impact on outside directors
Rehman et al. (2017)	China	2001–2012	760	Panel GMM	WCR	profitability, asset tangibility, debt, Firm size, OCF, board size, independence, and growth opportunities	WCR's profitability and growth have a positive impact. Whereas firm size, board size, GDP, debt, asset tangibility, and board independence negatively determine WCR
Valipour et al. (2012)	Iran	2001–2010	83	OLS	CCC	OCF, leverage, size, and profitability	Profitability, size, and OCF hurt CCC, but they have a positive impact on leverage
Cuong and Nhung (2017)	Vietnam	2010–2015	314	Panel GMM	WCR	Firm size, profitability, fixed assets, growth opportunity, and external financing	Profitability has a positive impact on the WCR, whereas fixed assets and firm size have a negative impact
Wiguna and Wasistha (2017)	Indonesia	2010–2014	192	Panel GLS	WCR	The factors include profitability, leverage, size, growth, GDP, OCF, CCC, and loan interest rate	Leverage (-) and profitability (+) were significant WCR determinants
Gill (2011)	Canada	2008–2010	166	Panel OLS	WCR	The factors to consider include OC, OCF, growth opportunities, ROA, firm size, TQ, and internationalization	ROA, OC, and internationalization have a positive impact, but the firm size and growth opportunities have a negative impact
Iftikhar (2013)	Pakistan	2006–2010	9	OLS Panel having a fixed effect	CCC	Sales growth, Fixed assets, market share, firm size, age, debts, and operating profit	Sales growth, firm size, debts, and fixed assets all have a negative impact on CCC. CCC's market share has a positive impact
Azami and Tabar (2016)	Iran	2004–2013	143	Panel GMM	CCC	Tangible assets, nonexecutive directors, leverage, age, profitability, GDP, firm size, Tobin Q	Tobin Q and tangible assets have a positive impact on the CCC, whereas GDP, leverage, and profitability have a negative impact
Manoori and Mohammad (2012)	Singapore	2003–2010	94	Panel OLS features a fixed effect and a random effect	CCC	Firm size, GDP, capital expenditures, profitability, cash flow, firm growth, and leverage	Firm size, GDP, capital expenditures, and OCF have a negative impact on CCC, whereas profitability has a positive influence.
Salawu and Alao (2014)	Nigeria	2000–2009	60	The panel OLS includes both fixed and random effects	WCR	Sales growth, firm size, leverage, GDP, net trading cycle, and Assets tangibility	GDP, size, and sales growth all have a positive impact on the WCR, whereas leverage has a negative impact

**Table 1 (cont.).** Summary of the literature

Author (year)	Observations	Study period	Sample size (listed firm)	Methodology	WCM for proxy	Independent variable	Key finding
Ali and Khan (2011)	Pakistan	2000–2008	28	OLS	WCR NLB	Business cycles, leverage, ROA, firm growth, cash flow, firm size, real GDP, unemployment rate	Across sectors, variables have a different impact on the WCR and NLB
Narender et al. (2008)	India	1995–2006	50	OLS	WCR NLB	OCF, firm performance, growth, size, business cycle, and capital structure	The business cycle and growth have a negative impact on the WCR, whereas firm size has a positive impact
Nazir and Afza (2009)	Pakistan	2007–2008	132	Panel OLS	WCR	Profitability, OC, Industry Dummy, OCF, Leverage, GDP, Growth, Profitability, Firm Value, and Size	Profitability, OC, and firm value positively influence WCR, however, leverage negatively impacts the WCR
Mongrut et al. (2014)	Argentina, Brazil, Chile, and Mexico	1996–2008	9,254	The panel OLS has both a fixed effect and a quantile regression	CCC	The average industry CCC, firm size, proportion of tangible assets, and future sales are all important considerations. Herfindahl-Hirschman Index, Country Risk	Average industry CCC and future sales do have an impact on firms' WCM efficiency, whereas the size and the country risk negatively influence the CCC
Kieschnick et al. (2006)	USA	1990–2004	3,155	Panel OLS with a fixed effect	CCC	Firm size, sales growth, total assets, number of directors, CEO compensation, and share ownership	Share ownership, firm size, and sales growth have a positive impact on the CCC, whereas the number of directors and CEO compensation have a negative impact
Goel and Sharma (2015)	India	2004–2013	1,200	Panel GLS with a fixed effect	CCC	Debts, asset tangibility, size, ROA, age, sales growth, and GDP	Firms' debts, asset tangibility, ROA, sales growth, size, and age all significantly influence their WCM efficiency, while macroeconomic factors such as GDP have a negligible impact
Haron and Norman (2016)	Malaysia	2002–2012	57	An OLS panel with fixed effects and quantile regression was used	CCC	The factors to consider are profitability, debt, sales growth, free cash flow, firm size, and liquidity	Profitability, sales growth, and size insignificantly affect the WCM efficiency of firms, whereas there is a significant (+) effect on free cash flow
Baños-Caballero et al. (2010)	Spain	2001–2005	4,076	Panel OLS and GMM	CCC	Leverage, Growth Opportunities, Size, Age, Tangible fixed assets, return, and industry	Fixed assets, debt, growth opportunities, and performance negatively impact the WCR. Cash flow and age negatively influence the CCC
Moussa (2019)	Egypt	2000–2010	100	Panel: OLS and GMM	WCR CCC	Factors to consider include OCF, growth, ROA, Tobin's Q, firm age, industry, firm size, GDP, and leverage	Firm age, ROA, and Tobin's Q, positively impact the WCR, whereas there is an insignificant effect on GDP, OCF, leverage, and growth
Tiwari et al. (2023)	India	2011–2020	291	Panel: OLS and GMM	WCR	OCF, growth, ROA, firm value, leverage, age, size, and GDP	OCF, growth, leverage, size, and GDP all have a negative impact on WCR, whereas WCR has a positive influence on ROA and firm age
Shroff (2023)	India	2006–2019	21	Stepwise regression analysis	CCC NWC	Firm size, asset tangibility, leverage, profitability, and sales growth	Firm size and leverage are important WCR determinants. Profitability, sales growth, and asset tangibility do not have a significant impact on the WCR

**Table 1 (cont.).** Summary of the literature

Author (year)	Observations	Study period	Sample size (listed firm)	Methodology	WCM for proxy	Independent variable	Key finding
Sharma et al. (2020)	India	2009–2017	150	Panel: OLS and GMM	NWC GWC	Leverage, growth opportunities, Asymmetric information, Nature of business, asset tangibility, Size, profitability, Revenue volatility, Board characteristics, OCF, board size, & GDP	leverage, board size, assets tangibility, and nature of business all play a significant role in determining NWC. The return on common equity (ROCE) and board size demonstrate GWC's positive determination. The size and nature of the business determine the negative relationship with GWC
Nyeadi et al. (2018)	Ghana	2007–2014	28	Panel: GMM	WCR	These factors include profitability, age, sales growth, GDP growth, OC, and leverage	Age, profitability, and OC positively influence WCR, while GDP growth, sales growth, and leverage negatively impact it
Uyar (2009)	Turkey	2007	166	Correlation analysis	CCC	Company size and profitability	Both variables have a negative effect on the CCC
Saarani and Shahadan (2012)	Malaysia	2006–2008	285	Structural Equation Modeling	WCR	Factors that influence profitability include asset tangibility, debt, growth, age, industry type, size, and nondebt tax shield	Profitability has a positive impact on the WCR, whereas debt, asset tangibility, and debt tax shield have a negative impact
Chauhan and Banerjee (2018)	India	1993–2015	17161	Panel OLS and GMM	CCC	Firm size, leverage, cash flow, profitability, asset tangibility, growth opportunity, and median industry cash flow	Firm size and asset tangibility have a positive impact on the CCC, whereas growth opportunity, leverage, and cash flow have a negative impact
Chiou et al. (2006)	Taiwan	35 quarters	19180	Panel OLS	WCR	Leverage, growth rate, profitability, size, age, industry dummies, and OCF	Growth opportunities, firm age, performance, and size positively determine WCR and leverage negatively impacts WCR

ence the CCC, whereas growth, firm size, operational cash flow, and firm age negatively affect it. Similarly, Kieschnick et al. (2006) studied the impact of industry concentration, firm characteristics, and governance mechanisms on CCC, concluding that firm size, growth opportunities, and governance practices significantly shape CCC. These results emphasize that industry-specific regulatory environments and corporate governance frameworks contribute to variations in working capital management effectiveness. Several studies have investigated CCC determinants in Asian markets. Azami and Tabar (2016) and Haron and Nomran (2016) examined firms in the region, while Chauhan and Banerjee (2018) found no clear target CCC among firms. Instead, they reported positive correlations between CCC and firm size as well as asset tangibility, and negative correlations with cash flow, leverage, and growth potential. More comprehensive approaches, as noted by Palombini and Nakamura (2012), integrate both working capital requirements and CCC. Akinlo (2012) analyzed 66 Nigerian firms, concluding that firm size, operational cash flow, and sales growth positively influence working capital management, while debt and economic conditions negatively affect it. The diversity of empirical findings suggests that working capital management strategies may require customization based on industry conditions and financial policies.

Despite extensive research, findings remain inconclusive due to variations in working capital management assessment, sample characteristics, and market conditions. Prior studies generally agree that working capital management efficiency is influenced by three primary categories of factors: macroeconomic variables, governance mechanisms, and firm-specific characteristics. Macroeconomic indicators include GDP, inflation, unemployment, and country risk. Governance mechanisms encompass board size, independence, and ownership structure. Firm-specific characteristics involve size, profitability, leverage, sales growth, and operational efficiency. The mixed evidence on the effect of firm size on working capital requirements suggests that while larger firms may benefit from economies of scale in managing working capital, smaller firms might exhibit more agility in adjusting their financial strategies. While some studies argue that firm size negatively affects

working capital requirements (Abadi & Abadi, 2012), others suggest the opposite (Akinlo, 2012; Hill et al., 2010; Salawu & Alao, 2014), highlighting the importance of contextual factors in working capital management research. In conclusion, the literature on working capital management suggests that firm characteristics, governance mechanisms, and macroeconomic conditions play significant roles in determining firms' working capital requirements. However, variations in findings necessitate further empirical investigation. In the subsequent section, the literature will be analyzed concerning each explanatory variable to develop research hypotheses.

Working capital requirements are influenced by various internal and external factors. Firm performance is a critical determinant, with evidence suggesting a mutually dependent relationship between effective working capital management and firm profitability. Effective working capital management leads to increased profitability and higher return on assets (ROA) (Habibniya et al., 2022; Demiraj et al., 2022; Dsouza et al., 2024). While some studies argue that high-performing firms maintain lower working capital requirements (Deloof, 2003), others suggest a positive relationship, as profitability may enable firms to maintain higher liquidity levels (Azami & Tabar, 2016; Baños-Caballero et al., 2013; Haron & Nomran, 2016; Zariyawati et al., 2016).

Growth opportunities, measured by sales growth, influence working capital requirements. Rapidly growing firms often minimize liabilities and working capital to support expansion (Chiou et al., 2006). However, other studies indicate that growth opportunities can increase working capital requirements due to higher capital needs (Akinlo, 2012; Salawu & Alao, 2014; Wasuzzaman & Arumugam, 2013). Leverage negatively impacts working capital requirements, as firms with high debt levels often prioritize debt servicing over working capital allocation (Abadi & Abadi, 2012; Azeem, 2015; Rehman et al., 2017; Wiguna & Wasistha, 2017). Effective working capital management helps mitigate the need for external financing, particularly in firms with constrained resources (Chiou et al., 2006). The operating cycle (OC), which combines the inventory conversion period (ICP) and the receivables conversion pe-

riod (RCP), has been positively linked to working capital requirements. Longer OCs indicate slower cash flow conversion, requiring higher working capital levels (Akinlo, 2012; Gill, 2011; Nazir & Afza, 2009). Firm value also affects working capital requirements. Investors favor firms with lower working capital requirements, reflecting efficient liquidity management (Hill et al., 2010). Conversely, increased investment in working capital may reduce firm value, as resources are tied up in operational assets (Gill, 2011; Kieschnick et al., 2006). Operating cash flow (OCF) exhibits a mixed relationship with working capital requirements. While high OCF indicates reduced reliance on working capital (Chiou et al., 2006), increased cash reserves can lead to higher working capital requirements due to short-term investments. Asset tangibility presents contrasting effects on working capital requirements. High fixed asset ratios may limit resources for working capital (Rehman et al., 2017), while some studies suggest that increased tangibility enhances borrowing capacity and liquidity (Kaur & Kaur, 2014; Baños-Caballero et al., 2013). Information asymmetry, measured by the market-to-book ratio, negatively impacts working capital requirements. Firms with greater transparency allocate more resources to working capital, while those with higher uncertainty reduce working capital requirements to conserve resources for long-term projects (Hill et al., 2010; Baños-Caballero et al., 2013). Firm size and age influence working capital requirements. Larger firms benefit from diversification and better financing access, maintaining lower working capital requirements (Abadi & Abadi, 2012; Gill, 2011). Similarly, older firms exhibit lower working capital requirements due to consistent growth patterns and established market positions (Baños-Caballero et al., 2013; Wasiuzzaman & Arumugam, 2013).

Governance mechanisms, such as board size and independence, significantly impact working capital requirements. Larger boards improve oversight, leading to reduced working capital requirements (Kieschnick et al., 2006; Azami & Tabar, 2016). Independent boards often implement stricter financial controls, further lowering working capital requirements (Zariyawati et al., 2010), although these effects can vary based on board effectiveness (Cornforth, 2002; Cohen et al., 2008). The sustainable development index (SDI) is positively correlated

with working capital requirements, as firms aligned with sustainability goals allocate more resources to working capital for long-term resilience (Alnuaimi & Nobanee, 2020; Gillgren et al., 2019). Finally, macroeconomic factors such as GDP significantly shape working capital requirements. During economic downturns, firms face delayed receivables and increased inventory needs, leading to higher working capital requirements (WCR) (Chiou et al., 2006; Azeem, 2015; Rehman et al., 2017).

The purpose of this study is to investigate the determinants of working capital requirements in the Indian hotel industry, focusing on firm-specific characteristics, governance mechanisms, sustainability practices, and macroeconomic conditions. Drawing upon prior literature, the study formulates the following hypotheses:

- H1: *Performance impacts a firm's WCR in the Indian hotel industry.*
- H2: *Growth opportunities impact a firm's WCR in the Indian hotel industry.*
- H3: *Leverage has an impact on firms in the Indian hotel industry's WCR.*
- H4: *The operating cycle impacts the WCR of a firm in the Indian hotel industry.*
- H5: *Firm value impacts the WCR of a firm in the Indian hotel industry.*
- H6: *Operating cash flow impacts a firm's WCR in the Indian hotel industry.*
- H7: *Asset tangibility has an impact on firms' WCR in the Indian hotel industry.*
- H8: *Asymmetric information impacts the WCR of firms in the Indian hotel industry.*
- H9: *Firm size impacts the WCR of firms in the Indian hotel industry.*
- H10: *Firm age impacts the WCR of Indian hotel firms.*
- H11: *Board size impacts WCR firms in the Indian hotel industry.*

H12: Board independence has an impact on WCR firms in the Indian hotel industry.

H13: Sustainable Development Index has an impact on the WCR of Indian hotel firms.

H14: GDP has an impact on the WCR of Indian hotel firms.

## 2. DATA AND RESEARCH METHODOLOGY

### 2.1. Data and sample

The sample includes firms from the Indian hotel sector listed on the stock exchange between 2013 and 2022. The data were obtained from the Refinitiv database, the World Bank, and the Sustainable Development Index. The objective of choosing the time frame was to incorporate as many of the later years of the study as feasible as possible. The firm-year-based data of all listed firms was aggregated, removing the data that were incomplete or had inadequate information about the chosen variables related to the financials. A cross-section and unbalanced dataset panel after applying most of the probable options of data reductions was created. The panel consists of 473 firm/year observations derived from the 67 selected firms. This sample did not exclude the outliers from the given panel; instead, the data were then winsorized at the 5% (p.0 95) level. Further processing of this dataset was conducted using STATA software.

### 2.2. Methodology

WCR was applied to the proxy for working capital requirements. The empirical model was developed, and Table 2 provides the definitions of all dependent and independent variables used in this model.

$$\begin{aligned}
 WCR_{i,t} = & \alpha + \beta_0 WCR_{i,t-1} + \beta_1 ROA_{i,t} + \beta_2 SG_{i,t} \\
 & + \beta_3 DR_{i,t} + \beta_4 OC_{i,t} + \beta_5 TQ_{i,t} + \beta_6 OCF_{i,t} \\
 & + \beta_7 FATA_{i,t} + \beta_8 ASMINFO_{i,t} + \beta_9 SIZE_{i,t} \quad (1) \\
 & + \beta_{10} AGE_{i,t} + \beta_{11} BSIZE_{i,t} + \beta_{12} BIND_{i,t} \\
 & + \beta_{13} SDG_{i,t} + \beta_{14} GDP_{i,t} + \epsilon_{it}
 \end{aligned}$$

The empirical model was evaluated through the application of the panel data methodology. This methodology offers numerous benefits over alternative approaches, including a greater volume of data points, an increased degree of freedom, mitigated collinearity among the explanatory variables, and improved management of individual variation (Sraieb & Labadze, 2022). The System GMM regression model was utilized with cross-section weights to address the potential issue of heteroskedasticity within the dataset. Statistical tests were conducted, in which the explanatory variables included in each model were lagged and treated as instruments. Additionally, the Hansen and Sargan statistics for over-identifying restrictions, along with the Arellano–Bond test for serial correlation in panel data, were employed to assess the validity of the GMM estimators used.

**Table 2.** Variables’ abbreviations and calculation

Source: Authors.

Abbreviation	Type	Variable	Proxy	Calculation
WCR	Dependent	WCR (working capital requirement)	WCR (Working capital requirement) / total assets	[Net working capital/total assets]
ROA	Independent	Performance	Return on assets	Net profit after tax/ Total assets
Growth	Independent	Growth opportunities	Sales growth	[Sales1 – Sales0]/Sales0]
LEV	Independent	Leverage	Debt ratio	[Total Debts/Total debts +Total equity]
OC	Independent	Operating cycle		[Inventory conversion period+ Receivable conversion period ICP = (Average inventory/annual cost of goods sold)*365 RCP = (average account receivables/Annual sales)*365]
TQ	Independent	Firm value		[(Market value of the equity + the book value of total debts) / total assets]

**Table 2 (cont.).** Variables' abbreviations and calculation

Abbreviation	Type	Variable	Proxy	Calculation
OCF	Independent	Operating cash flows	Operating cash flows/total assets	[Cash flow from operating activity/Total Assets]
FATA	Independent	Assets tangibility	Tangible 'fixed assets to total assets'	[Fixed financial Assets/Total Assets]
ASMINFO	Independent	Asymmetric information		Book to market ratio has been used as a proxy for measuring the asymmetric information
SIZE	Independent	Firm size	Natural logarithm of total assets	[Natural Logarithm of Total Assets]
AGE	Independent	Firm age	Natural logarithm of Firm age	[Natural logarithm of Firm Age]
B SIZE	Independent	Board Size	Total Number of Directors	[Total number of Directors on board was used to measure the board size]
BIND	Independent	Board Independence	Number of Independent Directors	[Total number of independent directors on the board is taken to measure the board's independent directors ]
SDG	Independent	Sustainable Development Index		
GDP	Independent	Economics condition	Gross domestic product	[Annual change in real gross domestic product]

### 3. RESULTS

#### 3.1. Descriptive statistics

Table 3 presents the descriptive statistics for both the dependent variable and the explanatory variables. The average WCR stands at  $-0.00355$ , while the standard deviation measures  $0.277$ . This generally indicates that a firm's current assets are lower than its current obligations. In simple terms, the firm may lack sufficient liquid assets, such as cash or accounts receivable, to meet its immediate financial commitments, such as accounts payable or short-term debt, at a given moment. Firm performance as measured by ROA. ROA has a mean value of  $-0.01$  and a standard deviation of  $0.214$ . Despite being near zero, the negative mean indicates that the majority of Indian hotel firms are experiencing losses. The majority of Indian hotels are either experiencing losses or struggling to reach their break-even point. The growth potential will fluctuate significantly, with a lower limit of  $0.99$  and an upper limit of  $85.52$ ; the mean growth rate stands at  $0.2925$ . The recorded LEV mean of  $0.409$  suggests that total debts account for approximately 40.9 percent of total debt and equity. The mean value

of OC is  $246.60$ , and the standard deviation of  $280$  represents a high deviation, indicating wide differences across the study sample. The TQ ratio averages  $1.7372$ , indicating that the firm value is greater than the sample firm's total assets. The average OCF is  $0.04$ , indicating that a portion of total assets' OCF is less than 10 percent on average. Tangible assets have a mean of  $0.78$ , which indicates that total tangible assets are 78 percent of total assets. The mean of ASMINFO is  $0.7709$ , and the standard deviation is  $6.997$ , which indicates a wide difference in asymmetric information throughout the sample for the study. Firm size and firm age had an average value of  $21.93$  and  $7.592751$ , with standard deviations of  $1.89$  and  $0.009$ , respectively, indicating no significant difference in firm size and age across the study sample. The mean BSIZE and BIND are  $7.596$  and  $3.689$ , respectively, with standard deviations of  $2.42$  and  $1.45$ , indicating no difference in BSIZE and BIND throughout the sample for the study. The SDG has an average value of  $60.50$  and a standard deviation of  $2.41$ , indicating no significant difference in SDG across the study sample. Ultimately, the GDP has an estimated average of  $5.67$ , indicating that the Indian economy was thriving during the period under review.

**Table 3.** Descriptive statistics

Variables	Observation	Mean	Std. Dev.	Min	Max
WCR	473	-0.00355	0.277181	-1.82683	0.835623
ROA	473	-0.01071	0.214827	-4.10807	0.502399
SG	473	0.292528	3.979198	-0.99136	85.51832
LEV	473	0.409599	0.539284	-1.51401	4.974113
OC	473	246.6089	280.7031	30.60088	1156.467
TQ	473	1.737276	2.745031	0.122024	43.37123
OCF	473	0.040711	0.488144	-10.3249	0.595831
FATA	473	0.780424	0.184982	7.39E-06	0.992563
ASMINFO	473	0.770912	6.99797	-125.132	18.65622
SIZE	473	21.92782	1.892093	17.55405	25.60094
AGE	473	7.592751	0.009598	7.550661	7.607381
B SIZE	473	7.596195	2.42946	3	16
BIND	473	3.689218	1.452143	0	9
SDG	473	60.50457	2.413394	56.28	63.45
GDP	473	5.670834	4.194686	-5.83105	9.050278

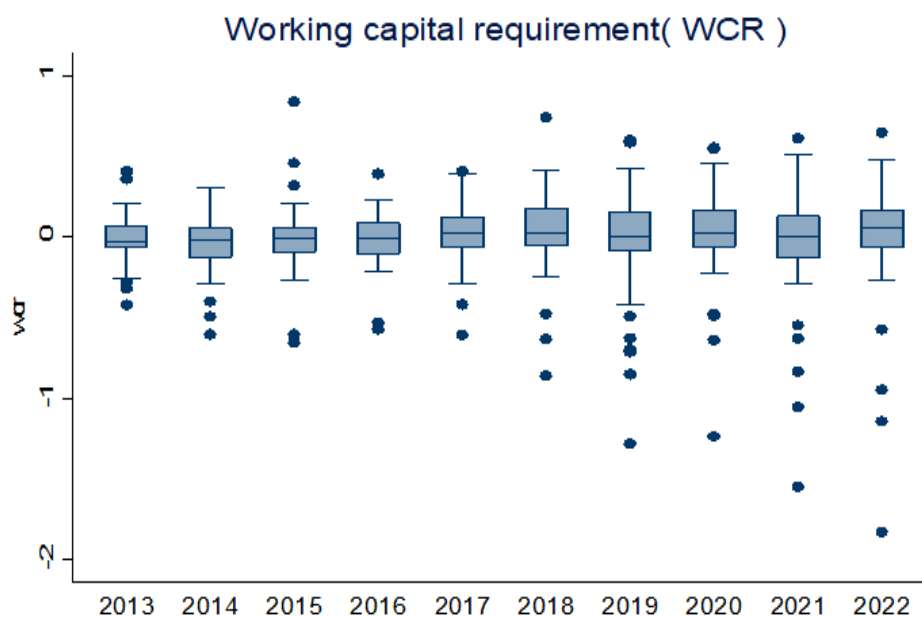
### 3.2. Correlation statistics

To ascertain the level of correlation between WCR and the explanatory variables that influence it, a simple correlation matrix for individuals was computed and is presented in Table 4. The results indicate that WCR shows a positive correlation with ROA, sales growth, firm value, OCF, and asymmetric information. Conversely, it exhibits a negative correlation with leverage, asset tangibility, and firm size. Table 4 further presents the results of the Variance Inflation Factor (VIF). The model’s variables exhibit in-

dependence from one another, indicating an absence of multicollinearity.

### 3.3. Results and discussion

The findings of this study provide significant insights into the determinants of working capital requirements (WCR). The results indicate a strong positive association between lagged WCR and current WCR, suggesting that firms’ working capital decisions are influenced by their previous working capital levels. This persistence implies that companies tend to follow consistent working capital policies over time.



**Figure 1.** Boxplot analysis for WCR

**Table 4.** Correlation matrix and VIF coefficients

Variables	WCR	ROA	SG	LEV	OC_WIN	TQ	OCF	FATA	ASMINFO	SIZE	AGE	B SIZE	BIND	SDG	GDP	VIF
WCR	1															
ROA	0.3291*	1														1.04
SG	0.1405*	0.0158	1													1.06
LEV	-0.6062*	-0.0467	-0.029	1												1.8
OC_WIN	0.047	-0.0687	0.0162	0.0508	1											1.13
TQ	0.1185*	0.0793	0.7027*	-0.0971	-0.1063	1										1.11
OCF	0.1911*	0.8959*	-0.0659	0.1435*	-0.0088	-0.0227	1									1.05
FATA	-0.6372*	-0.0198	-0.1992*	0.3270*	-0.1101	-0.2180*	0.0535	1								1.31
ASMINFO	0.2294*	0.0452	-0.0064	-0.5122*	0.0891	-0.0638	0.0139	-0.0593	1							1.48
SIZE	-0.1382*	0.0346	-0.0549	0.2111*	0.1075	-0.0983	0.0512	0.1064	0.0171	1						1.42
AGE	0.1137	-0.032	-0.0036	-0.0588	0.1790*	-0.067	-0.029	-0.1779*	0.1086	-0.0798	1					1.1
B SIZE	0.043	0.106	-0.066	-0.0614	-0.1346*	0.02	0.081	0.1097	0.0901	0.4316*	-0.1580*	1				3.57
BIND	-0.0021	0.0781	-0.0494	-0.0632	-0.0913	0.0011	0.0526	0.0915	0.0868	0.4216*	-0.1571*	0.8375*	1			3.43
SDG	0.0108	-0.1144	-0.0409	0.1096	0.0976	0.0119	-0.0584	-0.1498*	-0.092	0.0159	0.0613	-0.1299*	-0.1017	1		1.19
GDP	-0.027	-0.0033	0.0328	-0.0112	0.0259	0.0945	0.0101	0.0662	0.0538	-0.028	-0.0135	0.0328	0.0467	-0.3170*	1	1.14

Note: \* Statistically significant at the 5 percent level.

The box plot analysis in Figure 1 illustrates the distribution of WCR across different years. The visualization shows variations in WCR over time, suggesting the presence of firm-specific and macroeconomic factors influencing working capital policies. The observed skewness in the data highlights disparities in working capital management strategies among firms, potentially driven by industry-specific operational needs and financial constraints.

The positive and statistically significant relationship between return on assets (ROA) and WCR supports the hypothesis that firm performance positively influences working capital needs. This finding is consistent with prior research (Abbadi & Abbadi, 2012; Azeem, 2015; Wiguna & Wasistha, 2017), which argues that profitable firms maintain higher cash reserves to support their operational and investment activities. Consequently, such firms may be less concerned with the efficiency of working capital management, leading to higher WCR levels.

Leverage (LEV) exhibits a significant negative relationship with WCR, confirming the expectation that higher leverage constrains a firm's ability to maintain higher working capital. This aligns with previous studies (Abbadi & Abbadi, 2012; Azeem, 2015; Rehman et al., 2017) that argue that firms with substantial debt obligations allocate more resources toward interest payments, thereby limiting funds available for working capital. The results suggest that firms with high leverage prioritize efficient working capital management to ensure liquidity and minimize financial distress risks.

**Table 5.** System-GMM regression results

Source: Authors.

Variables	WCR	WCR
LAG WCR	0.828*** (0.1370)	0.814*** (0.1410)
ROA	0.326** (0.1470)	0.319** (0.1460)
SG	0.0129 (0.0122)	0.0119 (0.0084)
LEV	-0.0890** (0.0421)	-0.0893** (0.0407)
OC	-0.0000147 (0.0000)	-0.00000604 (0.0000)
TQ	-0.00854** (0.0035)	-0.00803** (0.0034)

Variables	WCR	WCR
OCF	-0.042 (0.0590)	-0.0346 (0.0586)
FATA	-0.215** (0.104)	-0.218** (0.105)
ASMINFO	-0.00125*** (0.0004)	-0.00120*** (0.0004)
SIZE	0.00161 (0.0037)	-0.00235 (0.0038)
AGE	-0.953 (0.6460)	-0.913 (0.6110)
B SIZE	0.00223 (0.0047)	0.00386 (0.0050)
BIND	0.00217 (0.0072)	0.000532 (0.0072)
SDG	0.00117 (0.0029)	0.00379* (0.0022)
GDP	- (0.0010)	-0.00021 (0.0010)
Control for the year effect	Yes	No
Constant	7.406 (4.9460)	6.944 (4.6670)
No. of Observations	396	396
Number of firms	60	60
AR1 p_value	0.003	0.004
AR2 p_value	0.771	0.734
Sargan p_value	0.471	0.288
Hansen p_value	0.195	0.092

Note: Robust standard errors in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

Table 5 presents the results of the empirical model using the Generalized Method of Moments (GMM) estimator. The results confirm the robustness of the model, with valid instruments as demonstrated by the Sargan and Hansen tests. The AR2 test confirms the absence of second-order autocorrelation, ensuring the model's reliability in capturing the determinants of WCR. The statistical significance of the lagged dependent variable further underscores the persistent nature of WCR.

Tobin's Q (TQ), representing firm value, exhibits a significant negative relationship with WCR, supporting H5. This outcome aligns with prior empirical research (Gill, 2011; Kieschnick et al., 2006), which suggests that firms with higher market valuations tend to maintain lower working capital. Investors view higher WCR as a signal of financial flexibility, which can enhance firms' ability to meet obligations and sustain operations efficiently.

Furthermore, asset tangibility (FATA) exhibits a significant negative association with WCR, vali-

dating H7. This suggests that firms with a higher proportion of tangible assets require lower levels of working capital, as they benefit from reduced financing costs and lower information asymmetry (Caballero et al., 2010). However, the results also highlight a potential trade-off between long-term investments in tangible assets and working capital allocation, as observed in previous studies (Baños-Caballero et al., 2013; Rehman et al., 2017; Wasiuzzaman & Arumugam, 2013).

The results further confirm the significant inverse relationship between asymmetric information (ASMINFO) and WCR, reinforcing H8. Consistent with Wasiuzzaman & Arumugam (2013), the findings suggest that firms facing higher levels of information asymmetry prefer to reduce their investments in working capital. Companies with substantial asymmetric information often rely more on debt financing, reducing their need for excess working capital. Moreover, firms experiencing higher levels of asymmetric information may adopt conservative working capital strategies to mitigate risks associated with uncertain financial conditions.

Lastly, sustainable development goals (SDG) are significantly associated with WCR at a 10% significance level, indicating a positive impact on firms' working capital policies. This supports H13 and suggests that firms committed to sustainability initiatives tend to adjust their working capital strategies to align with long-term business sustainability goals. Firms incorporating sustainability into their financial strategies may experience shifts in working capital requirements due to changes in investment policies and operational efficiencies.

Overall, the study confirms that WCR is shaped by multiple firm-specific factors, including profitability, leverage, firm value, asset tangibility,

asymmetric information, and sustainability considerations. These findings contribute to the literature by providing empirical evidence on the determinants of WCR while reinforcing the importance of financial management practices that balance liquidity, investment, and financial sustainability. The implications of these findings suggest that firms should adopt a strategic approach to working capital management, ensuring that they maintain sufficient liquidity while optimizing their financial performance. Future research should further explore the role of macroeconomic conditions and industry-specific factors in shaping working capital policies.

The empirical findings reveal that several firm-specific, governance, and sustainability-related factors significantly influence working capital requirements (WCR). Specifically, Hypotheses H1, H3, H5, H7, H8, and H13 were supported, confirming the significant impact of performance, leverage, firm value, asset tangibility, asymmetric information, and sustainability on WCR. For instance, Tobin's Q (H5) and asset tangibility (H7) exhibit significant negative relationships with WCR, suggesting that firms with higher market valuation or a greater proportion of tangible assets tend to operate with lower working capital due to reduced financing costs and lower information asymmetry. Similarly, the negative association between asymmetric information and WCR (H8) indicates that firms facing higher levels of information asymmetry adopt more conservative working capital strategies. Performance (H1), leverage (H3), and the Sustainable Development Index (H13) also show statistically significant effects on WCR. In contrast, the remaining hypotheses (H2, H4, H6, H9, H10, H11, H12, and H14) were not supported, as the corresponding variables did not exhibit statistically significant relationships with WCR in the context of the Indian hotel industry.

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## CONCLUSION

This study aimed to examine the determinants of working capital management in India's hotel sector by analyzing the factors influencing working capital requirements (WCR). Utilizing a dynamic panel model on data from 67 publicly listed firms over a decade, the research provides empirical insights into how firm-specific characteristics and macroeconomic conditions shape working capital management practices.

The findings indicate that financial performance, measured by return on assets (ROA), has a significant positive impact on WCR, suggesting that more profitable firms tend to maintain greater liquidity buffers. In contrast, firms with higher leverage and greater asset tangibility demonstrate a negative association with WCR, as these companies allocate fewer resources toward daily operational liquidity. Additionally, governance mechanisms, including board size and independence, influence working capital management by enhancing oversight and strategic decision-making.

Several conclusions can be drawn from these results. First, firms should balance profitability and liquidity to optimize working capital management effectively. Second, financial managers must consider leverage and asset structure when designing working capital strategies, ensuring sufficient liquidity without compromising investment potential. Third, strong governance structures enhance financial oversight, potentially leading to more efficient working capital policies. These insights are particularly relevant for stakeholders in the hospitality industry, where managing financial flexibility is crucial due to sector-specific volatility.

Future research should expand on these findings by incorporating additional external factors, such as industry-specific dynamics or regional economic conditions, to gain a more comprehensive understanding of working capital management. Examining these aspects across different economic cycles could further enrich the literature and provide broader implications for financial resilience and efficiency.

## IMPLICATIONS

The analysis demonstrates that firm performance positively influences WCR, challenging the conservative theory of working capital that prioritizes high current assets for liquidity. Instead, it supports a moderate approach, balancing liquidity needs with profitability goals. Both firm characteristics and macroeconomic factors should be carefully evaluated to ensure efficient working capital management, enabling firms to sustain operations without excessive reliance on costly external financing. For the hotel industry, these findings highlight the need for tailored working capital management strategies to improve operational efficiency and financial performance. Managers should prioritize efficient WCR management to boost cash flow, particularly during economic downturns, while aligning practices with firm-specific circumstances. These insights also aid investors and analysts in evaluating creditworthiness and company value.

## LIMITATIONS

The current study concentrated exclusively on conducting a panel data analysis of 67 companies listed on the Indian stock exchange from 2013 to 2022. It did not consider the elements influencing working capital in other service industries or make comparisons with other nations. Consequently, it is suggested that future investigations and studies broaden this subject by including companies from various service sectors to examine how the factors affecting working capital management might vary across different industries.

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## APPENDIX A

**Table A1. List of hotels**

1	Indian Hotels Company Ltd	28	Byke Hospitality Ltd	55	Imagicaaworld Entertainment Ltd
2	Oriental Hotels Ltd	29	TAJ GVK Hotels and Resorts Ltd	56	Devyani International Ltd
3	GFL Ltd	30	Viceroy Hotels Ltd	57	Toyam Sports Ltd
4	Country Club Hospitality & Holidays Ltd	31	U. P. Hotels Ltd	58	Apollo Sindoori Hotels Ltd
5	India Tourism Development Corp Ltd	32	Sinclairs Hotels Ltd	59	Coffee Day Enterprises Ltd
6	Howard Hotels Ltd	33	Best Eastern Hotels Ltd	60	Vidli Restaurants Ltd
7	Landmarc Leisure Corporation Ltd	34	H S India Ltd	61	Lemon Tree Hotels Ltd
8	Indrayani Biotech Ltd	35	KDJ Holidayscapes and Resorts Ltd	62	Barbeque-Nation Hospitality Ltd
9	International Travel House Ltd	36	HB Estate Developers Ltd	63	Sanghvi Brands Ltd
10	Savera Industries Ltd	37	Reliable Ventures India Ltd	64	Chalet Hotels Ltd
11	Velan Hotels Ltd	38	PVR INOX Ltd	65	Restaurant Brands Asia Ltd
12	Blue Coast Hotels Ltd	39	Royal Orchid Hotels Ltd	66	Easy Trip Planners Ltd
13	Cindrella Hotels Ltd	40	TGB Banquets and Hotels Ltd	67	Sapphire Foods India Ltd
14	Asian Hotels (North) Ltd	41	Cineline India Ltd		
15	Benares Hotels Ltd	42	Dhanada Corporation Ltd		
16	Graviss Hospitality Ltd	43	Delta Corp Ltd		
17	HLV Ltd	44	Mahindra Holidays and Resorts India Ltd		
18	Jindal Hotels Ltd	45	Emerald Leisures Ltd		
19	EIH Ltd	46	CHL Ltd		
20	Thomas Cook (India) Ltd	47	Jubilant Foodworks Ltd		
21	Advani Hotels and Resorts (India) Ltd	48	Talwalkars Better Value Fitness Ltd		
22	Nicco Parks & Resorts Ltd	49	Asian Hotels (West) Ltd		
23	Ras Resorts and Apart Hotels Ltd	50	Asian Hotels (East) Ltd		
24	Royale Manor Hotels and Industries Ltd	51	Espire Hospitality Ltd		
25	Sayaji Hotels Ltd	52	Speciality Restaurants Ltd		
26	Kamat Hotels (India) Ltd	53	Wonderla Holidays Ltd		
27	EIH Associated Hotels Ltd	54	Phoenix Township Ltd		