Tareq Mohammad ALMOMANI, Mohammad Abdullah ALMOMANI, Mohammed Ibrahim OBEIDAT /
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713

The Relationship between Working Capital Management and Financial Performance: Evidence from Jordan*

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Abstract

Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet short-term obligations and at the same time avoiding excessive investment in current assets. The study's objective is to investigate the moderating effect of working capital investment and financing policy on the relationship between working capital management efficiency and the financial performance of industrial firms listed on the Amman Stock Exchange (ASE). To achieve the objective of the study, this study used time series and data covering the period 2010–2018. A sample of 42 manufacturing firms listed on the ASE was used in the analysis and hypotheses testing. Return on assets is used to measure financial performance, while inventory turnover, receivables turnover, current assets turnover, working capital turnover, and inventory-to-sales ratio are used to measure the working capital management efficiency. This study involved two hypotheses, and both hypotheses were tested to emphasize a 95 percent level of confidence. For data analysis, we used descriptive statistics and the multiple linear regression method was used for hypotheses testing. The study finds that inventory turnover, receivables turnover, current assets turnover, and working capital turnover affect the financial performance of the manufacturing firms, whereas no substantial differences were found between the direct or the moderating models in estimating financial performance.

Keywords: Working Capital, Financial Performance, Industrial Companies, Amman Stock Exchange, Return on Assets

JEL Classification Code: M20, M40, M41, L25

1. Introduction

Public confidence – especially investors – about the quality of financial statements has been shaken after a series of scandals around the world related to the integrity

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of financial reports such as Enron, Worldcom, Xerox, and others (Ngo & Le, 2021). These failures can be attributed to the bad administrative and financial decisions that the management of those firms made (Al-Momani, 2015). Financing and investments decisions are important decisions that are normally taken by the management of business organizations. The financing decision is related to raising funds in an appropriate manner, whereas the investment decision relates to how the funds of a firm are to be invested into different assets so that the firm is able to earn the highest possible return for the investors. (Al-Amiri, 2013; Al-Momani & Al-Momani, 2018). Academics, authors, and other interested groups of people give enough attention to working capital management, because of its clear direct effect on the firm value and profitability, and its benefits in fulfilling the financial obligations of firms. Working capital is the most important source of financing for business organizations since it is related to the firm's survival (Ahmad et al., 2014). Financing and investing in working capital decisions are also important because of the associated risk-return relationship (Abdul Rahman, 2010).

714

Tareq Mohammad ALMOMANI, Mohammad Abdullah ALMOMANI, Mohammed Ibrahim OBEIDAT /
Journal of Asian Finance, Economics and Business Vol 8 No 6 (2021) 0713–0720

A company's sustainability and growth depend on the outcome of financing and investing decisions. Using these types of decisions, managers attempt to accomplish the strategic goal of maximizing firm value (Al-Zubaidi, 2008). Achieving profits is the primary goal of financial and investment decisions. These decisions vary according to the users of financial statements. A credit decision, for example, is linked to the firm's ability to repay loans and interests (Khan et al., 2021; Al-Momani, 2015). One of the most important tasks of management is to determine the optimal level of working capital to make a balance between return and risk. To maintain adequate liquidity, and at the same time, generate good revenue, firms must balance between investing in current assets and payment of liabilities. They must generate income while meeting their short-term obligations, as their maturity aligns with the terms of the activity in which they use (Raheman & Nasr, 2007).

Many decisions must be considered in the investment and financing of working capital. Management must determine the amount to be invested in current assets vis-à-vis fixed assets while considering the time frame necessary to recover the funds invested in each group of assets. Investments in fixed assets such as lands, buildings, and machines, require many years to break even, while investments in current assets can be recovered within a short period of time, depending on the length of the firm's commercial cycle (Nazir & Afza, 2009). The firm working capital policy determines the level of cash, temporary investments, inventories, and receivables that will be kept. This policy also affects returns and future risks. Failure to define a sound policy will jeopardize the survival and continuity of the enterprise (Ramazani et al., 2018).

Investing in current assets that cannot be readily converted to cash, will reduce the firm's liquidity, damage its credit reputation, and increase the cost of borrowed funds when it fails to increase sales volume, and it will generate less profits. Through the policy of financing, firms must determine the proportion of short-term financing sources relative to long-term sources, as well as determining the optimal combination of short-term financing sources (Al-Amiri, 2007). The management also needs to establish clear policies regarding the size of investment to determine the amount of required funding (Al-Amiri, 2007). The aggressive policy is based on small investments in low-circulating current assets. This will lead to a reduction in the amount of investment in net capital, and then, higher return, due to lower investment in less cost-effective part of the assets, and higher financial risk due to the firm's lower liquidity (Nazir & Afza, 2009).

As for the conservative policy, it is based on large investments in current assets, focusing on future sales and working to reduce the risk of liquidity and stock deficit, where this policy leads to lower returns. The risk and expected return of the moderate policy, meanwhile, are between the two previous types. Each investment policy has its associated cost and benefit, and each affects the profitability of the company differently. Therefore, managers should choose an appropriate investment policy to achieve the firm's goals. Some authors believe that investing in working capital is one of the factors that can help firms to improve their profitability (Al-Shubiri, 2011).

The current study aims to analyze the effect of capital management efficiency on the financial performance of the manufacturing firms listed on the Amman Stock Exchange (ASE), as well as to examine the moderating effect of working capital investment and financing policy on the relationship between working capital management efficiency and firm performance.

The purpose of working capital management is to achieve a type of balance between current assets and current liabilities in a form that a firm can pay its financial obligations when due. Achieving a type of balance between current assets and current liabilities enables businesses to avoid financial difficulties (Nguyen et al., 2020). The required and preferred balance between current assets and current liabilities differs from industry to industry and may differ sometimes from firm to firm. It directly consists, among different things, of inventory management, receivables management, securities management, payables management, and so on. Efficient management of working capital components is reflected in different aspects of performance. Working capital management is an important subject since it is the most important resource of a firm. Additionally, the decision pursued by the company to either invest or expand working capital is reflected in its profitability. While a firm may invest in current assets, the size of the investment varies according to the nature of its business. Moreover, bad management of working capital components leads to bankruptcy, when this pattern continues for a long period of time. Therefore, working capital should be given the deserved attention and importance to avoid bad situations.

The main problem in capital management is the infeasible investment, where its increase in costs is higher than the increase in returns. Therefore, managers must implement certain methods to raise the current assets turnover rate without affecting the firm's operational activities, so that the returns of current assets exceed the costs of maintaining them. Based on the above discussion, this study formulates two research questions:

1. Does efficient working capital management affect the financial performance of the manufacturing firms listed on the ASE?
2. Do working capital investment and financing policy, moderate the relationship between the working capital management efficiency and the financial performance of manufacturing firms listed on the ASE?

The remainder of the paper is organized as follows. Section 2 reviews the empirical literature and formulates the hypotheses. Section 3 discusses the research method, while section 4 presents the analysis and results. Section 5, shows the findings and conclusions of the study. Discusses the main findings.

2. Literature Review

Nastiti et al. (2019) examined the effect of working capital management on firm profitability, and how this relationship affects sustainable growth. They examine a sample consisting of 136 manufacturing listed firms at the Indonesian Stock Exchange, using data covering the period 2010–2017. Data analysis and hypotheses testing, using fixed-effects panel regression, the study revealed that working capital is a significant determinant of profitability. It also shows that working capital does not directly affect sustainable growth, but it has a significant indirect effect on sustainable growth through firm profitability. The study recommends firms to manage their working capital to generate more profits and achieve sustainable growth.

Kaushik and Chauhan (2019) examined the relationship between working capital management and firm performance based on 211 Indian listed firms at BSE and using data covering 2008–2016. They also examined how financial constraints affect the relationship between the two variables. The analysis revealed that the net trade cycle, account receivable days, and inventory days negatively affect the financial performance of Indian firms. On the other hand, account payables days positively affect their performance.

Roni et al. (2018) investigated the relationships between working capital management and the profitability of Indonesian state-owned enterprises in the processing industry. The examined variables include asset structure, liquidity, cash turnover, profitability, receivable turnover, and inventory turnover. Using the purposive sampling technique and based on a set of criteria, the study identified a sample of 13 companies. Using the multiple linear regression analysis in hypotheses testing, the authors found that inventory turnover and asset structure positively affect firm profitability. However, liquidity, cash turnover, and receivable turnover do not significantly affect the profitability of Indonesian state-owned enterprises in the processing industry.

Sharif and Islam (2018) assessed the effect of working capital on the profitability of Bangladeshi pharmaceutical firms. As a financial strategy, working capital management can affect liquidity and firm profitability. The study uses five-year time series data of listed firms at Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). Working capital is measured using account payable turnover in days, account receivable turnover in days, inventory turnover in days, and cash conversion cycle. On the other

hand, profitability is measured using return on assets. The authors found that a significant relationship exists between the examined variables. The analysis revealed that working capital has a significant effect on firm profitability. The study suggests that firms should reconsider their working capital management practices to remain competitive.

Jana (2018) examined the effects and efficiency of working capital management strategies in Indian fast-moving consumer goods (FMCG) firms. The author used secondary data for 2013–2017, collected from 15 listed FMCG firms. The dependent variables are return on investment (ROI), ROA, and return on equity (ROE), while the independent variables are current ratio, quick ratio, debt-equity ratio, gross profit ratio, net profit ratio, inventory turnover ratio, debtor's turnover ratio, fixed assets turnover ratio, total assets turnover ratio, working capital turnover ratio, dividend payout ratio, cash conversion cycle, and firm size. The study found a significantly positive and negative relationship between profitability and working capital management. Therefore, efficient management of working capital for FMCG company not only has a positive relationship with profitability but significantly impacts such firms' profitability.

Aregbeyen (2013) investigated the relationship between working capital management and profitability based on data covering the period 1993–2005, of 48 manufacturing firms listed on the Nigerian Stock Exchange (NSE). In more detail, the study examined how working capital management and other factors are related to firm profitability. Profitability is measured using gross operation profit, net operating income, and ROA. On the other hand, working capital management is measured using the average payment period, inventory turnover days, average collection period, and cash conversion cycle. The study showed that firms practice inefficient working capital management, which significantly reduces profitability.

Raheman et al. (2010) analyzed the relationship between working capital management and the performance of Pakistani firms, using data covering the period 998–2007, of a sample of 204 manufacturing firms listed on the Karachi Stock Exchange. The study showed that the net trade cycle, cash conversion cycle, and inventory turnover in days have a significant impact on performance. The study stated that the firms face financial constraints, due to their collection and payment policies. Moreover, the study revealed that sales growth, firm size, and financial leverage, significantly affect firm profitability. The findings suggested that the working capital management policy of Pakistani firms, is conservative, and there is a need to focus and improve the collection and payment policies. Management should formulate effective policies for the components of working capital. Furthermore, the efficient management and financing of working capital (current assets and current liabilities), can increase the operating profitability of the

manufacturing firms. To enhance the efficiency of working capital management, the firms should hire finance experts.

The present study is motivated by the lack of empirical evidence on the impact of working capital management efficiency on the finical performance of the manufacturing firms listed on the ASE. Enough empirical evidence on the subject in the Jordanian context is unavailable, based on the discussion above. Therefore, this study intends to analyze the effect of working capital management on financial performance. It also intends to identify the most important determinants of working capital management efficiency. Additionally, the study attempts to assess the moderating effect of working capital investment and financing policy on the relationship between working capital management efficiency and financial performance. These are assessed based on the data covering 2010–2018, of a sample consisting of 28 manufacturing firms listed on the ASE.

Based on the survey made to the relevant empirical literature, the study has formulated two hypotheses. The first concerns the direct relationship between working capital management efficiency and financial performance, whereas the second that including the moderating effect of working capital investment and financing policy on the relationship between working capital management efficiency and financial performance. Both hypotheses are listed in their null form to be as follows:

H1: *The working capital management efficiency does not affect the financial performance of the manufacturing firms listed on the Amman Stock Exchange (ASE).*

H2: *The working capital investment and financing policy does not moderate the relation effect of working capital management efficiency on the financial performance of the manufacturing firms listed on the Amman Stock Exchange (ASE).*

3. Methodology

The population of the study includes the entire manufacturing firms listed on the ASE. By the end of 2018, there were in total 51 manufacturing firms listed on the ASE, where a sample of 42 firms, had been selected. Each manufacturing firm listed on the ASE that satisfies two predetermined conditions had been included within the study sample. The first condition is the completeness and accessibility of data for an included firm, where firms with data shortage or inaccessibility are eliminated. The second condition is that an included firm had not been dissolved or merged during the study period. This means that only 42 firms met the two conditions out of 51, where the rest 5 firms are eliminated because they did not meet one or both conditions. Therefore, the final sample consisted of 42 manufacturing firms with a total of 378 observations.

Prior studies have used various measures of working capital management efficiency, working capital investing and financing policy, and financial performance. This study measures working capital management efficiency using inventory turnover, receivables turnover, current assets turnover, working capital turnover, and inventory-to-sales ratio, whereas working capital investment policy is measured using the ratio of current assets to total assets; working capital financing policy is measured using the ratio of current liabilities to current assets; and financial performance is measured using ROA.

To test the formulated hypotheses, two multiple regression models have been developed. The first direct model is developed to be as follows:

$$ROA = \alpha + \beta_1 INVT_{i,t} + \beta_2 ART_{i,t} + \beta_3 INVS_{i,t} + \beta_4 WCT_{i,t} + \beta_5 CAT_{i,t} + \beta_6 FSZ_{i,t} + \beta_6 Lev_{i,t} + \varepsilon_{i,t} \quad (1)$$

The second indirect model is developed to be as follows.

$$ROA = \beta_0 + IP_{i,t} \times FP_{i,t} + \beta_1 INVT_{i,t} + \beta_2 ART_{i,t} + \beta_3 INS_{i,t} + \beta_4 WCT_{i,t} + \beta_5 IP \times FP \times CAT_{i,t} + \beta_6 IP \times FP \times INVT_{i,t} + \beta_7 IP \times FP \times ART_{i,t} + \beta_8 IP \times FP \times INVS_{i,t} + \beta_9 IP \times FP \times WCT_{i,t} + \beta_{10} IP \times FP \times CAT_{i,t} + \beta_{11} FSZ_{i,t} + \beta_{12} Lev_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where, ROA: Return on assets, IP: Investment policy, FP: Financing policy, ART: Account receivable turnover, INVT: Inventory turnover, CAT: Current asset turnover, INVS: Inventory-to-sales ratio, WCT: Working capital turnover, α is the intercept, β_{1-11} are the coefficients, and ε is the error term.

Descriptive statistics including the mean as a measure of central tendency, and the standard deviation as a measure of variation, are used in data analysis, whereas, the multiple linear regression method is used in hypotheses testing. All hypotheses that had been tested emphasize a 95 percent level of confidence, which means that the predetermined coefficient of significance is 5 percent (1–0.95). The different hypotheses were tested using *f*-value, where the decision-base is to accept the null hypothesis, where when comparing the computed and the tabulated *f*-value, the computed f-value is greater than its corresponding tabulated one, otherwise, the null hypothesis is rejected, that is, when the computed f-value is lower than the tabulated *f*-value, the alternative hypothesis is accepted. Because the predetermined coefficient of significance is determined to be 0.05, another decision making base is used in deciding whether to accept or reject the null hypothesis, where with regard to this base, when the computed coefficient of significance is greater than 0.05, the null hypotheses is accepted, and when the computed coefficient of significance is less than 0.05, the null hypothesis is rejected, and instead, the alternative hypothesis is accepted.

4. Results

4.1. Descriptive Statistics

Table 1 shows the mean, median, minimum and maximum values, and the standard deviation of all variables. The maximum and minimum values for ROA are 38.40 and –43.80 respectively, suggesting that some manufacturing firms suffer losses while others gain positive returns. The mean value is 1.867, indicating that most firms earn positive ROA. The maximum value of the ratio of current assets to total assets, which represents the investment policy, is 0.93, while the minimum value and mean are 0.17 and 0.546. This means that the circulating assets constitute a significant portion of the total assets. In general, firms follow the conservative working capital management policy by investing in liquid components such as cash, temporary investments, receivables, and inventory. This policy is unstable and subject to fluctuations, as indicated by the large deviations between the maximum and minimum values. This policy safeguards the companies from a sudden decrease in cash balances or commodity stocks to meet the expected increase in sales. The results also indicate that the mean ratio of current liabilities to total assets is 0.256, while the mean ratio of current liabilities to current assets is 0.546. Current liabilities, therefore, constitute more than half of all liabilities. The two ratios suggest that the firms included in the sample, take into consideration financing and investment policy in their management of working capital.

The mean of receivable turnover is 3.09, while its maximum and minimum values are 20.16 and 0.30, respectively. Firms collect debts owed by their customers three times a year, or every 118 days. This means that firms face difficulties in collecting debts. The current assets turnover is 0.692, with a maximum and a minimum value of 2.08 and 0.07, respectively.

The mean inventory turnover is 4.432, and its maximum and minimum values are 147.72 and 0.10, respectively. The inventory turnover ratio differs greatly between the sample firms, which means that most firms face difficulty in managing their stocks. The mean inventory-to-sales ratio is 0.383, with a maximum and a minimum value of 4.62 and 0.00, respectively. The mean of working capital turnover is 0.596, with a maximum and a minimum value of 12.02 and –15.88, respectively. These indicate that some manufacturing firms do not have sufficient liquidity, and this is reflected in a negative form on the ability to meet their short-or medium-term obligations. The high turnover rate of working capital is an indication of the internal operating activity of a firm and a good indicator of sustainability and success.

To examine whether the data is appropriate for analysis, the study carries out the normal distribution, multicollinearity, and correlation tests. The results are summarized in Table 2. In summary, the models are useful and valid. The tolerance and variance inflation factor (VIF) are computed to test whether the variables overlapped. The VIF for all variables is less than 10, suggesting the absence of overlapping variables. The Durbin-Watson (D-W) statistic is 1.532, which indicates the absence of autocorrelation, as it is within the optimal value of between 1.5 and 2.5. Figure 1 illustrates the histogram and Jarque-Berastatistic of the model residuals. The residuals are normally distributed, the Jarque-Berastatistic is not statistically significant. The t-statistics and F-statistics are therefore valid.

4.2. First Hypothesis: Direct Relationship

Table 3 shows the significant linear relationship between working capital management efficiency and financial performance. The table shows that f-value equals 23.279, and the coefficient of significance (p-value) equals zero, because

**Table 1:** Descriptive Statistics of Variables for All Companies: 2010–2018

Variables	Observation	Mean	Maximum	Minimum	Standard Deviation
ROA	378	1.867	38.40	–43.80	8.877
ART	378	3.090	20.16	0.30	2.660
CAT	378	0.692	2.08	0.07	0.326
INVT	378	4.432	147.72	0.10	27.796
INVTOSALES	378	0.383	4.620	0.00	0.454
WCT	378	0.596	12.02	–15.88	12.476
IP	378	0.546	0.93	0.17	0.168
FP	378	0.256	0.98	0.00	0.143
SIZE	378	7.467	9.09	6.56	0.608
LEV	378	32.21	99.82	1.02	19.325

Table 2: Test of Data Validity and Study Model

Variables	Multicollinearity		Autocorrelation
	Tolerance	VIF	Durbin-Watson
ART	0.663	1.507	1.532
CAT	0.960	1.449	
INVT	0.991	1.009	
INVTOSALES	0.687	1.456	
WCT	0.965	1.036	
IP	0.523	1.912	
FP	0.716	1.397	
SIZE	0.937	1.067	
LEV	0.905	1.105	

$p < 0.05$, and because *f*-value is higher than the corresponding computed one, the null hypothesis is rejected, while its alternative is accepted. The coefficient of determination (R^2) is 0.809, which means that the independent variables explain 80.9 percent of the variance in financial performance. The adjusted R^2, meanwhile, is 0.775.

Table 3 shows that ART, CAT, INVT, and WCT, are significant predictors of financial performance. This finding is consistent with the findings of prior related researches such as Sharif and Islam (2018), Jana, (2018), and Raheman et al. (2010). On the other hand, INVS does not significantly affect financial performance, while firm size and leverage, both have a significant impact on financial performance. These findings are consistent with Sharif and Islam (2018) and Jana (2018).
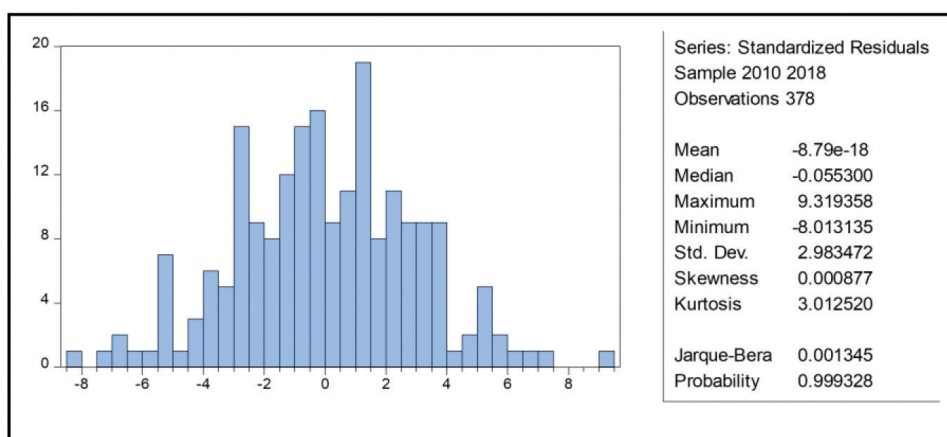
Figure 1: Normality Test Hypotheses Testing

Table 3: The Model and Statistics of a Direct Relationship

	$ROA = \alpha + \beta_1 INVT_{i,t} + \beta_2 ART_{i,t} + \beta_3 INV \text{ to Sales}_{i,t} + \beta_4 WCT_{i,t} + \beta_5 CAT_{i,t} + \beta_6 \text{Firm's Size}_{i,t} + \beta_6 Lev_{i,t} + \varepsilon_{i,t}$				
	Variables	Coefficient	Std. Error	*t*-statistic	Prob.
	Constant	−192.612	23.061	−8.352	0.000
Independent variables	ART	−0.012	0.005	−2.446	0.015
	CAT	0.181	0.069	2.584	0.011
	INVT	3.118	0.989	3.151	0.002
	WCT	0.021	0.007	2.904	0.004
	INV to SALES	−0.148	0.807	−0.183	0.854
Control variables	Firm's Size$_{i,t}$	26.593	3.032	8.772	0.000
	Lev$_{i,t}$	−0.266	0.025	−10.663	0.000
R^2	0.809				
Adj. R^2	0.775				
F	23.279				
Sig.	0.000				
Durbin-Watson	1.574				

Table 4: Summary of the Direct Effects and Interaction Effects

Independent Variable	Variables	First Model		Second Model	
		Sig.	***F***	**Sig.**	***F***
ROA	Direct effects	0.000	23.279	–	
	Interaction effects	–		0.000	20.576
	R^2	0.809		0.822	
	Adj. R^2	0.774		0.782	
	ΔR^2	0.809		0.013	
	ΔF	23.279		2.703	
	Sig.	0.000		0.000	

4.3. Testing the Second Hypothesis

Table 4 shows the results of two multiple regression models. The first model results in an R^2 of 0.809, which means that 80.9 percent of the variance in performance is explained by working capital management. The model is also a good fit of the data, $F = 23.279$, $p < 0.05$. In the second model, two moderators are incorporated - the working capital investment and financing policy. With regard to the second model, R^2 increases by 1.3 percent to 0.823, and the computed coefficient of significance is equal to zero, or a much-closed value to zero. Because the *f*-value is greater than the computed *f*-value, and because the computed coefficient of significance is less than 0.05, the null hypothesis is rejected, where instead, its alternative one is accepted. These results indicate that there is a significant moderation effect of investment and financing policy on the relationship between working capital management efficiency and financial performance.

5. Conclusion

The primary objective of the study is to investigate the relationship between working capital management efficiency and financial performance, as well as the moderation effect of working capital investment and financing policy of the manufacturing firms listed on the ASE. The study used two models; the direct effect model and the moderating effect model. Using the multiple linear regression model in testing both hypotheses, the analysis revealed that no substantial difference exists between the first direct and the second indirect models in estimating financial performance. The findings may be beneficial for managers of manufacturing firms, to improve financial performance. Furthermore, practitioners and other stakeholders (e.g. investors and bankers) of the manufacturing industry could give more consideration to working capital management to enhance financial performance. Working capital investment and financing policy could also enhance the effectiveness of working capital management, which may help investors and bankers make their investing and lending decisions.

Future studies should replicate the study in other sectors. The scope may be extended to include the components of working capital management, such as cash and marketable securities. Finally, future studies can add financial and non-financial variables that are expected to mediate or moderate the effect of working capital management on profitability, such as corporate governance. This study contributes by including sustainable growth in the analysis of the relationship between working capital management efficiency and firm performance. Moreover, the practical contributions of the findings extend to managers, investors, bankers, and other stakeholders in their effort to enhance the sustainable growth of firms through effective and efficient working capital management. Furthermore, the results of this study are useful for managers and financing institutions in their decisions to invest in current assets and to finance working capital.

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720

Tareq Mohammad ALMOMANI, Mohammad Abdullah ALMOMANI, Mohammed Ibrahim OBEIDAT /
Journal of Asian Finance, Economics and Business Vol 8 No 6 (2021) 0713–0720

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