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# The Effect of Intellectual Capital and Profitability on Financial Distress in Manufacturing Companies in The Building Construction Sub-Sector Listed on The IDX

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**Abstract**

This study aims to analyze the effect of intellectual capital on financial distress conditions in manufacturing companies in the building construction sub-sector listed on the Indonesia Stock Exchange (IDX). Intellectual capital is an intangible asset that plays an important role in creating added value for the company. This study uses the Value Added Intellectual Coefficient (VAIC™) method to measure intellectual capital, which consists of three main components, namely human capital, structural capital, and physical capital. Financial distress is measured using the Altman Z-Score prediction model. The population of this study is all building construction sub-sector manufacturing companies listed on the IDX during the 2018-2022 period as many as 22 companies. The sample was selected using purposive sampling technique with criteria with a sample number of 13 companies. The data used is secondary data obtained from the company's annual financial statements. Data analysis was carried out using linear regression panel data with eviews data processing tool. The results of this study show that Value Added Capital Employed (VACA) and Structural Capital Value Added (STVA) have a positive and significant effect on Financial Distress, while Value Added Human Capital (VAHU) **does not** have a positive and significant effect on Financial Distress in manufacturing companies in the building construction sub-sector listed on the IDX.

**Keywords:**
Human Capital Efficiency, Structural Capital Efficiency, Capital Employed Efficiency, Financial Distress

**Introduction**

Building construction sub-sector companies play an important role in supporting infrastructure development in Indonesia. Based on records from the Central Statistics Agency (BPS), the growth of the construction sector grew 7.68% on an annual basis or (year on year / yoy) in the fourth quarter of 2023, with a contribution to the total gross domestic product (GDP) of 10.49%. The growth rate of the construction sector was recorded to be much faster than the realization in the third quarter of 2023 which only reached 6.39% yoy. Its contribution to GDP at that time was only 9.86%. (Rachman, 2024)

However, in 2024, it is estimated that the outlook for the global property sector will be marked by uncertainty, in line with the prospect of slow economic growth. The slowdown in growth was influenced by, among others, economic slowdown in the United States (US), Europe and China (Sunarsip, 2024) . Debt burden and declining financial performance dragged down the share price of the construction sector. Analysts project that the improvement in the performance of the construction sector this year is still heavy. The risk in stocks with cheap valuations is high.

Based on RTI data (2023), the share price of compact construction issuers weakened. PT Waskita Karya (WSKT) fell 43% ytd to 202. Meanwhile, PT Wijaya Karya (WIKA) weakened 34% to Rp 525. Meanwhile, PT PP (PTPP) weakened 17% to Rp 590. Kompak, PT Adhi Karya (ADHI) weakened 4.96% ytd to Rp 460.

This decline in performance has an impact on the company's profit which can cause the possibility of financial distress (Sayyidah &; Saifi, 2017) . The company is not able to face business competition then it is likely to go bankrupt (Sari, 2022) . Financial distress is a situation when the company's financial condition declines before bankruptcy occurs, where the company is unable or difficult to meet its overdue financial obligations (Noviani et al., 2022) . This condition can be caused by various factors, such as low profitability, poor asset management, or errors in strategic decision making

To face competition and technological developments while avoiding Financial Distress, the company must be able to manage and use all its assets efficiently. There are not only tangible assets, but also intangible assets such as Intellectual Capital (Noviani et al., 2022) . It also mentions that (Shahwan &; Habib, 2020) intellectual capital is a non-physical asset (intangible resource) controlled by companies that can provide value benefits for the business to avoid the risk of financial crisis.

Stewart in argues that (Handayani et al., 2019) Intellectual Capital is the sum of everything in a company that can help a company to compete in a market that can be used to create prosperity. Intellectual capital itself is considered capable of providing added value (value added) of a company which will further develop the company's performance to be able to provide a competitive advantage of the company (Mustika et al., 2018) . Good intellectual capital management can increase employee

productivity which has an impact on the progress of the company, otherwise if intellectual capital does not run well, it results in poor company performance and will see a decrease in performance in company resources. This decline in performance has an impact on the company's profit which can cause the possibility of financial distress (Sayyidah &; Saifi, 2017) .

Building construction sub-sector companies rely heavily on skilled and experienced human resources, as well as innovation and knowledge in the management of construction projects. Therefore, intellectual capital plays an important role in the success of the company. However, there is still a research gap on the effect of intellectual capital on financial distress in building construction sub-sector companies in Indonesia.

Several previous studies conducted by showed the results that intellectual capital had a positive and significant effect on (Mustika et al., 2018) financial distress in mining companies listed on the Indonesia Stock Exchange during the period 2011-2015, while in manufacturing companies in the basic industrial and chemical sectors during the period 2011-2015 had a negative and significant effect on financial distress. Furthermore, research conducted by also showed the results that intellectual capital had a significant negative effect on (Ancient, 2018) financial distress in manufacturing companies listed on the Indonesia Stock Exchange during the period 2014-2017. In addition, the results of research conducted by showed the results that intellectual capital positively affected (Fashhan &; Fitriana, 2019) financial distress in trading companies and retail during the period 2014-2016. By analyzing the effect of intellectual capital on financial distress, companies can take strategic steps in managing human resources, structural capital, and customer capital to improve financial performance and minimize bankruptcy risk.

## Literature Review

### Resource-Based Theory (RBT)

Resource-Based Theory states that a company's competitive advantage comes from the resources owned by the company, both tangible resources and intangible resources. Intellectual capital is a form of intangible resources that can provide a competitive advantage for companies. Companies can compete well and survive in good performance for a long period of time if the company can optimize the management of its resources, (Sari, 2022).

### Signaling Theory

Signaling theory was originally put forward by Spence in his essay, Job Market Signaling. According to Spence (1973) signals signal that the owner of the information (sender) is trying to share some crucial meaningful information that can be used by . It (Irfan et al., 2023) basically provides information, records, or pictures of past,

present, and future circumstances for the survival of a company. Precise and accurate information is needed by investors as an analytical tool to make investment decisions. The company must disclose its financial statements because decision making by stakeholders will certainly be assessed based on the financial statements that have been presented. Thus, signal theory is related to financial distress because the prediction of (Ardian et al., 2023) financial distress will provide signals to stakeholders as consideration to predict the sustainability of cooperation between companies.

**Financial Distress**

A company has the potential to experience bankruptcy which begins with financial distress (Ardian et al., 2023). Financial distress according to (Rani, 2017) is one of the symptoms of bankruptcy experienced by companies characterized by financial difficulties seen by symptoms of liquidity difficulties and solvency / leverage difficulties in company finances.

According to (Mulyatiningsih &; Atiningsih, 2021)the characteristics of companies that experience financial difficulties, when the company experiences prolonged or continuous operating losses, resulting in decreased company performance and capital, in addition to resulting in reduced assets and an increase in debt.

A method that can be used to predict the occurrence of financial distress in a company is using the Altman Z-Score model. The Altman Z-Score model proposed by Erdward Altman became the most famous model and is often used to predict the financial distress situation of an organization or company (Widenda, 2017) .

This research is adjusted to the object of research, namely manufacturing companies. So that the Altman model used is the Altman Z-score Revision with the following measurements:

$Z = 0.717X1 + 0.84X2 + 3.107X3 + 0.420X4 + 0.998X5$

Information:

Z = Bankrupty Index (Z-Score)
X1 = Working Capital / Total Assets
X2 = Retained Earning / Total Assets
X3 = Earning Before Interest and Taxes / Total Assets
X4 = Book Value of Equity / Book Value of Total Debt
X5 = Sales / Total Assets

The criteria for bankruptcy risk (cut-off) of a company based on the Altman analysis method can be seen from the Z-Score value, namely:

a. If the Z-Score < 1.23, it means that the company is experiencing financial difficulties and high risk (financial distress).
b. If the value of 1.23 < Z < 2.99 then the company is considered to be in the gray area (the company is in good health or bankrupt)
c. If the Z-Score value < 2.99, then the company's condition is very healthy so that the possibility of bankruptcy is relatively small.

## Intellectual Capital

Intellectual capital was first defined by Galbraith in 1969 as a form of knowledge, intelligence, and brainpower activity using science to create value. According to Brooking (1996) in (Fashhan &; Fitriana, 2019) , intellectual capital is intangible assets that make companies run as they should. Meanwhile, according to (Marzoeki, 2018) Intellectual capital, it is the company's ability to create and manage various resources of knowledge, experience, and expertise of employees that contribute to the value creation process so that it can provide a competitive advantage for the company.

Intellectual capital is an intangible asset derived from human resources that are dynamic and always changing according to situations and conditions and cannot be measured (Ancient, 2018) . In order for the measurement results to be more accurate, to measure resources, appropriate indicators are needed (Hidayat, 2013). Intellectual capital can be taken into consideration in predicting the company's financial distress, because it can help allocate the company's financial resources and invest them properly and correctly (Canciarelli &; Allegrini, 2017) .

Pulic in 1998 introduced indirect measurement of Intellectual Capital using Value Added Intellectual Coefficient (VAIC™), a measure to assess the efficiency of value added as a result of a firm's intellectual ability. VAIC™ is designed to provide information about the value creation efficiency of tangible assets and (Tricahyadinata, 2014) intangible assets owned by the company. Value added is the most objective indicator to assess business success and show the company's ability to create value (value creation). Value Added (VA) is calculated as the difference between the output and input (Suparno & Ramadini, 2017).

Value Added = Input – Output

Information:

Output (OUT) : Total sales and other income

Input (IN) : Expenses and costs (other than employee expenses)

Value Added (VA) : Difference between output and input

To measure the company's intellectual capital, researchers use the VAIC method where there are 3 components to measure the performance of intellectual capital, namely VAHU (Value Added Human Capital), VACA (Value Added Capital Employed) and STVA (Structural Capital Value Added) (Ardalan &; Askarian, 2014).

### a. Value Added Capital Employed (VACA)

Capital employed is physical capital owned by a company, to acquire tangible assets through investment activities. How a company manages its physical and financial capital efficiently can be assessed based on the company's capital employed. This shows that the higher the value of capital employed by the company, the more efficient the management of intellectual capital in the form of buildings, land, equipment, or technology that is easily bought and sold in the market at the company. VACA is a ratio that shows the contribution made by each unit of Physical Capital (CA) to the value added of the company. VACA is calculated by the following formulation. (Ulum, 2016)

**VACA = VA/CE**

Information:

VACA : Value Added Capital Employed
VA : Value Added
CE : Capital Employed: Available funds (equity, net profit).

**b. Value Added Human Capital (VAHU)**

Human capital presents the company's ability to manage human resources and considers humans or employees as the company's strategic assets because of the knowledge they have to create products that can capture consumers. Therefore, the company must be able to manage its employees so that these employees can maximize their abilities and not leave the company. Companies that have high human capital will also have high financial performance. Some basic characteristics that can be measured from this capital, namely training programs, experience, competencies, beliefs, learning programs, individual and personal potential as well as recruitment and mentoring processes. The value of VAHU is calculated by the following formulation (Ulum, 2018):

**VAHU = VA / HC**

Information:
VAHU : Value Added Human Capital
VA : Value Added
HC : Human Capital: Employee Burden

**c. Structural Capital Value Added (STVA)**

Structural capital is the ability of an organization or company to convert human capital into company health. Structural capital includes the company's operational system, manufacturing processes, organizational culture, management philosophy and all forms of intellectual property owned by the company. The company's ability to reach the market or hardware, software, and / or infrastructure that supports employee performance. This ratio measures the amount of structural capital needed to generate one dollar of value added and is an indication of the success of structural capital in value creation.

**STVA = SC / VA**

Information:
STVA : Structural Capital Value Added
SC : Structural Capital: VA-HC
VA : Value Added

These three components (VAHU, VACA, and STVA) are part of intellectual capital that is believed to affect the company's financial performance. Companies that are able to manage and utilize intellectual capital well will gain competitive advantages and improve their financial performance, such as profitability, sales growth, and company value.

## RESEARCH METHODS

### Research Approach

This research is a research with a quantitative approach, because the data used in the research is in the form of numbers and data analysis is carried out using statistics. That is, this study

aims to determine the causal relationship between two or more variables, that is, the independent variable to the dependent variable . (Sugiyono, 2018)

The population in this study is all manufacturing companies in the construction and building sub-sector listed on the Indonesia Stock Exchange, totaling 22. Number of samples in this study The sampling procedure used in this study is non-probabilitay with purposive sampling techniques, based on certain criteria, namely:

a. Construction and building sub-sector manufacturing companies listed on the IDX.
b. Construction and building sub-sector manufacturing companies that publish financial statements for 2018-2022
c. Construction and building sub-sector manufacturing companies that report their financial statements only in rupiah.

The total number of companies included in the sample and data processing criteria is 13 companies. In general, the sampling process of this study can be seen below:

**Table 1 Research Sample Criteria**

| No. | Kode Emiten | Emiten | Kriteria Sampel | | Sampel |
|---|---|---|---|---|---|
| | | | 1 | 2 | |
| 1 | ACST | PT Acset Indonusa Tbk | √ | √ | 1 |
| 2 | ADHI | PT Adhi Karya (Persero) Tbk | √ | X | X |
| 3 | BUKK | PT Bukaka Teknik Utama Tbk | √ | √ | 2 |
| 4 | DGIK | PT Nusa Konstruksi Enjiniring Tbk | √ | √ | 3 |
| 5 | IDPR | PT Indonesia Pondasi Raya Tbk | √ | X | X |
| 6 | JKON | PT Jaya Konstruksi Manggala Pratama Tbk | √ | √ | 4 |
| 7 | MTPS | PT Meta Epsi Tbk | √ | X | X |
| 8 | MTRA | PT Mitra Pemuda Tbk | √ | X | X |
| 9 | NRCA | PT Nusa Raya Cipta Tbk | √ | √ | 5 |
| 10 | PBSA | PT Paramita Bangun J Sarana Tbk | √ | √ | 6 |
| 11 | PPRE | PT PP Presisi Tbk | √ | √ | 7 |
| 12 | PTDU | PT Djasa Ubersakti Tbk | √ | X | X |
| 13 | PTPP | PP (Persero) Tbk | √ | √ | 8 |
| 14 | PTPW | PT Pratama Widya Tbk | √ | X | X |
| 15 | RONY | PT Aesler Grup Internasional Tbk | √ | X | X |
| 16 | SSIA | PT Surya Semesta Internusa Tbk | √ | √ | 9 |
| 17 | TAMA | PT Lancartama Sejati Tbk | √ | X | X |
| 18 | TOPS | PT Totalindo Eka Persada Tbk | √ | √ | 10 |
| 19 | TOTL | PT Total Bangun Persada Tbk | √ | X | X |
| 20 | WEGE | PT Wijaya Karya Bangunan Gedung Tbk | √ | √ | 11 |
| 21 | WIKA | PT Wijaya Karya (Persero) Tbk | √ | √ | 12 |
| 22 | WSKT | PT Waskita Karya (Persero) Tbk | √ | √ | 13 |

Source : Processed by the author (2024)

The data used in this study are secondary data sourced from financial statements obtained from www.idx.co.id pages and previous researchers' articles (books and journals) related to the research theme. The data analysis technique used is regression analysis of panel data using eviews software containing cross-sectional observations for several years. With stages, namely descriptive statistical analysis, panel data regression model estimation, panel data regression selection test, determination coefficient, hypothesis test, and panel data regression analysis with the following observations:

$$\mathbf{Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + e}$$

Information:

Y : Financial Distress
$\alpha$ :Constant
$\beta$ : Regression Coefficient
X1 : Human Capital Efficiency (HCE)
X2 : Structural Capital Efficiency (SCE)
X3 : Capital Employed Efficiency (CEE)
e : Error

## Results

### 1. Descriptive Statistical Analysis

The results of descriptive statistical analysis can be seen in the table below:

**Table 2 Descriptive Statistical Analysis Test Results**

| Descriptive Statistics | | | | | |
|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| VACA | 65 | -11,61 | 4,83 | 0,7664 | 2,29950 |
| VAHU | 65 | -6,34 | 35,15 | 1,2001 | 1,65625 |
| STVA | 65 | -2,09 | 0,33 | 0,3661 | 2,95637 |
| FD | 65 | -4,33 | 346,68 | 20,5897 | 3,01227 |
| Valid N (listwise) | 65 | | | | |

Source : Data processed, 2024

Based on table 2. It can be seen the characteristics of each research variable with a sample number of 65 companies. The financial distress variable (Y) has a minimum value of -4.33 and a maximum value of 346.68. The mean value is 20.5897 and the standard deviation is 3.01227. The VACA variable (X1) has a minimum value of -11.61 and a maximum value of 4.83 while the mean value is 0.7664 and the standard deviation is 2.29950. The VAHU variable (X2) has a minimum value of -6.34 and a maximum value of 35.15 while the mean value is 1.2001 and the standard deviation is 1.65625. The STVA variable (X3) has a minimum value of -2.09 and a maximum value of 0.33 while the mean value is 0.3661 and the standard deviation is 3.01227.

### 2. Panel Model Estimation

In the regression model estimation method using panel data can be done through three approaches, namely Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM).

**a. Common Effect Model (CEM)**

**Table 3 Common Effect Model (CEM)**

Dependent Variable: FD_Y
Method: Panel Least Squares
Date: 04/05/24 Time: 15:03
Sample: 2018 2022
Periods included: 5
Cross-sections included: 13
Total panel (balanced) observations: 65

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 2.530012 | 2.57E+10 | 98.29941 | 0.0003 |
| VACA__X1 | 14695.47 | 6196.357 | 2.371631 | 0.0198 |
| VAHU_X2 | -6268.286 | 5516.693 | -1.136240 | 0.2588 |
| STVA_X3 | -14683.24 | 8499.054 | -1.727632 | 0.0874 |

| | | | |
|---|---|---|---|
| R-squared | 0.063666 | Mean dependent var | 2.55E+12 |
| Adjusted R-squared | 0.033134 | S.D. dependent var | 1.57E+11 |
| S.E. of regression | 1.54E+11 | Akaike info criterion | 54.40263 |
| Sum squared resid | 2.19E+24 | Schwarz criterion | 54.50948 |
| Log likelihood | -2607.001 | Hannan-Quinn criter. | 54.44582 |
| F-statistic | 2.085195 | Durbin-Watson stat | 0.256693 |
| Prob(F-statistic) | 0.107564 | | |

Source : Processed by the author 2024

**b. Fixed Effect Model (FEM)**

**Table 4 Fixed Effect Model (FEM)**

Dependent Variable: FD_Y
Method: Panel Least Squares
Date: 04/05/24 Time: 15:04
Sample: 2018 2022
Periods included: 5
Cross-sections included: 13
Total panel (balanced) observations: 65

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.840012 | 1.14E+11 | 16.13486 | 0.0000 |
| VACA__X1 | 16899.57 | 7478.603 | 2.259723 | 0.0263 |
| VAHU_X2 | -19629.32 | 10822.80 | -1.813700 | 0.0732 |
| STVA_X3 | 30587.71 | 11773.60 | 2.597990 | 0.0110 |

| Effects Specification | | | |
|---|---|---|---|
| Cross-section fixed (dummy variables) | | | |
| R-squared | 0.360809 | Mean dependent var | 2.55E+12 |
| Adjusted R-squared | 0.302032 | S.D. dependent var | 1.57E+11 |
| S.E. of regression | 1.31E+11 | Akaike info criterion | 54.12503 |
| Sum squared resid | 149E+24 | Schwarz criterion | 54.36543 |
| Log likelihood | -2589.001 | Hannan-Quinn criter. | 54.22220 |
| F-statistic | 6.138685 | Durbin-Watson stat | 0.425185 |
| Prob(F-statistic) | 0.000003 | | |

Source : Processed by the author 2024

## c. Random Effect Model (REM)

**Table 5 Random Effect Model (REM)**

Dependent Variable: FD_Y
Method: Panel EGLS (Cross-section random effects)
Date: 04/05/24 Time: 15:04
Sample: 2018 2022
Periods included: 5
Cross-sections included: 13
Total panel (balanced) observations: 65
Swamy and Arora estimator of component variances

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 2.533012 | 2.18E+10 | 115.6955 | 0.0000 |
| VACA__X1 | 14695.47 | 5264.666 | 2.791340 | 0.0064 |
| VAHU_X2 | -6268.286 | 4687.198 | -1.337321 | 0.1844 |
| STVA_X3 | -14683.24 | 7221.127 | -2.033372 | 0.0449 |

| Effects Specification | S.D. | Rho |
|---|---|---|
| Cross-section random | 0.000000 | 0.0000 |
| Idiosyncratic random | 1.31E+11 | 1.0000 |

| Weighted Statistics | | | |
|---|---|---|---|
| R-squared | 0.063666 | Mean dependent var | 2.55E+12 |
| Adjusted R-squared | 0.033134 | S.D. dependent var | 1.57E+11 |
| S.E. of regression | 1.54E+11 | Sum squared resid | 2.19E+24 |
| F-statistic | 2.085195 | Durbin-Watson stat | 0.256693 |
| Prob(F-statistic) | 0.107564 | | |

| Unweighted Statistics | | | |
|---|---|---|---|
| R-squared | 0.063666 | Mean dependent var | 2.55E+12 |

| | | | |
|---|---|---|---|
| Sum squared resid | 2.19E+24 | Durbin-Watson stat | 0.256693 |

Source : Processed by the author 2024

## 3. Panel Data Estimation Model Determination

The next step is testing to determine the panel data model used. The selection of regression models carried out several tests, which are as follows:

a. Test Chow

The chow test is used to select the regression model used, namely between the fixed effect model and the common effect model. The hypothesis in determining the panel data regression model is that if the chi-square cross section value < a significant value (0.05), then the fixed effect model will be chosen. Conversely, if the chi-square cross section value > significant value, then the common effect model will be used and the Hausman test is not needed.

**Table 6 Test Chow Result**

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

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 8.088775 | (5.87) | 0.0000 |
| Cross-section Chi-square | 36.649724 | 5 | 0.0000 |

Source : Processed by the author 2024

Based on table 7, the probability period chi-square value of 0.0000 means smaller than 0.0 so the appropriate temporary regression model to be used in this study is the Fixed Effect Model (FEM).

b. Hausman Test

The hausman test is used to select the best regression model used in research, namely between the fixed effect model and the random effect model. "The hypothesis in determining the panel data regression model is that if the random cross section value < a significant value (0.05), then the fixed effect model. Conversely, if the random cross section value > a significant value (0.05), then the random effect model is selected.

**Table 7 Hauman Test Result**

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

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Cross-section random | 40.443875 | 3 | 0.0000 |

Source : Processed by the author 2024

Based on table 8, the random probability period value of 0.0000 means less than 0.05. Based on the results of the Hausman Test, it can be concluded that the Fixed Effect Model is more precise than the Random Effect Model.

**4. Panel Data Regression Analysis Results**

The results of panel data regression using eviews using the fixed effect model approach method. The following are the results of panel data regression testing in this study.

**Table 8 Panel Data Regression Results**

Dependent Variable: FD_Y
Method: Panel Least Squares
Date: 04/05/24 Time: 15:04
Sample: 2018 2022
Periods included: 5
Cross-sections included: 13
Total panel (balanced) observations: 65

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.840012 | 1.14E+11 | 16.13486 | 0.0000 |
| VACA__X1 | 16899.57 | 7478.603 | 2.259723 | 0.0263 |
| VAHU_X2 | -19629.32 | 10822.80 | -1.813700 | 0.0732 |
| STVA_X3 | 30587.71 | 11773.60 | 2.597990 | 0.0110 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.360809 | Mean dependent var | 2.55E+12 |
| Adjusted R-squared | 0.302032 | S.D. dependent var | 1.57E+11 |
| S.E. of regression | 1.31E+11 | Akaike info criterion | 54.12503 |
| Sum squared resid | 149E+24 | Schwarz criterion | 54.36543 |
| Log likelihood | -2589.001 | Hannan-Quinn criter. | 54.22220 |
| F-statistic | 6.138685 | Durbin-Watson stat | 0.425185 |
| Prob(F-statistic) | 0.000003 | | |

Source : Processed by the author 2024

Based on table 9. Then the results of the panel data regression equation are obtained as follows:

**FD = 1.840012 + 16899.57 VACA – 19629.32 VAHU + 30587.71 STVA + e**

From the equation mentioned above can be explained as follows:

1) The constant value shows a number of 1.840012 meaning that if the variables VACA,

VAHU and STVA are 0 then FD is 1.840012.

2) The value of the regression coefficient of the VACA variable of 16899.57 means that every increase in VACA is 1, the FD value will increase by 16899.57.
3) The value of the VAHU variable regression coefficient of –19629.32 means that for every increase in VAHU by 1, the FD value will decrease by 19629.32.
4) The value of the STVA variable regression coefficient of 30587.71 means that every increase in STVA by 1 then the FD value will decrease by 30587.71.

## 5. Hopotesis Test

### a. Partial Test (t)

The t test is used to determine the effect of each independent variable on the dependent variable. The decision-making criteria in this test if the t-count value > t-table with a significance value of <0.05 then Ho is accepted and H1 is rejected. The t-test results can be seen in table 9 below:

**Table 9 Partial Test Result**

Dependent Variable: FD_Y
Method: Panel Least Squares
Date: 04/05/24 Time: 15:04
Sample: 2018 2022
Periods included: 5
Cross-sections included: 13
Total panel (balanced) observations: 65

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.840012 | 1.14E+11 | 16.13486 | 0.0000 |
| VACA__X1 | 16899.57 | 7478.603 | 2.259723 | 0.0263 |
| VAHU_X2 | -19629.32 | 10822.80 | -1.813700 | 0.0732 |
| STVA_X3 | 30587.71 | 11773.60 | 2.597990 | 0.0110 |

Source : Processed by the author 2024

The value of t-table in this study with a value of df 65-4=61, then the value of t-table is 1.99962. Based on table 10. Then the results of hypothesis testing (t-test) are as follows:

The VACA variable has a t-count value of 2.259723 with a significance of 0.0263. So we get t-calculate > t-table (2.259723 > 1.99962) with a GIS value of < 0.05 (0.0263<0.05) it can be concluded that VACA has a positive and significant effect on FD (Financial Distress).

The variable VAHU has a t-count value of -1.813700 with a significance of 0.0732. So we get t-calculate < t-table (-1.813700 < 1.99962) with a GIS value of >0.05 (0.0732>0.05) it can be concluded that VAHU does not have a positive and significant effect on FD (Financial Distress).

The STVA variable has a t-count value of 2.597990 with a significance of 0.0110. then obtained t-calculate > t-table (2.59799> 1.99962) with a GIS value of < 0.05 (0.0110<0.05) it can be concluded that STVA has a positive and significant effect on FD (Financial Distress).

### b. Simultaneous Test (F)

According to (Ghozali, 2018) simultaneous tests are used to determine whether the independent variables together affect the dependent variable and to measure the accuracy of the sample regression function in estimating the actual value through goodness of fit. The hypothesis will be tested with a significance level of 0.05. The results of the f test can be seen in table below:

**Table 10 Simultanous Test Result**

| | | | |
|---|---|---|---|
| R-squared | 0.360809 | Mean dependent var | 2.55E+12 |
| Adjusted R-squared | 0.302032 | S.D. dependent var | 1.57E+11 |
| S.E. of regression | 1.31E+11 | Akaike info criterion | 54.12503 |
| Sum squared resid | 149E+24 | Schwarz criterion | 54.36543 |
| Log likelihood | -2589.001 | Hannan-Quinn criter. | 54.22220 |
| F-statistic | 6.138685 | Durbin-Watson stat | 0.425185 |
| Prob(F-statistic) | 0.000003 | | |

Source : Processed by the author 2024

From the results of the f test shows that the f-count value is 6.138685 and the sig value is 0.000003. This study used 4 variables with the number N 65 then the value of the f-table is 2,758. So it is obtained that the value of the F-count > the F-table (6.138685>2.758) and the significance is smaller than 0.05 (0.000003 < 0.05). It can be concluded that simultaneously the variables VACA, VAHU, and STVA affect Financial Distress.

## 6. Coefficient of Determination

The coefficient of determination/R2 is used to determine how far the model is capable of explaining dependent variation (Ghozali, 2018) . According to many researchers recommend using the Adjusted R2 Square value when evaluating which regression model is best.

**Table 11 Coefficient of Determination**

| | | | |
|---|---|---|---|
| R-squared | 0.360809 | Mean dependent var | 2.55E+12 |
| Adjusted R-squared | 0.302032 | S.D. dependent var | 1.57E+11 |
| S.E. of regression | 1.31E+11 | Akaike info criterion | 54.12503 |
| Sum squared resid | 149E+24 | Schwarz criterion | 54.36543 |
| Log likelihood | -2589.001 | Hannan-Quinn criter. | 54.22220 |
| F-statistic | 6.138685 | Durbin-Watson stat | 0.425185 |
| Prob(F-statistic) | 0.000003 | | |

Source : Processed by the author 2024

Based on table 12. It can be seen that the value of Adj. R2 is 0.302032. This shows that the VACA, VAHU, and STVA variables are only able to explain financial distress as a dependent variable by 30.2%, the remaining 69.8% is influenced by other variables that were not studied in this study.

**Discussion**

Value Added Capital Employed has a positive and significant effect on Financial Distress in manufacturing companies in the building construction sub-sector listed on the IDX. A high Value Added Capital Employed (VACA) value indicates that the company can utilize its capital efficiently to generate added value for the company. This means that the higher the VACA, the lower the risk of Financial Distress in manufacturing companies in the building construction sub-sector listed on the IDX.

Value Added Human Capital does not have a positive and significant effect on Financial Distress in manufacturing companies in the building construction sub-sector listed on the IDX. This indicates that the company's ability to manage human resources is not strong enough to affect the risk of Financial Distress.

Structural Capital Value Added has a positive and significant effect on Financial Distress in manufacturing companies in the building construction sub-sector listed on the IDX. A high Structural Capital Value Added (STVA) value indicates that the company has a good capital structure in creating added value for the company. This means that the higher the STVA, the lower the risk of Financial Distress in manufacturing companies in the building construction sub-sector listed on the IDX.

**Conclusion**

Building construction sub-sector manufacturing companies need to improve the efficiency of using capital used in company operations. This is because high Value Added Capital Employed can increase the risk of financial distress. The Company can conduct periodic evaluations of the effectiveness of capital use and make improvements if needed.

Although Value Added Human Capital does not have a significant effect on financial distress, companies still need to pay attention to the quality of their human resources. Investing in employee training and development can help improve a company's productivity and operational efficiency, which in turn can reduce financial risk.

Companies need to improve the efficiency of using structural capital such as systems, processes, and company infrastructure. High Structural Capital Value Added can increase the risk of financial distress. Companies can make investments in new technologies, improve business processes, or improve infrastructure to improve operational efficiency.

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