

WORKING CAPITAL MANAGEMENT AND PERFORMANCE: A LITERATURE REVIEW INVESTIGATION OF A NON-LINEAR RELATIONSHIP

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Abstract: *This study discusses the importance of working capital management (WCM) in determining a firm's financial performance. Furthermore, the paper highlights a non-linear relationship between working capital and profitability, with a concave relationship indicating that working capital has a positive effect on profit up to an optimum level, after which it negatively affects profitability. This study suggests that proactive working capital policies can enhance profits and provide corporate policy implications for maximizing financial performance. Moreover, the study highlights the importance of maintaining working capital at an optimal level to benefit shareholders and suggests that working capital can be used as a tool to optimize financial performance and identify areas for improvement. Overall, the research contributes to understanding treasury management and emphasizes the importance of effectively managing working capital for profit maximization..*

Keywords: *Working Capital Management; Non-linear relationship; Profitability*

Introduction

Working capital management (WCM) presents a significant challenge for companies because it involves maintaining an appropriate level of liquidity to cover short-term financial obligations (Hatane et al., 2023). This is crucial for ensuring business continuity and maximizing profitability. WCM primarily focuses on managing current assets and liabilities, which form a crucial part of a company's total assets. Maintaining excessively high levels of current assets can result in unprofitable returns on short-term investments. However, having too few current assets can make a company vulnerable to difficulties and problems, potentially leading to operational failures, an inability to meet short-term financial obligations, and increased liquidity risk (Nguyen et al., 2020). Therefore, it is essential for companies to establish a rational working capital policy that strikes a balance between profitability and liquidity. By doing so, companies can enhance their profitability and create value for investors. Effective management of working capital plays a vital and influential role in the operational performance of a company's resources, liquidity, profitability, and overall value. As a result, companies strive to find the optimal level of investment in working capital, considering the risks and returns associated with current assets (Prempeh and Peprah-Amankonah, 2018; Aktas et al., 2018; Banerjee et al. 2024).

Profitability plays a crucial role in assessing the effectiveness of an organization's overall management in terms of the profit margin derived from sales and investments. It is commonly employed as a benchmark to evaluate business performance. Investors rely on profitability as a determining factor when deciding to invest in a company, as higher profitability signifies a stronger position for the company, ultimately leading to enhanced health and performance (Nofita Sari & Endri, 2019; Shahniah et al., 2020).

Banerjee, and Deb (2023a) defines working capital management as a fundamental concept that ensures a firm's ability to finance the difference between its short-term assets and liabilities. Banerjee, and Deb (2023b) acknowledges the significant role of working capital management in financial management, as it directly impacts a firm's performance, risk, and value. Therefore, regardless of their size, all firms recognize the importance of WCM. El-Ansary and Al-Gazzar (2021) further emphasize that financial managers are responsible for handling the current assets and liabilities involved in working capital management. They highlight the need for conscious attention, time dedication, and effective decision-making by executive managers across the organization. Moreover, Toušek et al. (2023) identify inventories, accounts receivables, and accounts payables as the most crucial components of working capital management. Ngatno et al. (2021) also assert that an excess of current assets can negatively impact a firm's profitability, while a scarcity of current assets increases the likelihood of bankruptcy.

Industrial sector companies listed in Oman are currently encountering difficulties in terms of profitability because of economic instability, rising production expenses, and fierce competition. Consequently, there has been a decrease in the return on assets and return on equity metrics, which has had a negative impact on the growth prospects of these companies and the overall economic welfare of Oman. Effective management of working capital is of utmost importance in the manufacturing sector of Oman as it helps strike a balance between liquidity and profitability. This, in turn, has implications for operational efficiency, financial stability, and the overall performance of businesses in the sector (Deloof, 2019). Moreover, Amponsah-Kwatiah & Asiamah (2021) support the claim that the importance of efficient working capital management by listed firms cannot be overemphasized as this is extremely needed to boost profitability and increase expansion in industry and productivity, a prerequisite condition for

dealing with the country's unemployment issues and ensuring economic stability. Given this backdrop, businesses should have a working capital culture that supports financial performance. Moreover, empirical evidence regarding the association between working capital and corporate performance is contradictory. On the one hand, investing in working capital is believed to have a favorable impact on firm profitability. This is because such investments facilitate sales and earnings growth, as highlighted by Baños-Caballero et al. (2020). Trade credit, for instance, positively affects sales by enhancing customer relationships. In addition, maintaining higher inventory levels safeguards the business against price fluctuations. Furthermore, short-term debts used to finance working capital come with low interest rates and are not exposed to inflationary risks, as Mahmood et al. (2019). However, excessive investment in working capital necessitate financing, leading to supplementary costs. This can result in adverse effects and financial losses for shareholders, as noted by Chang (2018). Consequently, if the cost of working capital investments rises rapidly compared with the benefits of holding larger inventories or offering trade credit to customers, it can diminish the firm's profitability levels. Recently, some studies have argued that there exists a non-linear relationship between investment in working capital and firm profitability, as highlighted by Tsuruta (2018). This nonlinear relationship suggests that investments in working capital positively impact corporate profitability up to a certain point, known as the optimum level of working capital or the break-even point (Akhund & Qazi, 2023). Beyond this point, working capital may become a negative determinant of firm performance. This combination of positive and negative effects, with a break-even point, is referred to as an inverted U-shaped relationship, as Mahmood et al. (2019) and Mohammadi et al. (2024) explain. Considering that "entrepreneurial success can refer to the mere fact of continuing to run the business" (Staniewski and Awruk 2019), the trade-off between working capital and firm profitability holds significant importance in the context of achieving success in the industrial sector.

The mixed results regarding the effects of working capital indicate that short-term financial decisions should recognize working capital as a determining factor of financial performance. Therefore, the current research seeks to examine current research on WCM and profitability. Our research presents new theoretical and practical insights into the relationship between working capital management and firm profitability. Initially, we analyse existing literature to show a nonlinear correlation between working capital management and corporate performance. The literature suggests a U-shaped relationship between working capital and firm profitability, where working capital positively affects profit up to a certain point (optimal level). Beyond this point, an increase in working capital negatively affects firm profitability (Briones et al., 2024). The literature highlights the importance of proactive working capital strategies in boosting profits. Moreover, our study provides valuable implications for corporate policies in an emerging economy. The findings are relevant to real-world business situations. Specifically, financial executives should focus on maintaining working capital at its optimal level rather than increasing net investment, while using internally generated funds for more profitable investment opportunities. Therefore, corporate managers should prioritize managing accounts payable, accounts receivable, and inventory turnover to maximize the advantages of working capital for shareholders.

Practitioners consider working capital a valuable asset because it can improve financial performance and help identify areas that require attention to achieve optimal financial outcomes. Policymakers can use this knowledge to maximize profits. The study's findings contribute to the understanding of treasury management, a complex and constantly evolving field that aims to achieve the best possible performance and streamline all treasury operations.

The research emphasizes that having too much working capital can negatively impact business performance, underscoring the importance of working capital as a reliable indicator for predicting future economic challenges.

Theories of Working Capital Management

There are several theories relating to the management of working capital, especially in firms operating in highly volatile business environments like the case of Oman. However, for the purpose of this study, the pecking order theory, agency theory, and cash conversion cycle theory have been considered.

Pecking Order Theory

The pecking order theory posits that firms' managers have more knowledge about the firms' values than potential investors because of information asymmetry. This theory suggests that firms tend to prioritize internal financing and debt over common stock when seeking external funds (Myers and Majluf, 1984). Internally generated funds are assumed to have no transaction costs, while the use of debt conveys positive information and the issuance of ordinary shares conveys negative information about the firm (Correa et al., 2007; Czerwonka & Jaworski, 2023). Therefore, the pecking order theory recommends that firms maintain high levels of cash reserves and liquid assets to meet obligations promptly and avoid external financing (Sunday et al. 2023; Chen, 2004). Moreover, the theory highlights that firms adopting a conservative financing approach can access credit easily and are perceived as safe investments by potential investors. Consequently, firms are advised to implement an aggressive working capital policy by keeping current assets at a lower level and relying more on supplier financing. This strategy ensures a sufficient amount of internal funds to support the firm's operations without the need for additional debt or equity (Sulistianingsih & Santi, 2023). The pecking order theory is particularly relevant for firms operating in uncertain economic environments because it effectively guides the management of working capital. It also addresses the issue of information asymmetry between managers and investors, offering a solution to some limitations of the traditional capital structure perspective on firms.

Agency theory

Jensen and Meckling (1976) introduced the agency theory, which provides an explanation for the relationships and agreements within a firm between different stakeholders (principals) and managers (agents). Managers are expected to pursue specific objectives set by shareholders. However, they may face challenges in achieving these objectives due to the managers' non-rational opportunistic behavior, leading to conflicts or problems within the organization (Jensen, 1994). To mitigate these agency problems, the principals incur agency costs, which include monitoring expenses, bonding expenses, and the resulting loss due to the separation of control and ownership (Banerjee & Deb, 2023b). Agency theory plays a crucial role in the financial management of firms, but its effectiveness relies on the abilities and ethics of the managers responsible for running the organization. It is particularly important in the management of working capital, especially for firms operating in highly unstable and uncertain environments, as they incur significant agency costs to ensure their success and sustainability. This theory is especially relevant when considering the components of working capital management. This helps explain why firms use debt as a source of financing, even without the advantage of a tax shield. According to Modigliani and Miller (1963), in a world without tax benefits, the composition of the firm is not significant. However, Jensen and Meckling (1976) argue that the optimal ownership structure of a firm depends on the trade-off between agency costs of debt and equity. This explains why debt remains a popular source of finance, even in

the absence of tax benefits. Moreover, it is accurate to state that agency theory is fundamental to the development of corporate governance. It also sheds light on the fact that even with highly efficient management, the maximum value of a firm may not be achieved (Hassan et al., 2023).

Cash conversion cycle theory

The theory of the cash conversion cycle, developed by Richards and Laughlin (1980), provides an explanation of how companies can effectively manage their working capital by reducing the duration of their operations cycle. This theory measures the time interval between a company's inventory purchase and the receipt of cash from its accounts receivables. By using the cash conversion cycle theory, firms' management can forecast the duration for which their cash remains tied up in operational activities. According to Kabuye et al. (2019), if a company takes an extended period to collect outstanding accounts receivables, maintains excessive inventory levels, or pays expenses too quickly, it will result in a lengthened cash conversion cycle. Consequently, a longer cash conversion cycle signifies a longer time required to generate cash, indicating potential insolvency for the firm.

Conversely, if a firm efficiently collects outstanding payments within a shorter time frame, accurately predicts inventory needs, or pays bills slowly, it will shorten the cash conversion cycle (Aminu and Zainudin, 2016). Therefore, a shorter cash conversion cycle indicates a healthier financial position for the firm. The additional cash generated can then be used for further purchases or to repay outstanding debts. The cash conversion cycle theory serves as the fundamental theory that elucidates the management of working capital, encompassing various concepts and components such as raw materials, finished products, inventory levels, receivables, payments, and the cash component (Umar & Al-Faryan, 2024).

Inverted U-shaped Relationship between Working Capital and Firm Profitability

Various perspectives have been put forth in the academic literature to elucidate the connection between working capital and firm performance. On the one hand, numerous previous studies have discovered a positive correlation between these two measures, drawing from firms in developed economies such as the US (Lyngstadaas 2020), the UK (Goncalves et al. 2018), Finland (Enqvist et al. 2014), as well as developing economies like Uganda (Kabuye et al. 2019), Egypt (Moussa 2018), Vietnam (Nguyen and Nguyen 2018), and Ghana (Amponsah-Kwatiah and Asiamah 2020). Kabuye et al. (2019) conducted an analysis of 110 supermarkets in Uganda, examining the influence of internal control systems and working capital management on financial performance. Their findings indicate that working capital management is a significant predictor of financial performance. Similarly, Moussa (2018) explored the impact of working capital management on the performance of 68 industrial firms in Egypt from 2000 to 2010 and documented a positive relationship between working capital management (measured by the cash conversion cycle) and firm profitability. The author highlights that stock markets in less developed economies fail to achieve optimal efficiency in their working capital management. In another study, Nguyen and Nguyen (2018) investigated the relationship between working capital management and corporate profitability, revealing a positive nexus between these factors in Vietnamese listed firms from 2008 to 2014. Additionally, Amponsah-Kwatiah and Asiamah (2020) reported a positive relationship between different components of working capital and profitability in listed manufacturing firms in Ghana. Furthermore, Goncalves et al. (2018) verified that effective working capital management leads to increased profitability, using UK unlisted companies as a case study from 2006 to 2014. In the United States, Lyngstadaas (2020) found a positive correlation between efficient working capital management and improved financial performance among listed

manufacturing firms. Enqvist et al. (2014) conducted a study on the impact of working capital management on firm profitability during various business cycles, focusing on Finland from 1990 to 2008. They emphasize that firms can boost their profitability by enhancing their working capital efficiency. This perspective is supported by the notion that working capital provides firms with the opportunity to expand through increased sales and revenues. Some firms face significant risk due to low inventory levels (Michalski 2016), resulting in adverse effects on sales levels and profitability (Michalski 2016). For businesses, seamless daily operations are essential because of the delay in payment between the purchase of raw materials and the receipt of funds from the sale of a finished good. Since WC requires a large investment, effective WC can contribute to improved firm performance. As a result, businesses try to efficiently manage the WCM components by shortening the CCC period, turning over inventory quickly, postponing payments to creditors, and pursuing early receivables collection (Hassan et al. 2023). According to the results of (Yeboah & Kjærland, 2024), operating profit is positively impacted by DWCM, but operating cost and profit are inversely related. DWCM improves OE, as the final result proves. Moreover, in all models, the working capital ratio (WCR) regularly outpaces the cash conversion cycle (CCC), suggesting that wise cash management in accounts payable, inventory, and receivable results in increased cost savings and improved performance.

On the contrary, an opposing body of research indicates that working capital management (WCM) has a harmful impact on profitability, drawing from data collected in developed economies (Fernandez-Lopez et al. 2020; Ren et al. 2019; Dalci et al. 2019), the European Union (Akgun and Karatas 2020), and developing economies (Pham et al. 2020; Wang et al. 2020; Le 2019; Yusoff et al. 2018; Habib and Huang 2016). Fernandez-Lopez et al. (2020) specifically highlight a negative correlation between various aspects of working capital and firm performance within a sample of Spanish manufacturing companies spanning from 2010 to 2016. Dalci et al. (2019) investigated the connection between the cash conversion cycle and profitability across 285 non-financial German firms from 2006 to 2013, concluding that reducing the duration of the cash conversion cycle positively impacts the profitability of small- and medium-sized enterprises. This conclusion is drawn from a variety of analytical approaches, including pooled ordinary least squares (OLS), fixed effects, random effects, and the generalized method of moments (GMM). Akgun and Karatas (2020) also identified a negative association between working capital and business performance within a sample of 28 European Union-listed companies during the 2008 financial crisis. Furthermore, Ren et al. (2019) discovered an inverse relationship between the cash conversion cycle and the profitability of non-state-owned enterprises in China. Similarly, Le (2019) reported a negative impact of working capital management on firm valuation, profitability, and risk for a sample of 497 firms in Vietnam from 2007 to 2016. Pham et al. (2020) also found the same negative relationship for Vietnamese steel companies. In Malaysia, Yusoff et al. (2018) conducted a study on 100 selected manufacturing companies and showed that the inventory conversion period, average collection period, and cash conversion cycle are significantly and negatively correlated with profitability. Additionally, Chang (2018) confirmed that a conservative working capital management policy can improve firm performance based on a sample of 31,612 companies from 46 countries spanning 1994–2011. Shrivastava et al. (2017) reported a detrimental influence of a longer cash conversion period on profitability in India using both classical panel analysis and Bayesian techniques. Habib and Huang (2016) found that positive working capital has a negative impact on profitability, whereas negative working capital positively affects profitability in Pakistan. Wang et al. (2020) also highlighted a negative association between working capital management and the performance of non-financial listed firms in Pakistan. Finally, De Almeida and Eid (2014) found that increasing the level of

working capital at the beginning of a fiscal year diminishes the value of Brazilian public companies based on data from 1995 to 2009. Furthermore, Ukaegbu (2014) highlighted the adverse impact of cash conversion cycles on firm profitability, specifically on net operating profit, using data from a sample of manufacturing companies in Egypt, Kenya, Nigeria, and South Africa from 2005 to 2009. According to Seth et al. (2020), a reduction in CCC or inventory days improves a company's profitability and sales performance. Therefore, it is necessary to handle each CCC component—such as receivable, inventory, and payable days—individually and as effectively as possible. Generally speaking, businesses need to concentrate on increasing cash collections while postponing payments. However, businesses need to carry it out under proper supervision and with expert guidance. Experts in the relevant financial domains must be engaged for this reason in order to provide professional advice that could increase WCM efficiency.

Another perspective suggests that increased investments in working capital lead to higher financing requirements, resulting in elevated interest expenses and heightened bankruptcy risk of firms. a rise in working capital levels brings about increased costs associated with holding and managing working capital, ultimately diminishing firm value (Michalski 2014). Nevertheless, the relationship between working capital components and firm value is contingent upon the risk sensitivity of individual firms (Michalski 2014). Michalski (2016) further illustrates that both before and after financial crises, firms tend to maintain higher levels of working capital as a means of hedging against disruptions in productivity costs.

The functional form of the relationship between working capital and firm profitability has recently become a topic of interest. Various studies have explored this relationship and found evidence of a concave relationship between the two measures. Most of these studies have focused on firms from developed economies, such as those conducted by Mahmood et al. (2019), Tsuruta (2018), Aktas et al. (2015), and Baños Caballero et al. (2014). Additionally, there have been studies that have examined firms from emerging European countries as well as specific sectors. For example, Botoc and Anton (2017) conducted a study on firms from emerging European countries, whereas Mun and Jang (2015) focused on firms from a certain sector. Mahmood et al. (2019) used the GMM methodology to analyze the working capital–profitability relationship in Chinese companies from 2000 to 2017. Their findings revealed an inverted U-shaped relationship, indicating an optimal level of working capital that maximizes profitability. Laghari and Chengang (2019) also reported similar results using the same GMM methodology, further supporting the existence of an inverted U-shaped relationship between working capital and profitability in Chinese listed companies. In a study conducted were Tsuruta (2018), data from over 100,000 small businesses in Japan was analyzed. The findings indicated a negative impact of working capital on firm performance in the short run but a positive impact over longer periods. This suggests that the relationship between working capital and profitability may vary with time. Altaf and Shah (2018) focused on nonfinancial Indian companies and employed the GMM methodology to examine the relationship between working capital management (WCM) and firm profitability. Their study provided evidence of an inverted U-shaped relationship, indicating an optimal level of WCM that maximizes profitability. Overall, these studies highlight the importance of understanding the relationship between working capital and firm profitability. The findings suggest a complex relationship between these two variables, and it is crucial for firms to carefully manage their working capital to achieve optimal profitability. Botoc and Anton (2017) identified a curvilinear relationship between working capital level and firm profitability in high-growth firms from Central, Eastern, and South-Eastern Europe during 2006–2015. Similarly, Afrifa and Padachi (2016) found a

concave relationship between working capital level (measured by the cash conversion cycle) and firm profitability in a sample of 160 listed firms from 2005 to 2010. Aktas et al. (2015) examined the relationship between WCM and firm performance in US firms from 1982 to 2011 using fixed-effects regressions. They emphasized the existence of an optimal point of working capital investment that firms may strive toward to enhance their overall performance. Furthermore, Mun and Jang (2015) reported a concave impact of working capital on firm value, suggesting the presence of an optimal working capital level for US firms in the restaurant industry from 1963 to 2012, based on static and dynamic panel data methodologies. Baños-Caballero et al. (2014) highlighted a non-linear relationship between working capital and firm value in a sample of UK firms, indicating the presence of an optimal working capital level that maximizes firm revenues. The authors also noted that the optimal level varies depending on financing constraints, with lower optimal working capital levels for firms facing financial constraints. For a sample of 719 Polish listed companies from 2007 to 2016, Anton and Afloarei Nucu (2020) look into the relationship between working capital and firm profitability. Working capital has a positive impact on Polish firms' profitability up to a break-even point (optimum level), according to the empirical results, which show an inverted U-shaped relationship between working capital level and firm profitability.

As can be noticed, the corporate finance literature does not provide a general agreement on how working capital affects firm performance. The divergence can be explained by different measures used for working capital: cash conversion cycle (Dalci et al. 2019; Shrivastava et al. 2017; Ukaegbu 2014), the most popular indicator used as proxy, net trade cycle (Baños-Caballero et al. 2014), or other measures (Inventory Turnover Ratio, Working Capital Turnover Ratio). Using these measures, in most studies, working capital is expressed as a composite measure (Prasad et al. 2019), but there are also a few studies that have examined the impact of working capital on profit, at the level of individual components of the cash conversion cycle or net trade cycle (Enqvist et al. 2014). Moreover, Mahmood et al. (2019) provide several reasons to explain why companies may exhibit different working capital–profitability: ownership structures, financial flexibility, tax provisions, and leverage. Moreover, the mixed results highlight that the relationship between working capital components and firm profitability may be more complex, and empirical studies have not identified the underlying mechanisms (Peng and Zhou 2019). In a recent paper, Peng and Zhou (2019) proposed considering different discount rates of companies to encounter inconsistencies in the relationship between working capital components and corporate profitability. Hidayat and Dewi (2023) used a study sample of coal mining companies listed between 2017 and 2020 on the Indonesia Stock Exchange. The t-test results indicate that the working capital turnover variable has no effect on profitability. A low working capital turnover and ineffective use lead to lower sales, which prevents the company's profitability from rising. This is demonstrated by the lack of an impact of working capital turnover on profitability.

The optimization of business profitability is a result of the effective management of working capital. Conversely, it is also plausible that profitable firms can invest more cash into working capital. Both firm profitability and working capital are influenced by various factors. Regarding potential endogeneity concerns, Seth et al. (2020) conducted a study that examined the impact of several exogenous variables on the efficiency of working capital management (WCM) and firms' performance. Through data envelopment analysis and structural equation modeling, the authors identify several variables, including interest coverage, leverage, net fixed asset ratio, and asset turnover ratio, that directly affect WCM efficiency and subsequently impact firm performance. The literature acknowledges the presence of certain channels that moderate the

relationship between working capital and firm performance. One such channel is corporate governance. Kayani et al. (2019) provided empirical evidence on the combined impact of WCM and corporate governance on financial performance for US-listed firms. The authors suggest considering the collective effects of short-term indicators (WCM) and long-term indicators (corporate governance) on financial performance. Giroud and Mueller (2011) considered market competition and emphasized that weak corporate governance diminishes firm value in non-competitive industries. In addition, the endogeneity issue can be influenced by CEO characteristics. Chief executives of firms tend to prioritize short-term profitability over long-term performance (Kayani et al. 2019).

From a methodological standpoint, the empirical findings primarily rely on static panel data methods (such as regression analysis) and correlation analysis. However, in recent studies, alternative methods like GMM have been employed to address the challenges of endogeneity (Dalci et al. 2019; Mahmood et al. 2019; Laghari and Chengang 2019; Altaf and Shah 2018; Botoc and Anton 2017). Endogeneity is widely recognized as a significant challenge in corporate finance. To address this issue, Li (2016) proposed several methods, including GMM, instrumental variables, fixed effects models, lagged dependent variables, and control variables. In the current econometric analysis, in addition to ordinary least squares, two panel data techniques are utilized: fixed-effects regression analysis and panel-corrected standard error models. The rationale behind employing these techniques lies in their advantages. Fixed-effects regression analysis considers all factors that may influence firm profitability in a given year, while the panel-corrected standard errors model addresses firm-level heteroscedasticity and contemporaneous correlations across firms. Furthermore, the combination of these methods, along with the inclusion of meaningful control variables, has shown promise in mitigating endogeneity issues, as suggested by Li (2016).

The varying outcomes concerning the impacts of working capital suggest that short-term financial choices should acknowledge working capital as a crucial element in determining financial performance. Consequently, this study posits the presence of an ideal working capital level for companies that maximizes their advantages. It is evident that there exists a non-linear relationship (inverted U-shape) between WKCR and ROA, indicating the necessity of incorporating the square of WKCR in the model.

Conclusion

This study has both theoretical and practical implications. For researchers, our findings indicate the necessity of testing a quadratic model for any sample of firms. In terms of practical implications, firms demonstrate an inverted U-shaped relationship between working capital and corporate performance. This implies that managers should be cautious of negative impacts on firm profitability, such as lost sales, missed discounts for early payments, or additional financing costs. The outcomes propose that corporate financial executives should steer clear of excessive net investment in working capital and aim for its optimal level. Meanwhile, internally generated funds can be directed toward more lucrative investment opportunities. By reducing unnecessary working capital, firms can free up cash that is tied up in funding daily operations, thereby enhancing financial flexibility. Consequently, corporate managers should concentrate on maintaining accounts payable, accounts receivable, and inventory turnover at an optimal level to maximize the benefits of working capital for shareholders. Our findings underscore the significance of working capital management for profit maximization. These results are applicable in business settings, emphasizing the importance of identifying and achieving the optimal level of working capital.

References

- Afrifa, G. A., & Padachi, K. (2016). Working capital level influence on SME profitability. *Journal of Small Business and Enterprise Development*, 23(1), 44–63.
- Akgun, A. I., & Karatas, A. M. (2020). Investigating the relationship between working capital management and business performance: Evidence from the 2008 financial crisis of EU-28. *International Journal of Managerial Finance*.
- Akhund, S. A., & Qazi, L. T. (2023). Nonlinear impact of Excess Working Capital on the firm performance. *Business & Economic Review* (2074-1693), 15(1).
- Aktas, N., Croci, E., & Petmezas, D. (2018). Is working capital management value-enhancing? Evidence from firm performance and investments. *FMA Europe*, 4(8), 2-6.
- Aminu, Y., & Zainudin, N. (2016). A review of anatomy of working capital management theories and the relevant linkages to working capital components: A theoretical building approach. *European Journal of Business and Management*, 7(2), 10-18.
- Amponsah-Kwatiah, K., & Asiamah, M. (2020). Working capital management and profitability of listed manufacturing firms in Ghana. *International Journal of Productivity and Performance Management*. (Note: This reference appears twice. You can omit the second one)
- Amponsah-Kwatiah, K., & Asiamah, M. (2021). Working capital management and profitability of listed manufacturing firms in Ghana. *International Journal of Productivity and Performance Management*, 70(7), 1751-1771. [doi: 10.1108/IJPPM-02-2020-0043]
- Anton, S. G., & Afloarei Nucu, A. E. (2020). The impact of working capital management on firm profitability: Empirical evidence from the Polish listed firms. *Journal of risk and financial management*, 14(1), 9.
- Banerjee, A., Kundu, S., & Sivasankaran, N. (2024). Asymmetric Impact of Working Capital Efficiency on Market Performance of Indian Firms. *Global Business Review*, 25(3), 705-723. <https://doi.org/10.1177/0972150920988648>
- Banerjee, P., & Deb, S. G. (2023a). Working capital management efficiency, managerial ability, and firm performance: new insights. *Applied Economics*, 56(33), 4001–4018. <https://doi.org/10.1080/00036846.2023.2208857>
- Banerjee, P., & Deb, S. G. (2023b). Capital investment, working capital management, and firm performance: Role of managerial ability in US logistics industry. *Transportation Research. Part E, Logistics and Transportation Review*, 176, 103224. <https://doi.org/10.1016/j.tre.2023.103224>
- Baños-Caballero, S., García-Teruel, P. J., & Martínez-Solano, P. (2020). Net operating working capital and firm value: A cross-country analysis. *BRQ Business Research Quarterly*, 23(2), 234–251.
- Baños-Caballero, S., García-Teruel, P., & Martínez-Solano, P. (2014). Working capital management, corporate performance, and financial constraints. *Journal of Business Research*, 67(2), 332–338.
- Botoc, C., & Anton, S. G. (2017). Is profitability driven by working capital management? Evidence for high-growth firms from emerging Europe. *Journal of Business Economics and Management*, 18(5), 1135–1155.
- Briones, O. F., Camino-Mogro, S. M., & Navas, V. J. (2024). Working capital, cash flow and profitability of intensive MSMEs: Evidence from Ecuador. *Journal of Entrepreneurship in Emerging Economies*, 16(2), 396-417.
- Chang, C.-C. (2018). Cash conversion cycle and corporate performance: Global evidence. *International Review of Economics and Finance*, 56, 568–581.
- Chen, J. J. (2004). Determinants of capital structure of Chinese-listed companies. *Journal of Business Research*, 57(12), 1341-1351.

- Czerwonka, L., & Jaworski, J. (2023). Determinants of working capital management in small and medium enterprises: Evidence from Central and Eastern Europe. *Journal of International Studies*, 16(2).
- Dalci, I., Ozyapici, H., Tanova, C., & Murad, B. (2019). The moderating impact of firm size on the relationship between working capital management and profitability. *Prague Economic Papers*, 28, 296–312.
- De Almeida, J. R., & Eid Jr., W. (2014). Access to finance, working capital management and company value: Evidences from Brazilian companies listed on BM&FBOVESPA. *Journal of Business Research*, 67(4), 924–934.
- Deloof, M. (2019). Does Working Capital Management Affect Profitability of Belgian Firms? [Manuscript unpublished].
- El-Ansary, O., & Al-Gazzar, H. (2021). Working capital and financial performance in MENA region. *Journal of Humanities and Applied Social Sciences*, 3(4), 257-280.
- Enqvist, J., Graham, M., & Nikkinen, J. (2014). The impact of working capital management on firm profitability in different business cycles: Evidence from Finland. *Research in International Business and Finance*, 32, 36–49.
- Fernandez-Lopez, S., Rodeiro-Pazos, D., & Rey-Ares, L. (2020). Effects of working capital management on firms' profitability: Evidence from cheese-producing companies. *Agribusiness*, 36(4), 770–791.
- Giroud, X., & Mueller, H. M. (2011). Corporate Governance, Product Market Competition, and Equity Prices. *Journal of Finance*, 66(2), 563–600.
- Goncalves, T. C., Gaio, C., & Robles, F. (2018). The impact of Working Capital Management on firm profitability in different economic cycles: Evidence from the United Kingdom. *Economics and Business Letters*, 7(1), 70–75.
- Habib, A., & Huang, X. (2016). Determining the optimal working capital to enhance firms' profitability. *Human Systems Management*, 35(2), 279–289.
- Harris, A. (2005). Working capital management: Difficult, but rewarding. *Financial Executive*, 21(4), 52-54.
- Hassan, M. K., Aysan, A. F., Kayani, U. N., & Choudhury, T. (2023). Working capital as a firm performance savior? Evidence from Scandinavian countries. *Research in International Business and Finance*, 65, 101959.
- Hassan, M. K., Aysan, A. F., Kayani, U. N., & Choudhury, T. (2023). Working capital as a firm performance savior? Evidence from Scandinavian countries. *Research in International Business and Finance*, 65, 101959. <https://doi.org/10.1016/j.ribaf.2023.101959>
- Hatane, S.E., Winoto, J., Tarigan, J. and Jie, F. (2023), "Working capital management and board diversity towards firm performances in Indonesia's LQ45", *Journal of Accounting in Emerging Economies*, Vol. 13 No. 2, pp. 276-299. <https://doi.org/10.1108/JAEE-11-2018-0130>
- Hidayat, I., & Dewi, F. O. S. (2023). The effect of liquidity, leverage, and working capital turn on profitability. *APTISI Transactions on Management*, 7(1), 60-68.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Kabuye, F., Kato, J., Akugizibwe, I., & Bugambiro, N. (2019). Internal control systems, working capital management and financial performance of supermarkets [Article]. *Cogent Business & Management*, 6(1), 1573524. [doi: 10.1080/23311976.2019.1573524] Note: Include the DOI if available.
- Kayani, U. N., De Silva, T.-A., & Gan, C. (2019). Working capital management and corporate governance: A new pathway for assessing firm performance. *Applied Economics Letters*, 26(11), 938–942. [doi: 10.1080/13504851.2018.1500223]

- Laghari, F., & Ye, C. (2019). Investment in working capital and financial constraints: Empirical evidence on corporate performance. *International Journal of Managerial Finance*, 15(2), 164–190. [doi: 10.1108/IJMF-07-2017-0149]
- Le, B. (2019). Working capital management and firm's valuation, profitability and risk: Evidence from a developing market. *International Journal of Managerial Finance*, 15(2), 191–204. [doi: 10.1108/IJMF-08-2017-0192]
- Li, F. (2016). Endogeneity in CEO power: A survey and experiment. *Investment Analysts Journal*, 45(2), 149–162.
- Lyngstadaas, H. (2020). Packages or systems? Working capital management and financial performance among listed U.S. manufacturing firms. *Journal of Management Control*.
- Mahmood, F., Han, D., Ali, N., Mubeen, R., & Shahzad, U. (2019). Moderating effects of firm size and leverage on the working capital finance–profitability relationship: Evidence from China. *Sustainability*, 11(9), 2029. [doi: 10.3390/su11092029]
- Michalski, G. (2014). *Value-based working capital management: Determining liquid asset levels in entrepreneurial environments*. New York: Palgrave Macmillan.
- Michalski, G. (2016). Risk pressure and inventories levels. Influence of risk sensitivity on working capital levels. *Economic Computation and Economic Cybernetics Studies and Research*, 50(2), 189–196.
- Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *The American Economic Review*, 53(3), 433–443.
- Mohammadi, R., Shiekh, M., Seyrani, M., & Mardaneh, M. (2024). Investigating the inverse U-shaped relationship between Working Capital Financing and Profitability with emphasis on the role of Firm Size and Financial Leverage using the GMM method. *Journal of Investment Knowledge*, 13(51), 157–176.
- Moussa, A. A. (2018). The impact of working capital management on firms' performance and value: Evidence from Egypt. *Journal of Asset Management*, 19(3), 259–273. [doi: 10.1080/1479347X.2017.1333323]
- Mun, S. G., & Jang, S. C. (2015). Working capital, cash holding, and profitability of restaurant firms. *International Journal of Hospitality Management*, 48, 1–11.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221.
- Ngatno, Apriatni, E. P., & Youlianto, A. (2021). Moderating effects of corporate governance mechanism on the relation between capital structure and firm performance. *Cogent Business & Management*, 8(1), 1866822.
- Nguyen, A. H., Pham, H. T., & Nguyen, H. (2020). Impact of working capital management on firm's profitability: Empirical evidence from Vietnam. *The Journal of Asian Finance, Economics, and Business*, 7(3), 115–125.
- Nguyen, A. T. H., & Nguyen, T. V. (2018). Working capital management and corporate profitability: Empirical evidence from Vietnam. *Foundations of Management*, 10, 195–206.
- Nofita Sari, F., & Endri, E. (2019). Determinants of return on assets (ROA) on conventional banks listed on Indonesian stock exchange (IDX) period 2013-2017. [Article]. 21, 52–62. <https://doi.org/10.9790/487X-2104025262> Note: Include the DOI if available.
- Peng, J., & Zhou, Z. (2019). Working capital optimization in a supply chain perspective. *European Journal of Operational Research*, 277(2), 846–856.
- Pham, K. X., Nguyen, Q. N., & Nguyen, C. V. (2020). Effect of working capital management on the profitability of steel companies on Vietnam Stock Exchanges. *Journal of Asian Finance, Economics and Business*, 7(6), 741–750.

- Prempeh, K., & Peprah-Amankona, E. (2018). Does working capital management affect profitability of Ghanaian manufacturing firms? *Journal of Advanced Studies in Finance*, 19, 22–33. [doi: 10.2139/ssrn.3289222] Note: Include the DOI if available, but use the provided number (SSRN 3289222) if there isn't one.
- Ren, T., Liu, N., Yang, H., Xiao, Y., & Hu, Y. (2019). Working capital management and firm performance in China. *Asian Review of Accounting*, 27, 546–562.
- Richards, V. D., & Laughlin, E. J. (1980). A cash conversion cycle approach to liquidity analysis. *Financial Management*, 9(1), 32–38.
- Seth, H., Chadha, S., Ruparel, N., Arora, P. K., & Sharma, S. K. (2020). Assessing working capital management efficiency of Indian manufacturing exporters. *Managerial Finance*, 46(8), 1061-1079.
- Shahnia, C., Purnamasari, E. D., Hakim, L., & Endri, E. (2020). Determinants of profitability: Evidence from trading, service and investment companies in Indonesia. *Accounting*, 6(5), 787–794. [doi: 10.5267/j.ac.2020.6.004]
- Shrivastava, A., Kumar, N., & Kumar, P. (2017). Bayesian analysis of working capital management on corporate profitability: Evidence from India. *Journal of Economic Studies*, 44(5/6), 568–584.
- Staniewski, M., & Awruk, K. (2019). Entrepreneurial success and achievement motivation—A preliminary report on a validation study of the questionnaire of entrepreneurial success. *Journal of Business Research*, 101, 433–440.
- Sulistianingsih, H., & Santi, F. (2023). Does SME's financing decisions follow pecking order pattern? The role of financial literacy, risk preference, and home bias in SME financing decisions. *Cogent Business & Management*, 10(1), 2174477.
- Sunday, A., Turyahebwa, A., & Byamukama, E. M. (2023). Working capital management practices and performance of small and medium enterprises in western Uganda. *Kabale University Interdisciplinary Research Journal*, 2(1), 4-21.
- Toušek, Z., Hinke, J., Gregor, B., & Prokop, M. (2023). Importance of Working Capital Management and Its Components for Firm Profitability. *Prague Economic Papers*, 32(4), 367-388.
- Tsuruta, D. (2018). Do working capital strategies matter? Evidence from small business data in Japan. *Asia-Pacific Journal of Financial Studies*, 47(4), 824–857. [Note: This reference appears twice. You can remove the duplicate entry.]
- Ukaegbu, B. (2014). The significance of working capital management in determining firm profitability: Evidence from developing economies in Africa. *Research in International Business and Finance*, 31, 1–16.
- Umar, U.H. and Al-Faryan, M.A.S. (2024), "The impact of working capital management on the profitability of listed halal food and beverage companies", *Managerial Finance*, Vol. 50 No. 3, pp. 534-557. <https://doi.org/10.1108/MF-12-2022-0606>
- Wang, Z., Akbar, M., & Akbar, A. (2020). The interplay between working capital management and a firm's financial performance across the corporate life cycle. *Sustainability*, 12(4), 1661. [doi: 10.3390/su12041661]
- Yeboah, S. and Kjærland, F. (2024), "Impact of dynamic working capital management on operational efficiency: empirical evidence from Scandinavia", *Managerial Finance*, Vol. 50 No. 6, pp. 1196-1214. <https://doi.org/10.1108/MF-09-2023-0582>
- Yusoff, H., Ahmad, K., Qing, O. Y., & Zabri, S. M. (2018). The relationship between working capital management and firm performance. *Advanced Science Letters*, 24(12), 3244–3248.