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Efficiency at the Core: How Working Capital Management Relates to Accounting Metrics and Market Performance in the Automotive Industry

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Abstract

In today's volatile automotive landscape, working capital management (WCM) functions not just as a back-office efficiency tool, but a strategic lever for financial and shareholder value. This study explores the relationship between WCM components and firm performance both from accounting and market valuation perspectives. It uses a panel dataset of the top ten publicly listed global automotive firms across multiple geographies over a ten-year period. Firm performance is assessed using accounting indicators of Return on Assets (ROA) and Return on Equity (ROE), and market valuation through Tobin's Q (TOBQ). The analysis focuses on four WCM components: cash conversion cycle (CCC), average receivables days (ARD), average payables days (APD), and inventory days (ITD), employing multiple linear regression (MLR) for empirical testing. The results reveal that ARD and APD are the most influential components. ARD negatively affects both ROA and ROE, while APD has a positive impact, indicating that efficient receivables collection and extended payable terms improve profitability. ITD and CCC were found to be statistically insignificant in accounting performance models. In contrast, TOBQ is negatively affected by both ARD and CCC, implying that longer receivables periods and cash cycles diminish market valuation by heightening liquidity risk and financial leverage. Notably, ROA and not ROE, emerged as a significant predictor of TOBQ, reinforcing the view that operational efficiency, rather than equity-based returns, is more valued by investors. This research adds to the literature by quantifying the dual impact of WCM on internal performance and external valuation in a capital-intensive industry. Although centered on the automotive sector, the findings may be cautiously generalized to other manufacturing industries with similar operational frameworks. The study underscores WCM's strategic importance as a lever for both internal performance enhancement and external value creation. Our findings offer actionable insights for operational managers and policymakers, emphasizing the need for optimized capital strategies that bridge operational finance and market performance for enhancing shareholder value.

Keywords: liquidity, working capital management, profitability, return on equity, return on assets, stock market performance, automotive industry

JEL Classifications: G10, G30, M11, M41

1. Introduction

Working capital management (WCM) lies at the heart of corporate financial strategy. It is primarily the difference between current assets and current liabilities that plays a critical role in sustaining day-to-day operations, managing supply chains, and maintaining a firm's solvency, particularly in capital-intensive industries such as automotive manufacturing. Sufficient liquidity is required for firms to meet their short-term financial obligations, ensuring that excess cash is not tied up, which could lead to decreased opportunities for profitable investments (Akbar et al., 2021). This, in turn, could affect future growth prospects and impact shareholder value (Kwenda & Matanda, 2015). Working capital management (WCM) remains a critical and often debated aspect of short-term financial management, as it involves complex decision-making that significantly impacts firm profitability and liquidity (Bagh et al, 2016). There are liquidity benefits in maintaining high levels of current assets, especially cash; however, this can result in fewer funds available for profitable investments (Al-Qudah et al., 2015). On the other hand, relatively less investment in current assets would make the firm vulnerable to short-term obligations not being fulfilled, which could further lead to disruptions in operations that sometimes pose a threat to the continuity

of the business (Aldubhani et al., 2022). Despite its recognized importance, the exact nature of the relationship between the efficiency of working capital management and firm performance, whether assessed through accounting-based or market-based indicators, continues to be a focal point of scholarly investigation and debate.

The automotive industry remains a significant contributor to economic growth for any country and serves as a compelling context for investigating the impact of WCM. In many countries like Germany, Japan, South Korea, the United States, and China, the automotive industry is a key pillar of industrial strength and competitiveness (Fan & Iqbal, 2022). This industry encourages growth in various related industries such as steel, aluminum, rubber, electronics, and batteries, among others. Moreover, it affects foreign trade and strengthens the exporting country's currency. The success of this sector results in an economic multiplier effect on economic outcomes (Bell et al., 2021). Complex global supply chains, high fixed asset intensity, and cyclical demand patterns characterize the automotive industry. Firms in this sector are especially vulnerable to inefficiencies in managing inventories, receivables, and payables (Bagh et al, 2016). The disruptions introduced by macroeconomic shocks such as the COVID-19 pandemic, semiconductor shortages, and geopolitical uncertainties have further underscored the strategic significance of liquidity management. For automotive firms, managing working capital is not merely a tactical necessity but a long-term value driver with implications for profitability, market valuation, and operational agility.

Theory posits that optimal working capital strategies enhance firm performance by minimizing capital tied up in short-term assets and encouraging cash flows towards more profitable avenues. Various studies have revealed differing outcomes regarding the impact on market performance measures. Some studies focus on certain countries, while others are on some business sectors and there is a gap in WCM research specifically in the automotive sector globally. Moreover, the majority of existing research has focused on broad industry-level or country-level analyses, often neglecting the sector-specific dynamics and heterogeneities found within industries such as automotive manufacturing. Nurhidayat & Thamrin (2023) studied the automotive sector in Indonesia, whereas Garg & Meetu (2022) based their study in India only, with a lack of studies encompassing this sector globally. This study aims to fill the gap by encompassing the automotive sector globally, and data is collected from large companies in this sector from major countries. Secondly, few studies have investigated the mediating role that accounting measures play in displaying the WCM influence on market performance. This study aims to explore the influence of WCM on market performance through accounting measures, and emphasizes the role of efficient operations, which is critical to increasing shareholders' value. Some studies have highlighted that the overall corporate strategy that adds value to investors is positively affected by efficient WCM (Toušek et al., 2022), and this study aims to investigate this mediating role of accounting performance measures.

The remainder of this paper is organized as follows, where Section 2 reviews the relevant literature on working capital management and firm performance using accounting and market measures, with an emphasis on sector-specific insights from manufacturing and automotive firms. Section 3 details the research objectives and the hypotheses of the study, followed by Section 4 that describes the dataset, variable construction, and econometric methodology, including the justification for the use of empirical methods. Section 5 presents the empirical findings, including both baseline regression results and robustness checks. Section 6 concludes by summarizing the contributions, acknowledging limitations, and outlining directions for future research.

2. Literature Review

The objective of this section is to highlight previous studies and their contribution to the area of WCM, which has been classified into four sections. It begins with a broader outlook on relevant theories and their importance, followed by a review of literature on country-specific studies. Then, it details the previous studies in various sectors with a focus on the automotive sector. It also highlights previous studies that have measured performance from shareholder perspectives, as this study also aims to find the connection between WCM and accounting profitability and market performance.

2.1 Theoretical Concepts of WCM

This study aims to assess the importance of WCM with a backdrop of some relevant theories which are detailed as follows. It was as early as 1776, that the idea of the 'Agency Theory' was introduced by Adam Smith in his 'Wealth of Nations' (Hutchison, 1976) however it for only formalized in the 1970s by economists like Ross and Mitnick (Mitnick, 2019) and others such as Jensen and Smith (Jensen & Smith, 1984). They argued about the behaviour of managers conflicting with the interests of the shareholders, affecting financial decisions. In the context of the topic of this study, WCM is a financial management technique and management should ensure that it is employed to increase value for the shareholders. The 'Stakeholder Theory' by Freeman in 1984 (Freeman, 2010), is related to the agency theory, in that both outline the interests of the shareholders. It suggests that value

is created by including the interests of all stakeholders of a business (Ruf et al., 2001). This is relevant to this study as we aim to measure market performance, addressing the interests of the shareholders who are the primary stakeholders by applying efficient WCM strategies. Naz et al. (2022) explicitly apply agency theory to WCM, arguing that stronger governance reduces agency conflicts, allowing better oversight of working capital components, particularly in avoiding overstocking or inefficient cash cycles. The 'Signaling Theory' conveys the idea that firms disclose private information to the market through their financial decisions, and efficient WCM may signal strong internal controls and operational efficiency, potentially improving investor confidence and firm valuation (Ross, 1977). The signaling theory is applied by Komara et al. (2020) to examine how financial policy decisions, including working capital indicators, impact investor perception and firm value.

2.2 WCM Studies Based on Geography

Studies in the literature on WCM often focus on specific countries, as national-level economic, regulatory, and institutional environments significantly influence WCM practices, outcomes, and effectiveness. Cultural factors, such as risk aversion, negotiation norms, or supplier-buyer relationships, may influence how companies manage receivables, payables, and inventory. A study of 88 US-listed firms from 2005 to 2007 by Gill et al. (2010) revealed a significant relationship between the cash conversion cycle (CCC) and profitability (gross profit margin). Similar results were also found in Spanish small and medium-sized enterprises by García & Martínez (2007), and by Deloof (2003) for Belgian non-financial firms. Howorth & Westhead (2003) examined small firms in the UK and classified them into four types, based on the importance of cash, inventory, receivables and the last with low working capital. The results vary among these types and suggest that small companies focus only on those areas of WCM where they expect higher returns. Wang (2002) examined companies in Japan and Taiwan and found that in both countries, aggressive WCM strategies enhance operating performance, as measured by Return on Assets (ROA) and Return on Equity (ROE), despite the structural and financial system differences between the two countries. This supports the authors' view of selecting a global sample for the study. Deari et al. (2024) investigated the dynamic relationship of WCM and profitability in eight EU countries and found a U-shaped relationship depicting an optimal working capital that maximizes profitability. Ukaegbu (2014) finds a differing situation for manufacturing firms in Egypt, Kenya, Nigeria, and South Africa, where a negative relationship is observed between CCC and profitability. This indicates that an increase in cash conversion cycles is associated with reduced profitability in all these countries. Interestingly, in Egypt, a negative relationship was found between the payables period and profitability, indicating that early payment to creditors was a signal of efficient financial management. In Iran, Alavinasab & Davoudi (2013) investigated 147 companies listed in the Tehran Stock Exchange and found that CCC was negatively related to both ROA and ROE. In India, similar outcomes were discovered for 366 non-financial listed firms (Agarwal & Varma, 2013).

The literature mostly reveals similar outcomes related to managing receivables and inventories, with differences mainly in short-term financing decisions. However, some differences are observed in results from specific industries or types of business organizations, or during periods that are not normal due to macroeconomic or other external influences. This study employs a sample from across the globe within the automotive industry. Addressing WCM issues on a global level offers several benefits, especially in an era of increasing globalization, integrated supply chains, and cross-border financial activities. Multinational corporations (MNCs) operate across jurisdictions with varying liquidity, tax, and credit conditions. A global perspective enables to optimize cash pooling, coordinate receivables, payables and inventory policies across geographies.

2.3 Studies Based on Sectors with a Focus on the Automotive Sector

The automotive industry is inherently one of the most globalized sectors in the world (Sturgeon et. al., 2009). It depends on complex international supply networks. Major automakers such as Toyota, Volkswagen, Ford, Hyundai, BMW, among others, operate manufacturing and assembly plants across the world. They also sell cars in virtually every country, adjusting models to meet local consumer requirements, regulatory standards and climate infrastructure environments. Filbeck & Krueger (2005) found significant differences in working capital management among various industries, also supported by other studies such as that of Boisjoly & Conine Jr. (2020), who conclude that conservative WCM strategies in the transportation and communication industry impact profitability greater than that in the financial services sector. Kasozi (2017) investigated 69 listed manufacturing sector firms in South Africa from 2007 to 2016 and found that shorter collection periods and payable periods increased profitability, whereas higher inventory turnover in days yielded better profit results. Garg & Gumbochuma (2015) studied retail sector firms in South Africa, revealing that a longer CCC hurt profitability between 2004 and 2013. Özkaya & Yaşar (2023) studied a sample of 236 firms from European countries in the food and beverage industry from 2005 to 2020, which resulted in a negative relationship between profitability and the CCC. Whereas Umar et al. (2024) examined 56 halal food and beverage companies in countries such as

Indonesia, Malaysia, Saudi Arabia and found similar outcomes. Rey-Ares et al. (2021) studied the fish canning industry in Spain, and they revealed that ROE was negatively related to the collection period and a U-shaped relationship with inventory turnover in days, suggesting that an increase in inventory levels initially decreases ROE, however, after a certain level, high inventory levels impact ROE positively. As operational practices differ between industries due to their business models, operational cycles, and risk profiles, the authors find it pertinent to examine WCM in a specific industry. For this study, they have selected the automotive industry.

We examine the studies within the automotive sector and existing literature shows varied results. Demiraj et al. (2022) examined the automotive sector in European countries, and the results revealed that all components of working capital, collection period, inventory period, and payables period were negatively related to ROA during 2010 and 2021. A previous study of Central European countries, however, did not find a significant relationship between Return on Capital Employed (ROCE) and CCC during 2006-2009 (Viskari et al., 2012). A study of this sector in Russia (Pirttilä et al., 2020) revealed that 13.6% of the automotive firms in Russia (from a sample of 317) had a negative CCC, indicating efficient WCM. A study on the automobile sector in India found that lower inventory levels led to lower profitability due to reduced revenue (Jafari & Rao, 2015). Nurhidayat & Thamrin (2023) studied the automotive sector in Indonesia, and the results indicated that high levels of inventory and longer payables have a negative relationship with ROA, whereas receivables have a positive relationship with ROA. Hence, we observe that the results are quite varied and there are gaps in the literature when exploring this topic. Given that the automotive industry has become increasingly globalized in recent years, this study aims to contribute to this area by examining the topic at a global industry level.

WCM consists of three major components: accounts receivable management, inventory management, and payable management. For the automotive sector, all three play a crucial role. Automobile manufacturers often sell to dealers who can be on long credit terms and credit policies. Studies have found a negative relationship between profitability and receivables (Alavinasab & Davoudi, 2013; Ukaegbu, 2014; Kasozi, 2017), indicating that earlier collection policies from customers would lead to increased liquidity, lower financing costs, and higher profitability. Other studies suggest that granting or extending credit period for customers increases sales, nurtures long-term relationships and enhances loyalty to the firm (Kumar, 2008; Prihartono et al., 2015; Okpala et al., 2019). The automotive sector requires critical inventory management due to its large and complex inventories of parts, components, and finished vehicles that must be managed efficiently. They need to procure quality materials at the right time to ensure availability for smooth manufacturing and manage costs of holding stock. While some studies suggest that high levels of inventory negatively impact profitability (Nurhidayat & Thamrin, 2023; Demiraj et al., 2022; Ukaegbu, 2014), others indicate a positive relationship (Deari et al., 2024). Due to large inventory demands, automotive firms also have long payable periods with their suppliers. By gaining time to pay their creditors, firms can utilize the cash to enhance their liquidity. Some studies have shown that longer payable periods are positively related to profitability (Gill et al., 2010; García & Martínez, 2007; Alavinasab & Davoudi, 2013) however, other studies indicate that paying off the creditors faster indicates higher profitability (Malik & Bukhari, 2014; Kasozi, 2017)

2.4 WCM Impact on Market Measures

Efficient financial decisions in a firm's operational activities contribute to value creation, benefiting shareholders and attracting potential investors. As Agency Theory and Stakeholder theory both focus on increasing shareholders' wealth and WCM being one of the important aspects of financial management, this study also aims to consider the impact of WCM on market measures, along with accounting measures. Some studies have included market measures, like Forghani et al (2013), who employed the market-to-book value as the dependent variable. Akbar et al. (2021) used Tobin's Q as an indicator, showing that high levels of working capital were linked to lower stock price volatility. Abuzayed (2012) also utilized Tobin's Q as a market indicator to examine the relation with WCM and concluded that market measures failed to identify inefficient WCM in emerging markets. Notably, few studies relate market measures to WCM, and secondly, compare the WCM impact on accounting measures that transform to market performance.

3. Research Objectives & Hypotheses

3.1 Research Objectives

This study provides an additional contribution to the existing body of literature and aims to offer a two-fold perspective on the impact of WCM on firm performance. One is by examining the impact of WCM on accounting measures of Return on Assets (ROA) and Return on Equity (ROE) and a market measure using Tobin's Q. Secondly, it aims to investigate whether the accounting performance measures influence the market performance in transferring the impacts of operating efficiency to share markets that contribute to value creation. The primary

focus of the statistical tests will be to determine how WCM and its components impact profitability and whether this situation translates to increasing shareholder value, with a theoretical perspective on the implications. It will also investigate the consistency (or divergence) in the effects of WCM across the performance indicators employed. This study aims to address the gap found in the literature by including automotive firms from across the globe in the sample, as this sector is one of the most globally integrated. The time period covered is from 2015 to 2024, as ten years would encompass varying patterns across economic cycles, thereby avoiding short-term noise and ensuring more generalizable and robust findings.

3.2 Hypotheses Development

The literature described has not been able to find consensus in the results when determining the relationship between WCM and profitability and therefore, to examine the objectives of the study, the authors have articulated the following null hypotheses that will be tested empirically in the study.

$H_0(1)$ There is no significant relationship between WCM represented by receivables in days, inventory turnover in days, accounts payable in days, cash conversion cycle and the ROA of firms in the automotive sector.

$H_0(2)$ There is no significant relationship between WCM represented by receivables in days, inventory turnover in days, accounts payable in days, cash conversion cycle and the ROE of firms in the automotive sector.

$H_0(3)$ There is no significant relationship between WCM represented by receivables in days, inventory turnover in days, accounts payable in days, cash conversion cycle and the Tobin's Q measure of firms in the automotive sector.

$H_0(4)$ ROA and ROE do not play a mediating role in conveying the impact of WCM on the TOBQ of firms in the automotive sector.

3.3 Research Framework

The study employs the framework described in Figure 1 to investigate the relationship between WCM and its components on the accounting profits and market performance of firms in the automotive industry worldwide.

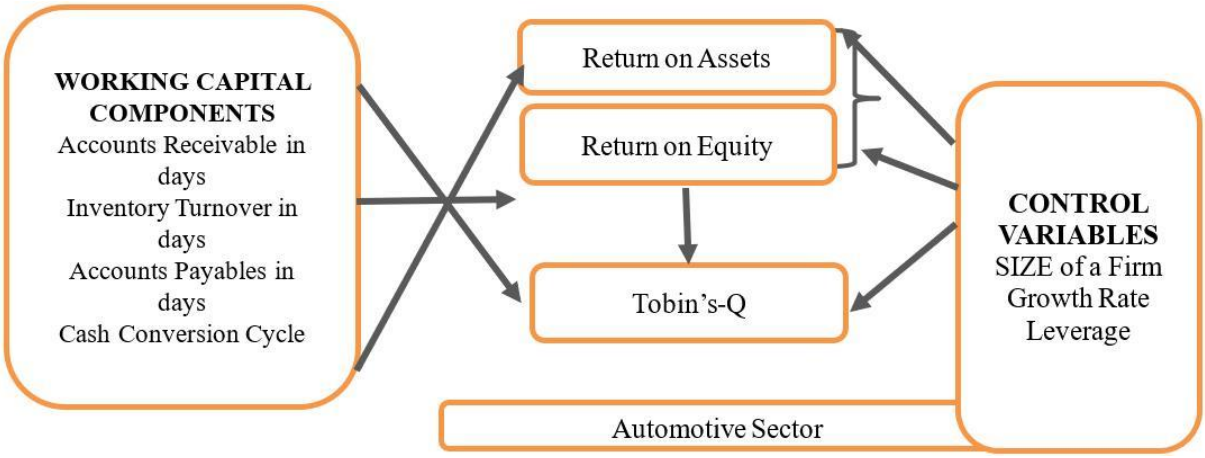

Figure 1. Framework of the Study

Three control variables have been introduced into the model: firm size, the company's growth rate, and leverage. Studies have suggested that profit may be influenced by these factors (Aldubhani et al., 2022; Mandipa & Sibindi, 2022; El-Ansary & Al-Gazzar, 2021; Abuzayed, 2012). Larger firms may have better credit terms, more resources for inventory management, and different profitability dynamics (Rahman & Yilun, 2021). The capital structure of the firm could also be one of the factors that could influence profitability and many studies differ in how leverage impacts profits based on the interplay of other factors such as firm size (Sudrajat & Setiyawati, 2021). The inclusion of these three control variables will isolate the true effect of the main independent variables, which are WCM and its components, on the dependent variables, namely, ROA, ROE, and Tobin's Q, ensuring the effect measured is due to WCM rather than other firm characteristics and will improve the validity, accuracy, and interpretability of results.

4. Data and Research Methodology

4.1 Study Sample

This study employed a sample of major firms in the automotive industry worldwide using a purposive sampling method, as the study has a specific focus on the industry to reveal valid and interpretable results (Kaushik & Chauhan, 2019). This non-probability sampling technique aligns with the study objectives, where the authors have intentionally selected listed companies that are industry leaders with globalized operations. They are meticulously chosen to reflect a broad and inclusive international presence. We focus on the automotive industry due to two major reasons, one, this sector is the most globalized sector with its supply chains spread across the world as well its customers (Bagh et al, 2016; Sturgeon et. al., 2009) and second, it is one of the major sectors in any economy that contributes substantially to employment and economic output in terms in Gross Domestic Product (GDP) (Fan & Iqbal, 2022). Ten major publicly listed automotive manufacturing firms have been selected as the study samples, as shown in Table 1. The financial data spanning the years 2014 to 2024 was obtained from the companies' published financial reports. Using a ten-year data collection period is highly suitable, given the dual objectives of this study. It allows for observing patterns across economic cycles, avoiding short-term noise and ensuring more generalizable and robust findings. The second objective examines whether accounting performance mediates the impact of WCM on market value, a relationship that is likely to evolve over the later years, rather than in the short term. A total of 110 observations were obtained, a sample size commonly regarded as statistically sufficient. This size supports the application of inferential statistical methods based on the Central Limit Theorem and offers reasonable statistical power for identifying moderate effects, particularly in models with a limited number of predictors.

Table 1. Sample Automotive Manufacturing Companies

SN	Name of Company	Year of Establishment	Country Headquarters	Stock Exchange (Ticker)	Size & Worldwide Operations
1	Ford Motor Company	United States (Dearborn, MI)	1903	NYSE: F	182,000+ employees, operations in over 125 countries; 2024 revenue $185 billion.
2	General Motors Company	United States (Detroit, MI)	1908	NYSE: GM	Operates in 37 countries, 13 brands; revenue $187 billion (2024).
3	Nissan Motor Co., Ltd.	Japan (Yokohama, Kanagawa)	1933	TSE: 7201	Global production and sales in 160 countries; with 131,000+ employees, revenue $87.4 billion (2024).
4	Honda Motor Co., Ltd.	Japan (Minato, Tokyo)	1948	TSE: 7267, NYSE: HMC	Global operations in 150+ countries; 200,000+ employees, revenue $142 billion (2024).
5	Toyota Motor Corporation	Japan (Toyota City, Aichi)	1937	TSE: 7203, NYSE: TM	World's largest automaker; 370,000+ employees; sales in 170+ countries, revenue $305 billion (2024).
6	Mitsubishi Motors	Japan (Minato, Tokyo)	1970 (spun off)	TSE: 7211	Operations in 160+ countries; 30+ manufacturing facilities globally, revenue $19 billion (2024).
7	Subaru Corporation	Japan (Tokyo)	1953	TSE: 7270	Presence in over 90 countries; strong U.S. market base; Toyota holds approx. 20% stake, revenue $32 billion (2024)
8	Volkswagen AG	Germany (Wolfsburg)	1937	FWB: VOW3	100+ production facilities in 27 countries; global sales across 150+ markets, revenue $351 billion (2024).
9	Mercedes-Benz Group AG	Germany (Stuttgart)	1926	FWB: MBG	Offices in 93 countries; sold 2.4+ million vehicles in 2024, with revenue $156 billion (2024)
10	BMW AG	Germany (Munich)	1916	FWB: BMW	Operates in over 140 countries; employs 150,000+ globally, revenue $154 billion (2024)

** All information has been taken from the published annual reports of the companies for the year 2024.*

4.2 Study Variables

Secondary data was collected from the financial statements of the sample companies for the period from 2014 to 2024. All required financial data, which includes ROA, ROE, Total Assets, Total Liabilities, Accounts Receivables, Inventories, Accounts Payable, Sales and COGS, were extracted from official company reports for the years using the Morning Star Direct portal (https://www.morningstar.com/ business/products/direct). The dependent variables for the study are profitability, measured by accounting performance measures of ROA and ROE, and the market performance measure of Tobin's Q. Previous studies have used performance of measures of ROA and ROE quite often as the dependent variable (Aldubhani et al., 2002; El-Ansary & Al-Gazzar, 2021; Wang, 2002; Malik & Bukhari, 2014; Agarwal & Varma, 2013). Few studies have used alternative profit measures, such as Garg & Gumbochuma (2015), who employed Operating Profit Margin (OPM), and Gill et al. (2010), who utilized Gross Profit Margin (GPM). This study prefers to work with the mainstream measures of ROA and ROE. For market performance, the Tobin's Q is selected for the study (Abuzayed, B., 2012; Shah & Hussain, 2017), with rare instances of the use of earnings per share as a similar measure are found (Ghosh, 2008). The share prices of the sample firms used in the Tobin's Q calculation for the study period are collected from the Morningstar Direct portal. The model has added three control variables of firm size (TA), leverage (LEV) and growth rate (GR) to improve the explanatory power of profitability, where in the context of manufacturing companies, WCM's impact can vary substantially (Seth et al, 020). For firm size the log of TA is used to improve linearity for modelling and to ensure that the variables are on comparable ranges, preventing features with larger magnitudes from dominating analysis or optimization. The independent variables include the CCC and its components of Accounts Receivable in Days (ARD), Inventory Turnover in Days (ITD), and Accounts Payable in Days (APD). Table 2 below gives a brief description of the variables.

Table 2. Description and Measurement of the Variables

Type of Variable	Definition	Formula	Scale
Dependent Variables			
Profitability (Accounting)	**ROA**: A measure to assess the effectiveness in the use of resources allocated in the form of the firm's total assets.	ROA = EBIT/Total Assets	Ratio
	ROE: A measure to assess the efficiency in the use of shareholders' capital	ROE = Net Profit/Total Shareholders' Equity	Ratio
Profitability (Market)	**Tobin's Q (TOBQ)**: A measure that compares the market value of a company's assets to their replacement (or book) cost.	TOBQ = Market Value of Equity + Book Value of Debt/ Book Value of Total Assets	Ratio
Independent Variables			
Receivable in Days (ARD)	The average number of days a company takes to collect payment from its customers after a sale.	ARD = (Average of accounts receivable/Sales) x 365	Days
Inventory Turnover in Days (ITD)	The average number of days inventory remains in stock before being sold.	ITD = (Average inventory/Cost of goods sold) x 365	Days
Accounts Payable in Days (APD)	The average number of days a company takes to pay its suppliers after receiving goods or services.	APD = (Average of accounts payable/Cost of goods sold) x 365	Days
Cash Conversion Cycle (CCC)	Time (in days) it takes for a company to convert its investments in inventory and receivables into cash, after paying its payables.	CCC = ARD + ITD - APD	Days
Control Variables			
Size (TA)	Total Assets are investments in the firm's assets.	Logarithm of Book Value of Total Assets	Log
Leverage (LEV)	LEV: Measure of how much a firm is financed by debt, and its capital structure	LEV = Total Debt/Total Equity	Ratio
Growth Rate (GR)	Change in Sales	GR = ($Sales_t$ – $Sales_{t-1}$)/ $Sales_t$	Ratio

4.3 Empirical Method

To explore the relationship between WCM and accounting profitability and market performance, and then explore the mediation of accounting profitability on market performance in the automotive industry, this study employs a quantitative analysis method using panel data to mitigate attrition bias and control for unobservable heterogeneity (Wooldridge, 2002). A correlation analysis is performed on all the study variables, followed by a multiple regression using the ordinary least squares (OLS) method, where observations are pooled across a cross-section of companies over several periods, from 2014 to 2024. The regression model is applied separately for all three measures of performance (ROA, ROE and TOBQ), *firstly* to examine whether independent variables can explain the variability in firm performance significantly and *secondly* to examine whether accounting profits play a mediating role for share market returns, thereby impacting firm value. For the second part of the investigation, lagged values of independent variables are used to incorporate the time taken for accounting measures to impact market results. The regression models used to test the study's hypotheses are as follows.

To test $H_0(1)$: There is no significant relationship between WCM represented by receivables in days (ARD), inventory turnover in days (ITD), accounts payable in days (APD), and cash conversion cycle (CCC) and the Return on Assets (ROA) of firms in the automotive sector, the equation is:

$$ROA_{it} = \alpha + \beta1(ARD_{it}) + \beta2(ITD_{it}) + \beta3(APD_{it}) + \beta4(CCC_{it}) + \beta5(TA_{it}) + \beta6(LEV_{it}) + \beta7(GR_{it}) + \varepsilon_{it} \quad (1)$$

To test $H_0(2)$: There is no significant relationship between WCM represented by receivables in days (ARD), inventory turnover in days (ITD), accounts payable in days (APD) and cash conversion cycle (CCC) and the Return on Equity (ROE) of firms in the automotive sector.

$$ROE_{it} = \alpha + \beta1(ARD_{it}) + \beta2(ITD_{it}) + \beta3(APD_{it}) + \beta4(CCC_{it}) + \beta5(TA_{it}) + \beta6(LEV_{it}) + \beta7(GR_{it}) + \varepsilon_{it} \quad (2)$$

Further, as the study aims to examine the impact of WCM on market performance, it proceeds to test $H_0(3)$: There is no significant relationship between WCM represented by receivables in days (ARD), inventory turnover in days (ITD), accounts payable in days (APD) and cash conversion cycle (CCC) and the Tobin's Q (TOBQ) measure of firms in the automotive sector. In this model, the lagged values of the independent variables at time $t-1$ are employed, reflecting the premise that efficient working capital management (WCM) in Year 1 leads to an enhancement in Tobin's Q in Year 2.

$$TOBQ_{it} = \alpha+\beta1(ARD_{it-1}) + \beta2(ITD_{it-1}) + \beta3(APD_{it-1}) + \beta4(CCC_{it-1}) + \beta5(TA_{it-1}) + \beta6(LEV_{it-1}) + \beta7(GR_{it-1}) + \varepsilon_{it-1} \quad (3)$$

To test the $H_0(4)$: ROA and ROE do not play a mediating role in conveying the impact of WCM on the TOBQ of firms in the automotive sector. WCM would be reflected in accounting profit measures and to examine whether this impact is transferred to market performance using lagged effects of the independent variables (t-1).

$$TOBQ_{it} = \alpha + \beta1(ROA_{it-1}) + \beta2(ROE_{it-1}) + \beta3(TA_{it-1}) + \beta4(LEV_{it-1}) + \beta5(GR_{it-1}) + \varepsilon_{it-1} \quad (4)$$

Where:

- ROA is EBIT divided by Total Assets for firm *i* in time *t*;
- ROE is Net Profit divided by Total Equity for firm *i* in time *t*;
- TOBQ is Market Value of Equity + Book Value of Debt divided by Book Value of Total Assets for firm *i* in time *t*;
- ARD is Average of accounts receivable divided by Sales into 365 days for firm *i* in time *t*;
- ITD is Average inventory divided by Cost of goods sold into 365 days for firm *i* in time t;
- APD is Average of accounts payable divided by COGS into 365 days for firm *i* in time *t*;
- CCC is ARD plus ITD minus APD for firm *i* in time *t*;
- TA is the log of total assets for firm *i* in time *t*;
- LEV is total debt divided by total equity for firm *i* in time *t*;
- GR is the growth in sales in year 1 from year *t*-1.
- ε_i is the error term

5. Empirical Results & Interpretations

5.1 Data Analyses

A panel data methodology is employed in the analysis, as the dataset comprises cross-sectional observations of firms over multiple time periods, aligning with the analytical framework recommended by Hsiao (2005). Before conducting the correlational and regression analyses, several diagnostic tests were performed to assess the dataset's suitability and determine the appropriate statistical tests. The Jarque-Bera test on all variables yielded p-values lower than the significance level of alpha = 0.1, indicating non-normality within the dataset. Therefore, Spearman's correlation will be used, which is suitable for non-parametric data. A multicollinearity test was conducted, and the Variance Inflation Factor (VIF) was found to be less than 5 for all dependent and control variables, except for ROA, which showed a VIF of 5.306. This value is less than 10 and acceptable in the model. As the WCM variables showed R^2 values close to 1, this is usual as these variables form the components of the WCM. Table 3 below shows the Tolerance and the VIF data for the variables. The Breusch–Pagan (BP) test was conducted to assess heteroskedasticity, a key assumption for the OLS regression model. The results indicated that all data were found to be homoscedastic. The endogeneity check was performed using the Hausman Test, which confirmed the applicability of the fixed effects model, given that firm-specific characteristics are likely correlated with the regressors. The Multiple Linear Regression (MLR) method will be used as a base method for examining the relationships for the panel data, as the dependent variables (ROA, ROE, TOBQ) as well as the independent variables (ARD, ITD, APD, CCC, LOGTA, LEV, GR) are of continuous numeric values and the aim is to quantify linear relationships and estimate the impact of each variable on profitability and market performance.

Table 3. Multicollinearity Tests

Statistic	ROA	ROE	TOBQ	ARD	ITD	APD	CCC	LOGTA	LEV	GR
R^2	0.812	0.534	0.726	1.000	1.000	1.000	1.000	0.483	0.665	0.177
Tolerance	0.188	0.466	0.274	0.000	0.000	0.000	0.000	0.517	0.335	0.823
VIF	5.306	2.144	3.644					1.935	2.988	1.216

Table 4 presents the descriptive statistics for the study's variables. All variables have 110 observations, ensuring comparability. The ROA ranged from a minimum of -2.61% to a maximum of 28% with a mean of 4.82%. Meanwhile, the ROE ranged from a minimum of -10.72% to a maximum of 45.38% with a mean of 11.4%. The share market performance metric of Tobin's Q showed a mean value of 0.96, ranging between 0.58 and 1.84. From the profitability measures, ROE is observed to have the highest variation, with a standard deviation of 8.7% whereas ROA is at 4%. The working capital variables of ARD had a mean of 91 days, indicating that companies took an average of 81 days to collect their receivables. In contrast, the APD showed that they received an average credit of 155 days for their payments to suppliers. ITD averaged 50 days for the sample companies. The CCC revealed a negative mean of 15 days, indicating that some firms collect cash earlier than they make payments. Negative CCCs are not uncommon in manufacturing businesses (Ali et al., 2018). Within the working capital variables, the APD is seen to have the highest standard deviation, at 104 days, followed by CCC at 84 days.

Table 4. Descriptive Statistics of the Study Variables

Statistic	ROA	ROE	TOBQ	ARD	ITD	APD	CCC	LOGTA	LEV	GR
Nbr. of observations	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00	110.00
Minimum	-2.61	-10.72	0.58	21.63	22.98	50.23	-172.16	1.11	0.62	-32.89
Maximum	25.49	45.38	1.84	264.69	86.96	367.58	215.40	2.82	6.40	23.42
Range	28.10	56.09	1.26	243.05	63.99	317.35	387.56	1.72	5.78	56.31
1st Quartile	2.92	6.70	0.86	50.06	34.36	61.95	-94.42	2.18	1.30	-2.77
Median	4.09	10.90	0.95	82.04	45.94	97.89	6.14	2.36	1.81	2.23
3rd Quartile	5.91	14.90	1.01	115.87	64.28	259.32	30.99	2.46	3.09	6.53
Mean	4.82	11.40	0.96	90.63	49.46	155.35	-15.26	2.20	2.37	1.87
Standard deviation (n)	3.95	8.68	0.17	48.07	18.53	104.22	84.25	0.49	1.48	8.92
Variation coefficient (n)	0.82	0.76	0.18	0.53	0.37	0.67	-5.52	0.22	0.62	4.76

5.2 Correlation Analysis

Spearman's rank-order correlation coefficient (ρ) is employed to assess the strength and direction of monotonic associations between variables. Unlike the Pearson correlation coefficient, which quantifies linear relationships under the assumption of normality and homoscedasticity, Spearman's ρ evaluates whether an increase in one variable corresponds to a consistent directional change in another, without requiring the relationship to be linear or the data to be normally distributed. This non-parametric method is particularly appropriate for the current dataset, as it accommodates both continuous and ordinal data, thereby offering robustness in the presence of non-normality and outliers. Table 5 shows the Spearman's rank correlation coefficient (ρ) for the variables of the study. The results of the coefficients of the accounting profitability measure of ROA reveal a moderate negative relationship between the WCM variables of ARD and APD. Thus, indicating that longer receivable and payable days are negatively related to ROA. Furthermore, no statistically significant relationship is identified between ROA and either the cash conversion cycle (CCC) or inventory turnover in days (ITD), suggesting that accelerated inventory turnover or a shortened cash cycle does not have a material influence on ROA. Consequently, the null hypothesis $H_0(1)$ is rejected, as components of working capital management (WCM), specifically receivables and payables management, demonstrate a moderate association with ROA. Similarly, return on equity (ROE) displays a moderately negative relationship with ARD, paralleling the pattern observed with ROA; however, no comparable relationship is found between ROE and APD. ROE's relation with CCC is significant and negatively related, indicating shorter cash cycles for higher ROA. $H_0(2)$ is rejected, as the WCM components of receivables management and the cash cycle have a moderate negative relation with ROE. Observing Tobin's Q measure of the market value of firms, H0(3) is also rejected, as a moderate negative relation is observed with both ARD and CCC, similar to the relation with ROE. This is also evidenced by a strong positive coefficient between ROE and TOBQ of 0.612, meaning higher ROE tends to be associated with better market performance. Observing the relationships of the dependent variables with the control variables, this indicates that capital-intensive firms and highly leveraged firms in the automotive sector tend to have lower ROA. Highly leveraged firms and those with high growth rates are moderately positively related to ROE. We also observe that firms with higher leverage may be perceived as more valuable by the market (0.506). Larger firms seem to manage CCC better, showing a high negative correlation of -0.62 and so do highly leveraged firms with a coefficient of -0.755. As moderate to high correlations are observed between profitability and most of the WCM variables, the study proceeds with the regression analysis to examine the hypotheses.

Table 5. Correlation Analysis Spearman's ρ

Variables	ROA	ROE	TOBQ	ARD	ITD	APD	CCC	LOGTA	LEV	GR
ROA	**1**									
ROE	**0.607**	**1**								
TOBQ	**0.316**	**0.612**	**1**							
ARD	**-0.258**	**-0.284**	**-0.344**	**1**						
ITD	-0.063	-0.051	-0.122	**0.745**	**1**					
APD	**-0.248**	-0.028	-0.005	**0.783**	**0.762**	**1**				
CCC	0.095	**-0.277**	**-0.407**	-0.086	**-0.232**	**-0.616**	**1**			
LOGTA	**-0.309**	-0.096	0.020	0.052	0.116	**0.328**	**-0.620**	**1**		
LEV	**-0.349**	**0.192**	**0.506**	-0.153	0.009	**0.366**	**-0.755**	**0.522**	**1**	
GR	**0.239**	**0.284**	0.107	-0.115	-0.010	-0.060	-0.044	0.051	0.006	**1**

Note: Values in bold are different from 0 with a significance level alpha=0.1

5.3 Regression Results

The MLR regression technique was applied to the panel data using the Fixed Effects (FE) model specification to control for time-invariant firm-level heterogeneity. Separate regressions were conducted for each dependent variable, ROA, ROE and TOBQ, against the explanatory variables of ARD, ITD, APD, CCC, along with the control variables of TA, LEV, and GR. In case of TOBQ, the model incorporates the lagged values of the independent variables to account for potential delayed effects, with a lag period of one year. The regression results corresponding to ROA, ROE, and TOBQ are presented in Tables 6, 7, 8, and 9, respectively.

Table 6. Regression of the Independent Variable ROA

Goodness of fit statistics (ROA):	
Observations	110
Sum of weights	110
DF	104
R^2	0.536
Adjusted R^2	0.514

Analysis of variance (ROA):						
Source	DF	Sum of squares	Mean squares	F	Pr > F	p-values signification codes
Model	5.000	921.097	184.219	24.015	**<0.0001**	***
Error	104.000	797.792	7.671			
Corrected Total	109.000	1718.890				
Computed against model Y=Mean(Y)						
*Signification codes: 0 < *** < 0.001 < ** < 0.01 < * < 0.05 < . < 0.1 < ° < 1*						

Model parameters (ROA):							
Source	Value	Standard error	t	Pr > |t|	Lower bound (90%)	Upper bound (90%)	p-values signification codes
Intercept	16.816	2.416	6.959	**<0.0001**	12.806	20.827	***
ARD	-0.040	0.006	-6.346	**<0.0001**	-0.051	-0.030	***
ITD	0.000	0.000					
APD	0.011	0.002	5.697	**<0.0001**	0.008	0.015	***
CCC	0.000	0.000					
LOGTA	-3.438	0.852	-4.036	**0.000**	-4.852	-2.024	***
LEV	-1.150	0.151	-7.627	**<0.0001**	-1.400	-0.900	***
GR	0.101	0.037	2.753	**0.007**	0.040	0.161	**
*Signification codes: 0 < *** < 0.001 < ** < 0.01 < * < 0.05 < . < 0.1 < ° < 1*							

Table 7. Regression of the Independent Variable ROE

Goodness of fit statistics (ROE):	
Observations	110
Sum of weights	110
DF	105
R^2	0.294
Adjusted R^2	0.267

Analysis of variance (ROE):						
Source	DF	Sum of squares	Mean squares	F	Pr > F	p-values signification codes
Model	4.000	2436.811	609.203	10.950	**<0.0001**	***
Error	105.000	5841.408	55.632			
Corrected Total	109.000	8278.219				
Computed against model Y=Mean(Y)						
*Signification codes: 0 < *** < 0.001 < ** < 0.01 < * < 0.05 < . < 0.1 < ° < 1*						

Model parameters (ROE):							
Source	Value	Standard error	t	Pr > |t|	Lower bound (90%)	Upper bound (90%)	p-values signification codes
Intercept	26.510	3.970	6.678	**<0.0001**	19.923	33.098	***

ARD	-0.077	0.014	-5.432	**<0.0001**	-0.101	-0.054	***
ITD	0.000	0.000					
APD	0.030	0.007	4.301	**<0.0001**	0.018	0.042	***
CCC	0.000	0.000					
LOGTA	-5.965	1.712	-3.484	**0.001**	-8.807	-3.124	***
LEV	0.000	0.000					
GR	0.215	0.087	2.482	**0.015**	0.071	0.359	*
*Signification codes: 0 < *** < 0.001 < ** < 0.01 < * < 0.05 < . < 0.1 < ° < 1*							

Table 8. Regression of the Independent Variable TOBQ

Goodness of fit statistics (TOBQ):	
Observations	109
Sum of weights	109
DF	104
R^2	0.321
Adjusted R^2	0.295

Analysis of variance (TOBQ):						
Source	DF	Sum of squares	Mean squares	F	Pr > F	p-values signification codes
Model	4.000	1.049	0.262	12.313	**<0.0001**	***
Error	104.000	2.216	0.021			
Corrected Total	108.000	3.265				
Computed against model Y=Mean(Y)						
*Signification codes: 0 < *** < 0.001 < ** < 0.01 < * < 0.05 < . < 0.1 < ° < 1*						

Model parameters (TOBQ):							
Source	Value	Standard error	t	Pr > |t|	Lower bound (90%)	Upper bound (90%)	p-values signification codes
Intercept	1.359	0.122	11.124	**<0.0001**	1.156	1.562	***
ARD	-0.001	0.000	-2.459	**0.016**	-0.001	0.000	*
ITD	0.000	0.000					
APD	0.000	0.000					
CCC	-0.001	0.000	-6.721	**<0.0001**	-0.001	-0.001	***
LOGTA	-0.168	0.041	-4.150	**<0.0001**	-0.235	-0.101	***
LEV	0.010	0.009	1.199	0.233	-0.004	0.025	°
GR	0.000	0.000					
*Signification codes: 0 < *** < 0.001 < ** < 0.01 < * < 0.05 < . < 0.1 < ° < 1*							

Table 9. Regression of TOBQ against ROA and ROE

Goodness of fit statistics (TOBQ):	
Observations	109
Sum of weights	109
DF	105
R^2	0.666
Adjusted R^2	0.656

Analysis of variance (TOBQ):						
Source	DF	Sum of squares	Mean squares	F	Pr > F	p-values signification codes
Model	3.000	2.173	0.724	69.640	**<0.0001**	***
Error	105.000	1.092	0.010			
Corrected Total	108.000	3.265				
Computed against model Y=Mean(Y)						
*Signification codes: 0 < *** < 0.001 < ** < 0.01 < * < 0.05 < . < 0.1 < ° < 1*						

Model parameters (TOBQ):							
Source	Value	Standard error	t	Pr > |t|	Lower bound (90%)	Upper bound (90%)	p-values signification codes
Intercept	0.641	0.031	20.727	**<0.0001**	0.590	0.693	***
ROA	0.039	0.005	8.481	**<0.0001**	0.032	0.047	***
ROE	0.000	0.000					
LOGTA	0.000	0.000					
LEV	0.057	0.007	8.717	**<0.0001**	0.046	0.068	***
GR	-0.003	0.001	-2.400	**0.018**	-0.005	-0.001	*
*Signification codes: 0 < *** < 0.001 < ** < 0.01 < * < 0.05 < . < 0.1 < ° < 1*							

5.5 Interpretations

To test the proposed hypotheses, multiple linear regression (MLR) analysis was employed to identify the key components of working capital that had the greatest influence on predicting the firm's profitability. Table 6 shows that the regression model for ROA is statistically significant, with the ANOVA p-value <0.0001, indicating a very low probability that the observed values are due to random chance. The R^2 of 53.6% indicates that the dependent variables explain a substantial portion of the variability in ROA. Hence, $H_0(1)$, stating that there is no significant relationship between WCM and ROA, is rejected based on the Type III sum of squares. The WCM variables of ARD and APD are significant, where ARD is the most influential. The β coefficient of -0.04 indicates a negative relationship between receivables in days and the ROA and the standardized coefficient suggests that a one standard deviation increase in ARD is associated with a 0.49 percentage point decrease in the ROA of a firm in the automotive sector. The findings of this study confirm previous studies that a negative relationship exists between receivables collection and profitability (Wang, 2002; Alavinasab & Davoudi, 2013; Ukaegbu, 2014; Kasozi, 2017). The results of the empirical analysis of the automotive industry show similar behavior to that of other manufacturing businesses, where earlier collections increase liquidity and lower financing costs, resulting in increased profits as indicated by ROA. APD is also observed to significantly influence the ROA, with a positive β coefficient of 0.011. The standardized coefficient indicates that a one-standard-deviation increase in APD leads to a 0.3 percentage point increase in ROA for a firm in the automotive sector. This is consistent with the extended payables theory, which suggests that enhanced liquidity, reduced financing costs, and improved profitability can result. While these findings support earlier research (Gill et al., 2010; García & Martínez, 2007; Alavinasab & Davoudi, 2013), they stand in contrast to the conclusions of Malik & Bukhari (2014) and Kasozi (2017), who reported opposing results. The empirical analysis reveals that neither ITD nor the CCC exerts a statistically significant influence on the dependent variable of ROA under investigation.

Table 7 shows that the regression model for ROE is statistically significant with the ANOVA p-value of <0.0001 and an R2 of 29.4% indicating a significant variability of ROE that is explained by the independent variables. Hence, $H_0(2)$, stating that there is no significant relationship between WCM and ROE, is rejected based on the Type III sum of squares. The WCM variables of ARD and APD are significant and similar to their impacts on

ROA Here, as well, ARD is found to be the most influential. having a negative β coefficient of -0.077 and APD has a positive β coefficient of 0.03. Similar to the impacts on ROA, longer receivable periods reduce ROE, while longer payables periods increase ROE, due to the benefits of liquidity and lower financing costs. The standardized coefficients of ARD suggest that a one standard deviation increase in ARD is associated with a 0.43 percentage point decrease in ROE, and that of APD is associated with a 0.08 percentage point increase in ROE. The results confirm previous studies with similar outcomes, such as Gill et al. (2010); Rey-Ares et al. (2021); Deloof (2003). These studies collectively reinforce the notion that efficient management of working capital components, particularly trade credit, can serve as a critical tool in enhancing financial performance. However, it contradicts others who find no significant relationship between WCM and its components and ROE, such as Aldubhani et al. (2022), who specifically studied Qatari companies. Such discrepancies may stem from contextual differences, such as firm size, sectoral dynamics, country-specific credit policies, or macroeconomic conditions, that affect supplier relationships and credit terms. Other WCM components, such as inventory in days (ITD) and cash conversion cycle (CCC), showed no significant influence on the ROE.

Table 8 reveals that the regression model for TOBQ is statistically significant with the ANOVA p-value of <0.0001 and an R2 of 32% indicating a significant variability of TOBQ that is explained by the independent variables. Hence, $H_0(3)$, stating that there is no significant relationship between WCM and TOBQ, is rejected based on the Type III sum of squares, the WCM variables of ARD and CCC. Both ARD and CCC are negatively related to TOBQ, with a β coefficient of -0.001 for both. Inventory and payables are insignificant in relation to TOBQ and market valuation of a firm in the automotive industry. This suggests that lower liquidity, resulting from an increase in receivables and extended cash cycles, increases debt, where highly leveraged firms are not preferred by market investors. The standardized coefficients of ARD suggest that a one standard deviation increase in ARD is associated with a 0.2 percentage point decrease in the TOBQ, and that of CCC is associated with a 0.37 percentage point decrease; however, CCC is more influential than ARD. This result diverges from the findings of Abuzayed (2012), who reported no statistically significant relationship between Tobin's Q and any components of working capital management (WCM) in their analysis of firms listed on the Amman Stock Exchange in Jordan. The results of the present study corroborate prior empirical research that has identified a statistically significant negative association between CCC and TOBQ, a measure of market performance. For instance, Ogundipe et al. (2012) examined Nigerian firms, and Nguyen et al. (2020) studied firms in Vietnam. In contrast, other working capital components, specifically inventories and accounts payables, did not exhibit significant effects on market performance in this study.

Table 9 presents the regression of TOBQ as a measure of market performance against ROA and ROE, which are measures of accounting profitability, to examine $H_0(4)$: ROA and ROE do not play a mediating role in conveying the impact of WCM on the TOBQ of firms in the automotive sector. The empirical results reject $H_0(4)$, as the model is statistically significant with an ANOVA p-value of <0.0001 and an R2 of 67% indicating a significant variability of TOBQ that is explained by the independent variables. Based on the Type III sum of squares, the ROA brings significant information to explain the variability of the dependent variable TOBQ, which is the most influential as compared to the control variables of leverage and growth rate. The empirical findings indicate a significant positive association between efficient WCM and ROA, ROE, suggesting that firms that manage their short-term assets and liabilities effectively are better positioned to optimize resource utilization and operational efficiency. This enhanced operational performance is positively reflected in market-based valuations, thereby underscoring the importance of internal financial practices in shaping investor perceptions and firm value (Deloof, 2003; Lazaridis & Tryfonidis, 2006). In contrast, ROE does not exhibit a statistically significant relationship with TOBQ, a widely recognized proxy for market valuation. This divergence suggests that equity-based returns, which are influenced by leverage and capital structure decisions, may not sufficiently capture the operational efficiency or sustainable performance that investors prioritize in valuation assessments (Moradi & Paulet, 2019). These findings lend support to the stakeholder theory, which argues that firm value is not solely derived from maximizing shareholder wealth, but also from considering broader stakeholder interests, including employees, suppliers, and customers. Efficient day-to-day management of working capital signals to the market that the firm is responsibly balancing these stakeholder relationships, thereby enhancing its reputation and long-term viability (Ruf et al., 2001).

6. Summary and Conclusion

6.1 Summary and Implications

This study aimed to investigate the relationship between WCM components and firm performance in the automotive sector, with a dual focus on how various elements of WCM influence accounting profits, as measured by ROA and ROE, and market performance, as measured by Tobin's Q (TOBQ). The correlation analysis revealed

that ARD was the most influential component of WCM, significantly impacting all three profit measures. Thus, implying that quick collections from customers would reduce external financing requirements, thereby increasing profits. On the other hand, an increase in receivables collection period leads to a notable decline in firm profitability. The CCC was negatively related to ROE and TOBQ. The multiple linear regression (MLR) analysis further confirms, through empirical results, that ARD and APD are statistically significant predictors of profitability, while others, such as inventory, do not exhibit a meaningful impact on any of the three performance measures. This result reinforces the theoretical argument that delays in receivables collection strain liquidity, increase financing needs, and ultimately reduce returns. Conversely, APD was found to have a positive and significant effect on ROA. Firms that take longer to settle their payables seem to benefit from enhanced internal liquidity and reduced dependence on external financing. The findings indicate that ARD and APD continue to be the primary drivers of ROE, aligning with the patterns observed in the ROA model, which underscores the crucial role of trade credit efficiency in enhancing firm profitability. Notably, other WCM components, such as ITD and CCC, were found to have no statistically significant effect on ROE and ROA.

Another dimension of this study explores the impact of WCM on TOBQ, a forward-looking, market-based measure of firm valuation, where ARD and CCC are the significant predictors, implying that inefficiencies in receivables collection and prolonged cash conversion periods can erode investor confidence, leading to a lower market valuation of firms in the automotive sector. The findings align with the Agency Theory (Jensen & Smith, 1984) that efficient WCM can enhance shareholders' interests and Stakeholder Theory (Freeman, 2010) that firm value is not solely derived from maximizing shareholder wealth, but also from considering broader stakeholder interests, including employees, suppliers, and customers. The negative relationship suggests that delayed cash inflows and extended operational cycles compromise firm liquidity, potentially increase reliance on debt, and signal higher risk to investors, which are factors often penalized in market valuation. The study demonstrates that WCM efficiency, as observed through the overall cash cycle, has important implications for market-based valuation metrics. Firms aiming to enhance their perceived market value should prioritize reducing the duration of the cash cycle.

These findings further support the strategic importance of integrating WCM practices into broader financial performance and value-creation strategies. The final empirical test in this study examines whether accounting-based profitability measures (ROA, ROE) play a mediating role in transmitting efficient WCM impacts on the TOBQ, a widely used market-based indicator of firm valuation. The empirical results affirm that ROA has a significant and positive influence on market valuation, underscoring that effective internal WCM, through better utilization of assets, directly translates into enhanced market value. This supports the Signaling Theory (Komara et al., 2020), which posits that investors closely monitor operational efficiency and are positively rewarded in capital markets. Investors appear to place greater value on asset efficiency and liquidity management than on equity returns, which may be distorted by financial engineering. Efficient day-to-day management of working capital signals to the market that the firm is responsibly balancing these stakeholder relationships, thereby enhancing its reputation and long-term viability. In summary, this final empirical test strengthens the overall conclusion that WCM not only affects internal profitability but also has far-reaching implications for external market valuation. Specifically, ROA acts as a critical channel through which it signals efficient operational practices and is rewarded by the market.

6.2 Conclusion

In conclusion, this study affirms that effective management of receivables and payables plays a critical role in enhancing firm performance in the automotive industry. Managers are advised to tighten receivables collection policies and tactically leverage payables deferrals to optimize liquidity and returns. The lack of significance in inventory and cash conversion variables suggests the need for further investigation, potentially exploring nonlinear effects, sector-specific inventory dynamics, or firm size and supply chain complexity. This study adds quantitative rigor to the WCM-performance nexus and provides empirical evidence supporting WCM as a critical determinant of financial and market success in capital-intensive industries. The primary limitation of this study is its focus on a specific industry, which means that the findings may not apply to other industries with different characteristics. However, the results may be extrapolated to other manufacturing industries with broadly similar attributes. Future studies could extend this work by utilizing longitudinal panel datasets covering fifteen or more years, allowing for analysis across different macroeconomic cycles and crises. Future studies may benefit from exploring these relationships across different time horizons, business cycles, or geographic markets to identify nuanced drivers of equity-based profitability. For example, incorporating data from industries such as electronics manufacturing, automotive, and pharmaceuticals in both developed and emerging Asian markets, particularly Japan, Taiwan, South Korea, and Singapore, would enable more targeted sectoral comparisons. Methodologically, future research

could apply dynamic panel data models such as GMM to control for endogeneity, and machine learning techniques for non-linear pattern detection, enhancing the precision of identifying industry-specific drivers of equity-based profitability linked to working capital strategies. Furthermore, a broader and more comparative approach among various sectors in future research could offer deeper insights into the contextual effectiveness of working capital strategies across diverse industrial landscapes.

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