



## The Influence of Production Cost and Working Capital on Profitability with Firm Size as a Moderating Variable

Dewi Kurnianingsih<sup>1</sup>, Achmad Fadjar<sup>2</sup>

<sup>1,2</sup>Accounting Postgraduate Program, Widyatama University, Bandung

Correspondence: E-mail: [kurnianingsih.dewi@widyatama.ac.id](mailto:kurnianingsih.dewi@widyatama.ac.id)

### ABSTRACT

This research aims to examine how production cost and working capital affect profitability, and also to investigate whether firm size can moderate the influence of production cost and working capital on profitability. Observation data amounting to 110 entries, obtained from 10 textile sub-sector companies listed on the Indonesia Stock Exchange (IDX) during the period 2012-2022, were extracted from the companies' annual reports. Moderated Regression Analysis (RMA) was used to analyze the data. The findings show production cost has a negative but not significant impact, while working capital has a positive but not significant impact on profitability. The findings also show firm size does not moderate the effect of either production cost or working capital on profitability. The implication of these findings are that production cost and working capital, under certain conditions, cannot be used as the main factors for determining profitability. Furthermore, firm size similarly cannot be used as a primary reference for enhancing profitability.

### ARTICLE INFO

#### Article History:

Submitted/Received 18 October 2024

First Revised 20 November 2024

Accepted 10 December 2024

First Available online 31 January 2025

Publication Date 31 January 2025

#### Keyword:

Production Cost, Working Capital, Profitability, Firm Size

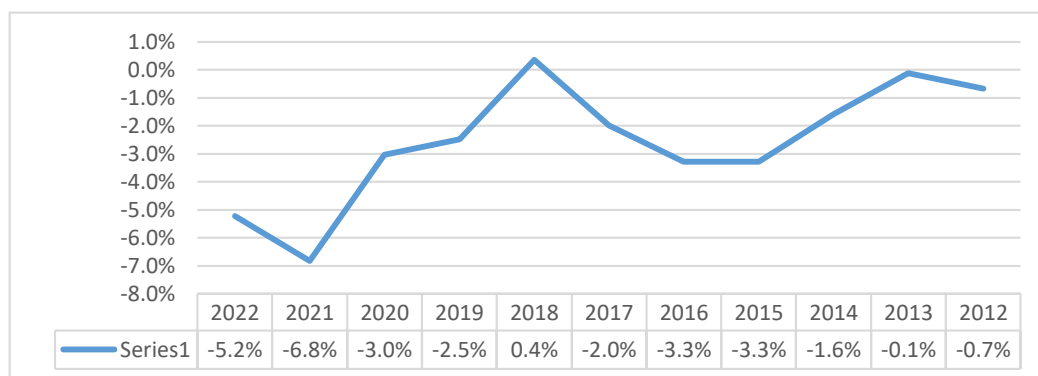
## 1. INTRODUCTION

A company is an organization made up of individuals or teams collaborating toward specific objectives. Companies typically aim to generate profit by selling products and services. According to Fuad, M. et al. (2006:22), economic objectives are one of the main reasons for establishing a company. The company seeks to sustain itself by generating profit. Achieving other company goals depends on the company's ability to survive, grow, and generate profit. A company's performance can be considered satisfactory if it is able to achieve these objectives. If these objectives are not met, further analysis of the company's performance is necessary to implement improvement measures.

A company's performance can be evaluated by examining its financial ratios. Assessing financial performance is a structured process used to determine how well a company generates profits and maintains specific cash reserves (Hery, 2021:25).

One of the critical ratios in assessing a company's achievement of its profit-related objectives is the profitability ratio. Successfully managing a company for sustained growth amid competition, technological advancements, and uncertain economic conditions is a complex task that necessitates effective business strategies. Companies strive to meet their targeted goals, particularly in generating profits, which are vital for their continued survival in the global business landscape.

The phenomenon related to the profitability ratio in textile companies listed on the Indonesia Stock Exchange is presented in figure 1:



**Figure 1.** Average Return on Assets (ROA)

The graph above illustrates the average Return on Assets (ROA) for textile companies listed on the Indonesia Stock Exchange (IDX) from 2012 to 2022, highlighting its fluctuations over the years. With the exception of 2018, the average ROA was negative each year during this period. Although the ROA was positive in 2018, it remained low, at less than 1%.

The profitability ratio indicates how effectively a company utilizes its assets in its operations (Fadjar et al., 2021). It serves as a metric to assess a company's capability to generate profits from its core operations (Hery, 2021:192). According to Gitman and Zutter (2015:128), several indicators can be employed to evaluate profitability, including the firm's profits in relation to its sales, total assets, or shareholders' equity. Key indicators for measuring the profitability ratio encompass profit margin, return on assets, and return on

equity. Return on Assets is a widely utilized financial ratio that assesses a company's overall profitability. Companies invest in assets with the intention of utilizing them to generate profits (Hery, 2021:193).

The profitability of a company is closely related to various influencing factors. Previous research indicates that several variables affect profitability, including firm size, working capital, operational efficiency, liquidity, and leverage (Alarussi, 2018). Additionally, Stierwald (2010) identified productivity factors as significant influences on profitability, suggesting that lower average production costs, improved product and service quality, and higher output levels with fewer inputs can enhance profitability. Furthermore, Istan et al. (2021) noted that profitability is affected by factors such as production costs, operating expenses, capital structure, and company growth.

Research by Oyedokun et al. (2019) and Ramadita & Suzan (2019) indicates that production costs negatively impact profitability. In contrast, Jannah et al. (2021) found that production costs do not influence profitability. Additionally, Kalsum & Nurwani (2022) presented findings suggesting that production costs have a positive effect on profitability.

Research by Sjaiful et al. (2019), Alarussi and Alhaderi (2018), Setianto et al. (2022), Respati et al. (2022), Kusuma & Bachtiar (2018), Nastiti et al. (2019), and Yuliani et al. (2021) indicates that working capital positively affects profitability. In contrast, studies by Kartadjumena et al. (2020), Pangestuti et al. (2021), and Wijaya et al. (2021) found that working capital does not have an effect on profitability.

Research by Pila et al. (2022) found that company size does not moderate the relationship between costs and profitability. In contrast, Mahmood et al. (2019) asserted that company size significantly moderates the effect of working capital on profitability. However, Lubega, S.D. (2020) presented a differing view, indicating that company size does not moderate the impact of working capital on profitability.

Unlike previous studies, this research not only seeks to examine the impact of production costs and working capital on profitability but also incorporates firm size as a moderating variable between these factors. This study contributes to reinforcing existing findings regarding the role of production costs and working capital in enhancing profitability. Additionally, it highlights the moderating effect of firm size on the relationship between production costs, working capital, and profitability.

## **2. METHODS**

This study employs an explanatory research approach. According to Purnamasari et al. (2023:79), explanatory research seeks to elucidate the causal relationships between specific variables, aiming to understand the reasons behind and mechanisms through which a phenomenon occurs. This type of research typically involves more intricate statistical analyses, experiments, and regression analyses to evaluate the relationships between variables. In this study, the independent variables are production costs and working capital, while profitability serves as the dependent variable. Additionally, firm size is included as the moderating variable.

In this research, production cost is assessed through annual variability, which is derived from the sum of raw material costs, direct labor, and overhead costs, calculated as follows:

$$\text{AV Production Cost} = \frac{\text{Production cost}_{\text{current year}} - \text{Production cost}_{\text{previous year}}}{\text{Production cost}_{\text{previous year}}}$$

Working capital is measured by the annual variability of net working, calculated as follows:

$$\text{Net Working Capital (NWC)} = \text{Current Asset} - \text{Current Liability}$$

$$\text{AV NWC} = \frac{\text{NWC}_{\text{current year}} - \text{NWC}_{\text{previous year}}}{\text{NWC}_{\text{previous year}}}$$

Firm size is measured by the annual variability of natural logarithm of total assets, calculated as follows:

$$\text{AV Ln Total Assets} = \frac{\text{Ln Total Assets}_{\text{current year}} - \text{Ln Total Assets}_{\text{previous year}}}{\text{Ln Total Assets}_{\text{previous year}}}$$

Profitability is measured by the annual variability of Return on Assets, calculated as follows:

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}}$$

$$\text{AV ROA} = \frac{\text{ROA}_{\text{current year}} - \text{ROA}_{\text{previous year}}}{\text{ROA}_{\text{previous year}}}$$

This research uses secondary data types and is in the form of data that has been processed by other parties, namely financial report data from textile companies listed on the Indonesia Stock Exchange in 2012-2022. The data collection techniques for this research are documentation techniques and literature reviews. The research population determined by the researcher is 154 financial reports of textile companies listed on the Indonesia Stock Exchange in 2012-2022 with a total of 14 companies. The sampling technique used in this research is nonprobability sampling. Following this approach, a total of 10 companies were selected, resulting in a dataset comprising 110 data points.

This research employs the Moderated Regression Analysis (MRA) model. To ensure precise results, the calculations were performed using EViews 13 software. The analysis follows these steps:

1. Calculating the ratios of annual variability in production cost, working capital, profitability, and firm size.

2. Selecting the appropriate regression model.
3. Conducting classical assumption tests.
4. Performing the Moderated Regression Analysis (MRA) and testing the hypotheses
5. Drawing final conclusions.

### 3. RESULTS AND DISCUSSION

This research examines financial indicators of profitability, with particular emphasis on production cost, working capital, and firm size as a moderating variable. The findings are detailed as follows:

- a. The descriptive statistics results are presented in table.

**Table 1. Statistic Descriptive**

Description	Production Cost	Working Capital	Profitability	Firm Size
Mean	0.000728	-3.429729	-1.19825	0.041116
Median	0.019293	-0.043381	-0.03913	0.010245
Maximum	0.80409	28.76828	33.40924	1.135343
Minimum	-0.853873	-245.6136	-88.7914	-0.854541
Std. Dev.	0.28654	25.8042	10.53111	0.226009

Source: Eviews 13 Output

The following explanation is derived from the table above:

- 1) The most substantial increase in production costs was recorded at 0.8041, or 80.41%, at PT Century Textile Industry Tbk in 2021. The production cost rose from Rp 270.829.158.500 in 2020 to Rp 488.600.166.240 in 2021. This rise corresponds with a notable increase in sales, which grew from Rp 267.228.315.500 in 2020 to Rp 482.472.383.100, marking an increase of 82.56%. The lowest recorded value was -0.8539, or -85.39%, which was observed at PT Panasia Indo Resources Tbk in 2018. In that year, the production value amounted to Rp 78,359,049,000, a significant decrease from Rp 536,239,772,000 in 2017. This decline was attributed to the partial suspension of production operations that began in September 2017.
- 2) The most substantial increase in working capital, recorded at 28.7683 or 2,876.83%, took place at PT Sri Rejeki Isman Tbk in 2014. The working capital value rose from Rp 109,865,926,829 in 2013 to Rp 3,270,519,325,000 in 2014, primarily due to a significant reduction in the current debt account. Conversely, the largest decrease in working capital occurred at PT Ever Shine Tex Tbk in 2013, with a value of -245.6136 or -24,561.36%. This represents a drastic decline, as working capital fell from -Rp 293,871,300 in 2012 to -Rp 72,472,661,427 in 2013, attributed to a decrease in the current asset account.
- 3) The most significant increase in Return on Assets (ROA) was recorded at 33.4092 or 3,340.92% for PT Ever Shine Tex Tbk in 2018. The company's profit rose from IDR 24,580,989,924 in 2017 to IDR 903,141,493,983 in 2018. Conversely, the largest decrease in ROA, which was -88.7914 or -8,879.14%, occurred at PT Argo Pantes Tbk

in 2014. The company reported a profit of IDR 5,190,812,500 in 2013, which dramatically fell to a loss of IDR 376,203,875,000 in the following year.

- 4) The most substantial increase in firm size was recorded at 1.1353 or 113.53% for PT Asia Pacific Investama Tbk in 2017. The firm's size rose from IDR 1,619,757,000,000 in 2016 to IDR 3,458,737,000,000 in 2017, driven by a notable rise in both inventory and fixed asset accounts. Conversely, the largest decrease in firm size, measured at -0.8545 or -85.45%, occurred at PT Pania Indonesia Resources Tbk in 2018. The firm's size declined from IDR 4,035,086,385,000 in 2017 to IDR 586,940,667,000 in 2018, primarily due to a significant reduction in fixed asset accounts.

b. Test outcomes for identifying the regression model.

**Table.2** Chow Test

Redundant Fixed Effects Tests  
Equation: FEM  
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.028502	(9,97)	0.4231
Cross-section Chi-square	10.025968	9	0.3484

Source: Eviews 13 Output

According to table 2, the cross-section Chi-square probability value from the Chow test results is 0.3484. Consequently, the common effect model is employed, as the Chi-square probability value exceeds 0.05, indicating that the null hypothesis (H0) is accepted.

**Table.3** Hausman Test

Correlated Random Effects - Hausman Test  
Equation: QREM  
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.114911	3	0.3742

Source: Eviews 13 Output

As shown in Table 3, the Chi-square probability value from the Hausman test is 0.3742. Therefore, the random effect model is selected, as the Chi-square probability value is greater than 0.05, leading to the acceptance of the null hypothesis (H0).

**Table.4** Lagrange Multiplier Test

Lagrange Multiplier Tests for Random Effects

Null hypotheses: No effects

Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	1.602490 (0.2056)	0.278537 (0.5977)	1.881028 (0.1702)

Source: Eviews 13 Output

Based on Table 4, the Breusch-Pagan probability value from the Lagrange Multiplier (LM) test is -0.1702. Consequently, the random effect model is chosen, as the Breusch-Pagan value is less than 0.05, resulting in the rejection of the null hypothesis (H0)

c. The outcomes of the classical assumption tests

**Table.5** Multicollinearity Test

	Production Cost	Working Capital
Production Cost	1.000000	-0.027907
Working Capital	-0.027907	1.000000

Source: Eviews 13 Output

Based on Table 4.13, it can be concluded that there is no multicollinearity between the variables, as indicated by the correlation value between X1 and X2 of -0.02, which is below the threshold of 0.9.

d. Moderated Regression Analysis and Testing the Hypoteses

**Table 6.** t test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-1.224036	1.052036	-1.163493	0.2472
AVPC	-0.260997	4.227781	-0.061734	0.9509
AVWC	0.006684	0.039732	0.168231	0.8667
AVFS	1.219377	5.271431	0.231318	0.8175
AVPC*AVFS	1.164552	11.62377	0.100187	0.9204
AVWC*AVFS	1.10702	0.612228	1.808183	0.0734

Referring to Table 6, the derived regression equation is as follows:

$$AVROA = -1.388 - 0.261AVPC + 0.007AVWC + 1.219AVFS + 1.165AVPC*AVFS + 1.107AVWC*AVFS$$

The equation above indicates that production cost has a positive but insignificant effect, while working capital has a negative and insignificant effect on profitability. The interaction of production cost and working capital with firm size is also positively insignificant.

The negative impact of production costs on profitability aligns with the managerial efficiency profit theory, which suggests that companies with greater managerial skills and efficiency are expected to earn profits as compensation. Maximum profitability is achieved when the gap between sales revenue and production costs is at its widest (Elpisah, 2022:107).

In this research, production costs do not significantly affect profitability, indicating that companies are able to manage their production costs within an effective or normal range for business operations. However, other factors may have a more substantial influence on profitability. For instance, in 2019, Sunson Textile Manufacture Tbk recorded the smallest annual ROA variability at -1.698%, with production costs declining by -3.3%. While production costs decreased, profitability saw a sharper decline. This can be attributed to the fact that, in 2018, Sunson Textile Manufacture Tbk reported additional revenue from the sale of fixed assets amounting to Rp 29 billion, a source of income absent in 2019. Furthermore, the company experienced a foreign exchange gain of Rp 3.9 billion in 2019, compared to a loss of Rp 193.1 million in the previous year.

A similar case is observed with Argo Pantes Tbk in 2014, where the smallest annual ROA variability was -8.879%, despite an increase in production costs by 9.2%. Although this aligns with the general theory that higher production costs negatively impact profitability, the more pronounced factor in this case was the foreign exchange gain of Rp 239.1 billion recorded in 2018, compared to a loss of Rp 68.2 billion in 2019. Additionally, Argo Pantes Tbk reported a profit from the sale of fixed assets amounting to Rp 14 billion in 2019, whereas in 2018, the gain from such sales was significantly lower, at Rp 314.3 million.

This indicates that while production costs play a role, other financial elements, such as foreign exchange gains and asset sales, may exert a stronger influence on the overall profitability of a company.

The findings of this study align with the research by Jannah et al. (2021), which concluded that production costs do not significantly impact profitability. However, these results differ from those of Oyedokun et al. (2019) and Ramadita & Suzan (2019), who found that production costs have a negative effect on profitability. Additionally, Kalsum & Nurwani (2022) reported contrasting results, stating that production costs positively influence profitability.

The results in this research also indicate that working capital does not have a significant effect on profitability. These findings are consistent with the research by Kartadjumena et al. (2020), Pangestuti et al. (2021), and Wijaya et al. (2021), which concluded that working capital does not affect profitability. However, other studies by Sjaiful et al. (2019), Alarussi and Alhaderi (2018), Setianto et al. (2022), Respati et al. (2022), Kusuma & Bachtiar (2018), Nastiti et al. (2019), and Yuliani et al. (2021) reported that working capital has a positive effect on profitability.

Resource-based theory states that companies that have resources can make the company have a competitive advantage and are able to direct the company to have good



long-term performance. According to the annual report, textile sector companies listed on the stock exchange show a greater proportion of working capital deficits compared to those with positive working capital. This indicates that most companies have higher current liabilities than current assets. As a result, they are burdened with debt, limiting the efficiency of resource utilization and hindering their ability to generate the desired profit.

The moderating effect of firm size on the relationship between production costs, working capital, and profitability aligns with the theory of economies of scale. Essentially, working capital represents funds with a short-term turnover period, and companies must continually enhance operational efficiency to achieve optimal profits. Larger firms tend to have better access to external funding under favorable terms, which boosts their working capital (Lubega, 2020). Additionally, larger firms benefit from utilizing more advanced machinery and equipment, which allows for greater output at lower per-unit costs. They can also invest more in research, development, and technological innovations to enhance production efficiency. Moreover, larger companies possess greater bargaining power when negotiating prices with suppliers, enabling them to procure raw materials at lower costs (Erwin et al., 2023:53).

This study reveals that company size does not serve as a moderating factor for either production costs or working capital in relation to profitability. These findings align with the research conducted by Pila et al. (2022), which concluded that company size does not influence the relationship between costs and profitability. Similarly, Lubega, S.D. (2020) found that company size does not moderate the impact of working capital on profitability. In contrast, Mahmood et al. (2019) reported that company size significantly moderates the relationship between working capital and profitability. The insignificance of the moderating effect of either production costs or working capital on profitability indicates that achieving strong profitability also relies on effective company management. Consequently, large firms do not automatically ensure efficient management of operational processes, even when employing the same technology. Additionally, large companies with adequate or excessive working capital may not necessarily manage these resources effectively, leading to a limited impact on profitability.

#### **4. CONCLUSION**

This study aims to identify the factors influencing profitability in publicly listed textile companies in Indonesia. It examines two independent variables: production cost and working capital, along with a moderating variable, firm size. Data from 10 companies covering the period from 2012 to 2014 was obtained from the companies' annual reports, and Moderate Regression Analysis was employed to analyze the data. The results indicate no significant relationship between production cost or working capital and profitability. However, the regression coefficients align with theoretical expectations, that a decrease in production cost is associated with an increase in profitability. Similarly, an increase in working capital is also expected to enhance profitability. Furthermore, the analysis of the moderating variable

reveals that firm size does not moderate the relationship between either production cost or working capital and profitability.

This study has several limitations. First, the data was derived from a single industry, the textile sector, and did not account for industry differentiation. Additionally, the sample size was limited to 14 textile companies listed on the Indonesian Stock Exchange, which restricted the range of profitability variations observed. Despite these limitations, this research highlights that, under certain conditions, production costs are not the main factor affecting profitability, particularly in the textile sector. While companies may maintain efficient production costs, other factors, such as foreign exchange fluctuations or asset sales, can have a more significant impact on profitability. Additionally, working capital is not always a determining factor in profitability. Some companies may have suboptimal or even deficit working capital, limiting the efficiency of resource utilization and hindering their ability to generate the desired profit

Moreover, firm size does not always align with theory regarding its role in moderating the influence of production costs or working capital on profitability. Large firms often face challenges in effectively managing and overseeing operations and strategies. The increased complexity that accompanies growing firm size can lead to inefficiencies and reduced performance.

## 5. REFERENCES

- Alarussi, A. S., & Alhaderi, S. M. (2018). Factors affecting Profitability in Malaysia Journal of Economic Studies Article information. *Journal of Economic Studies*, August 2018.
- Elpisah. (2022). *Pengantar Ekonomi Mikro*. Purwokerto: CV. Pena Persada.
- Fadjar, A., Prayoga, A., & Nata, B. W. (2021). The effects of corporate social responsibility on profitability. *Management Decision*, 54(6), 1383–1406. <https://doi.org/10.1108/md-07-2015-0268>
- Fuad, M. dkk. (2006). *Pengantar Bisnis*. Jakarta: PT Gramedia Pustaka Utama.
- Gitman, L. J., & Zutter, C. J. (2015). *Principles of Managerial Finance 14th Edition*. Essex: Pearson Education Limited.
- Hery. (2021). *Analisis Laporan Keuangan: Integrated and comprehensive edition*. Jakarta: PT Grasindo.
- Istan, M., Husainah, N., Murniyanto, M., Suganda, A. D., Siswanti, I., & Fahlevi, M. (2021). The effects of production and operational costs, capital structure and company growth on the profitability: Evidence from manufacturing industry. *Accounting*, 7(7), 1725–1730. <https://doi.org/10.5267/j.ac.2021.4.025>
- Jannah, A. R., Sulisty, & Yogivaria, D. W. (2021). Pengaruh biaya produksi, biaya operasional, struktur modal, dan likuiditas terhadap profitabilitas. *Jurnal Riset Mahasiswa Akuntansi*, 8(2), 1–9. <https://doi.org/10.21067/jrma.v8i2.5234>
- Kalsum, U., & Nurwani. (2022). J-Reb: Journal- Research of Economic dan Bussiness J-Reb: Journal- Research of Economic dan Bussiness. *J-Reb: Journal- Research of Economic Dan Bussiness Journal*, 1(1), 12–24.
- Kartadjumena, E. dkk. (2020). The Determinant Factors of Profitability in Indonesia Consumer Goods Manufacturing Companies. *PalArch's Journal of Archeology of Egypt/ Egyptology (PJAE)*, 17(10), 3759–3772.

- Kusuma, H., & Bachtiar, A. D. (2018). Working Capital Management and Corporate Performance: Evidence from Indonesia. *Journal of Management and Business Administration. Central Europe*, 26(2), 76–88.
- Lubega, S. D. (2020). Does Firm Size Moderate the Relationship Between Working Capital Level and Firm Profitability? *African Journal of Education, Science and Technology*, 5(4).
- Mahmood, F., Han, D., Ali, N., Mubeen, R., & Shahzad, U. (2019). Moderating effects of firm size and leverage on the working capital finance-profitability relationship: Evidence from China. *Sustainability (Switzerland)*, 11(7), 19–22. <https://doi.org/10.3390/su11072029>
- 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, 61–68. <https://doi.org/10.3846/BTP.2019.06>
- Oyedokun, G. E., Tomomewo, A. O., & Owolabi, S. A. (2019). Cost Control and Profitability of Selected Manufacturing Companies in Nigeria. *Journal of Accounting and Strategic Finance*, 2(1), 14–33. <https://doi.org/10.33005/jasf.v2i1.31>
- Pangestuti, I. R. D., Pridarsanti, K. Y., & Robiyanto, R. (2021). Location, working capital, corporate governance, and profitability: The case of Indonesian manufacturing firms. *International Journal of Business and Society*, 22(2), 881–900. <https://doi.org/10.33736/ijbs.3765.2021>
- Pila, J., Muturi, W., & Olweny, T. (2022). Moderating Effect of Manufacturing Firm Size on Indicators of Financial Uncertainty and Performance of Kenya Manufacturing Firms. *Journal of Accounting and Finance in Emerging Economies*, 8(4), 489–500. [www.publishing.globalcsrc.org/jafee](http://www.publishing.globalcsrc.org/jafee)
- Purnamasari, D. dkk. (2023). *Metodologi Penelitian Akuntansi: Mengumpulkan Bukti, Menyusun Analisis, Mengkomunikasikan Dampak*. Jambi: PT. Sonpedia Publishing Indonesia.
- Wijaya, J. H., Saputera, D., & Hendiarto, R. S. (2021). Measurement of Food and Beverage Company Profitability for 2014-2018 Using Working Capital, Debt to Equity Ratio and Current Ratio Turkish Journal of Computer and Mathematics Education Research Article. *Turkish Journal of Computer and Mathematics Education*, 12(8), 1376–1380.
- Yuliani, Karim, S., Umrie, R. H., Bakar, S. W., & Robiyanto, R. (2021). Moderating effect of business environment to working capital and profitability in Indonesia. *Contaduria y Administracion*, 66(2), 1–21. <https://doi.org/10.22201/fca.24488410e.2021.2480>