



Does Management of Working Capital Affects Profitability: Evidence from Manufacturing Sector of Pakistan

Muhammad Noman¹, Waseem Ahmed², Ahsen Saghir³, Naeem Khan⁴

¹ MBA Student, Department of Management Science, SZABIST, Larkana, Pakistan.

² Assistant Professor, Department of Management Science, SZABIST, Larkana, Pakistan.

³ Lecturer, Abasyn University, Islamabad, Pakistan.

⁴ Senior Lecturer, Shifa Tameer-e-Millat University, Park Road Campus, Islamabad, Pakistan.

ARTICLE INFO

Article History:

Received: February 10, 2023
Revised: March 23, 2023
Accepted: March 24, 2023
Available Online: March 26, 2023

Keywords:

Working capital
Profitability
Cash conversion cycle
Dynamic GMM

JEL Classification Codes:

C12, L25, L60, M21

ABSTRACT

This paper examines the effect of management of working capital on profitability of manufacturing companies of Pakistan. The paper employed annual data ranging from 2014 to 2021 of 23 manufacturing companies of Pakistan. The dynamic generalized method of moments (GMM) technique is applied to see the aforementioned relationship. Findings of the study are that cash conversion cycle and all its elements except receivable days are positively and significantly associated with profitability (ROA) while CCC is negatively and significantly associated with profitability (ROE). Further, a more comprehensive research is recommended based on comparison between developing and developed nations in context of working capital practices.

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.



© 2023 The Authors, Published by iRASD. This is an Open Access Article under the [Creative Common Attribution Non-Commercial 4.0](https://creativecommons.org/licenses/by-nc/4.0/)

Corresponding Author's Email: drnaeemkhan87@gmail.com

Citation: Noman, M., Ahmed, W., Saghir, A., & Khan, N. (2023). Does Management of Working Capital Affects Profitability: Evidence from Manufacturing Sector of Pakistan. *IRASD Journal of Economics*, 5(1), 82–90. <https://doi.org/10.52131/joe.2023.0501.0112>

1. Introduction

It is necessary for companies to maintain required level of liquidity so that they can meet the short-term obligations. It becomes inevitable in highly fluctuated markets like Pakistan where value of currency is continuously depreciating and inflation is increasing exponentially. The liquidity can be maintained by effectively managing current assets and current liabilities, also known as management of working capital (WC). A well-managed working capital allows firms to operate their regular business smoothly and focus on long term growth and stability.

The working capital management (WCM) is an important issue for financial managers due to its relation with profitability and liquidity of a firm. Firms are required to maintain liquidity at a level that it can fulfill short term obligations (Mandipa & Sibindi, 2022). Meanwhile, it is also important for firms to warrant that WC is not burdened with excess cash (Akbar, Akbar, Nazir, Poulouva, & Ray, 2021). According to Kwenda and Matanda (2015), it is crucial for managers to

effectively & efficiently manage the WC with regards to attaining the goal of maximization of shareholders' wealth. Three types of strategies are considered to tackle this issue of working capital management namely aggressive, conservative and moderate strategies. These strategies are based on trade-off between risks & return (Weinraub & Visscher, 1998). The aggressive strategy means maintaining capital elements at low level, with higher risk of liquidity and investment return. On other side, conservative strategy focuses on the higher volume of capital requirements and on less risk of liquidity and less return. While moderate strategy lies on average risk-taking policy. Firms with positive profitability may face bankruptcy, if they are selecting inappropriate strategies (Samiloglu & Demirgunes, 2008).

Firms which seem profitable may stop business trading if they are not able to pay due short-term obligations. According to an article by Mike Ashworth published on ACCA global website, the objective of management of working capital is twofold. First, it is to maintain liquidity. However, a firm can lose discounts given by supplier or can face employee turnover or bad ratings by credit agencies if it does not pay the due obligations like creditors payments and salaries. Second objective of management of working capital is profitability. As mentioned in the aforesaid article, higher level of working capital may lead to failure of earning desired return. Hence, it can be inferred that a trade-off will continuously be there between liquidity and profitability with respect to working capital decisions. Consequently, it has become inevitable for managers to critically understand each element of working capital and their relation with profitability and liquidity.

Cash Conversion Cycle, in short CCC, is generally used as proxy for measurement of WC. Altaf and Shah (2018); Chishty, Hussain, and Fareed (2022); Dalci, Tanova, Ozyapici, and Bein (2019); Mandipa and Sibindi (2022) and Nastiti, Atahau, and Supramono (2019) used CCC to measure WC. CCC refers to the duration in days a firm will take to turn its investment made in inventory into cash. It consists of three elements i.e., Days Sales Outstanding (DSO), Days Payable Outstanding (DPO) and Days Inventory Outstanding (DIO). The formula to calculate CCC is DSO plus DIO minus DPO.

The aforementioned elements of working capital are interconnected, for instance, extension in credit terms may lead to weak cash positions for a firm (Ashworth, n.d.). Due to its significance, working capital has remained the topic of interest for research scholars. However, it is still a debatable topic as literature provides varying results with respect to direction of association between the performance of firm and its working capital (Hashmi & Iqbal, 2022; Mandipa & Sibindi, 2022). Therefore, this paper aims to contribute into literature by extending the research in context of manufacturing sector of Pakistan as according to the Pakistan Economic Survey 2020-21, the share of manufacturing sector in GDP and employment is 12.79% and 16.1% respectively. With regards to the significance of WCM and the fact that working capital's effect on profitability is still inconclusive (Mandipa & Sibindi, 2022), the objective of the study is to ascertain whether management of working capital affects profitability in context of manufacturing sector of Pakistan. The study further aims to answer the question that what is the effect of Cash Conversion Cycle (CCC) and its elements on ROA and ROE of manufacturing firms of Pakistan.

The study will establish a relationship between working capital and profitability in context of manufacturing sector of Pakistan. It will contribute into existing literature which is still inconclusive regarding the direction of relationship between WCM and profitability. The study will also indicate that how manufacturing sector is different in terms of working capital sensitivity and importance as compared to other industries of Pakistan. Further, it will provide a great insight for financial managers especially of Pakistan and will enable them to make informed decision regarding level of working capital while not compromising the profitability.

The paper is further divided in following parts. Section 2 presents comprehensive review of literature. Section 3 delineates methodology of research adopted in this paper. Section 4

presents empirical results and their discussion. Section 5 concludes the paper with future recommendation.

2. Literature Review and Hypothesis Development

Literature on association of management of the WC with profitability has provided varying results when it comes to direction of association between these variables. This section of paper presents these varying results of literature as follows.

2.1 Negative Association between Working Capital and Profitability

According to Chishty et al. (2022), management of WC plays essential role in internal growth rate of manufacturing companies of Pakistan. The study analyzed 174 firms listed on Pakistan Stock Exchange and utilized secondary data ranging from 2016 to 2020. It was concluded by the authors that it is necessary for companies to maintain days sales outstanding (DSO) and inventory turnover (ITO) at minimum level. The study of Soda, Hassan Makhoulf, Oroud, and Al Omari (2022) which was based on industrial firms of Jordan's stock exchange established conclusion that the WC has negative impact on firms' profitability of industrial sector. They founded that inventory and receivable days are negatively associated with return on Assets. However, they found that days of payable are associated insignificantly in negative direction with return on assets.

Mandipa and Sibindi (2022) analyzed the listed retail firms of stock exchange of Johannesburg. They included sixteen retail firms of South Africa in their study and covered period ranging from 2010 to 2019. In their study, the management of WC was proxied by all three elements of WC which are average collection & average payment period, average inventory age, as well as combination of these all elements that is called CCC. While the net profit margin (NPM), return on equity as well as on assets were used as proxy for financial performance. By applying fixed and random effect models, the study found negative relationship between the financial performance and management of WC. The authors concluded that in context of retail firms of South Africa, manager should adopt aggressive policy to manage working capital as performance and profitability of firms would increase by shortening the number of days of components of WC.

Dalci et al. (2019) looked into the association of management of WC with profitability by including the size of firm as a moderating variable in context of 285 German firms (non-financial). The study proxied working capital with cycle of cash conversion (CCC), profitability proxied with return on assets (ROA) and firm size with total assets' natural log. Dalci et al. (2019) found evidence of moderation in the relationship due to size of firm. It was concluded that for small firms, as the length of CCC increases, the ROA decreases. However, for large firms, the result is opposite that is as the length of CCC increases, the ROA also increases. According to authors, these empirical results are supported by the notion that large firms can easily manage working capital through financing at less cost but this is not possible for small firms.

Altaf and Shah (2018) investigated that how the profitability of companies is affected by management of working capital in context of India. Their study was based on ten years' period and utilized a two stage GMM technique. It included operating profit (gross) & return on assets (ROA) as proxy for profitability while cycle of cash conversion (CCC), accounts payables and receivables period, and inventory period as proxy for management of WC. The authors concluded that profitability increases when the CCC is at lower level and vice versa. Further, the study also found the optimal CCC point which is 63 days suggesting that firms should complete their CC cycle in 63 days to earn higher profits.

Jayarathne (2014) conducted the study in context of Srilanka by employing data ranging from 2008 to 2012 of manufacturing firms Colombo's Stock Exchange. The study found strong

evidence of negative association between CCC, inventory & account receivable period and profitability. However, one element of CCC that is account payable period is found to have positive association with profitability in manufacturing firms of Srilanka.

2.2 Positive Association between Working Capital and Profitability

Hashmi and Iqbal (2022) adopted a detailed approach on association between the management of WC, profitability & liquidity by including a moderating variable of family ownership. Their study employed robust regression technique and data ranging from 2014 to 2019 of 150 companies (non-financial) listed on Pakistan Stock Exchange. It was concluded by authors that the WCM has positive impact on profitability and liquidity in case of Pakistan. However, this relationship is moderated negatively by family ownership as the higher liquidity may be exploited for owners' personal benefits. It was further concluded that leverage has insignificant relationship with profitability and liquidity of firms under study.

Ahmad, Bashir, and Waqas (2022) made a comparative analysis of working capital and profitability in context of three developing countries which are Malaysia, Thailand and Pakistan. Their study compared the relation of firm performance and working capital during COVID-19 with crises of 2008. The study was based on 577 firms of aforementioned countries. By applying generalized method of moments (GMM) method, it was found that the association of CCC with ROA was changed to positive during COVID-19 as compared to crises of 2008. The authors argue on this that this change was due to less sales and delay in collection of receivables occurred due to COVID-19. It was further concluded that COVID-19 had adverse effect on working capital and performance as compared to the financial crises of 2008. Gillani, Shafiq, Ahmad, and Zaheer (2021) examined that during COVID-19, the mental health of the working class also suffers due to food insecurity, which ultimately affects their work.

Amponsah-Kwatiah and Asiamah (2021) focused manufacturing firms of Ghana to study association of management of the WC and profitability. They studied the separate effect of each element of CCC as well as combined effect and used fixed and random effect models to achieve the objective of the study. It was concluded in their paper that all of variables used in study i.e., accounts receivables, management of inventory, a/c payables, cycle of cash conversion (CCC), current asset and ratio, and firm size had positive association with return on equity and return on assets. Nastiti et al. (2019) found that profitability of manufacturing firms tends to increase if the CCC is longer. Their study was based on 136 Indonesian firms listed on stock exchange while covered eight years' data ranging from 2010 to 2017. The authors argued that these empirical results are due to the fact that the firms maintain higher level of inventory, causing longer CCC, to ensure smooth continuation of business operations.

Alarussi and Alhaderi (2018) studied the factors that are affecting profitability of 120 listed (non-financial) Malaysian companies. The study applied Fixed-effects model and Pooled OLS analysis techniques while covering data from 2012 to 2014. The authors found strong evidence of positive association between working capital, efficiency of firms, size of firm and profitability in context of Malaysia. The study also concluded that liquidity has insignificant relationship with profitability.

2.3 Hypothesis Development

Based on the mixed results of literature as discussed above, the study has developed following hypotheses to test in context of Pakistan.

H1: Cycle of cash conversion (CCC) is significantly associated with the ROA and the ROE in context of manufacturing firms of Pakistan.

H2: Receivable Days (RD) is significantly associated with the ROA and the ROE in context of manufacturing firms of Pakistan.

H3: Inventory Days (ID) is significantly associated with the ROA and the ROE in context of manufacturing firms of Pakistan.

H4: Payable Days (PD) is significantly associated with the ROA and the ROE in context of manufacturing firms of Pakistan.

3. Research Methodology

3.1 Data and Sources

Data for aforementioned variables is collected from Financial Statement Analysis (Non-Financial) document that is available on State Bank of Pakistan’s website. The study covered period from 2014 to 2021. The document enlists 40 companies under manufacturing sector however, 23 companies are included in the study out of 40 due to missing data and outliers.

3.2 Variables and Measurements

The dependent variable profitability proxied by the return on equity (ROE) and the return on assets (ROA). The independent variable cash conversion cycle which includes three elements i.e., receivable days (RD), inventory days (ID) and payable days (PD) is used as proxy for working capital. The control variables are ratio of total liabilities to total assets is used as proxy for leverage (LEV) and total assets as proxy for firm size (SIZE).

Table 1
Variables Measurement

Variables	Type of Variable	Symbol	Calculation
Return on assets	Dependent	ROA	Net income ÷ Total Assets
Return on equity	Dependent	ROE	Net Income ÷ Shareholders’ Equity
Receivable days	Independent	RD	(Account receivables ÷ sales) × 365
Inventory days	Independent	ID	(Inventory ÷ cost of sales) × 365
Payable days	Independent	PD	(Account payables ÷ cost of sales) × 365
Cash conversion cycle	Independent	CCC	RD + ID – PD
Leverage	Control	LEV	Total liabilities ÷ Total Assets
Size	Control	SIZE	Natural log of total assets

3.3 Methodology and Model Specification

A quantitative study based on secondary data available on State Bank of Pakistan is conducted and E-Views 10 statistical software is used for regression analysis. Further, in order to meet the objectives of the study, dynamic panel data technique that is Generalized Method of Moments (GMM) is employed. The other techniques of panel data like Random or Fixed Effect Model do not address the potential presence of endogeneity in panel data. However, the GMM technique tackles this potential issue (Altaf & Shah, 2018). Further, the GMM technique is employed following prior literature practice which includes Ahmad et al. (2022); Altaf and Shah (2018); Dalci et al. (2019). The following four econometric models are specified to test the study hypotheses (Model 1 & 2 testing H1; Model 3 & 4 testing H2 to H4) as mentioned in literature section.

Model 1

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 CCC_{it} + \beta_3 LEV_{it} + \beta_4 SIZE_{it} + u_{it} \tag{1}$$

Model 2

$$ROE_{it} = \beta_0 + \beta_1 ROE_{it-1} + \beta_2 CCC_{it} + \beta_3 LEV_{it} + \beta_4 SIZE_{it} + u_{it} \tag{2}$$

Model 3

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 RD_{it} + \beta_3 ID_{it} + \beta_4 PD_{it} + \beta_5 LEV_{it} + \beta_6 SIZE_{it} + u_{it} \quad (3)$$

Model 4

$$ROE_{it} = \beta_0 + \beta_1 ROE_{it-1} + \beta_2 RD_{it} + \beta_3 ID_{it} + \beta_4 PD_{it} + \beta_5 LEV_{it} + \beta_6 SIZE_{it} + u_{it} \quad (4)$$

4. Empirical Findings and Discussion

4.1 Descriptive Statistics

Descriptive statistics of each variable under consideration are given in Table 2. As depicted in the table, total number of observations are 184 (23 cross sections x 8 years). The mean values are 0.044, 0.055, 37.804, 115.685, 94.426, 590.62 for ROA, ROE, receivable days, inventory days, payable days and cash conversion cycle respectively. According to Jarque-Bera test, the data is not normally distributed as the null hypotheses is rejected at 1% significance level. However, it is common in panel researches as entities differ in their size from each other.

Table 2
Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	N	Prob (Jarque Bera)
ROA	0.044	0.033	0.408	-0.216	0.088	184	0.000
ROE	0.055	0.085	1.049	-5.523	0.483	184	0.000
RD	37.804	28.418	176.809	0.008	35.736	184	0.000
ID	115.685	107.333	429.907	1.381	66.739	184	0.000
PD	94.426	77.564	383.285	0.556	65.300	184	0.000
CCC	59.062	51.063	337.989	-79.560	61.522	184	0.000
SIZE	15.344	15.038	18.035	12.440	1.468	184	0.006
LEV	0.546	0.594	0.974	0.074	0.199	184	0.000

4.2 Correlation Matrix

Correlation results are given in Table 3. The correlation indicates relation among variable which can range from -1 (perfect negative correlation) to +1 (perfect positive correlation). As depicted in table, the correlation among variables under consideration is in acceptable range and that no any variable is highly correlated (either positive or negative) with any other variable.

Table 3
Correlation Matrix

	ROA	ROE	RD	ID	PD	CCC	SIZE	LEV
ROA	1.000							
ROE	0.582	1.000						
RD	-0.178	-0.150	1.000					
ID	0.296	0.112	0.203	1.000				
PD	0.136	0.035	0.315	0.655	1.000			
CCC	0.073	-0.003	0.466	0.508	-0.168	1.000		
SIZE	0.382	0.194	-0.116	0.104	-0.024	0.071	1.000	
LEV	-0.280	-0.196	0.126	0.091	0.318	-0.166	0.117	1.000

4.3 Regression (GMM) Results

This section presents the regression results of the study found by using dynamic generalized method of moments technique. Table 4 provides results of Model 1 & 2 where combined impact of cash conversion cycle (CCC) is examined on ROA & ROE while Table 5 provides results of Model 3 & 4 where separate impact of each element of CCC is examined on ROA & ROE of manufacturing sector in context of Pakistan.

Table 4
GMM Results (Model 1 & 2)

Variable	Dependent Variable: ROA		Dependent Variable: ROE	
	Coefficient	P-value	Coefficient	P-value
Lag of dependent	-0.1193*	0.0046	-0.8978*	0.0000
CCC	0.0001**	0.0277	-0.0015*	0.0000
SIZE	-0.1256*	0.0000	-0.5926*	0.0000
LEV	-0.2347*	0.0000	-2.7756*	0.0000
Prob(J-statistic)	0.2891		0.4731	

Note: *, **, *** shows significance at 1%, 5% and 10% level respectively.

The results in Table 4 indicate significant relationship at 1% level of independent variable (CCC), lag of dependent variables (ROA -1 & ROE -1) and control variables (Size & leverage) with dependent variables i.e., ROA & ROE. The relationship is negative with regard to lag values as depicted by corresponding coefficient values. However, the CCC is positively related with ROA but negatively related with ROE. The coefficient values of lagged dependent variable indicate that an increase of one point in ROA & ROE will decrease next year ROA & ROE by 0.1193 and 0.8978 points. The coefficient values corresponding to CCC indicate that, on average, a one-day increase in CCC will increase ROA by 0.0001 points and decrease ROE by 0.0015 points. In model 1 & 2, the control variables are also found to be significantly and negatively associated with ROA & ROE. Further, these models (model 1 & 2) are proved to be a good fit as the probability of J-statistic is insignificant i.e., 0.2891 for model 1 and 0.4731 for model 2.

Table 5
GMM Results (Model 3 & 4)

Variable	Dependent Variable: ROA		Dependent Variable: ROE	
	Coefficient	P-value	Coefficient	P-value
Lag of dependent	-0.0182	0.7877	-0.8699*	0.0000
RD	0.0001	0.7714	-0.0011	0.5049
ID	0.0002*	0.0000	0.0002	0.5496
PD	0.0005*	0.0002	0.0010	0.2059
SIZE	-0.0698*	0.0001	-0.5811*	0.0000
LEV	-0.4916*	0.0000	-3.0334*	0.0000
Prob(J-statistic)	0.2728		0.5284	

Note: *, **, *** shows significance at 1%, 5% and 10% level respectively.

The results in table 5 indicate mixed results for ROA (Model 3) & ROE (Model 4). The lag of dependent variable and receivable days are insignificantly associated with ROA whereas inventory days and payable days as well as the control variables (size & leverage) are positively and significantly associated with ROA at 1% significance. Their coefficient tells that a one-day increase in inventory days and payable days will increase ROA by 0.0002 and 0.0005 points respectively. On the other hand, the lag of dependent variable and control variable are found to have highly significant and negative relation with ROE while the all three components of CCC that are receivable days, inventory days and payable individually do not show significant relation with ROE. The coefficient value of lagged dependent variable indicates that an increase of one point in ROE will decrease next year's ROE by 0.8699 points. Moreover, the model 3 & 4 are also proved as good fit models based on insignificant probability value of J-statistic i.e., 0.2728 for model 3 and 0.5284 for model 4. The positive association of working capital elements with ROA found in this study is in line with prior literature results as the same results were extracted by Alarussi and Alhaderi (2018); Amponsah-Kwatiah and Asiamah (2021); Hashmi and Iqbal (2022); Noshad, Amjad, Shafiq, and Gillani (2019) and Nastiti et al. (2019). On the other hand, the negative association of CCC with ROE is in line with findings of Mandipa and Sibindi (2022). Further, the ROA is widely used in literature as proxy of profitability as it is considered more appropriate measure based on the fact that ROE can provide misleading information when a company is highly leveraged (Thakur, n.d.).

5. Conclusion

The decision regarding management of WC and its appropriate level are very critical for business managers because even a firm which seems profitable may stop business trading if it is not able to pay due short-term obligations. These WC decisions are based on trade-off between liquidity and profitability. The literature on this topic provides varying results, therefore, this study aimed to contribute in literature by conducting an empirical study in context of manufacturing sector of Pakistan. The study is conducted based on data ranging from 2014 to 2021 of manufacturing companies of Pakistan and the dynamic GMM technique is used. The study found significant positive relationship of cash conversion cycle and all of its elements, except receivable days, with ROA. The results are in line with many of the prior literature results. The results of the study are of great significance for business managers, especially of Pakistani manufacturing sector. The study findings recommend that managers should maintain higher CCC to improve ROA and one of many ways is to maintain higher level of inventory including raw material so that the manufacturing process runs smoothly in high demand time.

Further, there are some limitations of this study. The study considered only one sector and one country with limited time frame; hence, it is recommended for future research to include more countries and sectors with large time frame to get some comparative insights. Further, future research should also focus on comparison between developing and developed nations to see how developing and developed nations differ in terms of working capital management practices.

Authors Contribution

Muhammad Noman: initiated the core idea of performed data analysis and drafting
Waseem Ahmed: reviewed and revised overall quality and writeup of the manuscript
Ahsen Saghir: provided guidelines for empirical analysis
Naeem Khan: provided guidance for data analysis, reviewed, supervised overall study

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

References

- Ahmad, M., Bashir, R., & Waqas, H. (2022). Working capital management and firm performance: are their effects same in covid 19 compared to financial crisis 2008? *Cogent Economics & Finance*, 10(1), 2101224. doi:<https://doi.org/10.1080/23322039.2022.2101224>
- Akbar, A., Akbar, M., Nazir, M., Poulouva, P., & Ray, S. (2021). Does working capital management influence operating and market risk of firms? *Risks*, 9(11), 201. doi:<https://doi.org/10.3390/risks9110201>
- Alarussi, A. S., & Alhaderi, S. M. (2018). Factors affecting profitability in Malaysia. *Journal of Economic Studies*, 45(3), 442-458. doi:<https://doi.org/10.1108/JES-05-2017-0124>
- Altaf, N., & Shah, F. A. (2018). How does working capital management affect the profitability of Indian companies? *Journal of Advances in Management Research*, 15(3), 347-366. doi:<https://doi.org/10.1108/JAMR-06-2017-0076>
- Amponsah-Kwatiah, K., & Asiamah, M. (2021). Working capital management and profitability of listed manufacturing firms in Ghana. *International journal of productivity and performance management*, 70(7), 1751-1771. doi:<https://doi.org/10.1108/IJPPM-02-2020-0043>
- Ashworth, M. (n.d.). Working capital management. *ACCA Global*. Retrieved from <https://www.accaglobal.com/hk/en/student/exam-support-resources/fundamentals-exams-study-resources/f9/technical-articles/wcm.html>
- Chishty, B., Hussain, A., & Fareed, S. (2022). Working Capital Management and Corporate Internal Growth Performance: Evidence of Listed Non-Financial Companies in Pakistan.

- Reviews of Management Sciences*, 4(1), 95-107.
doi:<https://doi.org/10.53909/rms.04.01.0119>
- Dalci, I., Tanova, C., Ozyapici, H., & Bein, M. A. (2019). The moderating impact of firm size on the relationship between working capital management and profitability. *Prague Economic Papers*, 28(3), 296-312. doi:<https://doi.org/10.18267/j.pep.681>
- Gillani, S., Shafiq, M. N., Ahmad, T. I., & Zaheer, S. (2021). Household Food Insecurity and Mental Health amid COVID-19 Pandemic: A Case of Urban Informal Sector Labor in Punjab (Pakistan). *Pakistan Journal of Social Sciences*, 41(4), 755-772.
- Hashmi, M. A., & Iqbal, M. S. (2022). Impact of working capital management on firm profitability and liquidity: the moderating role of family ownership. *Accounting Research Journal*, 35(5), 676-696. doi:<https://doi.org/10.1108/ARJ-07-2021-0212>
- Jayarathne, T. (2014). *Impact of working capital management on profitability: Evidence from listed companies in Sri Lanka*. Paper presented at the Proceedings of the 3rd International Conference on Management and Economics.
- Kwenda, F., & Matanda, E. (2015). Working Capital Management in Liquidity-Constrained Economy: A Case of Zimbabwe Stock Exchange Listed Firms in the Multiple Currency Era. *Public and Municipal Finance*, 4(1), 55-65.
- Mandipa, G., & Sibindi, A. B. (2022). Financial performance and working capital management practices in the retail sector: empirical evidence from South Africa. *Risks*, 10(3), 63. doi:<https://doi.org/10.3390/risks10030063>
- Nastiti, P. K. Y., Atahau, A. D. R., & Supramono, S. (2019). Working capital management and its influence on profitability and sustainable growth. *Business: Theory and Practice*, 20(1), 61-68. doi:<https://doi.org/10.1080/23311975.2022.2049671>
- Noshad, M., Amjad, M., Shafiq, M. N., & Gillani, S. (2019). Performance and Obstacles of SMEs: An Empirical Evidence from BRICS Countries. *iRASD Journal of Economics*, 1(2), 113-131. doi:<https://doi.org/10.52131/joe.2019.0101.0010>
- Samiloglu, F., & Demirgunes, K. (2008). The effect of working capital management on firm profitability: Evidence from Turkey. *The International journal of applied Economics and Finance*, 2(1), 44-50.
- Soda, M. Z., Hassan Makhoulouf, M., Oroud, Y., & Al Omari, R. (2022). Is firms' profitability affected by working capital management? A novel market-based evidence in Jordan. *Cogent Business & Management*, 9(1), 2049671. doi:<https://doi.org/10.1080/23311975.2022.2049671>
- Thakur, M. (n.d.). ROE vs ROA. Retrieved from <https://www.educba.com/roe-vs-roa/Onlinejournalarticle>
- Weinraub, H. J., & Visscher, S. (1998). Industry practice relating to aggressive conservative working capital policies. *Journal of Financial and Strategic Decision*, 11(2), 11-18.