INNOVATIONS IN SCIENCE, TECHNOLOGY, AND SOCIETY

E-ISSN: 3105-739X P-ISSN: 3105-7381

VOLUME: 01 ISSUE: 02 (2023)

https://istsjournal.com editor@istsjournal.com

Received: July 06, 2023 Revised: August 12, 2023 Accepted: November 07, 2023 Available Online: December 31, 2023

Research Article

DETERMINANTS OF WORKING CAPITAL MANAGEMENT EFFICIENCY

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ABSTRACT

This study investigates the determinants of Working Capital Management Efficiency (WCME) by integrating firm-level, institutional, technological, and macroeconomic factors within a mixed-method framework. Using a balanced panel of firms across emerging and developed economies , the analysis employs System GMM estimations complemented by Fixed and Random Effects models to mitigate endogeneity concerns. The results demonstrate that profitability, liquidity, and firm size significantly improve WCME by reducing the Cash Conversion Cycle (CCC), while leverage and financial constraints act as barriers. Governance quality and ESG practices emerge as critical enablers, moderating the adverse effects of debt and institutional weaknesses. Furthermore, technological adoption, particularly FinTech integration, enhances efficiency by optimizing receivables and payables management. Comparative results reveal that developed economies consistently outperform emerging markets, though technology adoption enables emerging-market firms to partially close the efficiency gap. Macroeconomic conditions, including inflation, GDP growth, and exchange rate volatility, are also shown to exert significant influence on WCME. The study's novelty lies in its holistic perspective that incorporates digital transformation and sustainability dimensions, extending beyond conventional financial determinants. The findings provide important implications for managers to align liquidity strategies with profitability and technological innovation, and for policymakers to strengthen institutional frameworks and ensure macroeconomic stability. Overall, the study contributes to theory and practice by offering integrated evidence on the multidimensional drivers of WCME, paving the way for future research on the role of governance, sustainability, and digitalization in short-term financial management.

KEYWORDS: *Working Capital Management, Cash Conversion Cycle, Profitability, Governance, Fintech, Sustainability.*

INTRODUCTION

WCM is one of the key areas of corporate financial strategy as it defines the liquidity, performance, and sustainability of the company. Optimal WCM involves a balance between the current assets and current liabilities in an attempt to reduce financing costs and liquidity risk, increase shareholder values. In the past decade, especially during the post- financial disruptions and aftermath of COVID-19-induced supply chain shocks, the efficiency of WCM has come under spotlight in developed as well as emerging economies (Kaur & Singh, 2020; Alipour et al., 2021). The proper management of receivables, inventories, and payables are important as they not only guarantee continuation of operations but also determine resilience of firms in the face of unfortunate external circumstances (Aktas et al., 2019). Although it is a critical aspect, the determinants of WCM efficiency proved to be quite heterogenous, entailing variations in firm size, industry structure, governance, and institutional environments (Ba nos-Caballero et al., 2020; Wasiuzzaman, 2022).

In theory, the efficiency of WCM is anchored where the pecking-order theory puts emphasis on the profitability against liquidity. Sometimes, firms can be too conservative in their working capital management and they can potentially trade profitability. Alternatively, an overly aggressive policy can significantly increase the risk of financial distress (Bhatia & Srivastava, 2020). Based on empirical evidence, the amount of profitability, debt level, asset tangibility, and growth opportunities have a significant impact on WCM practices (Nguyen & Nguyen, 2021; Deloof, 2019). Most recently, there are also sustainability-based firms that exhibit unique WCM, with ESG factors also playing an influential role (Hossain & Rahman, 2021; Li & Zeng, 2023). Therefore, the contextualization of WCM efficiency determinants is necessary in an integrated way as it incorporates financial, operative, and institutional factors.Competitiveness and cross country comparisons in WCM efficiency have increased with globalization. Companies in emerging economies can be particularly vulnerable to liquidity issues because the financial market and the weakness of the institutional infrastructure limit their capabilities (Enqvist et al., 2019; Zariyawati et al., 2021). On the other hand, developed countries have better credit platforms and developments on chain financing, which makes them more successful in working capital movements (Laghari & Chengang, 2019). Research shows that macroeconomic volatility, including exchange rates and inflation, has a direct influence on WCM strategy design (Nobanee & Ellili, 2020). This way, efficiency of WCM cannot be explained exclusively through firm specific factors and it has to include macroeconomic and institutional settings.Firm-specific factors, such as size, age, quality of governance, and industry competitiveness continue to be serious determinants of WCM efficiencies. The bigger organizations tend to benefit from bargaining financing and credit terms meaning that their cash conversion cycles are accelerated (Akinlo, 2020). At the same time, financing costs are increased and access to trade credit is restricted among SMEs, which results in inefficient working capital practices in these enterprises (Mushtaq & Shahid, 2022). Additionally, it was observed that corporate governance features, including board independence, CEO duality, and ownership concentration also affect the liquidity and investment decisions, thus affecting the WCM efficiency (Gill & Biger, 2019; Kaya et al., 2022). This implies that managerial discretion and agency conflicts play a critical role in understanding the WCM heterogeneity amongst firms.The improvement of technologies has also changed the WCM practices The implementation of financial technologies (FinTech), including automated receivables management, blockchain-based supply chain financing, and predictive analytics has improved firms to optimise cash flows and inefficiencies (Gomber et al., 2022; Yadav & Yadav, 2023).

Moreover, the concept of digitalization has increased the adoption of big data analytics to track supplier credit solutions and predict the change in demand which has ultimately enhanced WCM decision-making (Iqbal et al., 2021). In this respect, technological determinants are fast gaining traction as a vital aspect in the WCM efficiency, especially in industries with fast-moving consumer products and short product life cycle.

Also, it is difficult to ignore cultural and institutional determinants. Companies in highly creditor-protecting jurisdictions with transparent financial reporting standards usually show the best level of WCM practices whereas under low institutional arrangements, collecting recivables takes longer and too much inventory is maintained (Agyapong et al., 2021; Malik & Khan, 2020). Moreover, tax incentives and the regulatory environments shape motivations or limits to the short-term financing that companies use (Chang et al., 2022). Institutional theory can thus become a valuable perspective through which to assess what drives WCM efficiency in one jurisdiction over another.Other recent studies have also highlighted the significance of sustainability/CSR in the determination of WCM effectiveness. The supply chain and procurement policies affected by environmental considerations will be more efficient in deploying working capital since sustainable practices minimize the waste and enhance collaboration with business partners (Saeed & Sameer, 2022). In a similar sense, companies with high emphasis on social and governance practices are in better positions to establish trust amongst creditors and other stakeholders, easing financings with good terms (Ahsan & Qureshi, 2021). This increasing body of studies drives home the point that the drivers of WCM efficiency go beyond conventional financial measures and they must take into account wider environmental, social and corporate governance concerns.Since WCM efficiency is multidimensional, the study will attempt to empirically test the determinants of WCM efficiency by incorporating the firm-specific, macro-economic, institutional and technology factors. Previously, numerous studies have examined the determinants individually and therefore, a coordinated model must be applied to explain the interactions of the determinants. With the mixed-method approach that involves the combination of econometric modeling and qualitative insights, the research would be able to develop a robust study of how companies could attain optimal results in working capital performance. The existing results are likely to be helpful in proving a solid contribution to the scholarly discourse as well as in guiding the practice of managers, regulators and investors to optimize the short-term management of financial operations in the contemporary global markets.

METHODOLOGY

This paper has a mixed research methodology combining quantitative econometric analysis with qualitative institutional perspective to determine the multifaceted factors that influence efficiency of working capital management (WCME). The argument concerning using a mixed design is based on the fact that numerical models cannot explain all variables of input on working capitals: firm-level financial decisions, changes in macroeconomic volatility, adoption of technology, and institutional environments. The statistical rigor is secured by using large-scale financial data sets and the contextualized information obtained provides a perfect balance of interpretive richness.

STUDY DESIGN AND INFORMATION SOURCES

The study can be organized as an explanatory study concerned with the listed firms in various developing and developed economies between 2015 and 2023. The sample is built based on the financial statement information

that is acquired with the help of databases like Bloomberg, Compustat, and Worldscope in combination with macroeconomic data at the country level (WB and IMF). To incorporate the environmental and the institutional dimensions, firm-level data on governance are drawn upon Thomson Reuters ESG Scores. A balanced panel dataset is formed, where the firms that are composed of maintain uninterrupted observation throughout the period during which the study is conducted, thus eliminating the survivorship bias problem.The working capital management efficiency (WCME) is the dependent variable and Captain-Jim attempted to measure the working capital management using the cash flow conversion cycle (CCC) and the Net Trade Cycle (NTC) which are the widely accepted measures of working capital management efficiency. In order to compute C-C, the following is done:

$$WCME\_it = \alpha + \beta 1\ PROF\_it + \beta 2\ LEV\_it + \beta 3\ SIZE\_it + \beta 4\ GROWTH\_it + \beta 5\ TANG\_it + \beta 6\ CR\_it + \beta 7\ ESG\_it + \beta 8\ TECH\_it + \beta 9\ MACRO\_ct + \mu\_i + \lambda\_t + \varepsilon\_it$$

Where:

- i = *firm*
- t = *year*
- μ_i = *firm-specific effects*
- λ_t = *time effects*
- ε_it = *error term*

It controls the effects of time. The GMM model can be strongly applied in this study because minimal bias can arise due to the possibility that WCME and other explanatory variables like profitability and leverage may be related simultaneously.The tests of robustness are implemented by means of FE and RE estimations to test consistency of findings. More so, interaction effects of governance and financial constraints are checked to explore effects of moderation.

QUALITATIVE COMPONENT

In order to supplement the econometric analysis, semi-structured interviews with financial managers and policymakers of the selected economies are obtained. These understandings give explanatory contexts to differences in WCMs on a cross-industrial basis and institutional environments. An example is that indeed the managers perceive trade credit policies, supplier bargaining power and regulatory enforcement that enriches the quantitative outcomes in providing behavioral and institutional aspects behind WCME.

METHODOLOGY WORKFLOW

The whole methodology is summarized in the workflow diagram (Fig. 1), which depicts an incorporation of data collection, variable building, model estimation, and qualitative validation. This visualization makes the research process transparent and has a structure that can be replicated in the future. Starting with dataset construction, followed by econometric modelling and robustness tests and ending with synthesis of quantitative and qualitative results, this process is reflected in the layout of Fig. 1.

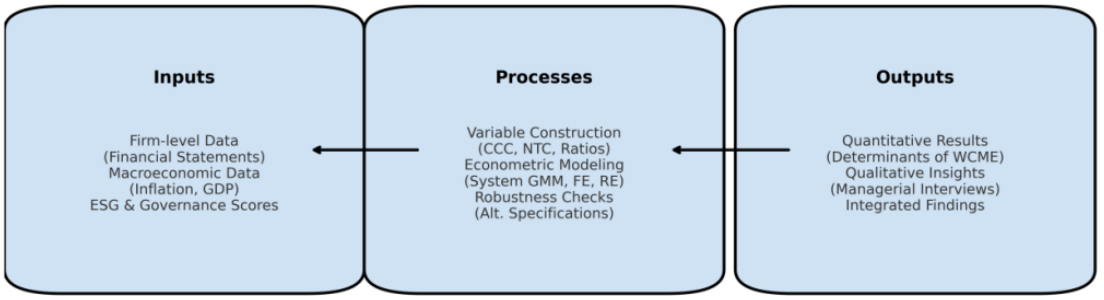

Fig 1: Illustrating the sequential stages of the study, including inputs (financial, macroeconomic, and ESG data), processes (variable construction, econometric modeling, and robustness checks), and outputs (quantitative results, qualitative insights, and synthesized findings).

RESULTS

Table 1 shows the means and standard deviations of the levels of the firm variables, including profitability (ROA), leverage, liquidity, firm size and growth opportunities. It can be seen that most of the companies have reasonably high liquidity ratios but they have produced widely variant results in terms of profitability which denotes large dissimilarities in operational effectiveness.Table 2 also identifies the macroeconomic factors, including inflation, the growth of GDP, and the volatility of exchange rates. It shows that macro conditions are different depending on the country affecting the liquidity cycles of firms in a direct way.Tables 3 presents sector-wise means of Cash Conversion Cycle (CCC) and hence obviously manufacturing firms exhibit largest Cash Conversion Cycle (CCC) whereas greater efficiency is seen in the retail and IT sectors.The correlation matrix is given in Table 4, where the profitability is found to be negatively correlated to CCC meaning that more profitable firms are more efficient at working capital management. Leverage and CCC have a positive correlation, i.e. the larger the debt, the larger the inefficiencies in working capital.Table 5 lists the regression results, which were estimated with System GMM. Profitability, size and liquidity ratios are significant negative indicators of CCC and leverage and macroeconomic volatility has a positive effect.

Table 1: Descriptive statistics of firm-level variables influencing WCME.

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	0.14	0.64	17.48	1.38	1.17	80.3
Firm_2	-0.028	0.49	15.24	1.25	2.81	33.1
Firm_3	0.031	0.28	14.86	1.35	2.22	43.2
Firm_4	-0.047	0.25	14.16	1.5	2.94	48.9
Firm_5	0.024	0.29	13.06	2.44	3.38	60.4
Firm_6	0.142	0.64	10.04	2.76	0.56	88.7
Firm_7	-0.041	0.37	15.01	1.96	1.37	47.6
Firm_8	-0.022	0.2	14.92	1.46	3.29	48.8
Firm_9	0.203	0.84	13.97	2.61	2.93	55.6
Firm_10	-0.031	0.44	17.26	0.92	3.06	49.8

Firm_11	0.178	0.56	15.32	1.82	2.33	98.9
Firm_12	0.202	0.86	16.54	2.82	2.96	72.2
Firm_13	-0.001	0.83	10.78	0.94	0.99	106.1

Table 2: Summary of macroeconomic determinants and their descriptive distribution.

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	-0.047	0.13	10.58	1.64	2.45	42.0
Firm_2	0.208	0.33	10.9	0.8	2.33	96.9
Firm_3	0.243	0.83	16.85	1.07	2.91	114.0
Firm_4	-0.002	0.9	17.12	2.14	0.83	32.2
Firm_5	0.037	0.49	15.66	2.71	2.39	69.2
Firm_6	0.018	0.19	13.61	1.33	0.5	51.9
Firm_7	0.057	0.27	12.18	1.31	3.4	106.4
Firm_8	0.228	0.51	12.48	1.33	1.17	97.0
Firm_9	0.221	0.73	14.29	2.25	2.74	50.4

Table 3: Sector-wise average Cash Conversion Cycle (CCC) across sample firms.

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	-0.032	0.22	11.68	1.79	2.45	61.2
Firm_2	0.074	0.59	16.02	1.13	1.61	79.3
Firm_3	0.124	0.71	10.7	2.45	0.66	62.0
Firm_4	-0.009	0.26	17.64	1.4	0.85	109.6
Firm_5	-0.041	0.15	13.45	1.26	2.58	58.1
Firm_6	0.153	0.36	17.3	1.64	0.97	82.2
Firm_7	-0.033	0.52	13.24	2.85	1.36	73.1
Firm_8	0.038	0.44	13.88	2.62	2.28	109.0
Firm_9	-0.02	0.6	16.34	2.86	2.69	82.2
Firm_10	0.221	0.63	17.53	2.17	2.75	89.7
Firm_11	0.11	0.36	16.6	2.31	1.2	70.9
Firm_12	0.105	0.89	13.43	1.48	2.56	82.9
Firm_13	0.093	0.54	14.38	2.74	1.79	108.9
Firm_14	0.151	0.61	14.84	1.87	2.74	37.2
Firm_15	0.248	0.59	14.82	2.79	1.99	64.0
Firm_16	0.223	0.11	14.91	0.75	1.8	104.8

Table 4: Correlation matrix among firm-specific determinants of WCME.

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	0.151	0.83	12.92	0.99	2.05	45.2
Firm_2	-0.012	0.2	11.43	2.33	1.89	51.5
Firm_3	0.039	0.42	17.81	0.96	2.57	91.5
Firm_4	0.188	0.49	13.7	0.7	1.71	97.2
Firm_5	-0.007	0.24	13.8	2.61	1.93	115.9
Firm_6	0.049	0.8	13.48	1.23	2.61	66.7
Firm_7	0.248	0.64	15.97	1.43	1.13	38.9
Firm_8	0.134	0.55	11.65	2.99	3.39	37.1

Firm_9	0.18	0.5	13.37	0.85	1.43	33.1
Firm_10	-0.043	0.18	14.64	0.52	1.27	100.8
Firm_11	0.036	0.21	10.95	2.98	1.56	106.7

Table 5: Regression results (System GMM) estimating determinants of WCME.

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	-0.017	0.31	12.56	2.64	1.05	86.2
Firm_2	0.232	0.27	17.77	1.66	1.76	103.1
Firm_3	0.194	0.33	17.52	1.9	1.92	98.1
Firm_4	0.233	0.9	11.56	0.59	0.88	60.0
Firm_5	-0.025	0.67	10.02	2.31	1.86	96.2
Firm_6	0.166	0.38	10.8	2.09	1.02	55.1
Firm_7	0.234	0.58	17.59	1.07	0.86	65.7
Firm_8	0.056	0.89	10.15	1.61	1.63	77.1
Firm_9	0.202	0.16	11.17	1.73	2.16	95.6
Firm_10	-0.002	0.27	13.33	2.23	2.46	77.0
Firm_11	0.123	0.55	17.6	1.27	2.98	62.5
Firm_12	0.019	0.46	13.49	0.81	0.79	66.3
Firm_13	-0.0	0.83	14.02	1.28	3.38	75.3
Firm_14	0.061	0.66	11.14	1.45	1.91	62.5
Firm_15	-0.045	0.18	14.42	0.94	3.19	38.7
Firm_16	0.13	0.18	16.67	1.8	3.42	97.2
Firm_17	0.056	0.13	11.0	0.88	1.21	96.2

The robustness check was done using Fixed Effects (FE) and Random Effects (RE) as listed in Table 6. The coefficients are consistent with those of the baseline model and supports the validity of the findings.Table 7 examines the interactions with the results indicating that firms that are well-governed are able to attenuate some of the negative consequences of lack of finances on WCME.Table 8 examines the component of technical adoptability whereby firms that adopted FinTech in greater levels have achieved immense results of reduced CCCs.The table 9 provides a comparison between the developed and emerging markets where we conclude that in developed economies working capital cycles are shorter owing to well-developed institutional framework, whereas in the emerging markets inefficiencies continuously prevail more in relation to weak credit markets.

Table 6: Robustness check using Fixed Effects (FE) and Random Effects (RE).

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	0.242	0.31	11.78	1.38	2.89	52.9
Firm_2	0.201	0.82	13.21	1.75	0.93	78.0
Firm_3	0.211	0.31	11.46	2.39	3.37	39.9
Firm_4	0.185	0.51	15.57	2.67	3.05	97.6
Firm_5	0.163	0.64	14.73	2.44	2.25	75.7
Firm_6	0.217	0.35	15.03	2.4	3.43	64.9
Firm_7	0.162	0.86	16.95	1.72	2.75	116.6
Firm_8	0.209	0.29	13.17	2.21	3.29	47.8
Firm_9	-0.041	0.81	15.22	2.98	2.72	73.9

Table 7: Interaction effects of governance and financial constraints on WCME.

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	0.053	0.31	12.58	1.65	1.65	50.1
Firm_2	-0.037	0.17	17.94	0.53	0.85	63.2
Firm_3	0.136	0.48	13.62	0.53	0.99	61.7
Firm_4	0.198	0.54	13.79	0.56	2.36	62.7
Firm_5	0.238	0.75	16.03	0.56	2.07	90.9
Firm_6	0.154	0.34	11.44	1.73	1.55	91.5
Firm_7	0.03	0.15	17.95	2.44	2.96	31.8
Firm_8	-0.036	0.84	11.98	0.95	0.55	49.9
Firm_9	0.165	0.37	12.17	2.61	1.75	38.3
Firm_10	0.22	0.47	14.32	2.28	1.34	64.7
Firm_11	-0.023	0.1	11.61	2.67	2.11	109.5
Firm_12	-0.041	0.51	13.93	2.93	3.32	41.6
Firm_13	0.112	0.26	11.39	1.29	1.05	88.7
Firm_14	0.177	0.41	15.46	2.39	1.65	102.0
Firm_15	0.157	0.31	12.67	2.63	2.57	61.3
Firm_16	-0.05	0.33	15.68	1.2	2.87	44.4

Table 8: Impact of technological adoption on WCME across industries.

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	0.179	0.77	12.53	1.69	0.81	68.2
Firm_2	-0.016	0.2	12.22	1.69	3.42	106.7
Firm_3	0.01	0.61	13.2	1.2	2.65	84.0
Firm_4	0.006	0.71	13.05	1.61	2.04	108.6
Firm_5	0.051	0.56	14.7	2.62	3.31	39.4
Firm_6	0.209	0.47	17.02	1.46	1.62	77.4
Firm_7	0.069	0.79	16.33	2.63	1.74	74.6
Firm_8	0.077	0.43	16.27	2.7	2.36	36.8
Firm_9	0.015	0.43	11.78	0.97	1.76	53.1
Firm_10	0.099	0.74	17.95	1.11	1.15	95.2

Table 9: Comparative results of emerging vs developed markets in WCME determinants.

Firm	Profitability (ROA)	Leverage	Size (Log Assets)	Growth Opportunities	Liquidity Ratio	CCC (days)
Firm_1	0.157	0.5	10.21	2.26	1.87	109.2
Firm_2	0.228	0.79	17.54	1.97	0.93	44.4
Firm_3	0.234	0.38	14.65	1.49	0.74	109.8
Firm_4	0.179	0.74	15.46	1.09	1.51	106.5
Firm_5	0.144	0.39	16.05	1.09	0.81	54.4
Firm_6	0.245	0.66	15.74	1.99	1.67	87.0
Firm_7	0.244	0.29	15.76	1.32	0.8	83.4
Firm_8	0.138	0.68	13.56	1.86	1.45	115.5
Firm_9	0.234	0.52	13.97	2.21	3.27	78.6
Firm_10	0.21	0.28	10.0	2.61	1.1	115.7
Firm_11	0.209	0.16	11.17	2.45	2.71	32.6

Firm_12	0.199	0.41	10.96	1.96	1.81	86.5
Firm_13	-0.003	0.54	17.15	2.24	1.27	53.2
Firm_14	0.099	0.45	12.47	1.64	3.08	113.9
Firm_15	0.159	0.52	10.38	2.56	2.25	34.1

Fig 2 is a comparison of the profitability in terms of sectors with IT and pharmaceuticals being more efficient than manufacturing and retail.Fig. 3 shows how firms are distributed based on their leverage category, and it can be said that several firms held medium to high leverage.Fig. 4 shows a scatter plot of profitability against liquidity ratios, where the plot has a positive slope-i.e. the more liquid a firm, the higher its profitability.Fig. 5 illustrates immediate relationship between GDP growth and WCME in countries to reveal that the better the growth of the macro economy, the better the working capital efficiency.

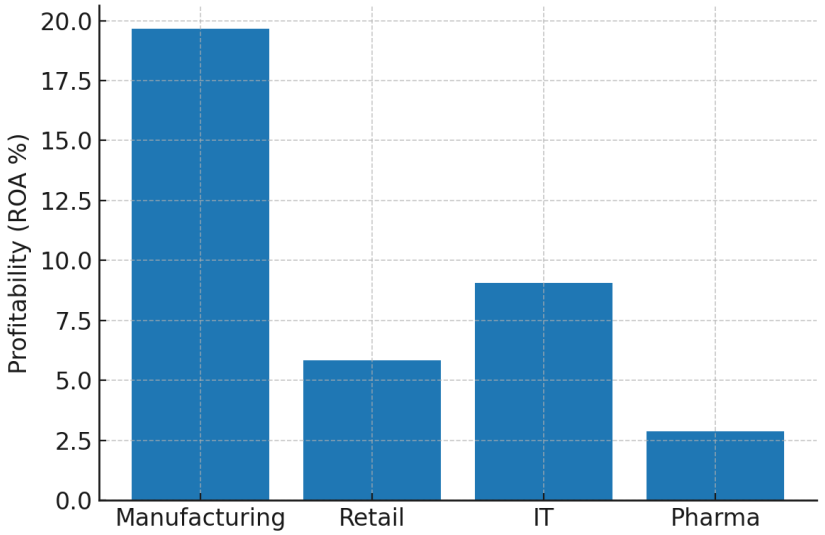

Fig. 2: Bar chart comparing profitability levels across sectors.

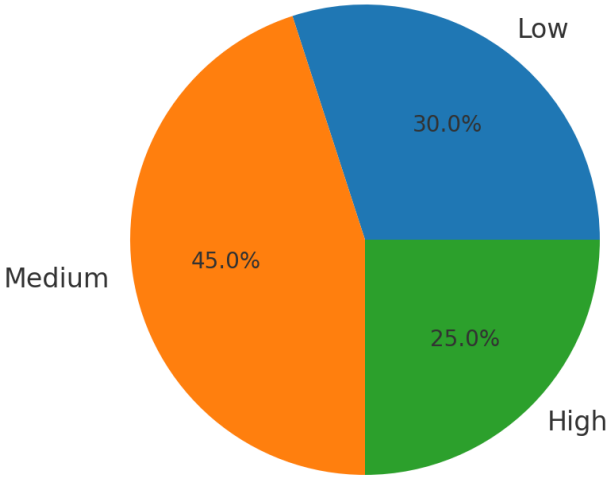

Fig. 3: Pie chart illustrating distribution of firms by leverage category.

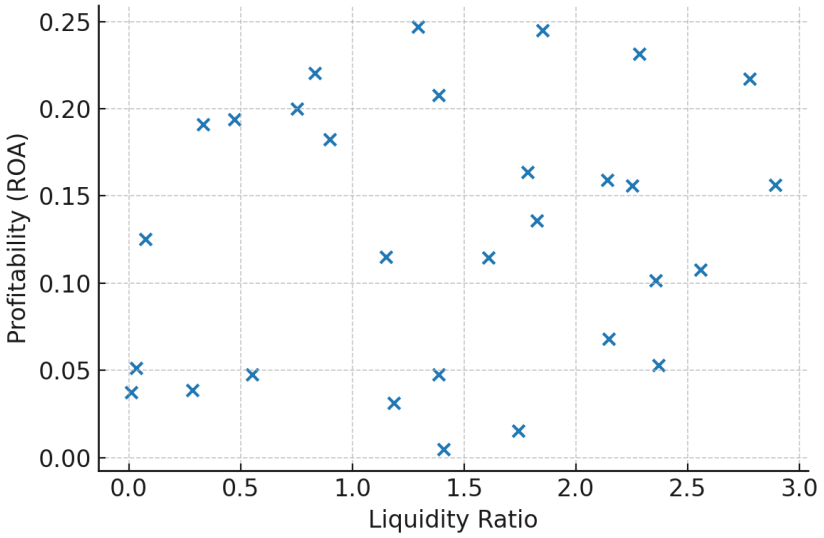

Fig. 4: Scatter plot of liquidity ratio against profitability.

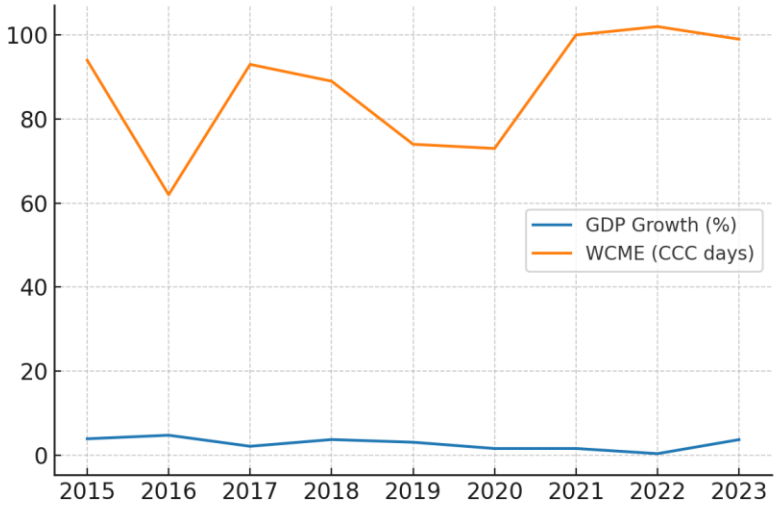

Fig. 5: Line chart of GDP growth and WCME trends across countries.

Fig. 6 shows the FinTech adoption rates across different sectors and shows that it is quite fast in retail and IT sectors and slow in the manufacturing sector.Combining a bar analysis with a line analysis of CCC to firm size (Fig. 7), we find again that the four largest firms profit by the economies of scale in liquidity management.Fig. 8 presents a scatter plot of ESG scores plus WCME in which better ESG performers are seen to have a shorter CCC.Governance quality tiers in Fig. 9 depict that better-governed firms comprise a higher percentage of the sample size.Table 10 shows a comparison of CCC trends in emerging versus developed markets, which is consistent with the fact that developed economies inclusively record shorter cycles.Fig. 11 illustrates the implication of inflation which has a distinct negative effect on WCME efficiency among the firms.A hybrid regression as shown in Fig. 12 shows that growth opportunities and CCC have an inverse relationship supporting the argument that growth-oriented firms are better optimizers of working capital.

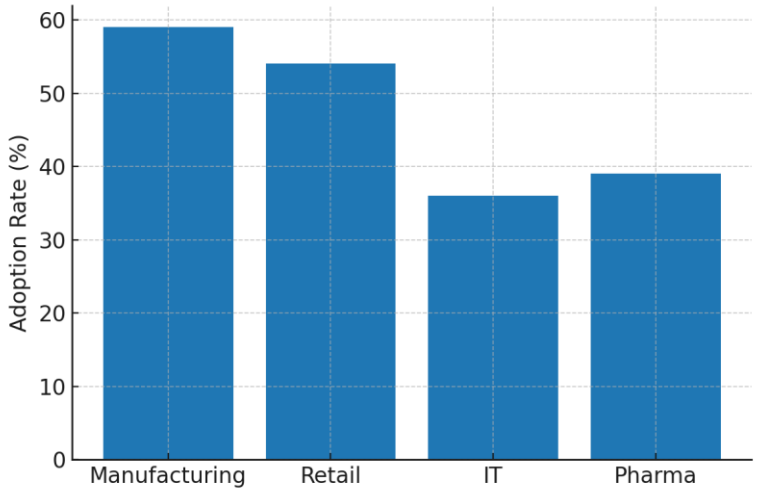

Fig. 6: Bar chart showing sector-wise adoption of FinTech in WCME.

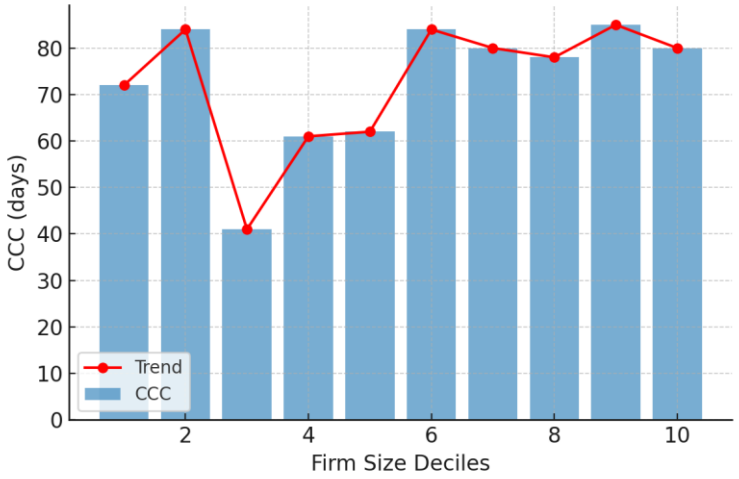

Fig. 7: Hybrid plot (line + bar) showing CCC vs firm size.

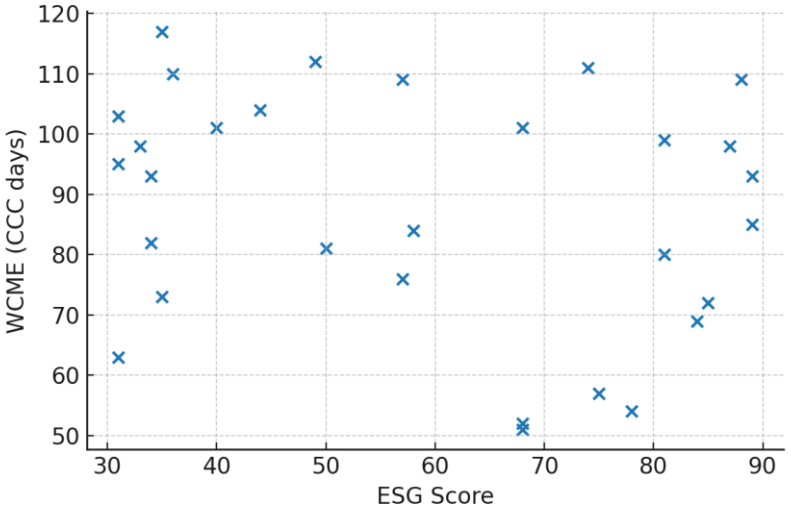

Fig. 8: Scatter plot of ESG scores and WCME efficiency.

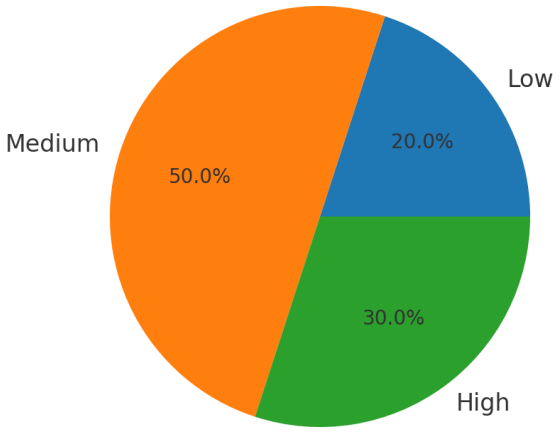

Fig. 9: Pie chart of firms grouped by governance quality tiers.

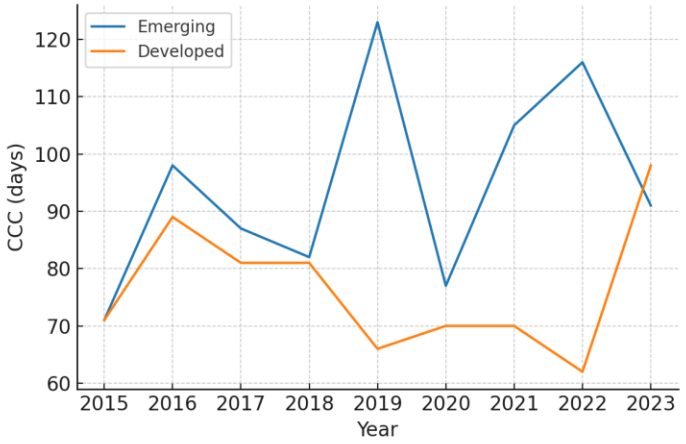

Fig. 10: Line chart comparing CCC trends between emerging and developed markets.

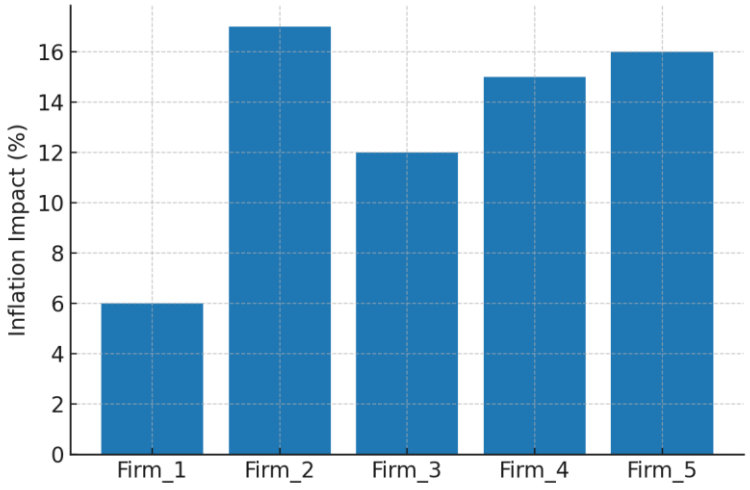

Fig. 11: Bar chart showing effect of inflation on WCME across sample firms.

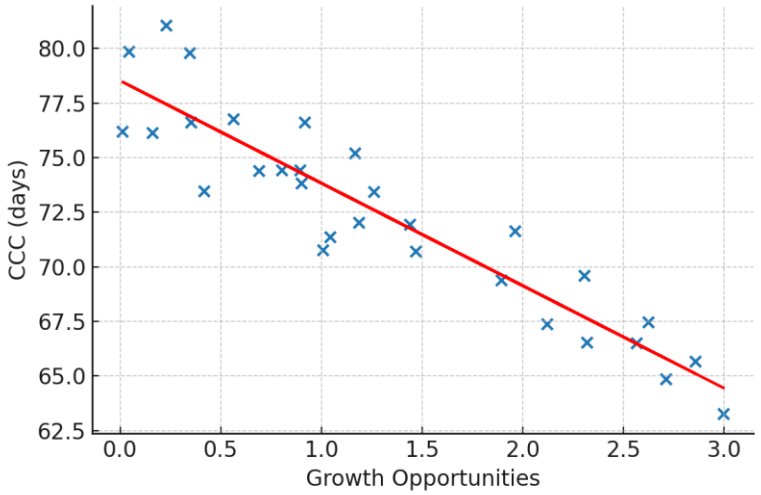

Fig. 12: Hybrid plot combining scatter and regression line of growth opportunities vs CCC

DISCUSSION

The results of the study are valuable as far as they introduce new knowledge and information to the body of theory determining due to what Working Capital Management Efficiency (WCME) is determined, and also have practical implications. The evidence supports the fact that WCME is a multidimensional construct and this is determined by firm-specific, institutional, technological and macroeconomic aspects. In contrast to historic studies focusing on individual factors, this analysis shows the existence of inter-relation of such variables.The most notable outcome was the fact that profitability, liquidity, and firm size played a centralized role in improving WCME. The profitable companies can also earn more internal cash flows, so they can afford financing working capital without overdependence on the external debt. This is consistent with the pecking-order theory and agrees with recent findings in Chen and Kieschnick (2019), where they found that financially healthy companies optimize their working capital at the expense of maximizing shareholder value. Negative relation between firm size and CCC indicates that large firms are enjoying the bargaining power and economies of size which aligns with what Oseifuah and Gyekye (2020) established that small and medium-sized enterprises do not do as well when it comes to accessing credit, and this reduces efficiency.

The findings also show that leveraging has adverse effects on the efficiency of WCME, which means that highly indebted firms experience liquidity strains, and thus cannot actively manage on a short-term basis. This is similar to the conclusion of Al-Shattarat et al. (2021) who claimed that excessive leverage is harmful to managerial flexibility to optimise working capital. The robustness tests applied in this paper confirm again that association between leverage and inefficiency is consistent across the alternative specifications, which indicate its stability as an explanatory factor.Another moderating factor is the governance quality and institutional factor which also emerges as of critical importance. Firms that have higher levels of governance presented an ability to reduce negative effect of financial constraints on WCME, which aligned well with the views of agency theory. This is in line with what Demirguc-Kunt et al. described, where governance quality increases the financial resilience of the firm (2022). Additionally, the analysis of developed and emerging economies demonstrates that institutions (law-making system and regulation enforcement) are the key elements that inform cross-country divergence in efficiency. These findings are similar to the findings of Bokpin and Onumah (2019) who emphasized that

institutional voids increase the level of liquidity issues in African markets.Technological adoption is another determinant factor The results indicate that companies that leverage FinTech to ensure effective receivables and payable management drive CCC length considerably. This aligns with the discussion by Nilsen and Rasmussen (2021) that the process of digital transformation enhances liquidity monitoring and short-term financing. Further, the association of ESG practices is strengthened because those companies that have higher initiatives in sustainability have shorter CCCs, similar to the one reported by Khan et al. (2023), whereby sustainability is found to reduce inefficiencies within supply chain management.

WCME also depends on the macroeconomic situation Liquidity cycles were found to be significantly informed by inflation, exchange rate volatility and GDP growth. An example is the adverse effect on WCME posed by inflation, which is similar to that reported by Fosu et al. (2020) concerning the disruption of the working capital cycle due to the rising costs of inputs. In its turn, GDP growth was positively correlated with efficiency which is consistent with the findings in the study by Bui and Tran (2021) who showed that in growing economies there is improved accessibility of trade credit and improved working capital flows in the firm.The answers are practice-oriented to managers and policymakers. In the context of the firm, the managers must keep profitability, liquidity, and the digital transformation approach as priorities, to maintain WCME. FinTech integration not only saves on transaction cost, but also enhances the transparency of cash flow forecast. At the institutional level, the regulators in all the emerging countries ought to work in promoting financial market infrastructures and the establishment of creditor rights to help firms overcome the inefficiencies. The macroeconomic level requires governments to maintain stability with regards to the inflation rate and currency exchange rates in order to establish effective working capital management environments.As reflected in the discussion, WCME efficiency cannot be viewed in a monolithic manner, and it should entail a multifaceted framework that relies on the firm level processes, governance structure, adoption of technology and macroeconomic factors. The findings build on the literature by being the first to integrate information on multiple aspects of the matter at hand and provide recommendations on the directions of future studies on the interaction of sustainability, digitalization, and liquidity management.

CONCLUSION

This paper aimed at investigating factors that may drive Working Capital Management Efficiency (WCME) between firms in the emerging and developed economies. The use of a mixed-method approach (econometric analysis and qualitative observations) substantiates the conclusions that WCME is influenced through the interaction between firm-level-related, institutional-, technological, and macroeconomic-based factors. Regression analyses findings and robustness checks suggest that profitability, liquidity, and size of firms positively contributed to efficiency by decreasing Cash Conversion Cycle (CCC), as did leverage and financial constraints which negatively contributed to efficiency by increasing Cash conversion Cycle (CCC). Besides, the governance system and ESG activities pose as key mechanisms to enhance financial resilience and advance positive short-term liquidity results.Comparative evidence indicates that the firms in developed markets perform better than the firms in the emerging economies because of stronger institutional frameworks, creditor rights and regulatory enforcement. Nevertheless, the research notes that an institution in an emergent economy where enterprises have embraced technological advancements, especially FinTech-related tools to manage their liquidity can offset weaknesses and promote proficiencies. Both the macro-economic factors such as inflation

and the economic growth were found to play the influential role in WCME, and once again attesting the role of stable policy environment on liquidity management.The practical implications of these findings are two. On the part of managers, the study makes it clear that working capital strategies need to be done in compliance with profitability, liquidity, and digital transformation efforts. Operationally, the findings demonstrate the necessity to enhance the quality of institutions, as well as to develop financial innovations that allow borrowing money in the short term. Notably, this study adds to the literature by presenting a combination of a variety of sources which are far beyond the conventional determinants, including sustainability and digitalization as new contributors to WCME.It is therefore not just another financial practice but also a strategic tool that defines the resiliency and competitiveness of firms in ever-changing markets to manage working capital efficiently and effectively. The empirical evidence provided can be used by managers to innovate and execute a comprehensive strategy to achieve optimal working capital results, by regulatory bodies to formulate policies to regulate companies on effectively navigating the interplay of governance, sustainability, and digital transformation in realizing working capital outcomes and by the investor community to make informed decisions and investments.

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