INTELLECTUAL CAPITAL, NON-PERFORMING LOAN, AND INFLATION’S EFFECTS ON FIRM VALUE: THE MEDIATING ROLE OF FINANCIAL PERFORMANCE

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KEYWORDS
Financial Performance; Firm Value; Inflation; Intellectual Capital; Non-Performing Loan

ABSTRACT
This paper aims to analyze how financial performance can mediate the influence of intellectual capital, non-performing loans and inflation on firm value. Our sample is 39 banks in Indonesia that have passed the criteria based on purposive sampling, with a total of 5 years of observation. This research is quantitative research with a panel data multiple regression model, which will be processed using E-views and a Sobel test calculator to test the mediation effect. The findings of this research show that VACA, VAHU, non-performing loans and inflation have a direct effect on financial performance. However, STVA has no effect. Also directly, VACA, non-performing loans and financial performance influence firm value. However, VAHU, STVA and inflation have no effect on firm value. The results of the Sobel test succeeded in proving that financial performance was able to mediate the influence of VACA, VAHU, non-performing loans and inflation on firm value. However, it failed to prove the mediating influence of financial performance on STVA and firm value.

INTRODUCTION
The development of a country's banking sector can indicate how well or poorly the country's economy is doing (Mishkin, 2009). According to Ningsih (2021:1), banking is the heart of the Indonesian economy since banks in Indonesia help improve the country's economic growth and establish a stable economy.

According to Astuti et al. (2021: 134), a company uses firm value as a metric to assess whether it falls within the category of a good company or not. Increasing a firm's value will demonstrate that it has a positive reputation and a promising future, which will draw in investors (Utomo, 2019:1). The following information on the value of banking businesses listed on the Indonesia Stock Exchange from 2017 to 2021:
On the basis of Table 1. It is well known that the company value has declined during a five-year period. According to Setianto (2016), the low PBV value is a result of the share price fall, which can also be a sign of a decline in the issuer's quality and fundamental performance. Investors will undoubtedly receive a warning signal if a company's fundamental performance and quality regularly deteriorate (Lev, 2018). Therefore, research or studies on the issues that arise are required to improve the attainment of firm value (Enholm, Papagiannidis, Mikalef, & Krogstie, 2022).

Gaining public trust requires banks to have good management or administration that considers the bank's overall health (Judisseno, 2002: 105). According to Article 29 paragraph 2 of Law No. 10 of 1998 Concerning Banking, banks are required to make sure that their institutions meet the criteria for capital adequacy, asset quality, management quality, liquidity, profitability, solvency, and other factors connected to bank activity. Additionally, banks are required to operate in compliance with the prudential banking principle.

The quality of banking management can be seen in the people who work there, as well as in the educational aspect and experience of the staff in dealing with various circumstances that arise (Hery, 2021: 16). The Financial Services Authority (OJK) issued new regulations addressing digital banks in 2021, which are contained in POJK Number 12/POJK.03/2021 Chapter IV Article 23. This highlights the importance of intellectual capital in Indonesian banking. The OJK launched these new policies in order to encourage Indonesia's digital development. According to Wernerfelt in Dekrita (2021: 19), investors will place a high value on enterprises with big capacities (intellectual capital) (Mangoting, Nugroho, & Yanuar, 2019). The same point was expressed by Putri and Miftah (2021), who noted that the existence of intellectual capital helps companies to produce additional value to improve company performance, and if company performance improves, the market will respond by boosting company value.

The principle of prudence (prudential banking) must be applied in the financial element of banking, as stated in Article 29 paragraph 2 of Law No. 10 of 1998. Credit risk is the first risk that the banking sector recognizes as a concern, resulting in the requirements of Basel 1, the entirety of which describes credit risk control (Sunarto et al., 2018: 2). Non-performing loans are one of the indicators used to assess banking credit risk (Vouldis & Louzis, 2018). According to Siswanti et al. (2020: 36), non-performing loans serve as both a gauge of the health of the banking system and a catalyst for the real economy, therefore banks are in charge of responsibly managing credit. According to Murni and Sabijono (2018), poor credit quality will increase risk, particularly if credit provision is carried out without using the principle of prudence and expansion in credit provision is less controlled (Sonjaya & Muslim, 2023). As a result, the bank will bear greater risks, which, if the amount is significant enough, will affect banking performance.
Asset liability management, also known as asset and liability management, essentially aims to sustain the bank's health by foreseeing external changes to inflation, interest rates, and currency exchange rates. (Kustiningsih & Farhan, 2022: 189). The ultimate objective of monetary policy, according to Basmar et al. (2021:76), is to maintain and maintain the stability of the value of the Rupiah, one of which is reflected in a low and stable inflation rate. Depending on how severe the inflation is, it can have both beneficial and bad effects (Khan & Naushad, 2020). According to Suryani (2017:65), rising inflation will have an effect on rising interest rates, which will affect the consistency of credit payments and decrease customer demand for credit. As a result, bank revenue from credit products will decrease, and there is a significant chance that customers won't be able to pay debts (Seira, Elizondo, & Laguna-Müggenburg, 2017).

Financial performance is a summary of a firm's financial situation that is examined using financial analysis techniques to determine if it is in good or bad financial condition and how well the company performed within a specific time period. According to Jumono (2022:5), it is possible to evaluate the performance of the banking sector using a profitability proxy (return on assets), which is a good representation of the company's principal objective of maximizing shareholder value. According to Bank Indonesia Regulation No. 6/9/PBI/2004, 1.5% is the ideal ROA criterion. Basically, the better the return on assets (ROA) ratio, the healthier the bank's business is developing, which ultimately also leads to a rise in the bank's worth (Daryanto, Utami, & Rakhmawati, 2018).

The goal of this research is to identify and analyze the mediating influence of financial performance on the relationship between intellectual capital (IC), non-performing loans (NPL), and inflation on company value based on the context of the problem as described above. It is hoped that this research will provide management with information to further increase the value of their companies (Cheng, Green, Conradie, Konishi, & Romi, 2014).

**RESEARCH METHODS**

This study employs multiple linear regression analysis techniques for panel data using Eviews software to test the hypothesis about the strength of the independent variables (intellectual capital, non-performing loans, and inflation) on firm, as well as the mediating influence (financial performance) using sobel test. Panel data in econometrics is the outcome of combining time series and cross section data with the following model:

\[
ROA_{i,t} = \beta_0 + \beta_1 VACA_{i,t} + \beta_2 VAHU_{i,t} + \beta_3 STVA_{i,t} + \beta_4 NPL_{i,t} + \beta_5 Inflation_{i,t} + \epsilon_{i,t}
\] (1)

\[
PBV_{i,t} = \beta_0 + \beta_1 VACA_{i,t} + \beta_2 VAHU_{i,t} + \beta_3 STVA_{i,t} + \beta_4 NPL_{i,t} + \beta_5 Inflation_{i,t} + \beta_6 ROA_{i,t} + \epsilon_{i,t}
\] (2)

**RESULT AND DISCUSSION**

Results of Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>VACA</th>
<th>VAHU</th>
<th>STVA</th>
<th>NPL</th>
<th>Inflation</th>
<th>ROA</th>
<th>PBV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.12</td>
<td>1.29</td>
<td>0.35</td>
<td>3.65</td>
<td>2.60</td>
<td>0.85</td>
<td>1.43</td>
</tr>
<tr>
<td>Max</td>
<td>1.69</td>
<td>4.03</td>
<td>5.96</td>
<td>22.27</td>
<td>3.61</td>
<td>6.50</td>
<td>5.77</td>
</tr>
</tbody>
</table>
The statistical range of the VACA value is from -3.05 to 1.69, with a mean value of 0.12. The mean value of 0.12 shows that every one-unit increase in capital employed (the entire amount of the company's accessible funds) will be followed by an increase in the company's value added.

The average VAHU value is 1.29, with a statistical range of -6.36 to 4.03. According to the mean value of 1.29, there will be a 1.29-unit increase in value added for every unit that human capital (salary costs and employee benefits) increases.

The STVA value has an average value of 0.35 and a statistical range of -12.39 to 5.96. The mean value of 0.35 means that for every unit increase in structural capital for the company, there will be a 0.35 rise in value added.

According to Bank Indonesia, a bank must have a non-performing loan (NPL) percentage of less than 5% to be considered healthy (Irawati, Maksum, Sadalia, & Muda, 2019). The non-performing loan (NPL) value ranges from 0.05 to 22.27, with an average value of 3.65, according to the statistical table. With a 3.65 average value, it can be said that Indonesian banking is still in good shape. The banks listed on the Indonesian Stock Exchange have a mean NPL less than 5% (Sukmana & Febriyati, 2016).

While the greatest inflation value of 3.61 that occurred in 2017 is seen as not acceptable, the minimum inflation value of 1.68 that occurred in 2020 might still be considered good (Chen, Zhu, & Li, 2020). According to the Indonesian government, inflation will be good at 3.0% in 2022 and 2023 and 2.5% in 2024. It may be concluded that Indonesia will be able to keep the inflation rate at both levels from 2017 to 2021 based on the average value (mean) of 2.6%.

The average return on assets (ROA) for banks is 0.85, according to the data that has been gathered. Because Bank Indonesia, the country's monetary regulator, sets a Return on Assets (ROA) threshold of 1.5 in order for the bank to be considered in good standing, this illustrates that the average ROA attained is still not healthy (Salim & Mundung, 2020).

In this study, the dependent variable, or firm value, has a range of values from 0.21 to 5.77, with an average value of 1.43. This average value shows that Indonesian banking firms still have a good market value because it is more than 1.

Results of Panel Data Regression Analysis

Common Effect Models, Fixed Effect Models, and Random Effect Models are three strategies that can be used for estimating model parameters when using panel data (Fitrianto & Musakkal, 2016).

Selection of Regression Model I (Independent Variables and Intervening Variables)

<table>
<thead>
<tr>
<th>Effects Test</th>
<th>Statistic</th>
<th>d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>8.247953</td>
<td>(38,151)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>219.085283</td>
<td>38</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Source: Processed Output (2023)
The Chow test rejects H0, which indicates that there is no cross-section effect in the data, with a significance value of Cross-section chi-square 0.05. As a result, research using the Fixed Effect Model (FEM) should be continued.

**Tabel 4**
**Hausman-Test for Regression Model I**

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>0.000000</td>
<td>5</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Source: Processed Output (2023)

The Hausman test has a significance level of 1.0000 > 0.05. Accept the null hypothesis that interference has an impact on the cross-sectional data. As a result, the Random Effect Model (REM) should be used to assess the data in this study.

**Tabel 5.**
**Random Effect Model Regression Coefficient - Model I**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.461984</td>
<td>0.296011</td>
<td>-1.560697</td>
<td>0.1203</td>
</tr>
<tr>
<td>VACA</td>
<td>-1.345152</td>
<td>0.271877</td>
<td>-4.947639</td>
<td>0.0000</td>
</tr>
<tr>
<td>VAHU</td>
<td>1.085662</td>
<td>0.077146</td>
<td>14.07274</td>
<td>0.0000</td>
</tr>
<tr>
<td>STVA</td>
<td>-0.010560</td>
<td>0.042672</td>
<td>-0.247468</td>
<td>0.8048</td>
</tr>
<tr>
<td>NPL</td>
<td>-0.101920</td>
<td>0.031497</td>
<td>-3.235842</td>
<td>0.0014</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.175526</td>
<td>0.077920</td>
<td>2.252648</td>
<td>0.0254</td>
</tr>
</tbody>
</table>

Source: Processed Output (2023)

**Selection of Regression Model II (Independent Variables, Intervening and Dependent Variables)**

**Tabel 6.**
**Chow-Test for Regression Model II**

<table>
<thead>
<tr>
<th>Effects Test</th>
<th>Statistic</th>
<th>d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>7.288744</td>
<td>(38,150)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>203.986331</td>
<td>38</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Source: Processed Output (2023)

The Chow test rejects H0, which indicates that there is no cross-section effect in the data, with a significance value of Cross-section chi-square 0.05. As a result, research using the Fixed Effect Model (FEM) should be continued.

**Tabel 7.**
**Hausman-Test for Regression Model II**

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>0.000000</td>
<td>6</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Source: Processed Output (2023)
The Hausman test has a significance level of 1.0000 > 0.05. Accept the null hypothesis that interference has an impact on the cross-sectional data. As a result, the Random Effect Model (REM) should be used to assess the data in this study.

### Table 8.

Random Effect Model Regression Coefficient - Model II

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.561019</td>
<td>0.229018</td>
<td>6.816146</td>
<td>0.0000</td>
</tr>
<tr>
<td>VACA</td>
<td>-0.622159</td>
<td>0.223598</td>
<td>-2.782483</td>
<td>0.0059</td>
</tr>
<tr>
<td>VAHU</td>
<td>0.130595</td>
<td>0.084390</td>
<td>1.547528</td>
<td>0.1234</td>
</tr>
<tr>
<td>STVA</td>
<td>-0.000627</td>
<td>0.033141</td>
<td>-0.018924</td>
<td>0.9849</td>
</tr>
<tr>
<td>NPL</td>
<td>-0.097943</td>
<td>0.025022</td>
<td>-3.914260</td>
<td>0.0001</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.094959</td>
<td>0.061326</td>
<td>1.548425</td>
<td>0.1232</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.123200</td>
<td>0.054585</td>
<td>-2.257047</td>
<td>0.0252</td>
</tr>
</tbody>
</table>

Source: Processed Output (2023)

### Sobel Test

A variable is called intervening if the variable influences the relationship between the independent variable and the dependent variable (Namazi & Namazi, 2016). Sobel test to test the strength of the indirect influence of the independent variable on the dependent variable through the intervening variable (Natsir & Yusbardini, 2020). In this research, to test this effect, we will use the sobel test calculator from the danielsoper.com website.

![Sobel Test Calculator Display](image)

### How Intellectual Capital Impacts Financial Performance

Based on the results of the partial test (t), VACA has a probability value of 0.000 < α = 0.05 with a path coefficient value of -1.34. This means that VACA has a negative and significant effect on financial performance, which is contrary to the hypothesis of this research (Deniswara, Uyuun, Lindawati, & Willnaldo, 2019). The findings of this study are consistent with those of Endri (2018), who discovered that VACA had a negative and significant impact on financial performance. This unfavorable effect is assumed to exist because VACA has a connection to the usage of capital while acquiring physical assets (Baum, Crosby, & Devaney, 2021). Andika & Astini (2022), who discovered the same results and concluded that VACA had a negative and significant impact on financial performance (ROA), noted that this was because some companies had negative coefficient values, which caused the negative effect of VACA on ROA to arise. As a result, many businesses are unable to make use of the resources that both CA and CE businesses have. Hodijahm et al.’s (2023) study, which asserts that VACA has a favorable impact on firm financial performance, does not support the findings of this study.

### How Non Performing Loan Impacts Financial Performance
**How Inflation Impacts Financial Performance**

Based on the results of the partial test \(t\), NPL has a probability value of \(0.000 < \alpha = 0.025\) with a path coefficient value of \(0.17\). This means that inflation has a positive and significant effect on financial performance, which is contrary to the hypothesis of this research (Adu, Domfeh, & Denkyirah, 2016). The findings of this study are corroborated by the findings of Tan and Floros (2012), who investigated the impact of inflation on banking profitability in China (Tan, 2016). That said, predicted inflation will allow banks to modify interest rates, resulting in revenues increasing faster than costs, which will benefit profitability. The similar point was made by Jackson et al. (2021), who investigated the impact of inflation on financial performance in Sierra Leone. However, there are several studies that found results that were not in line with this research, such as research conducted by Almansour et al. (2021) who found a negative and significant influence between inflation and company financial performance.

**How Intellectual Capital Impacts Firm Value**

Based on the results of the partial test \(t\), VACA has a probability value of \(0.015 < \alpha = 0.05\) with a regression coefficient of \(-0.62\), which means that VACA has a negative and significant effect on company value. This study's findings are consistent with those of Hamidah et al. (2015). This is because some companies have not been able to manage physical capital efficiently, so they have not been able to attract investors to invest their capital in the company. This study contradicts the findings of Nguyen and Doan (2020), who found that VACA had a positive influence on firm value.

**How Non Performing Loan Impacts Firm Value**

Based on the results of the partial test \(t\), NPL has a probability value of \(0.000 > \alpha = 0.05\) and a path coefficient value of \(-0.09\), which indicates that partially non-performing loans have a negative and significant effect on company value. The findings of this study are consistent with research by Olalere et al. (2019), who looked at the effect of financial risk on firm value in banking in 5 ASEAN countries. According to rumors, banks would face greater risks as a result of bad credit quality (De Santis, 2012). Banks run significant risks when lending is unrestrained. This risk comes in the form of debtors having trouble repaying credit, which, if the sum is significant enough, can have an impact on the bank's income and, consequently, the performance of the banking industry (Mendoza & Rivera, 2017). Reduced
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banking income will send a bad signal to investors, which eventually lowers the value of the company. Murni and Sabijono (2018), on the other hand, discovered that non-performing loans had a positive and significant effect on firm value.

How Inflation Impacts Firm Value

Based on the results of the partial test (t), inflation has a probability value of 0.123 > α = 0.05 and a path coefficient value of 0.09, which indicates that inflation has a positive and insignificant effect on company value. This study's findings are consistent with those of Purnamasari & Sartika (2023) and Irdilah & Tanjung (2022). This is due to the fact that the inflation rate is still low and at a manageable level, which ultimately has no impact on investors' choices to keep purchasing firm shares. Budiharjo (2021), on the other hand, discovered results that showed inflation had a negative and significant impact on firm value.

How Financial Performance Impacts Firm Value

Based on the results of the partial test (t), inflation has a probability value of 0.025 < α = 0.05 with a path coefficient value of -0.12, which indicates that financial performance has a negative and significant effect on company value. The findings of this study are consistent with those of Suryana & Rahayu (2018) and Jin et al. (2022) studies. It is said that profitability, a proxy for ROA, has a detrimental impact on company value due to both internal and external causes. If ROA is below average, internal reasons may manifest. In contrast, external factors are those that originate from outside the firm and are beyond its control (McKenny, Short, Ketchen Jr, Payne, & Moss, 2018). The findings of this study contradict those of Widagdo and Sa’diyah (2020) and Agusti et al. (2022), who claim that firm performance as evaluated by return on assets has a positive and significant impact on company value.

How Intellectual Capital Impacts Firm Value through Financial Performance

Based on the results of the Sobel test, the probability value is 0.015 < α = 0.05 and the path coefficient value is 0.16. This indicates that financial performance is able to mediate the relationship between VACA and company value. The findings of this study are consistent with those of Wijaya et al. (2020) and Khusnah & Anugraini (2021). It is believed that organizations can generate added value from available physical capital. While this does not directly contribute to company value, increased earnings due to available physical capital would indirectly raise the value of the company (Suhendra, 2015). However, research by Natsir & Bangun (2020), which claims that financial performance is unable to mediate the influence of VACA on firm value, does not support this research.

How Non Performing Loan Impacts Firm Value through Financial Performance

Based on the results of the Sobel test, the probability value is 0.025 < α = 0.05 and the path coefficient value is 0.01. This indicates that financial performance is able to mediate the relationship between NPL and company value with a significant positive influence. According to Kasmir (2010: 100), one of the goals of extending credit is to generate profits, which are realized in the form of interest payments that banks receive in exchange for the services and credit fees they charge their clients (Manurung & Manurung, 2019). Banks who are still able to exercise appropriate credit management and supervision will see an increase in banking income.
How Inflation Impacts Firm Value through Financial Performance

Based on the results of the Sobel test, the probability value is 0.043 < \( \alpha = 0.05 \) and the path coefficient value is -0.02. This indicates that financial performance is able to mediate the relationship between inflation and company value with a significant negative influence. According to Samsul (2006:201), macro factors influence corporate performance, and changes in company performance fundamentally alter share prices in the market. Fundamentalist investors will value shares based on the company's current success as well as its expectations for future performance (Palat, 2016). If performance improves, the share price rises; if performance falls, the share price falls. If one of the macro variables changes, investors will react positively or adversely based on whether the change is positive or negative in their eyes.

CONCLUSIONS

The findings of this study partially successful in determining the impact of VACA, VAHU, non-performing loans, and inflation on financial performance, but failed to identify any impact of STVA on financial performance. This study's findings also partially succeeded in determining the impact of VACA, non-performing loans, and financial performance on firm value. They did not, however, discover any impact of VAHU, STVA, or inflation on firm value. If seen from the Sobel test, the results of this research have succeeded in proving that financial performance is able to mediate the influence between VACA, VAHU, non-performing loans and inflation on company value. However, this research failed to prove that financial performance is able to mediate the influence of STVA on company value. Suggestions for further research are to add or update the research year. Apart from that, research can also add other variables that are thought to influence company value and financial performance, both from external and internal factors.

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