

The Relationship among Working Capital Efficiency, Financial Leverage, and Firm Performance: An Empirical Analysis of the Healthcare Firms Listed in Saudi Bourse

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Abstract

Financial resources are essential for business growth and attainment of competitive advantage. The effective allocation and usage of financial resources play a decisive role in ensuring businesses' long-term survival and competitive advantage across the world in all industries. Healthcare sector is of core importance due to its dynamic and ever evolving character. Like every other country, KSA puts a lot of attention to the healthcare industry and effective financial management has gained importance. The study aims to check the association among financial leverage, working capital efficiency and performance of the firm. Six mega healthcare firms that are listed the Saudi Stock Exchange (Tadawul) were selected for sampling from 2014-2022. The results of regression and correlations tests show a goodness of fit or R² shows 40% and 52% effect of WC on returns and equity of the companies, whereas coefficient shows 0.00039 and 0.00073 negative impact on assets and equity returns. The current research results highlighted a negative association among WCM and companies returns. The study further concluded that FL has a positive effect on CCC, implying that increased financial leverage (FL) and working capital management (WCM) factors had negatively influenced both returns on assets and equity. Effectively managing working capital contributed to improved financial performance. Therefore, findings and results suggested that healthcare organizations better use the best working capital management practices to reach up to optimized performance and returns.

Keywords: Working Capital Management (WCM), Firm's Performance (FP), Financial Leverage (FL), Return on Assets (ROA), Return on Equity (ROE), Return on Investment (ROI)

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1. Introduction

The healthcare industry has seen swift upgradation and advancement in technology, artificial intelligence, and medical practices. The global dynamics and challenges have made financial managers realize the need for efficient financial management to attain growth, sustainable development and competitiveness. Saudi Arabia is continuously upgrading their healthcare sector under vision 2030 to improve healthcare practices which promote the need to develop a viable system to manage healthcare resources (technology, human resources, financial) and their

efficient use through good governance practices, accountability and transparency (Rahman & Al-Borie, 2021). Good financial management has gained vital importance due to paradigmatic shift and progression in Saudi healthcare sector. Working capital and financial leverage management emerges as crucial determinants of overall performance in this landscape (Mohd Tahir & Mohd Ashhari, 2020); Onaepemipo et al. (2019); (Sagner, 2014).

Effective WCM is striking a delicate equilibrium that allows for adequate liquidity while minimizing costs and maximizing profitability (Yousaf & Bris, 2021). On the other hand, financial leverage (FL) refers to using debt financing to magnify the returns to shareholders through increased earnings per share. Financial leverage can be a difficult problem for financial managers because when the debt ratio increases, it can raise financial risks and increase capital costs, so firms must manage their financial resources better (Al-Slehat, Zaher, Fattah, & Box, 2020; Alter & Elekdag, 2020; Hanif et al., 2024). By utilizing financial leverage, a company can maximize shareholder value while successfully attaining its goals (Hongli, Ajorsu, & Bakpa, 2019; Ma et al., 2022).

The healthcare system in the KSA has been rated higher than that of several other wealthy nations (Al-Hanawi, Khan, & Al-Borie, 2019). Ensuring the healthy lives and promoting the well-being for all age groups is the fundamental goal of the Sustainable Development Agenda set by the United Nations (Howden-Chapman et al., 2017; Seidman, 2017). For this purpose, the government of KSA has taken several actions to achieve the development objectives, investing \$36.8 billion, or 14.4% of its 2022 budget for healthcare and social development. After education and the military, this allocation is the third-largest expenditure (Rahman & Qattan, 2021; Trade.gov, 2022). The relationship among the WCM efficiency, financial leverage (FL), and (FP) has been done in literature but not in the health sector of KSA. Therefore, this empirical analysis explores the relationship between the working capital management efficiency, financial leverage, and the firms' performance in the healthcare companies listed at Saudi Bourse.

Research Objectives

This research study has the following core objectives:

- To explore the relationship between the working capital management efficiency and financial leverage for the firms in healthcare sector.
- To examine the association that exist between working capital management efficiency and performance of the firms in healthcare sector.
- To investigate the connection between financial leverage and the financial performance of companies operating in the healthcare industry.
- To check the association among WCM efficiency, financial leverage, and firm performance.

Problem Statement

The KSA has a public and private healthcare system that serves a population of 31,742,308 people (Aljashaam, 2017). The MOH guide the public sector, which provides the

majority of the country's health care services (Al-Hanawi, Alsharqi, Almazrou, & Vaidya, 2018). The Ministry of Health, which receives funds from the yearly government budget, acts as the leading supplier of public healthcare services and is in charge of around 60% of the country's hospitals and primary care facilities. However, Saudi Arabia's healthcare industry currently faces several issues and challenges.

Firstly, there is a significant increase in demand for healthcare services due to population growth, aging population, and the rising prevalence of chronic diseases (Khoja et al., 2017). Secondly, while the country has made considerable investments in healthcare infrastructure, there are still disparities between regions, with some areas lacking adequate facilities and services (Al-Rashid, Nahiduzzaman, Ahmed, Campisi, & Akgün, 2020). Thirdly, work force shortages, particularly in specialized areas like nursing and primary care, pose a significant challenge (Albejaidi & Nair, 2019). Fourthly, maintaining consistent quality and standardization of healthcare services across providers and regions is a persistent challenge (Chowdhury, Mok, & Leenen, 2021). Lastly, healthcare financing presents a complex issue, as the sector must balance financial sustainability and patient affordability (Kamphuis & Kanavos, 2021; Rahman & Qattan, 2021).

Efficient WCM is essential for healthcare corporations to ensure the optimal utilization of financial resources, liquidity maintenance, inventory levels management, and handling accounts receivable. It also safeguards against the adverse effects of value shrinkage in current assets, maintains credit worthiness, and enables hospitals to address emergencies promptly (Rauscher & Wheeler, 2012). This quantitative study intends to witness the link among working capital management (WCM), financial leverage (FL) and financial performance (FP) in the Saudi Arabia healthcare sector. The preliminary literature assessment on healthcare sector is based on the research undertaken in other countries such as Pakistan (Tanveer, Nazir, Khan, Khan, & Razzaq, 2016), India (Talha, Christopher, & Kamalavalli, 2010), Western Uganda (Cranimar & John, 2021), and Kenya (Judith & Muturi, 2018). Therefore, this study examines how the WCM and financial leverage (FL) impacts the performance of healthcare enterprises listed at the Saudi Bourse.

2. Literature Review

WCM and Firm's Performance (FP)

Literature is available on WCM. For example, Chambers and Cifter (2022) investigated the impact of WCM on FP in the hotel and tourism industries. According to the study, WCM and FP have an upturned U-shaped relationship. In contrast, sports firms showed a positive linear relationship, while changes in WCM had no meaningful impact on gambling FP.

Ahmad et al. (2022) explored the relationship between WCM and FP from 2004 -2020. Scholars have also conducted a research study examining the correlation between the WCM and FP through the utilization of panel data analysis and found negative correlation between the gross WCM and FP throughout the EU and other nations exhibiting high levels of economic performance (Akgün and Memiş Karataş, 2021; Akbar et al., 2021). On the other hand, Basyith

et al. (2021) led a study and found that the WCM significantly affected the FFP of companies in Indonesia. Similarly, Sawarni et al. (2020) examined how WCM efficiency affected the success of 414 Bombay SE listed Indian companies and found that WCM effectiveness significantly affected FP of the firms. This difference statistically varied across industries significantly.

Delima (2020) conducted a research study in Srilanka and found that effective strategies and policies for managing WCM could play a crucial role in preventing the corporate failure and enhancing overall business performance. Similarly, Wang et al. (2020) conducted a study to explore the impact of WCM and Working capital strategy on a company's FFP differs. Moreover, different studies have been done on different countries and they have found the significant association among them (Seth et al., 2020; Kayani et al., 2020; Nastiti et al., 2019; Ren et al., 2019; Pakdel and Ashrafi 2019).

Yusoff et al. (2018) examined WCM efficiency and its impact on FP. On the same line, Simon et al. (2018) conducted a study on WCM and FP and found that the optimization of WCM was of utmost importance for organizations. Inadequate management of WC can potentially hinder a firm's capacity to create cash flow and finance their routine operational endeavors (Dey and Sharma 2018; Altaf and Shah 2017; Shajahan and Suganya 2017; Kam and Shin 2016; Bhatia and Srivastava 2016; Hassan et al., 2014). They revealed a notable disparity in correlation between the WCM and business performance prior to and following the economic downturn.

WCM and Financial Leverage

WCM has a strong association with the financial leverage of firms and different studies has been done by scholars using different methodologies. For instance, Shaik et al. (2023) studied the relationship between the WCM and FP and found a positive correlation between the WCM and FP of companies listed at Tadawul. Then, Ilham et al. (2022) reported the potential impact of leverage and effective WCM on Indonesia stock exchange listed company. Moreover, Flannery and Öztekin (2021) conducted a study on the connection between the WCM and FL and found a significant impact. A significant affiliation between the WC and FL has been reported by different studies in various settings (Coleman and Baidoo 2020; Bintara 2020).

Lind and Schupp (2020) presented their study on FL and the WCM of financial flow by employing a theoretical framework for enhancing the WCM efficiency within the supply chain by employing payment term modifications. Then, Mahmood et al. (2019) has also found the similar results with same variables. Khan et al. (2018) examined the WCM techniques, business profitability, and the function of leverage as a moderator. Moreover, findings indicated a notable correlation between the WCM and the FL (Dalci and Ozyapici 2018; Hilal 2016; Gombola et al., 2016; Nia and Mansoori 2016; Garg and Gumbochuma, 2015; Taani 2012).

FL and FP

FL is an important source for the firm's financing and it has a significant impact on their financial performance. Different studies have explored this association and found significant results. For example, Kalash (2023) presented the consequences of FL on FP in Turkey, considering financial distress risk and the currency crisis from 200 and find the negative impact of FL on performance of companies. Similarly, Das et al. (2022) posited in their study in

Bangladesh and observed asymmetrical association between the FL and a FP. Then, Rahim et al. (2021) analyzed the impact of FL on Islamic banks performance in the Asian nations.

Different studies have been done to check the association among FL and FP and found the significant results (Danso et al., 2021; Guo et al., 2021; García-Gómez et al., 2021). Nano et al. (2020) conducted a study on financial leverage and proposed that PT should priorities' examining manufacturing inputs, particularly raw materials, and optimize the management of corporate assets to uphold favorable financial outcomes. Similarly, a negative relationship has been reported between the ratio of short-term loans to total assets and ROA as well as Tobin's Q (Appiah et al., 2020; Hongli et al., 2019; Afolabi et al., 2019; Iqbal and Usman 2018).

Kimathi et al. (2015) conducted study in Nairobi on financial leverage and the FP and found a negative correlation between an organization's expansion potential and its financial leverage ratio. The relationship between the FL and FP had been an interest amongst the academicians. Then, Kale (2014) aimed to look into how the performance of non-financial blue-chip businesses listed under the NSE 20-share index was affected by financial leverage and findings showed that for big firms. Similarly, a substantial correlation between the working capital management (WCM) and the financial performance (FP) of a firm have been observed by different studies (Enekwe et al., 2014; Panigrahi and Sharma 2013; Raza 2013; Al-Rdaydeh 2018).

3. Methodology

Measurement of Variables

Two accounting-based measures of FFP will be used as dependent variables in this research study. These accounting-based performance variables, ROA and ROE, are some of the most often-used financial performance indicators in the literature (Ahmad et al., 2022; Soukhakian & Khodakarami, 2019). Table 3.1 lists the formulas and acronyms used to measure the variables for the current investigation.

Table 3.1: Variables Measurement and Abbreviation

Variables	Type	Abbreviations
Return on Assets	Dependent	ROA
Return on Equity	Dependent	ROE
Average Collection Period	Independent	ACP
Days Inventory Outstanding	Independent	DIO
Average Payment Period	Independent	APP
Cash Conversion Cycle	Independent	CCC
Debt Ratio	Mediating Variable	DR

Econometric Methodology

The proposed econometric model for the research has mentioned below and pooled OLS Regression has been run on the data.

Direct impact of WCM on FP

$$ROA = \alpha + \beta CCC + \varepsilon t$$

$$ROE = \alpha + \beta CCC + \varepsilon t$$

Direct impact of WCM on FL (Path A)

$$DR = \alpha + \beta CCC + \varepsilon t$$

Direct impact of FL & WCM on FP (Path B & C)

$$ROA = \alpha + \beta DR + \beta_2 CCC + \varepsilon t$$

$$ROE = \alpha + \beta DR + \beta_2 CCC + \varepsilon t$$

$$ROE = \alpha + \beta DR + \beta_2 ACP + \beta_3 APP + \beta DIO + \varepsilon t$$

$$ROE = \alpha + \beta DR + \beta_2 ACP + \beta_3 APP + \beta DIO + \varepsilon t$$

The study has used the statistical package of EVIEWS 13 for checking WCM impact on FP with mediating role of FL. Initially, descriptive statistics has run to check the normality of the data. After that, the Panel Pooled OLS regression has been used for WCM direct impact on FP. Then Path A has been checked along with paths B & C.

4. Results and Discussions

Descriptive Statistics

The results are shown in the table below. The debt ratio mean is 0.276398, while it maximally goes to 1.542196, and its minimum value is 0.048572. The variable of ROA and ROE has the mean 0.088002 and 0.144416 correspondingly. On the other hand, the CCC, DPO, DIO and DSO means are 131.4910, 65.06426, 40.59713, and 155.9581, respectively. The cash conversion cycle have the average of 131days that shows that firms are taking much time for cash conversion of their inventories and highlight the inefficiencies in their receivables management and working capital. The high values of skewness for DPO and DR shows that firms' payment periods are also longer and its debt ratios are also higher that shows outliers in the data.

Table 4.1: Descriptive Statistics

	DR	ROA	ROE	CCC	DPO	DSI	DSO
Mean	0.276398	0.088002	0.144416	131.4910	65.06426	40.59713	155.9581

Median	0.196587	0.082378	0.135351	120.7782	52.79159	38.51609	143.0676
Maximum	1.542196	0.232081	0.357112	294.7759	160.6620	63.46522	293.9630
Minimum	0.048572	0.004542	0.013820	8.221999	22.89208	22.65381	36.03527
Std. Dev.	0.300562	0.044882	0.074318	74.09506	35.09454	11.61416	65.17158
Skewness	3.261183	0.530304	0.624458	0.099947	1.085085	0.317709	0.247819
Kurtosis	13.19084	3.382421	2.793956	2.013435	3.324219	1.876571	1.889458
Jarque- Bera	323.2880	2.807094	3.538291	2.237632	10.63258	3.678746	3.266038
Probability	0.000000	0.245724	0.170479	0.326666	0.004911	0.158917	0.195339

Direct WCM on Firm's Performance (ROA)

In order to check out direct effect of the WCM on the FP, the Pooled OLS regression has run and its results have shown the WCM has a significantly negative impact on the ROA of the organizations. Its value of coefficient is -0.00039 and it is statistically significant at 5% level. This shows that the total effect of WCM on FP is significant.

Table 4.2: Direct Effect of WCM on ROA

Dependent Variable: ROA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.13963	0.009726	14.35616	1.50E-19
CCC	-0.00039	6.46E-05	-6.07903	1.54E-07
R-squared	0.420156	Mean dependent var		0.088002
Adjusted R-squared	0.408786	S.D. dependent var		0.044882

Direct Effect of WCM on ROE

For checking the direct impact of WCM on the performance of the firm via returns on equity, the Pooled OLS regression has run and its results have been shown below. The results highlighted that the WCM has negative impact on the returns of the firms. Its value of coefficient is -0.00073 and it is statistically significant at 5% level. This shows that the total impact of WCM on firm's performance is significant.

Table 4.3: Direct Effect of WCM on ROE

Dependent Variable: ROE				
Variable	Coefficient	Std.	t-	Prob.
C	0.240659	0.0144	16.642	2.95E-22
CCC	-0.00073	9.60E-	-	5.69E-10
R-squared	0.532525	Mean dependent var		0.144416
Adjusted R-squared	0.523359	S.D. dependent var		0.074318

Direct Effect of WCM on Financial Leverage (Path A)

For checking the impact of independent variable of WCM, the regression has run and its results have been shown in table below. The results show that CCC is positively impacting the financial leverage. The value of its coefficient is 0.001034 and is statistically significant at 10% level.

Table 4.4: Direct Effect of WCM on Financial Leverage (Path A)

Dependent Variable: DR				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.140485	0.082712	1.698481	0.095511
CCC	0.001034	0.000549	1.881835	0.065571
R-squared	0.064929	Mean dependent var		0.276398
Adjusted R-squared	0.046594	S.D. dependent var		0.300562

Direct Effect of WCM & FL on Firm's Performance (FP) (Path B & C)

For checking the impact of mediating variable and independent variable on FP, the Pooled OLS has run and results in table have shown that both variables are putting the negative impact on returns on assets of the firm and their coefficients are significant at 5% level.

Table 4.5: Direct Effect of WCM and FL on FP (Path B & C)

Dependent Variable: ROA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.14623	0.009256	15.79873	4.46E-21
CCC	-0.00034	6.18E-05	-5.56398	1.03E-06
DR	-0.04699	0.015244	-3.08214	0.003339
R-squared	0.512733	Mean dependent var		0.088002
Adjusted R-squared	0.493242	S.D. dependent var		0.044882

Checking the Impact of Mediating Variable

For testing the indirect effect of financial leverage, Sobel test has been used and its results have been reported in the table. The Sobel test has been introduced in 1982 for estimating the statistical significance of indirect effect in the mediation analysis. For the calculation of this test, the values of coefficients of A and B and their related standard errors has been used and its calculations has shown below. The value of test statistics is less than .10, which means the results are significant at 10% level and study concludes that the indirect effect between the working capital management (WCM) and firm performance (FP) via financial leverage (FL) is statistically significant at 10% level.

Path A: 0.001034 (0.000549)

Path B (ROA): -0.04699 (0.015244)

Path C (ROA): -0.00034 (6.18E-05)

Table 4.6: Mediating Impact of Variable

	Test Statistics	St. Error	P-value
Sobel Test	-1.6071708	0.00003023	0.10801691

Point effect

For finding the point estimate of indirect effect of the WCM at which the p-value of Sobel Test get statistically significant is shown below:

0.001034 * -0.04699

0.00004858 (0.10801691)

0.00004858 is the estimate of indirect effect between the working capital management (WCM) and firm performance (FP) via financial leverage (FL) at p value of 0.10801691.

Direct Effect of WCM & FL on FP (Path B & C)

For checking the impact of mediating and independent variable on the FP, the Pooled OLS has run and results have been shown indicating that both the variables are having negative impact on ROE of the firm and their coefficients are significant at 5% level.

Table 4.7: Effect of WCM and FL on FP (Path B & C)

Dependent Variable: ROE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.246862	0.014525	16.99528	2.03E-22
CCC	-0.00069	9.70E-05	-7.07212	4.63E-09
DR	-0.04415	0.023923	-1.84542	0.070902
R-squared	0.562335	Mean dependent var		0.144416
Adjusted R-squared	0.544829	S.D. dependent var		0.074318

Path A: 0.001034 (0.000549)

Path B (ROE): -0.04415 (0.023923)

Path C (ROE): -0.00069 (9.70E-05)

Table 4.8: Mediating Impact of Variable

	Test Statistics	St. Error	P-value
Sobel Test	-1.31817091	0.00003463	0.18744644

The value of test statistics is greater than 0.05, which means the results are not significant and study concludes that the indirect effect between the WCM and FP via FL is not statistically significant. Point effect for finding the point estimate of indirect effect of the WCM at which the p-value of Sobel Test get statistically significant is shown below:

$0.001034 * 0.04415$

0.00004565 (0.18744644)

0.00004565 is the estimate of the indirect effect between the WCM and FP via financial leverage (FL) at p value of 0.18744644.

5. Conclusion

In conclusion, some significant outcomes emerged from our empirical study of the relationship between the WCM effectiveness, FL, and business performance in healthcare enterprises listed at the Saudi Bourse. Firstly, it was evident that the WCM is crucial in determining the success of healthcare enterprises in Saudi Arabia. The negative and statistically significant impact of the WCM on company returns shows that efficient the WCM might lead to greater FL.

Secondly, the positive effect of the debt ratio on the cash conversion cycle implies that increased leverage may lead to longer cash conversion cycles in healthcare organizations. This could be due to increasing financial obligations linked to more significant debt levels. Furthermore, both FL and the WCM factors, including cash conversion cycle, days payable outstanding, days sales inventory, and days sales outstanding, have negatively influenced both returns on assets and equity. These results show that balancing FL and the WCM is critical for enhancing corporate performance. Excessive debt levels and ineffective the WCM can undermine profitability and shareholder value.

Interestingly, days payable outstanding emerges as a positive contributor to firm performance, showing that a longer time to pay suppliers may be associated with better returns on assets and equity. This shows that healthcare organizations should consider streamlining their accounts payable operations. In short, our analysis illustrates the complicated relationship between the WCM efficiency, FL, and business performance in the context of healthcare firms in Saudi Arabia. These findings can serve as helpful insights for healthcare executives and financial managers as they attempt to make educated decisions on working capital and financial structure, eventually aiming to increase their businesses' financial health and competitiveness. Further research may investigate the causal links and explore solutions for improving the WCM and FL in healthcare organizations to improve overall performance.

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