The Role of Growth in Moderating the Relationship of Intellectual Capital to Firm Values

Komang Adhitanaya¹, Partiwi Dwi Astuti² and Ni Nengah Seri Ekayani²

¹Airlangga University, Surabaya-Indonesia
²Universitas Warmadewa, Denpasar-Indonesia
*Email: komang.adhitanaya-2022@feb.unair.ac.id

Published: 20/09/2023

How to cite (in APA style):

Abstract—This study examines the moderating effect of growth on the relationship between intellectual capital and firm value. The population in this study is made up of manufacturing companies in the consumer goods sector that are listed on the Indonesia Stock Exchange in the 2017–2020 period. The determination of the sample using the purposive sampling method yielded a sample of 37 companies. The analytical method used is moderated regression analysis (MRA). The study results reveal that intellectual capital has a significant positive effect on firm value. Furthermore, growth strengthens the effect of positive intellectual capital on firm value. With growth, it can indicate the company's progress through an increase in assets, one of which is intellectual capital that has the potential to generate high cash flows in the future, thereby increasing the value of the company.

Keyword: Firm value; intellectual capital; growth

I. INTRODUCTION

The purpose of the company is to serve the interests of its stakeholders, increase the value of the firm, meet the needs of the community, and earn profits (Khairat, 2017). As a corporate objective, maximizing the present value of all future profits that shareholders will obtain is more acceptable than maximizing the company's value (Utami, 2020). In the long run, especially for companies that become public, the value of the company is significant because it reflects the well-being of the owner, who becomes more prosperous as the company's value rises. Two factors define the company's value: (1) diverse companies must be valued differently (public and private companies), and (2) depending on the objective of the evaluation as well (Berzkalne & Zelgalve, 2014). The stock market price represents the actual assets of the organization (Utami, 2020). Thus, the higher the stock price, the greater the company's worth (Chandra & Djajadikerta, 2018). In reality, not all businesses can consistently raise their company's value.

The theory underlying research on intellectual capital is the resource-based theory because this theory believes the firm to be a collection of resources and competencies that can provide a competitive advantage for the company. In order to produce value for the organization, the firm is considered to be a collection of resources and competencies (Islamati, 2017). Intellectual capital is one method that can be used to assess and measure knowledge assets (Lestari & Munandar, 2017).

In Indonesia, intellectual capital still needs to be commonly understood. If a corporation identifies itself as a knowledge-based business, it can compete by leveraging the competitive advantages gained through creative breakthroughs developed by its intellectual capital (Widiatmoko, 2015). Intellectual capital is required to preserve and increase firm value, according to Masitha (2019). No. 19 of the Statement of Financial Accounting Standards (PSAK) highlights that intellectual capital is an intangible asset that
must be disclosed to remain sustainable and improve the company's worth. Hidayat & Hairi (2016) and Arifin (2016) successfully demonstrated that intellectual capital positively impacts corporate value. A similar study has demonstrated that intellectual capital significantly raises business value and that firm value will rise if the company can effectively employ intellectual capital (Chen et al., 2005; Berzkalne & Zelgalve, 2014; Nimtrakoon, 2015; Lestari & Munandar, 2017; Sardo & Serrasqueiro, 2017; Li & Zhao, 2018; Badarudin & Wuryani, 2018; Lestari & Satyawani, 2019; Aulia et al., 2020; Halim, 2020; Triwaderi & Amanah, 2020; Ni et al., 2021; Muasiri & Sulistyowati, 2021).

Some research demonstrates that intellectual capital harms the value of banking businesses (Hadiwijaya & Rohman, 2013; Marcelia & Purnomo, 2016; Josephine et al., 2019). Wergiyanto (2016) and Lestari & Munandar (2017) discovered similar results, demonstrating that intellectual capital negatively impacts firm value. Even the results of Landion & Lastanti (2019); Dewi & Husain (2020); Utami (2020); and Ionita & Dinu (2021) imply that intellectual capital has no bearing on a company's value.

Previous research on the connection between intellectual capital and firm value reveals a gap and contradictory findings. One can resolve differences in outcomes from earlier investigations using a contingency technique. This contingency theory is a behavioral theory that asserts that management or organizational conditions depend on a company's internal and external circumstances (Suparsa et al., 2017). Contingency theory is also a theory that may comprehend the internal and external business environment's equilibrium and interrelationships (Tangpong et al., 2019).

This analysis revealed the existence of a company growth variable as one of the contingency factors. Landion & Lastanti (2019) show that expansion or business growth positively moderates the effect of intellectual capital on firm value. According to Rusiah et al. (2019), various factors, including growth, impact the value of a company. Investors were pleased to learn of the existence of growth, which resulted in a rise in stock prices. Growth is the degree to which a business integrates into the global or industry-specific economic system. Growth reveals whether or not a company is expanding.

Based on the contingency theory view, a company that has adequate intellectual capital and is balanced with its ability to grow is likely to get greater investor appreciation than if investors see the company as solely having intellectual capital. Growth is an essential indicator of fundamental analysis from an investor's perspective because it shows the extent to which a company will generate profits in the future. Therefore, growth is placed as a moderating variable, and this reasoning will be proven in this study.

Other similar research was also conducted by Sari et al. (2022) and Appah et al. (2023). Sari et al. (2022) revealed that intellectual capital has an effect on firm value. The result conducted by Sari et al. (2022) also is supported by the result conducted by Appah et al. (2023) that intellectual capital is an important determinant of a firm's value.

This study examines the relationship between intellectual capital and firm value by using growth as a moderator, including the growth variable as a moderator intended to enhance research in accounting, and has a theoretical and empirical contribution. In addition, the practical benefits for the company are mainly in the form of efforts to increase the company's value, and investors can use this information to evaluate the company.

II. CONCEPT AND HYPOTHESIS

Intellectual capital is part of the knowledge that can benefit the company. Intellectual capital is able to contribute something or make a contribution that can provide added value and different uses for the company. Resources-based theory (RBT) and contingency theory are used as the theories underlying research on the effect of intellectual capital on firm value and growth in moderation. According to Ulum (2017: 23), resource-based theory (RBT) shows that if a business institution has resources that are able to make the institution have a competitive advantage and have optimal long-term performance, and according to Suparsa et al. (2017), contingency theory is an open system in a company that is closely related to interactions to adjust and control the environment to maintain business survival. The inconsistency of results in previous research can be solved by using a contingency approach.

The theory above is supported by the results of research conducted by Chen et al. (2005), Berzkalne and Zelgalve (2014), Badarudin and Wuryani (2018), Lestari (2018), Aulia et al. (2020), Halim (2020), Triwaderi and Amanah (2020), and Muasiri et al. (2023) that intellectual capital has an effect on firm value. The result conducted by Sari et al. (2022) also is supported by the result conducted by Appah et al. (2023) that intellectual capital is an important determinant of a firm's value.
and Sulistyowati (2021), which state that intellectual capital has a positive effect on firm value. Conversely, research by Wergiyanto (2016) and Lestari and Munandar (2017) states that intellectual capital has a negative effect on firm value. Different results are shown in the research of Landion and Lastanti (2019), Dewi and Husain (2020), and Utami (2020), which state that intellectual capital has no effect on firm value.

The difference in results from previous studies can be solved by using a contingency approach. This is done by adding other variables that might strengthen the relationship between intellectual capital and firm value. The variable that is expected to strengthen the relationship is growth. If growth develops well, then investors will assess that the company is able to generate more returns on the investment made and have an impact on increasing the value of the company. Based on the explanation of the previous theoretical and empirical studies, there are two hypotheses in this study.

The Effect of Intellectual Capital on Firm Value

The resource-based theory states that utilizing well-owned resources will provide a competitive advantage for companies (Wernerfelt, 1984). Therefore, its intellectual capital will significantly influence the company's value. Furthermore, innovation will occur and provide good news to the market, ultimately increasing the company's market value (Landion and Lastanti, 2019).

Halim (2020), Triwaderi & Amanah (2020), as well as Muasiri & Sulistyowati (2021), found that there was an increase in company value when the company's intellectual capital was well managed. Intellectual capital plays an important role and determines whether the company has good performance, ultimately affecting its market value. It can be concluded that every monetary unit invested in intellectual capital will increase the market value of the company. The management of intellectual capital allows companies to innovate and reveal signals to the market about their growth opportunities, which will lead to an increase in the company's market value (Landion & Lastanti, 2019). Chen et al. (2005); Berzkalne & Zelgalve, (2014); Nimtrakoon, (2015); Sardo & Serrasqueiro, (2017); Li & Zhao, (2018); Badarudin and Wuryani (2018); Lestari (2018); Aulia et al. (2020); Halim (2020); Triwaderi and Amanah (2020); Muasiri and Sulistyowati (2021); and Ni et al. (2021), which states that intellectual capital has a positive influence on firm value.

H1: Intellectual capital has a positive effect on firm value

The Effect of Intellectual Capital on Firm Value with Growth as Moderation

Intellectual capital is a valuable resource for companies and plays an essential role in increasing company value. Investors usually pay more for shares of companies with higher intellectual resources than other companies (Chen et al., 2005). Intellectual capital, recognized as a company asset, can generate competitive advantages so that companies can survive and continue to develop to maximize stakeholders' interests. Companies that can create added value on an ongoing basis are attractive to investors so that the company's value can increase. Thus, using intellectual resources effectively and efficiently will drive the company's value. It is supported by the research of Chen et al. (2005); Berzkalne and Zelgalve, (2014); Nimtrakoon, (2015); Sardo & Serrasqueiro, (2017); Li & Zhao, (2018); Badarudin and Wuryani (2018); Lestari (2018); Aulia et al. (2020); Halim (2020); Triwaderi and Amanah (2020); Muasiri and Sulistyowati (2021); and Ni et al. (2021), which states that intellectual capital has a positive influence on firm value.

Growth can show the progress of a company. An increase in assets can generate high cash flows in the future. A productive company certainly has a lot of financial transactions or activities, so it will be a good business prospect for investors who will invest (Ramdhonah et al., 2019). The relationship between intellectual capital and firm value can be strengthened by growth because growth can indicate a company's success (Aeni & Asyik, 2019). With the existence of high intellectual capital, supported by high company success, the effect on share value will be more robust, so that it will reflect increased company value because investors see good prospects when making investments. Then it can be formulated that the second hypothesis to be proposed, namely:

H2: Growth can moderate the effect of intellectual capital on firm value

The Role of Growth in Moderating the Relationship of Intellectual Capital to Firm Values
III. METHOD

This research was conducted at manufacturing companies in the consumer goods sector listed on the Indonesia Stock Exchange with the object of researching the effect of intellectual capital on firm value and growth as a moderator. This study focused on 54 consumer goods manufacturers listed on the Indonesia Stock Exchange between 2017 and 2020. The type of data in this study is quantitative. Quantitative data is data in the form of numbers and analysis in the form of statistics (Sugiyono, 2016: 7). Quantitative data in this study is in the form of financial reports of manufacturing companies in the consumer goods sector listed on the Indonesia Stock Exchange for the 2017–2020 period.

The data source used in this research is secondary data. Secondary data is data that is already available and collected by other parties; researchers just need to utilize the data according to their needs (Sanusi, 2017:104). According to Sugiyono (2016:85), purposive sampling is the technique of determining samples with certain considerations. The sample was determined using the method of purposive sampling, which resulted in the selection of 37 companies for a total of 148 observations. Furthermore, a comprehensive measurement of variables is described in Table 1 below.

There are 3 variables in this study: firm value as the dependent variable, intellectual capital as the independent variable, and growth as the moderating variable. Table 2 below explains the definition of variables and their measurements.

Table 2. Operational Definitions and Measurement Items

<table>
<thead>
<tr>
<th>Definition Variable</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellectual capital (VAIC&lt;sup&gt;TM&lt;/sup&gt;)</td>
<td>VACA = Value Added Capital Employed</td>
</tr>
<tr>
<td></td>
<td>VAHU = Value Added Human Capital</td>
</tr>
<tr>
<td></td>
<td>STVA = Structural Capital Value Added</td>
</tr>
<tr>
<td></td>
<td>VAIC&lt;sup&gt;TM&lt;/sup&gt; = VACA + VAHU + STVA</td>
</tr>
<tr>
<td>Firm Value (PBV)</td>
<td>Firm value is measured using the price book value (PBV) formula. The PBV formula is calculated on the basis of a comparison between the stock price and the book value per share. The stock price used is the closing price at the end of the company’s reporting year (Brigham and Houston, 2018:145).</td>
</tr>
<tr>
<td>Growth (Asset Growth)</td>
<td>Asset Growth = (Total Asset&lt;sub&gt;t&lt;/sub&gt; - Total Asset&lt;sub&gt;t-1&lt;/sub&gt;)/(Total Asset&lt;sub&gt;t-1&lt;/sub&gt;)</td>
</tr>
</tbody>
</table>

(Source: Recapitulation Data, 2023)

Description: value added = OUT (total income) – IN (total expenses except employee expenses); capital employed = total equity; human capital = employee expenses; structural capital = value added – human capital.

Data analysis comprised descriptive testing, while hypotheses were tested using moderated regression analysis (MRA). MRA
examines whether the moderating variables improve or lessen the causal link between the independent and dependent variables. There is a model of the equation to find out the relationship between independent and dependent variables, as well as the type of moderation of this research, as below.

\[ Y = \alpha + \beta_1X + \beta_2Z + \beta_3X*Z + \epsilon \]  

(1)

Description: \( \alpha \) = cut point/constant; \( \beta \) = regression coefficient; \( \epsilon \) = standard error; \( Y \) = firm value; \( X \) = intellectual capital; \( Z \) = growth; \( X*Z \) = interaction between intellective capital and growth.

IV. RESULT AND DISCUSSION

The data normality test results show that out of all 148 observational data points, 78 are categorized as outliers, so only 70 observational data points can be analyzed in the moderated regression analysis model.

Table 3. Research Data

<table>
<thead>
<tr>
<th>Data</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collected Data</td>
<td>148</td>
<td>100%</td>
</tr>
<tr>
<td>Abnormal Data</td>
<td>(78)</td>
<td>52.7%</td>
</tr>
<tr>
<td>Data Analyzed</td>
<td>70</td>
<td>47.3%</td>
</tr>
</tbody>
</table>

(Source: Processed Data, 2023)

Descriptive Statistics

Table 4. Descriptive Statistical Result

<table>
<thead>
<tr>
<th>Variable (measurement)</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Value (PBV)</td>
<td>-0.45</td>
<td>4.67</td>
<td>0.9730</td>
<td>0.74846</td>
</tr>
<tr>
<td>Intellectual Capital (VAICTM)</td>
<td>-12.73</td>
<td>20.28</td>
<td>1.9363</td>
<td>3.84873</td>
</tr>
<tr>
<td>Firm Value (PBV)</td>
<td>-0.45</td>
<td>4.67</td>
<td>0.9730</td>
<td>0.74846</td>
</tr>
</tbody>
</table>

(Source: Processed Data, 2023)

Table 4 contains the results of descriptive statistical tests, namely: PBV as a proxy for company value is obtained using the closing share price formula divided by the book value per share. The lowest PBV value was indicated by -0.45 in 2019. At the same time, the highest value is 4.67. A PBV with a negative value of 0.45 indicates that the company is experiencing an impairment loss, which means that the book value of the paid-up capital has not generated profits effectively. Meanwhile, a higher PBV value of 4.67 indicates that the company uses its capital well to obtain profitability. The average PBV shows that companies can earn 0.97% of their total assets. However, the standard deviation is higher than the average PBV. Deviations and variations in the realized company value ratio from company data during the observation period are relatively high.

It uses the formula for the added value of capital employed plus the added value of human capital, and structural capital yields VAIC as a proxy for intellectual capital. The 2018 VAIC number with the lowest value is -12.73. The most significant value, though, is 20.28. VAIC, with a negative value of -12.73 indicates that the company's intellectual capital has declined and is not being successfully managed. Moreover, a VAIC value of 20.28 suggests that the company can effectively manage its intellectual capital to grow its worth. The standard deviation exceeds the mean of the VAIC. The realized VAIC ratio varies significantly from business statistics during the observation period.

Growth as a moderating variable is obtained by comparing the current total with the previous total assets. Growth's lowest value was indicated by -0.79 in 2018. At the same time, the highest value is 20.28. The growth rate of -0.79 indicates that the company is experiencing a decline in growth which indicates that growth has been unable to increase value effectively. In addition, the growth value of 1.68 indicates that the company can manage growth effectively in its efforts to build corporate value. The standard deviation exceeds the average value of growth. Deviations and variations in the realized growth ratio from company data during the observation period are relatively high.

Table 5. Classical Assumption Testing Result

<table>
<thead>
<tr>
<th>Classical Assumption Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normality Test</td>
<td>Asymp. Sig (2-tailed) = 0.520</td>
</tr>
<tr>
<td></td>
<td>Sig Value of Intellectual Capital = 0.385</td>
</tr>
<tr>
<td>Heteroscedasticity Test</td>
<td>Sig Value of Growth = 0.943</td>
</tr>
<tr>
<td></td>
<td>Sig Value of Intellectual Capital*Growth = 0.276</td>
</tr>
<tr>
<td></td>
<td>VIF value of Intellectual Capital = 1.245</td>
</tr>
<tr>
<td>Multicollinearity Test</td>
<td>VIF value of growth = 1.236</td>
</tr>
<tr>
<td></td>
<td>VIF value of Intellectual Capital*Growth = 1.014</td>
</tr>
<tr>
<td>Autocorrelation Test</td>
<td>Asymp. Sig (2-tailed) = 0.054</td>
</tr>
</tbody>
</table>

(Source: Processed Data, 2023)
Table 5 explains the results of testing the classical assumptions of this study. The normality test results show an Asymp. Sig (2-tailed) of 0.520. The results of this normality test indicate that the equation model fulfills the normality test because of the Asymp. Sig value is greater than 0.05. The heteroscedasticity test results show that the sig value of each variable is above 0.05, which indicates that the regression model is free from heteroscedasticity. In the multicollinearity test, the results of the variance inflation factor (VIF) calculation also show that no one independent variable has a VIF of more than 10. So, it can be concluded that there is no multicollinearity between the independent variables. The autocorrelation test results from the equation model show that the test value is 0.04716 and the Asymp. Sig (2-tailed) coefficient is 0.054. This shows that the equation model fulfills the autocorrelation test because of the Asymp. Sig (2-tailed) is greater than 0.05, so it can be concluded that the residuals are random or that there is no autocorrelation between residual values.

Hypothesis Testing Results

The hypothesis test results show that a significance level of 0.05 (α = 5%) is used. If t is less than 0.05, then the null hypothesis is rejected. The outcomes of hypothesis testing are displayed in the table 6 below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.410</td>
<td>0.000</td>
</tr>
<tr>
<td>Intellectual Capital</td>
<td>0.111</td>
<td>0.000</td>
</tr>
<tr>
<td>Growth</td>
<td>0.534</td>
<td>0.019</td>
</tr>
<tr>
<td>Intellectual Capital*Growth</td>
<td>0.129</td>
<td>0.000</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.631</td>
<td></td>
</tr>
<tr>
<td>F : 40,406</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. F : 0.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Processed Data, 2023)

The R-squared value is 0.631, and the F-statistic probability is 0.000, showing that all variables, namely intellectual capital and growth, simultaneously affect the firm value variable. The MRA findings in Table 5 demonstrate that intellectual capital has a positive impact on firm value with a probability of 0.000, which is less than α (0.05). Similar results are reached when intellectual capital interacts with growth; the coefficient has a value of 0.129 and a probability of 0.000 <α (0.05); therefore, both hypotheses H1 and H2 are statistically supported.

**Intellectual Capital Effect on Firm Value**

Approval of the first hypothesis, which states that intellectual capital positively affects business value, indicates that each monetary unit spent on intellectual capital will improve the firm's market value. Intellectual capital management enables firms to produce and communicate development signals to the market, enhancing the organization's market value (Landion & Lastanti, 2019).

The results of this study empirically support the resource-based theory. The resource-based theory states that companies will excel in business competition by managing and utilizing their resources (Wernerfelt, 1984). Companies that can use their intellectual capital well can gain a competitive advantage and generate added value, enhancing their value. Research by Berzkalne & Želgalve (2014); Sardo & Serrasqueiro (2017); Li & Zhao (2018); Badarudin & Wuryani (2018); Lestari (2018); Ni et al. (2020); Aulia et al. (2020); Halim (2020); Triwaderi & Amanah (2020); and Musari & Sulistiyowati (2021) supports the result of this study.

**The Role of Growth in Moderating the Effect of Intellectual Capital on Firm Value**

Approval of the second hypothesis, which asserts that growth can moderate the effect of intellectual capital on company value, implies that expansion inside firms can amplify the positive effect of intellectual capital on firm value. Growth might indicate a company's development. In the future, an increase in assets has the potential to provide substantial cash flows. A productive corporation undoubtedly engages in numerous financial transactions or operations, making it an attractive investment opportunity for investors (Ramdhonah et al., 2019). However, growth can strengthen the connection between intellectual capital and corporate value, as growth shows a company's success (Aeni & Asyik, 2019). With the existence of high intellectual capital, supported by high company success, the effect on share value will be more robust, so that it will reflect increased company value because investors see good prospects when making investments. It can be concluded that growth is a type of quasi-moderation because this variable connects between the predictor variable and the bound variable, where the moderation variable interacts with the predictor variable while at
the same time becoming the prediction variable.

V. CONCLUSION

The results of this study reveal that intellectual capital has a significant positive effect on firm value. Investors will appreciate the intellectual capital system more through a rise in stock values, the more effectively it is implemented. Intellectual capital is well-balanced with the company's growth potential and attracts greater investor appreciation than if investors saw the company as possessing only intellectual capital.

The theoretical, practical, and empirical implications obtained are that intellectual capital and growth directly affect firm value. Growth can moderate the correlation between intellectual capital and firm value. Furthermore, investors and companies should always pay attention to intellectual capital and growth as predictors and moderators in their efforts to increase company value. It can be concluded that the kind of moderation in the role of growth that moderates the relationship between intellectual capital and the value of the company is quasi-moderation.

Based on this research, suggestions are expected to be made, namely that companies should increase their intellectual capital because it can increase company value. Increasing the company's intellectual capital can be done by increasing training programs and encouraging employees to continue their education to improve employee competence, and shareholders are expected to be more careful in investing in the capital market to choose companies that have good intellectual capital, growth, and company value because they have more guaranteed company prospects.

This study is limited to the manufacturing consumer goods sector with a four-year observation period. Therefore, it needs to describe the actual condition and trend of intellectual capital management in the long term. Future research should utilize longer periods and different industries for comparison. Future studies may also include other metrics of firm worth, such as earnings per share (EPS), as it is feasible that investors will place a greater emphasis on a company's EPS and utilize other business sectors with solid intellectual capital to achieve better results.

REFERENCE


Hadiwijaya, R. C., & Rohman, A. (2013). Pengaruh Intellectual Capital Terhadap Kinerja...


