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Article

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Cogent Business & Management

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Suggested Citation: Soda, Mohammed Zakaria; Makhlouf, Mohammed Hassan; Oroud, Yazan; Omari, Rania Al (2022) : Is firms' profitability affected by working capital management? A novel market-based evidence in Jordan, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 9, Iss. 1, pp. 1-9,
<https://doi.org/10.1080/23311975.2022.2049671>

This Version is available at:

<https://hdl.handle.net/10419/288613>

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To cite this article: Mohammed Zakaria Soda, Mohammed Hassan Makhoulf, Yazan Oroud & Rania Al Omari (2022) Is firms' profitability affected by working capital management? A novel market-based evidence in Jordan, Cogent Business & Management, 9:1, 2049671, DOI: [10.1080/23311975.2022.2049671](https://doi.org/10.1080/23311975.2022.2049671)

To link to this article: <https://doi.org/10.1080/23311975.2022.2049671>



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Received: 23 November 2021
Accepted: 26 February 2022

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Reviewing editor:
David McMillan, University of Stirling, Stirling United Kingdom

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

Is firms' profitability affected by working capital management? A novel market-based evidence in Jordan

Mohammed Zakaria Soda^{1*}, Mohammed Hassan Makhoulf¹, Yazan Oroud¹ and Rania Al Omari²

Abstract: This paper aimed to look into the relationship between working capital management and industrial firms' profitability listed on the Amman Stock Exchange (ASE) from 2014 to 2020. The data incorporated into the yearly statements of 23 listed industrial firms have been collated to investigate the developed model. In order to examine the data, panel data procedure employed 161 observation. The empirical findings indicate that the working capital negatively influences the profitability of industrial companies in Jordan. Existing and potential financiers and stakeholders are incentivized to purchase more shares of quick conversion cash firms. More importantly, the study's findings provide practitioners with crucial financial insights and policy consequences. The combination is an important component that has directly and indirectly affected the financial status of the firm, which will eventually be reflected in its value. Current and potential investors shall evaluate the companies' total financial position rather than focusing on minor issues, such as payment days. This study contributes to the existing literature on the relationship between WCM and profitability of emerging market, and it's one of the few studies that investigate the elements of CCC individually and aggregated.

Subjects: Accounting and Finance for Events; Business, Management and Accounting; Financial Accounting

Keywords: cash conversion cycle; inventory days; payable days; receivable days; Jordan
Subjects: M41; P17; D24



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PUBLIC INTEREST STATEMENT

The Jordanian industrial sector plays a major and important role in supporting the national economy and contributes to raising the national GDP. As a result, many companies seek to maximize their profitability by managing their working capital in a way that ensure high returns for investors. Therefore, this study aimed to suggest the most important methods to have additional cash that helps the investors to achieve the best returns.

1. Introduction

“Working capital management (WCM)” is a principal element of the process of financial management (Seth et al., 2020), as effective working capital management has become as the main stone to build a firm strategy to maximize shareholders’ equity (De Almeida & Eid, 2014). WCM, which is an essential matter, is considered to be a renewed phenomenon that continues to be of significant academic interest in manufacturing companies due to their great contribution in developing the economic situations at the national level (Uguru et al., 2018). By analyzing the structures of current liabilities and assets and defining the optimum value of the inventory, receivables, payables, and the relationship between all of them (Abuzayed, 2012) studied their impacts on profitability. Moreover, WCM is considered a measure of the ability of the company to rely on using its current assets to pay its current debt (Ahangar, 2021; Alvarez et al., 2021; Olaoye & Okunade, 2020).

Another important thing is that working capital is a key part to guarantee that the financial resources of the firm are completely adequate to complete its operation and maintain high levels of financial performance (Ahangar, 2021; Owele, 2014). Prior studies have assured that working capital strongly contributes to enhancing the performance of the company (Baños-Caballero et al., 2014; Oladimeji & Aladejebi, 2020; Taurigana & Afrifa, 2013). Seth et al. (2020) argued that WCM can be a competitive advantage for companies by managing cash flow accounts (accounts payable, accounts receivable, and inventory) regarded as the main elements of the Cash Conversion Cycle (CCC). Consequently, CCC is considered the necessary time to accurately change the raw materials into finished goods in the manufacturing companies to receive the cash from customers (Olagunju et al., 2020). According to Akindele and Odusina (2015), the receivables collection system and credit control system enhance the cash flow, raise the liquidity, and maximize profitability.

CCC is mainly used in this study as the main tool to measure the process of working capital management. Credit policy’s expansion process negatively affects working capital and may increase bad debts (Tingbani, 2015), this argument can be attributed to the effect of payable days as crucial element of working capital management. Thus, the companies must adopt a balanced credit policy that enhances cash flow and ensures the continuance of sales and revenues (Olagunju et al., 2020). Akindele and Odusina (2015) pointed out that credit leads to raising current assets turnover in the long term but may affect the assets’ quality due to increased risk of doubtful accounts and bad debts.

Effective creditors’ management can enhance the company’s liquidity by organizing the purchases process and dates of creditors’ payments in a planned manner. However, any delay in paying the debts may lead to the company’s loss of the opportunity to gain purchases discounts (Seth et al., 2020). Concerning inventories, namely work in process, raw materials, and completely manufactured commodities, companies shall achieve optimal inventory levels based on the demand for products and sales forecasting as the increase in inventory might affect the levels of profitability and liquidity. Alternatively, if companies have insufficient inventory, this may lead to the loss of sales opportunities. Thus, to achieve efficient working capital management, companies may depend on appropriate techniques to enhance inventory management (Oladimeji & Aladejebi, 2020; Seth et al., 2020; Uguru et al., 2018).

Accordingly, this study aimed to investigate whether effective WCM by using CCC components (inventory period, accounts receivables period, and accounts payable period) affects profitability (Return on Assets (ROA)) in industrial companies listed in ASE. Moreover, the study separates components of WCM that may affect profitability differently.

2. Literature review

The CCC theory was first highlighted by Richards and Laughlin (1980) and considered as the main theory that focuses on WCM components, beginning from converting raw materials to finished goods. The theory has also covered the processes of the cash cycle of purchasing and selling and all decisions related to inventories, receivables, and payables (Korode, 2017; Oladimeji & Aladejebi, 2020; Sensini & Vazquez, 2021). Moreover, CCC theory focuses on the concept of cash cycle to

analyze the efficiency of WCM (“i.e. a short cash conversion cycle”) to maximize the profitability and liquidity of the company and then increase the firm’s value. On the contrary, inefficient WCM (“i.e. a long cash conversion cycle”) may decrease the company’s liquidity and minimize the value of the company (Oseifuah, 2016; Richards & Laughlin, 1980).

Companies can maximize profitability through a shorter cash conversion cycle because the firms may have the ability to develop their business by collecting more cash to improve profits (Baños-Caballero et al., 2014). Moreover, dynamic working capital management helps to reduce borrowing costs, decrease the external financing risks, and enhance the company’s financial position (Mol & Wijnberg, 2011).

The association related to WCM and external variables was investigated by using a sample of Indian firms (Seth et al. (2020)). They found that the relationship is significant. In addition, they argued that the efficient working capital model may enhance the company’s performance by decreasing the CCC, which has led to improve the WCM. Olaoye and Okunade (2020) pointed out that the relationship among WCM elements measured by Average Collection Period and Inventory Turnover is insignificant, while the Creditor Payment Period is significantly effective. Moussa (2018) has shown a significant and positive relationship between CCC and ROA. He argues that companies known for efficient working capital management have a good performance in enhancing the process of collecting cash. Briones (2019) examined the financial statement of real estate companies listed in the Ecuadorian market. The findings of the study indicate that the WCM measured by receivable days and payable days has a significant impact on profitability. In Kenya, Matoke and Muturi (2017) addressed the impact of the WCM on the performance of the Kenyan hospitality industry. The results of the study indicated that WCM elements (Payable days, receivable days, inventory days) have a positive relationship with the firm’s performance.

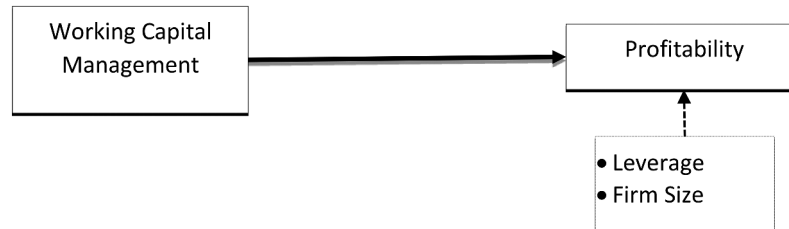
Empirical results obtained from Kasahun (2020) addressed the WCM’s impact on profitability in manufacturing firms. The findings revealed that the PD can improve profitability, enhance payment policy, and increase sales. Using a data set of 225 firms of the UK market extending from 2001 to 2011, Tingbani (2015) examined the relationship between WCM elements (RD, PD, and ID) and profitability (ROA). The results show a significant relationship between profitability and RD and PD, while it is insignificant with ID.

By using a sample of 133 SMEs of the UK, the association between profitability and WCM is examined by (Taurigana & Afrifa, 2013). They found that the individual components of WCM “average days’ payables (ADP), average days’ inventory (ADI), and average days—receivable (ADR)” have negatively and insignificantly impacted the ROA, while ADR and ADP have a negatively significant relationship. Also, it is found that working capital management negatively affects profitability in Swedish companies as put by (Yazdanfar & Öhman, 2014). Moreover, in Nigeria, the impact of WCM on 50 Nigerian companies’ performance is examined by (Falope & Ajilore, 2009). The study concluded that there is a negative and significant relationship between cash conversion cycle, average payment period, and profitability. Jahfer (2015) argued that profitability is negatively affected by shorter CCC. Arnaldi et al. (2021) pointed that the working capital management has a linear correlation with profitability.

Using panel data, Nyamweno and Olweny (2014) pointed out that “Receivable days (RD)” and “Cash conversion cycle (CCC)” have no impact on gross operating profit. On the contrary, they found that the “payable days (PD)” and “Inventory days (ID)” have significantly affected performance. Al Omari et al. (2017) investigated the association between the “WCM” and profitability ratios in the Jordanian industrial sector and revealed that profitability is measured by gross profit, net profit, and operating profit is significantly affected by WMC.

Using a Singaporean 92-firm sample, found a negative impact of CCC on the return of assets. They argued that the companies can maximize their profitability by decreasing the receivable days and inventory days. In Pakistan, Agha (2014) pointed out that the relationship between ROA and payable

Figure 1. Research framework.



days and inventory days is positive and significant. Jahfer (2015) showed that the receivable days have a negative association with profitability. Moreover, they argued that the companies' profitability can be increased through reducing receivable days, increasing payable days, and creating value through maintaining optimum inventory levels. Agarwal and Varma (2013) found that working capital management has significantly affected profitability. Azeez et al. (2016) found that CCC and return on equity have a negative relationship, while it is positive with payable days. Similar outcomes appeared in a study conducted by Salman et al. (2014) where they found that CCC and ROA share a negative relationship with industrial companies. In Nigeria, Olagunju et al. (2020) investigated the impact of WCM on ROA in Nigerian listed hotels within a period extending from 2000 to 2018. Their results reported that WCM significantly affects hotels' profitability, and the company's management should save the optimal level of inventory and avoid loss of credit sales. However, using a sample of manufacturing Pakistani firms, Ahmed (2018) showed that profitability and CCC have an insignificant relationship.

3. Methodology

The study sample adopted in this research included the entire industrial listed firms on the Amman Stock Exchange (ASE) from 2014 to 2020. The industrial sector comprises 46 listed firms. However, 23 firms have been excluded due to their liquidity, merging, or loss. The final sample included 23 firms and consisted of 161 firm-year observations. The industrial sector was selected due to its importance to the Jordanian economy, being one of the largest sectors in ASE. The study depended on balanced panel data, as Hsiao (2014) provides a massive quantity of data that maximizes the scale of freedom and reduces the collinearity among independent variables.

4. Research framework

As previously stated, numerous researches have given insight into the link between profitability and working capital management such as Baños-Caballero et al. (2014); Korode (2017); Oladimeji & Aladejebi (2020); Topor et al. (2017). However, to the best of the researcher's knowledge, very little work has investigated the relationship between profitability and working capital management in developing countries such as Jordan. Furthermore, addressing the aggregate influence of working capital in this relationship assists this research to contribute to the current knowledge area, as represented in Figure 1.

The current work has used return on assets to measure profitability. The cash conversion cycle (receivable days + inventory days—payable days) is also used to calculate the working capital management). Control variables, namely: leverage and firm size evaluated by the total assets' natural logarithm are used in the study to capture the influence of other variables. Table 1 explains how the study's variables were measured:

All variables are identified in Table 1 with the description of the measuring method for each. Previous studies indicated that profitability may be affected either through the relationship with the components of working capital management, as independent variables, or aggregate of working capital management elements. Therefore, the hypotheses of the study will be tested through two functional models.

Table 1. Variables’ measurement

Variables	Acronym	Measurement
Dependent Variable		
Profitability	ROA	Net income to total assets
Independent		
Working capital management	CCC	Receivable days+ Inventory days- Payable days
Receivable days	RD	((Account receivables)/(annual sales)) * 365
Inventory days	ID	(Inventory/ cost of sales) *365
Payable days	PD	(Accounts payable/ purchases) *365
Control Variable		
Leverage	LV	Total liabilities to total assets
Firm size	FSIZE	Total assets’ natural logarithm

Model (1) is shown by Equation 1 which looks at the working capital management items’ individual impact on profitability:

$$ROA_{it} = \alpha + \beta_1 RD_{it} + \beta_2 ID_{it} + \beta_3 PD_{it} + \beta_4 LV_{it} + \beta_5 FSIZE_{it} + \epsilon_{it} \quad (1)$$

where *ROA* (Return on Assets), *RD* (Receivable Days), *ID* (Inventory Days), *PD* (Payable Days), *LV* (Leverage), *FSIZE*(Firm Size), α (intercept term), β 's are estimated coefficients and ϵ is the estimate error term for each firm (*i*) and each year (*t*).

As for Model (2), it is shown in Equation 2 which investigates the relationship of the aggregate of working capital management elements on profitability:

$$ROA_{it} = \alpha + \beta_1 CCC_{it} + \beta_2 LV_{it} + \beta_3 FSIZE_{it} + \epsilon_{it} \quad (2)$$

Where *ROA* (Return on Assets), *CCC* (Working Capital Management), *FSIZE* (Firm Size), α (intercept term), β 's is predicted coefficients and ϵ is the estimate error term for each firm (*i*) and each year (*t*).

The procedure of panel data has been employed to analyze the recurrent use of functional models in accounting studies. As a result, most panel data observations contain at least two stages: a time-series dimension denoted by (*t*) and a cross-sectional dimension denoted (*i*). (Baltagi, 2008). In panel data regression, Wooldridge (2010) stated that the heterogeneity effect in this stage of analysis is adjusted by using the fixed-effects or random-effects models. The significance of related individual influences of panel data observations, which are consistent over time and can be independently distributed across time, is examined by (Baddeley & Barrowclough, 2009). However, bias in the consequences may be presented by the pooled Ordinary Least Squares (OLS) estimation, invalidating inferences, and thus is impossible to use with panel data. When pooled OLS is used for panel data, firm-specific features are not measured, resulting in autocorrelation due to the lack of segregation of years in the same firm. As observations may have similar qualities that are not taken into consideration, they can play a good role in omitting variables bias and heterogeneity bias (Baddeley & Barrowclough, 2009). Accordingly, one of the issues required to be investigated with the use of panel data analysis is the working capital management’s impact on profitability.

5. Empirical results

The Hausman test generally analyzes “fixed-effects (FEM) with random-effects (REM)” coefficients to determine the more appropriate and best model. If the p-value is significant, FEM should be used

Table 2. Model 1 empirical results

$$ROA_{it} = \alpha + \delta_i + \theta_1 RD_{it} + \theta_2 ID_{it} + \theta_3 PD_{it} + \theta_4 LV_{it} + \theta_5 FSIZE_{it} + \epsilon_{it}$$

Variables	B	T	P> t
RD	-0.056	-3.950	0.008***
ID	-0.013	-2.100	0.081*
PD	-0.004	-0.570	0.592
LV	-15.444	-4.980	0.003**
FSIZE	2.307	0.340	0.746
Constant	0.889	2.620	0.049**
$R^2 = 0.3848$		$F = 1001.44***$	

Notes: Significance level *** 1%, ** 5% and * 10%

rather than REM because random effects would be biased. REM can be effectually employed if the p-value is insignificant (Wooldridge, 2010). “Hausman test” has been utilized for comparing the two models, where the findings displayed that both models had significant p-values, pointing out that the fixed-effects model should be used. Baum (2001) maintains that though the errors’ variance in panel data is systematic across cross-sectional observations, it may change over time in observations, calling for group-wise heteroscedasticity. As put by Baltagi (2008), overshadowing heteroscedasticity can lead to unimportant coefficient calculations and partial standard errors. To examine the presence of the heteroscedasticity problem, the Modified Wald test for group-wise heteroscedasticity is employed. To avoid and moderate the existence of the problem of heteroscedasticity in the tested models, the robust covariance matrix estimation method of Baum (2001) is used. After correcting the potential of a heteroscedasticity problem, robust results are offered.

The impact of working capital management on the profitability using Model 1 has been investigated as the related empirical results are presented in Table 2. The estimations suggest that receivable days (RD) and Inventory Days (ID) negatively affect profitability (ROA) at the significance level of 1% and 10% respectively with an estimated coefficient value of -0.056 for (RD) and -0.013 for (ID) variables. In detail, this outcome is consistent with Matoke and Muturi (2017). Oppositely, payable days (PD) negatively and insignificantly impacted the profitability.

Additionally, the control variables’ estimated coefficients show that leverage has negatively and significantly affected profitability. Yet, firm size has a positive and insignificant impact on profitability. The F-test reveals that the estimated model is adequate at the significance level of 0.01 and the R-square is about 38% in terms of overall model diagnostics.

Table 3. Model 2 empirical endings

$$ROA_{it} = \alpha + \delta_i + \theta_1 CCC_{it} + \theta_2 LV_{it} + \theta_3 FSIZE_{it} + \epsilon_{it}$$

Variables	B	T	P> t
CCC	-0.123	-4.390	0.005***
LV	-21.578	-10.060	0.000***
Log Size	-5.291	-1.030	0.342
Constant	54.130	4.440	0.004***
$R^2 = 0.2671$		$F = 74.63***$	

Notes: Significance level *** 1%, ** 5% and * 10%

The estimated aggregate working capital management of profitability is summarized in Table 3. Profitability (ROA) is adversely affected by working capital management (CCC), with a coefficient value of -0.123 suggesting a stronger negative impact. This coefficient has a significant level of 0.01 that is considerably higher than the similar variable's significance level when evaluated singly in Model 1.

The aforesaid results confirm that effective working capital management can enhance the industrial firms in Jordan profitability. The results also show that the company can manage the structures of current liabilities and assets and define the optimal value of current liabilities, inventory, receivables, and cash the relationship among all of them. Moreover, CCC is regarded as a measure of the ability of the firm to rely on its current assets to pay its current debt, guaranteeing that the firm has sufficient resources to complete its operation, maintain high levels of inventory conversion to cash, and maximize profitability.

Alongside the estimations of aggregate CCC, the estimations suggest that leverage (LV) has negatively affect profitability (ROA) at the significance level of 1% with an estimated coefficient value of -21.578 . This indicates that the industrial Jordanian companies are negatively affected by increasing the total debt. Alternatively, decreasing leverage will be followed by an increase in profitability of the industrial companies. Current and potential investors prefer companies with low investment leverage since this ensures a steady and consistent demand for their dividends. Firm size, on the other hand, has a negative and insignificant coefficient. The model is fit at a 0.01 confidence level, and the R-square value is 26.7%.

6. Conclusion and policy implications

The current study is of great assistance and impact for understanding the importance of working capital management, chiefly concerned with managing current assets and liabilities in a method that helps the company in paying off short-term debts. This implies if working capital is not properly managed, the company needs more funds to pay off short-term liabilities. Thus, the cash conversion cycle (CCC) is considered a performance measure for the company. It is also used as a measure of efficiency in managing liquidity and identifying the extent of the company's need for cash so that the process takes place in a manner that achieves the best-desired results.

In a nutshell, this research paper focuses on examining the working capital management's impact on profitability. The study sample covers 23 industrial firms listed on the ASE from 2014 to 2020. Due to the nature of the study, the panel data analysis of the fixed-effects model was used. The empirical findings indicate that the working capital negatively influences the profitability of industrial Jordanian companies. Existing and potential financiers and stakeholders are incentivized to purchase more shares of quick conversion cash firms.

More importantly, the study's findings provide practitioners with crucial financial insights and policy consequences. The combination of working capital is a crucial issue that shall be taken into account in the company's accounts. This combination is an important component that has directly and indirectly affected the financial performance of the firm, which will eventually be reflected in its value. Current and potential investors shall evaluate the companies' total financial position rather than focusing on minor issues such as payment days.

Funding

The authors received no direct funding for this research.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

correction

This article has been republished with minor changes. These changes do not impact the academic content of the article.

Citation information

Cite this article as: Is firms' profitability affected by working capital management? A novel market-based evidence in Jordan, Mohammed Zakaria Soda, Mohammed Hassan Makhoulf, Yazan Oroud & Rania Al Omari, *Cogent Business & Management* (2022), 9: 2049671.

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