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THE INFLUENCE OF WORKING CAPITAL MANAGEMENT, FINANCIAL CHARGES, AND MACROECONOMICS ON PROFITABILITY IN THE BUILDING CONSTRUCTION SUB-SECTOR

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Abstract:

Background: Efficient working capital management is critical for building construction companies. Inadequate management can lead to operational inefficiencies, elevated financial charges, and reduced profitability. The stability of the national economy can also influence corporate performance.
Purpose: This study aims to analyze the impact of working capital management, financial charges, and macroeconomic factors on the profitability of building construction sub-sectors.
Design/methodology/approach: This study utilizes quarterly financial report data from ten construction companies listed on the Indonesia Stock Exchange (IDX) from 2015 to 2023. Macroeconomic data is obtained from the Badan Pusat Statistik and Bank Indonesia. The data is analyzed using descriptive statistics, comparative testing, and panel data regression.
Findings/Results: Descriptive statistics indicate a fluctuating trend during the observation period, with days of sales outstanding dominating cash conversion cycle. Comparative tests reveal significant differences in working capital management, interest coverage ratio, and profitability before and during COVID-19. The panel data regression results indicate that days of inventory outstanding, days of payable outstanding, debt to equity ratio, working capital interest rates, construction GDP growth, and sales growth all have significant effects on profitability.
Originality/value (State of the art): Thus, it can be concluded that the manager of building construction companies must give significant attention to the management of accounts payable and liabilities to enhance profitability.

Keywords: building construction, financial charges, macroeconomics, profitability, working capital management

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INTRODUCTION

Infrastructure development was one of the five priority programs of the president for the period 2014-2019 and continued in 2019-2024. This is driven by the important role of infrastructure development as one of the indicators of a country's competitiveness. The multiplier effect of infrastructure development includes equalizing access to infrastructure facilities, absorbing labor force, and increasing economic growth. The contribution of the construction sector to the Gross Domestic Product (GDP) ranked fourth largest from 2015 to 2021 (Figure 1), with an average of 10.34 percent until 2023 (BPS, 2024).

Government support in this sector is also evident through the increasing trend of infrastructure budget allocations from 2015 to 2019 (Kemenkeu, 2022). Despite experiencing a decline in 2020 due to budget reallocation aimed at combating the COVID-19 pandemic (Figure 2). The spread of COVID-19 has caused Indonesia's economic growth to contract by 5.32 percent. The construction sector has become the fourth most affected sector with a revenue decline of 87.94 percent in July 2020 (BPS, 2020). This is triggered by delays in project completion and cancellations, budget increases, disruptions in the supply chain, and layoffs (Wibowo 2021), which subsequently lead to a decrease in profitability.

On the other hand, profitability serves as a key indicator of financial health of a company and influences the decisions of investors and creditors (Rauhaty 2021). According to Louw et al. (2019), a decrease in profitability is influenced by suboptimal working capital management. Working capital that is not managed properly can lead to operational inefficiencies, decreased profitability, difficulties in meeting short-term obligations (Al-Mohareb, 2019), and potential bankruptcy (Ren et al. 2019). Figure 3 illustrates that the trend of the average net profit decline began in the first quarter of 2019.

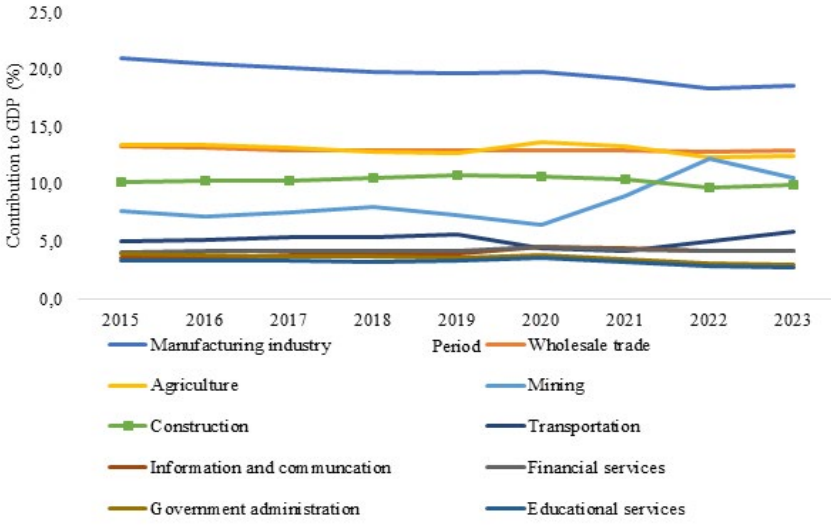

Figure 1. GDP of Indonesia by Industrial Origin

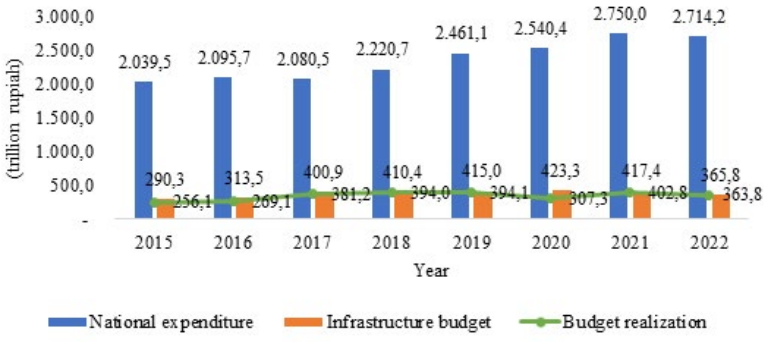

Figure 2. Budget and realization of infrastructure 2015-2022

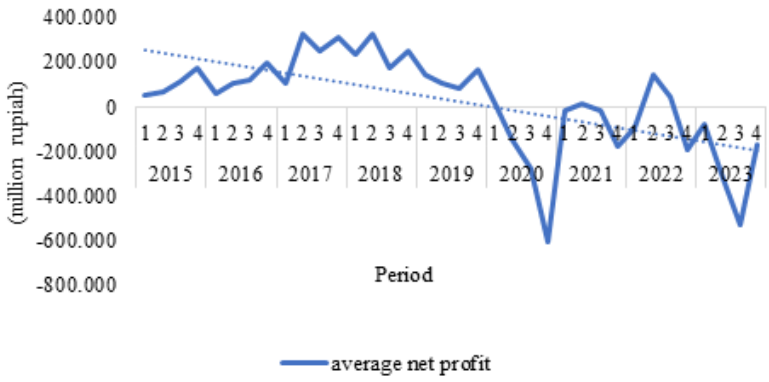

Figure 3. Accumulated net profit of the building construction subsector 2015-2023

According to Yin et al. (2021), the efficiency of working capital management is crucial for construction companies in Malaysia, as investment decisions are predominantly influenced by current assets. In the building construction subsector in Indonesia (Table 1), current assets also dominate the total assets of companies, averaging 66.8 percent. Accounts receivable constitutes the largest component, with a proportion reaching 56.6 percent. Meanwhile, the primary source of funding consists of liabilities, accounting for an average of 62.2 percent. Current liabilities dominate at 77.7 percent. Table 1 also presents data on accounts receivable and accounts payable turnover, which experienced a decline from 2015 to 2021. This fact reinforces the argument regarding the urgency of optimal working capital management in the building construction subsector in Indonesia.

Besides being influenced by internal company factors, profitability can also be affected by external factors (Hussain et al. 2021). Rizki et al. (2019) concluded that macroeconomic conditions significantly influence profitability. Puci et al. (2023) also demonstrated that interest rates have a significant impact on profitability. Meanwhile, Semenova and Vitkova (2019) found that the financial stability of the construction sector is directly influenced by the country's conditions. The research findings of Tertia and Subroto (2021) indicate that the phenomenon of the COVID-19 pandemic has a negative impact on the financial performance of state-owned enterprises in the construction sector. Furthermore, companies affected by COVID-19 tend to experience an increase in the cash conversion cycle period (Hamshari et al. 2022). Therefore, external factors such as macroeconomic indicators are also considered to play a crucial role in the financial decision-making process to optimize company profitability.

Previous studies on the impact of working capital management on firm profitability have shown varied results. The majority of research concludes that there is a negative relationship between working capital management and profitability (Toan et al. 2017; Linh and Mohanlingam 2018; Soukhakian and Khodakarami 2019). Other studies have found that working capital management and profitability have a positive relationship (Rauhaty, 2021; Erdian, 2022). Furthermore, there is research suggesting that working capital management does not significantly affect company profitability (Nur et al. 2016; Yin et al. 2021). This could be due to the different characteristics of the industries being studied (Louw et al. 2019). With this background, this study will analyze the influence of working capital management, financial charges, and macroeconomic indicators on the profitability of companies in the building construction sub-sector in Indonesia.

The variables of working capital management utilized include the days of inventory outstanding (DIO), days of sales outstanding (DSO), days of payables outstanding (DPO), and the cash conversion cycle (CCC). Financial charges (EBK) will be approximated using the interest coverage ratio. The macroeconomic factors employed include the interest rate on working capital (IRC) and the growth of Gross Domestic Product in the construction sector (PDBk). The selected control variables are the Debt-to-Equity Ratio (DER) and Sales Growth (SG). Finally, profitability will be proxied by Return on Assets (RoA) and Return on Equity (RoE).

Table 1. Short-term financial condition of the building construction sub-sector

Short-term financial condition	Year									Average
	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Current asset/ Total asset (%)	74.2	70.0	70.3	70.6	69.7	64.3	62.2	60.9	59.4	66.8
Receivables/ Current asset (%)	56.0	56.2	56.5	60.0	61.6	57.3	55.1	53.6	53.3	56.6
Account receivable turnover (ratio)	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.4	0.5	0.4
Inventories/ Current asset (%)	7.5	6.2	5.9	7.9	8.6	11.8	12.4	13.6	14.6	9.8
Inventories turnover (ratio)	13.1	18.7	27.4	163.8	91.1	71.4	59.2	83.9	87.6	68.5
Liabilities/Liabilities and Equity (%)	62.0	60.0	60.9	63.4	65.4	64.5	61.8	60.3	61.7	62.2
Current liabilities/ Liabilities (%)	82.7	79.8	80.5	78.4	78.2	77.7	75.6	73.6	73.0	77.7
Account payable turnover (kali)	1.9	1.3	1.3	1.2	1.1	0.9	1.0	1.2	1.3	1.2
Financial charges/ Revenues (%)	2.3	2.4	2.6	3.5	5.5	9.3	8.8	6.7	8.1	5.5

METHODS

This study uses quantitative methods with secondary data sources in the form of quarterly financial reports of companies from the first quarter of 2015 to the fourth quarter of 2023. The company's financial statements were downloaded from the Indonesia Stock Exchange (IDX) website, IDN financials, and the company's website. Meanwhile, macroeconomic data was obtained from the Badan Pusat Statistik (BPS) and Bank Indonesia (BI).

The sampling was conducted using purposive sampling technique with criteria including; 1. Companies classified under the building construction sub-sector listed on the IDX; 2. Publishing complete quarterly financial reports, starting from March 2015 to December 2023; Hence, 10 companies were selected consisting of 4 BUMN and 6 BUMS as research samples.

Descriptive analysis is used to explain the condition of working capital management, interest coverage ratio, and profitability of companies in the building construction sub-sector as well as general macroeconomic indicators. Comparative testing aims to compare research variables in the periods before and during the COVID-19 pandemic. Meanwhile, panel data regression analysis aims to determine the influence of working capital management, interest coverage ratio, and macroeconomic indicators on company profitability. Panel data regression is chosen to produce more efficient econometric estimations (Baltagi, 2005). The stages in panel data regression consist of determining the best estimation model, testing classical assumptions, testing model feasibility, and hypothesis testing. Thus, the panel data regression model in this study is formulated as follows:

RoA Model 1:

$$RoA_{it} = \alpha + \beta_1 LnCCC_{it} + \beta_2 EBK_{it} + \beta_3 IRC_{it} + \beta_4 PDBk_{it} + \beta_5 DER_{it} + \beta_6 SG_{it} + \varepsilon_{it}$$

RoA Model 2:

$$RoA_{it} = \alpha + \beta_1 LnDIO_{it} + \beta_2 LnDSO_{it} + \beta_3 LnDPO_{it} + \beta_4 EBK_{it} + \beta_5 IRC_{it} + \beta_6 PDBk_{it} + \beta_7 DER_{it} + \beta_8 SG_{it} + \varepsilon_{it}$$

RoE Model 1:

$$RoE_{it} = \alpha + \beta_1 LnCCC_{it} + \beta_2 EBK_{it} + \beta_3 IRC_{it} + \beta_4 PDBk_{it} + \beta_5 DER_{it} + \beta_6 SG_{it} + \varepsilon_{it}$$

RoE Model 2:

$$RoE_{it} = \alpha + \beta_1 LnDIO_{it} + \beta_2 LnDSO_{it} + \beta_3 LnDPO_{it} + \beta_4 EBK_{it} + \beta_5 IRC_{it} + \beta_6 PDBk_{it} + \beta_7 DER_{it} + \beta_8 SG_{it} + \varepsilon_{it}$$

Operational definition of variables: RoA (Net income/ total assets x 100); RoE (Net income/total equity x 100); LnCCC (DIO + DSO – DPO); LnDIO (Inventories/ cost of revenues x 90); LnDSO (Receivables/revenues x 90); LnDPO (Trade payables/cost of revenues x 90); EBK (EBIT/interest expense); IRC (Working capital interest rate); PDBk ((PDBkt – PDBkt-1)/PDBkt-1); DER (Total liabilities/total equity); SG ((SGt – SGt-1)/SGt-1).

Hypothesis

Companies with large inventory stocks require a greater amount of capital, which leads to an increase in storage costs and the risk of damaged goods. Toan et al. (2017) and Louw et al. (2019) concluded that reducing investments in inventory would enhance the profitability of the company. Therefore, the first hypothesis in this study is:

H_1: Days of inventory outstanding has a significant negative effect on profitability.

If a company implements a lenient credit sales policy, cash inflows will be delayed and accounts receivable will increase. This can lead to a decline in the company's profitability. Toan et al. (2017) and Al-Mohareb (2019) demonstrate that a shorter collection period can enhance a company's profitability. Hence, the second hypothesis in this research is as follows:
H_2: Days of sales outstanding has a significant negative effect on profitability.

Trade payables may incur costs when suppliers offer discounts for early payment (Brigham and Houston, 2007). Therefore, companies need to compare the benefits of paying suppliers early with the costs of forgoing the discount. Panda et al. (2020) found that increased profitability can be achieved by extending the trade payable period. Thus, the third hypothesis in this research is as follows:
H_3: Days of payable outstanding has a significant positive effect on profitability.

The shorter the Cash Conversion Cycle (CCC), the better it is for the performance of the company. When a company receives cash more rapidly, it does not require additional working capital from third parties. Toan et al. (2017) and Ren et al. (2019) demonstrate that there is a negative relationship between CCC and company performance. Therefore, the fourth hypothesis in this study is:
H_4: Cash conversion cycle has a significant negative effect on profitability.

The higher the growth rate of sales or assets, the more a company relies on external financing (Ross et al. 2010). The acquisition of credit incurs interest expenses that can reduce profits (Twesige and Gasheja, 2019). Consequently, the fifth hypothesis in this study is:
H_5: EBIT/interest expense has a significant positive effect on profitability.

The increase in interest rates will raise the financial charge on companies, prompting a reduction in the use of external working capital. Zulfikar et al. (2020) concluded that a company's profits will decline when interest rates rise. Based on this explanation, the sixth hypothesis is as follows:
H_6: Working capital interest rate has a significant negative effect on profitability.

The growth in Gross Domestic Product (GDP) indicates an increase in corporate revenue through heightened demand for construction services. Rizki et al. (2019) concluded that GDP growth significantly and positively impacts profitability. Thus, the seventh hypothesis in this research is:
H_7: GDP growth in construction has a significant positive effect on profitability.

High debt will increase the financial charges of the company, thereby reducing profitability. Research conducted by Rizki et al. (2019) and Pratama (2021) also concluded that the DER has a significant negative effect on profitability. Therefore, the eighth hypothesis of this study is as follows:
H_8: Debt to equity ratio has a significant negative effect on profitability.

Sales growth can enhance the economies of scale for a company, optimize asset utilization, and promote efficiency, resulting in an increase in net income. The positive impact of sales growth on the profitability of construction and property firms has also been identified in the research conducted by Rizki et al. (2019). Hence, the ninth hypothesis in this study is:
H_9: Sales growth has a significant positive effect on profitability.

Inefficient working capital management leads companies to increase borrowing to meet operational needs. The acquisition of credit is then followed by financial expense borne by the company. Excessive interest expenses will suppress profitability and investor preference for investment (Arhinful and Radmehr, 2023). External funding is also influenced by interest rate movements that impact company profits (Erdian 2022). Furthermore, the smoothness of construction activities also depends on the country's economic situation (Semenova and Vitkova, 2019). Thus, the research framework diagram is shown in Figure 4.

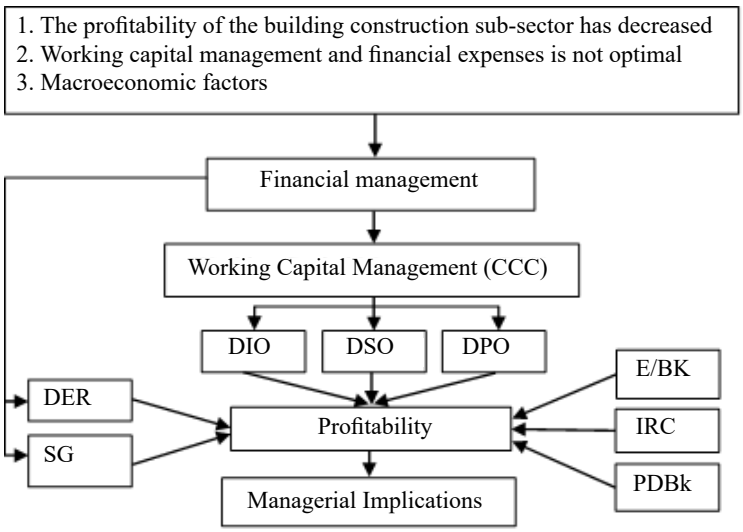

Figure 4. Research framework

RESULTS

Descriptive statistics

Descriptive statistical analysis aims to describe the characteristics of working capital management, interest coverage, and profitability of construction companies. Additionally, it examines the dynamics of macroeconomic indicators in Indonesia from 2015 to 2023. Table 2 shows that the main components of working capital management in construction are DSO, with an average value reaching 287.86 days. Meanwhile, DIO becomes the smallest component with an average value of 70.27 days. The average CCC period is 195.38 days. This means that construction companies need more than six months to convert working capital tied up in operational activities into cash obtained from customers. A lower standard deviation value than the mean indicates that the data distribution of CCC is quite concentrated.

Next, the average EBK is 166.92. The minimum and maximum values of EBK are -17.56 and 8263. A high standard deviation in EBK indicates that the data distribution of EBK is highly variable. Furthermore, the average IRC during the observation period is 9.98%. The minimum value of 8.02% occurred in Q2 2022, when the government sought to recover the national economy from the impact of the COVID-19 pandemic. Meanwhile, the maximum value of 12.56% occurred in Q1 2015. As for the growth of GDPk, it has an average of 4.09% with the minimum growth occurring in Q4 2020 as a result of the COVID-19 pandemic. Conversely, the highest GDPk growth occurred in Q4 2023. Lastly, the average RoA and RoE in building construction companies are 0.23% and -1.98% respectively. Both variables have higher median and standard deviation values. As a result, the majority of companies achieve profits that are higher than the mean with a diverse range of data distribution.

Based on the ownership of the business entity, it can be seen that BUMN have higher average values of DIO, DSO, DPO, and CCC compared to BUMS (Figure 5). DIO, DSO, DPO, and CCC for BUMN also show an increasing trend from 2018 to 2021. Meanwhile, in BUMS, DIO exhibits a trend that is relatively more gradual. Although there has been a slight increase in DSO and DPO during the pandemic. Thus, compared to BUMS, BUMN require more time to sell inventory, collect accounts receivable, and pay business debts to suppliers.

On average, EBIT to financial charges has shown a decreasing trend since 2015 and has deepened during the pandemic period. This decline is caused by the increased use of short-term debt during the COVID-19 era. As a result, the company's ability to pay financial charges has diminished. Subsequently, prior to the pandemic, the average growth rate of the construction GDP reached 5.89% or higher than the aggregate GDP which was only valued at 4.93%. Meanwhile, during the pandemic, the average growth rate of the construction GDP contracted more deeply compared to the aggregate GDP (Figure 6). Lastly, the working capital interest rate has shown a decreasing trend from 2015 to Q2 2022.

Figure 7 shows the profitability movements of BUMN and BUMS. BUMN have a more fluctuating RoA trend compared to the relatively stable RoE. The average RoE has a higher value than RoA, although both declined during the pandemic. The highest average RoA and RoE are held by PTPP with values reaching 0.63% and 2.21% respectively. In private companies, the decline in RoA has been occurring since 2015 and deepened during the COVID-19 pandemic. RoE had a relatively stable movement before the pandemic, but then reached its lowest point in Q2 2020, averaging -60.2%. The highest average RoA and RoE in BUMS were achieved by TOTL with average values of 1.42% and 4.06%.

Comparative test

The working capital management structure in both business entities is equally dominated by DSO. DIO is the smallest component. However, DIO, DSO, DPO, and CCC in BUMN experienced significant changes (Table 3) before and during the COVID-19 pandemic. Whereas in BUMS, changes only occurred in DSO and CCC (Table 4). Subsequently, both business entities experienced a decrease in their ability to pay financial charges. Meanwhile, both working capital interest rates and construction GDP also underwent significant median changes before and during COVID-19. Lastly, in terms of profitability proxies, both BUMN and BUMS recorded a deeper decline in RoE compared to RoA.

Table 2. Descriptive statistics of research variables

Variable	Mean	Median	Min.	Max.	Std Dev.
DIO	70.27	41.01	0.00	406.46	87.33
DSO	287.86	244.88	70.91	865.49	149.88
DPO	162.75	113.73	13.72	657.81	132.14
CCC	195.38	165.95	-25.11	697.94	110.29
EBK	166.92	2.59	-17.56	8263.10	772.17
IRC	9.98	10.11	8.02	12.56	1.39

Variable	Mean	Median	Min.	Max.	Std Dev.
PDBk	4.09	5.47	-5.67	7.68	3.49
DER	2.74	1.85	0.44	113.38	6.53
SG	8.12	6.51	-71.98	118.66	39.32
RoA	0.23	0.45	-25.34	14.23	2.63
RoE	-1.98	1.21	-356.34	27.87	23.91

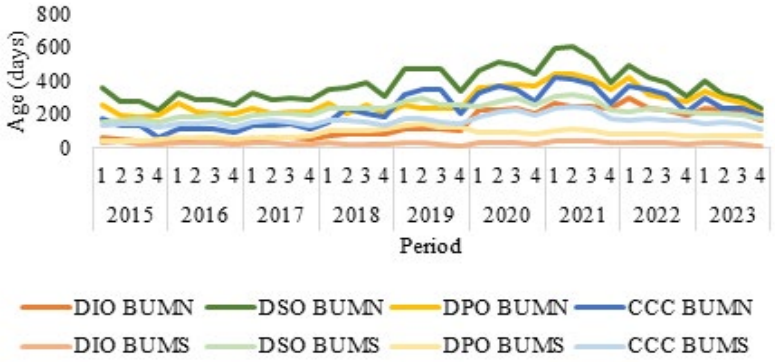

Figure 5. Movement of working capital management in the building construction sub-sector

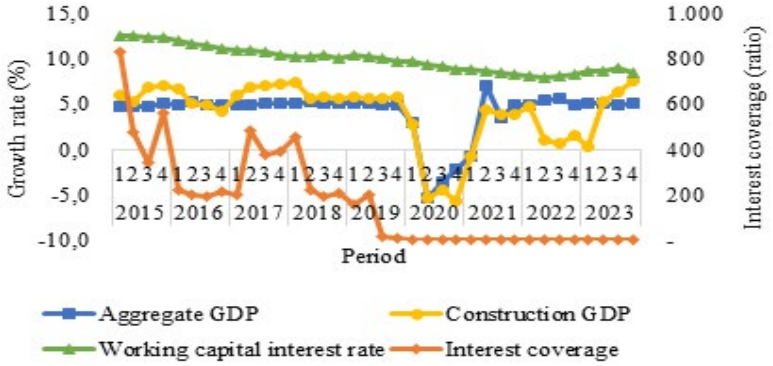

Figure 6. Movement of interest coverage, construction GDP, and interest rates

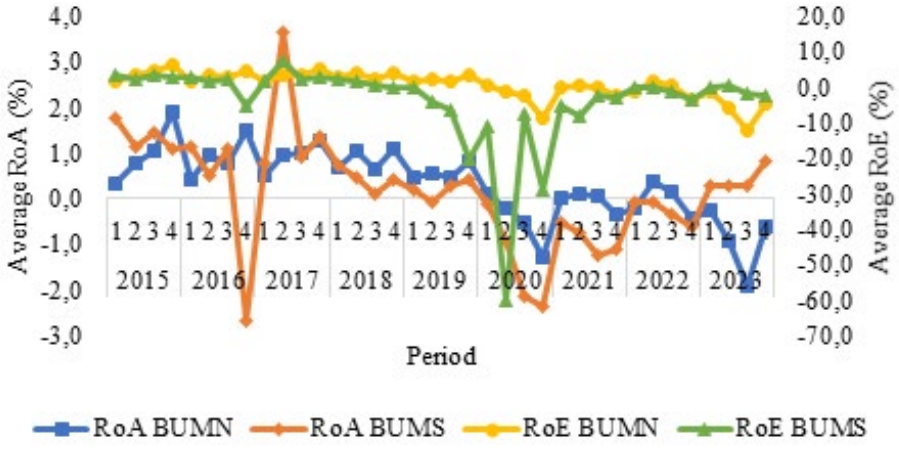

Figure 7. Movement of profitability in the building construction sub-sector

Table 3. BUMN comparative test

Variable	Period	Median/ Mean	Prob.	Conclusion
*DIO	Before	97.39	0.000	Significantly different
	During	240.60		
DSO	Before	363.98	0.020	Significantly different
	During	446.44		
*DPO	Before	243.94	0.000	Significantly different
	During	368.52		
CCC	Before	188.94	0.000	Significantly different
	During	326.11		
EBK	Before	3.38	0.000	Significantly different
	During	1.42		
ROA	Before	0.61	0.000	Significantly different
	During	0.04		
ROE	Before	2.26	0.000	Significantly different
	During	0.22		

Table 4. BUMS comparative test

Variabel	Periode	Median	Prob.	Conclusion
DIO	Before	3.59	0.260	Insignificant
	During	10.43		
DSO	Before	189.94	0.003	Significantly different
	During	227.53		
DPO	Before	74.06	0.172	Insignificant
	During	88.89		
CCC	Before	146.16	0.000	Significantly different
	During	183.10		
EBK	Before	2.49	0.000	Significantly different
	During	0.29		
ROA	Before	0.56	0.006	Significantly different
	During	0.16		
ROE	Before	1.47	0.001	Significantly different
	During	0.26		

During a crisis, all companies experience an increase in CCC. This finding supports the research by Hamshari et al. (2022) which states that companies affected by COVID-19 tend to experience an increase in CCC period. Subsequently, the majority of companies also experience a decrease in their ability to pay financial charges as well as a decrease in profitability.

Panel data regression

The Hausman test results for RoA model 1 and 2 as well as RoE model 1 and 2 have a probability value of 0.0000 or less than 0.05. Therefore, the Fixed Effect Model (FEM) is selected as the best estimation model for all models. The next step is to test the classical assumptions. Based on the normality test results, the Jarque-Bera probability values for RoA model 1 and 2 also RoE model 1 and 2 are 0.0000, which is less than 0.05. Therefore, the residual data is not normally distributed. However, referring to the central limit theorem which states that the larger the sample size (n > 30), the closer it will approach a normal distribution (Lind et al. 2012). Thus, it can be said that the residuals in this study approximate a normal distribution. This is because the processed sample size reached 298.

Next, the efficiency of the model due to heteroskedasticity issues is improved by correcting standard errors, known as White's robust standard errors. This method estimates residual variance robustly, making the standard errors of regression coefficients more accurate. Finally, autocorrelation correction is performed by estimating

ρ from the Durbin-Watson (DW) value, which is then transformed into the generalized difference equation (Basuki, 2017). Thus, the DW value increases in the range of 1.9779 to 2.0398. The multicollinearity test results (Table 5; Table 6) show that the correlation values between variables < 0.8, indicating that all models are free from multicollinearity issues.

The F test on RoA model 1 and 2 as well as RoE model 1 and 2 resulted in a probability value of 0.0000 less than 0.05. This means that the independent variables collectively have a significant impact on the dependent variable. The coefficient of determination (R2) values for each model are 0.383, 0.443, 0.354, and 0.397 respectively. Consequently, in sequence each model can explain the diversity of the dependent variables by 38.3%, 44.3%, 35.4%, and 39.7%. Meanwhile, the remaining 61.7%, 55.7%, 64.6%, and 60.3% are explained by other variables outside the study. The results of the partial regression coefficient test (t-test) are presented in Table 7.

Table 7 presents the results of panel data regression in the building construction sub-sector. It can be observed that DIO has a significant negative impact on RoA and RoE. Inventory stored for a long time will require a larger working capital due to implications on increased storage costs, handling, insurance, and the risk of material damage to raw materials. Subsequently, this has an impact on the decrease in the company's net profit. Thus, these results are in line with the research hypothesis. The negative relationship between DIO and profitability is consistent with the studies by Toan et al. (2017) and Louw et al. (2019).

Next, DSO statistically does not significantly affect RoA and RoE. This is suspected to occur due to intense competition in the construction business in Indonesia (BPS 2023). As a result, construction companies tend to use loose credit sales policies to attract project owners in order to increase revenue. The result is not in line with the research hypothesis, but is consistent with the studies of Yin et al. (2021) and Erdian (2022) which concluded that DSO does not significantly affect profitability.

DPO has a significant negative impact on RoA and RoE. Prolonged accounts payable periods lead suppliers to restrict credit sales and discounts to the company. Consequently, the availability of cheap financing options diminishes. As a result, the company needs to access funding from banks, leading to increased financial charges and reduced profitability. The findings of this study do not align with the research hypothesis, but are similar to Yin et al. (2021) which proves that the higher the DPO, the lower the profitability in construction companies in Malaysia.

Table 5. CCC correlation matrix

Variable	CCC	EBK	IRC	PDBK	DER	SG
CCC	1.00	-0.12	-0.33	-0.24	0.35	-0.14
EBK	-0.12	1.00	0.00	0.11	-0.10	0.00
IRC	-0.33	0.00	1.00	0.49	-0.10	0.07
PDBK	-0.24	0.11	0.49	1.00	-0.04	0.06
DER	0.35	-0.10	-0.10	-0.04	1.00	0.01
SG	-0.14	0.00	0.07	0.06	0.01	1.00

Table 6. DIO, DSO, DPO correlation matrix

Variable	DIO	DSO	DPO	EBK	IRC	PDBK	DER	SG
DIO	1.00	0.23	0.42	-0.38	-0.16	-0.12	0.39	0.00
DSO	0.23	1.00	0.79	-0.13	-0.10	-0.15	0.69	-0.13
DPO	0.42	0.79	1.00	-0.15	-0.16	-0.16	0.72	-0.04
EBK	-0.38	-0.13	-0.15	1.00	0.00	0.11	-0.10	0.00
IRC	-0.16	-0.10	-0.16	0.00	1.00	0.49	-0.10	0.07
PDBK	-0.12	-0.15	-0.16	0.11	0.49	1.00	-0.04	0.06
DER	0.39	0.69	0.72	-0.10	-0.10	-0.04	1.00	0.01
SG	0.00	-0.13	-0.04	0.00	0.07	0.06	0.01	1.00

Table 7. Regression results of panel data

Variable	Profitability			
	RoA (1)	RoA (2)	RoE (1)	RoE (2)
C	0.6483	3.5389**	-0.6873	2.4264
DIO		-0.2541***		-0.8229***
DSO		0.1447		2.0638
DPO		-0.7248***		-2.1759**
CCC	-0.1508		0.1628	
EBK	0.0002	0.0002	0.0003	0.0005
IRC	0.0899*	0.0334	0.4061***	0.1913
PDBk	0.0400**	0.0236	0.1123*	0.0751
DER	-0.2601***	-0.1315	-1.5238***	-1.1866**
SG	0.0072***	0.0060***	0.0167***	0.0150***
R-sq.	0.3833	0.4432	0.3549	0.3971
F-stat.	11.27***	12.64***	9.97***	10.46***
DW stat.	2.0398	2.0148	1.9797	1.9779

***) significant at (α) 1%, **) significant at (α) 5%, *) significant at (α) = 10%

Subsequently, CCC statistically does not significantly affect RoA and RoE, and has a different direction of relationship with both. The negative relationship between CCC and RoA indicates that companies can increase profit by reducing CCC. Conversely, a high CCC will increase RoE. Therefore, a balance in working capital management is needed to achieve optimal profit. Thus, the findings of this study do not align with the research hypothesis. Research by Simon et al. (2019) and Yin et al. (2021) also conclude that CCC does not significantly affect profitability.

EBK is statistically insignificant to both profitability proxies. However, it demonstrates a positive coefficient across all research models. This phenomenon is presumed to occur because profitability in the building construction sub-sector is more significantly influenced by inventory period, accounts payable period, and sales growth compared to the ability to meet short-term interest obligations. Consequently, the findings of this study do not align with the research hypothesis and are contrary to the findings of Arhinful and Radmehr (2023).

IRC has a significant positive effect on RoA and RoE. This result contradicts the research hypothesis that suggests that IRC is negatively related to profitability. This is believed to occur because the interest rate on working capital is declining. Thus, it becomes an option for companies to obtain funding at a lower cost. As a result, the financial charges incurred will decrease and profitability can increase. A positive influence of interest rates on profitability was also found in the study by Puci et al. (2023).

PDBK has a significant positive effect on RoA and RoE. Economic growth will drive demand for construction services. As a result, company productivity, liquidity, performance, and profitability will increase. The results are in line with the research hypothesis that GDP growth positively influences profitability. The positive relationship between GDP growth and profitability was also found in the studies by Rizki et al. (2019) and Puci et al. (2023).

The DER has a significant negative impact on RoA and RoE. The average DER during the observation period was 2.74, meaning that debt financing dominates the capital structure of construction companies. High levels of debt will increase the company's interest expenses, leading to a decrease in profit. For that reason, the findings of this study are in line with the research hypothesis which posits that DER has a negative impact on profitability. Pratama (2021) research also concludes that DER significantly negatively affects profitability.

Finally, SG has a significant positive effect on RoA and RoE. This is in line with the research hypothesis that sales growth affects the profitability of the building construction sub-sector. Sales growth can increase a company's economies of scale, optimize asset utilization, and drive efficiency that leads to an increase in net profit. The positive impact of SG on the

profitability of construction and property companies was also found in the studies by Skuflic et al. (2018) and Rizki et al. (2019).

Managerial implications

Working capital management in the building construction sub-sector can be improved through two main strategies. First, by improving the accuracy of material supply forecasting and implementing just-in-time strategies to minimize the amount of inventory that needs to be stored in the warehouse. Second, by implementing a lenient credit sales policy to increase receivables and revenue, as well as taking advantage of discounts from suppliers for paying trade payables in a shorter period of time.

Management of construction companies also needs to pay attention to both macroeconomic factors. Dominance of liabilities over equity can reduce tax expenses, thus the company's net profit will increase. Subsequently, in a stable economic condition, companies can increase the use of loose credit policies to boost business income. Increasing sales growth can be pursued through improving project work quality and diversifying services or products by adding business operation segments.

Another aspect that construction companies need to consider is reducing their reliance on debt financing. Some efforts that can be made include increasing equity by adding retained earnings, selling non-productive assets, and applying for loan restructuring. Companies also need to implement adjustments and mitigation through the application of restrictive current asset investment policies and conservative funding approaches for current assets. This strategy aims to minimize risks while maintaining the company's liquidity during periods of economic crisis.

CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on the research findings, it can be concluded that throughout the observation period, the average working capital management, interest coverage ratio, and profitability of the building construction sub-sector have fluctuating trends. Furthermore, working capital management in this sub-sector is dominated by DSO, while DIO is the smallest component. In BUMN, CCC and its components experienced a significant increase during the pandemic period. On the contrary, BUMN and BUMS experienced a significant decline in their ability to pay interest expenses and profitability during the COVID-19 outbreak.

During the pandemic, 6 out of 10 companies experienced a decrease in average sales, affecting the inventory levels in the warehouse. The economic crisis caused accounts receivable payments from customers to be delayed, impacting the length of payment terms to suppliers. As a result, companies increased the use of short-term bank debt, leading to higher financial costs and erosion of profitability. As for the construction GDP growth, it also contracted significantly and the working capital interest rates consistently showed a declining trend.

All independent variables simultaneously influence RoA and RoE in the building construction sub-sector in Indonesia. Meanwhile, partially, DIO, DPO, and DER have a significant negative effect on both RoA and RoE. As for the variables IRC, PDBk, and SG, they positively affect both profitability proxies. Next, the four research models are able to explain the diversity of dependent variables at 38.3%, 44.3%, 35.4%, and 39.7%. Thus, the remaining 61.7%, 55.7%, 64.6%, and 60.3% are influenced by other variables outside the scope of the study.

Suggestions

As an enrichment in further research, it is recommended to add an interaction variable between working capital management components and macroeconomic indicators. Thus, it is expected to produce a comprehensive study so that financial decision-making by company management becomes more detailed. In addition, the use of primary data can also be carried out to obtain an operational perspective that is in line with the conditions in the field.

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