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How Business Intelligence, Intellectual Capital, and Company Performance Increase Company Value? Leverage as Moderation

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Abstract
This study aims to analyze the role of leverage which moderates the effect of business intelligence, intellectual capital, and financial performance on firm value and is controlled by the variable firm size and sales growth in manufacturing industry companies on the IDX in 2013-2021. This study uses secondary data and panel data, a sample of 420 manufacturing industry companies in 2013-2021. The results of the first model study before moderation show that the independent variables of business intelligence, intellectual capital and company performance have a positive effect on firm value. However, for the leverage variable it has a negative effect on firm value, which shows that the higher the debt owned, the lower the company's value. The application of business intelligence can be done through the improvement of a good integrated system. Companies should optimize their intellectual capital. The use of debt to finance a company can increase the value of the company, this increase should be considered before making a decision by considering the risks that will arise and the cash flows that will be received.

Keywords: Business Intelligence, Intellectual Capital, Company Performance, Leverage, Company Value

1.0 INTRODUCTION

The level of company competition can change business people in controlling the company by maximizing the potential of the company both internally and externally. Internal management can be carried out through tangible resources and intangible resources, namely intellectual capital, Ekowati et al., (2012) and supported by business intelligence as a source for obtaining and managing information (Pirttimaki (2007), as well as company performance (Sudiyatno and Puspitasari, 2010): These three components can increase the value of the company.

Business intelligence is a system and information center that is useful to assist in the decision-making process (Trkman et al., 2010). Information is obtained by collecting, consolidating, analyzing, and accessing data that enables users to make better business decisions. One of the measuring tools for business intelligence is the cost of research which includes market research, Mulyadi (2001). Al-Shubiri, (2012) emphasized that business intelligence really helps managers and product managers in identifying various levels of customers and producing products or services that suit the needs of customers. But Davison (2001) argues differently that business intelligence does not have much effect on increasing the company.

Apart from business intelligence, another factor that influences the increase in company value is intellectual capital. Andriani and Jamaluddin (2014) and Putra (2012) emphasized the importance of intellectual capital resources, both for profit-oriented companies and non-profit companies in facing the level of competition in the company. The results of his research state that intellectual capital has a positive effect on firm value (Indrajaya, 2015) but the results of research by Iranmad (2014), Sunarsih and Mendra (2012) show that intellectual capital has a negative effect. This gap underlies the need for further research because there are inconsistent results. research, as well as company performance which has an important role in company value. The results of financial performance research also have a different influence between Firnando's research (2016) and Gamayuni and (Rika, 2012). This gap is also supported by other factors that play a moderating role between business intelligence, intellectual capital, and company performance on company value, namely leverage. There are different points of view about the source of funds used to finance the company's operations or investments originating from debt owned by the company, as the reason for using leverage for the moderating variable.

Other factor that influences company value is company performance of company size (Meidawati, 2016), and growth that can control company value. The basis for using control variables is based on the results of previous studies, by Joshi (2012), and Wicaksana (2012). which has been adapted to the conditions of the research environment. The motivation on this study is maximizing company value using business intelligence and Intellectual capital in driving company performance, with a focus on leverage as a key moderator.

2.0 LITERATURE REVIEW

Company Value

Husnan explained that (2004), company value is the price that prospective buyers are willing to pay if the company is sold. The main goal of the company is to maximize the prosperity of the owner or shareholder by increasing the value of the company. Competition between companies, especially manufacturing companies demands better company management, which can be done through increased sales and cost efficiency to obtain high-profit margins to increase company value and prosperity of investors or shareholders (Renaldo, Suhardjo, et al., 2021).

Business Intelligence and Enterprise Value

Business Intelligence (Renaldo, Jollyta, et al., 2022) is the process of collecting data, providing access, and analyzing data to assist organizations as a source of corporate knowledge in assisting decision-making and can influence company performance. Another function of business intelligence is to assist organizations in knowing current trends so that they can be used by organizations in determining corporate strategy so that organizations are ready to face dynamic market trends. Williams & Williams, (2011) and Shubiri (2012), explain business intelligence more broadly as a process for obtaining data and processing this data into a useful information center for quick, precise, and efficient decision making which can be done through advertising costs, technology information (Sudarno, Putri, et al., 2022) and Marketing which has an impact on increasing the value of the company. Likewise, Widhiastuti (2017) explains business intelligence as an addition to the costs of obtaining information, and processing information until the information can be used for corporate decision making which consists of advertising costs, information technology, and marketing costs.

Intellectual Capital and Company Value

Sawarjuwono and Kadir (2003) explain that the elements of intellectual capital consist of Human Resource Capital (HC), Structural Capital (SC), and Relationship Capital (RC). good with customers. The value of the company will increase if it can maximize its intellectual capital. Putra (2012) and Sudibya and Restuti (2014) have proven that intellectual capital has a positive and significant effect on firm value. Likewise, with Ulum's research (2008), who conducted research on the banking sector in Indonesia. The results of the study also state that intellectual capital is statistically proven to have an effect on firm performance and firm value.

Company Performance and Company Value

Performance is the determination of the size that can be used to measure the success of a company in generating profits, as a measure to determine the level of company conditions in a certain period. (Sudiyatno and Puspitasari 2010) and Christiani (2010) explains that financial performance is an achievement achieved by a company in a certain period that reflects the level of soundness of the company. Furthermore, Christiani (2010), explains that the company's financial performance is one aspect of the fundamental assessment of the company's financial condition which can be done based on an analysis of the company's financial ratios.

Leverage

Leverage as a moderating variable in this study. Leverage arises because companies that want to meet their operational or investment needs use assets as a source of funds which causes fixed expenses in the form of depreciation costs from fixed assets and interest costs from debt. This increases the value of the company. This fixed burden can strengthen or weaken the resources that affect company value, namely intellectual capital, business intelligence, and financial performance. Mondal and Kumar (2012), in the banking sector, use leverage as measured by total debt with the results of the study stating that leverage has a significant negative effect on firm value. But research by Hasibuan et al (2016) stated a significant effect.

Control Variables

In this study, there are 3 supporting factors as control variables that affect firm value, namely firm size (size), growth (GR), and Firm Characteristic (FC). Selection of company size, growth, and firm characteristics as control variables, namely variables that can be controlled or made constant so that the influence of independent variables on the dependent is not influenced by external factors that are not examined (Sugiono, 2011), because based on the results of previous research, Komalasari (2014), these variables can control and influence the value of the company. The size is measured from the natural log of assets. The growth is measured by sales growth. The firm characteristics is measured by how long the company stayed in main sector.

Hypothesis

Hypothesis 1. Business Intelligence Influences Firm Value
Hypothesis 2. Intellectual Capital Influences Firm Value
Hypothesis 3. Intellectual Capital Influences Firm Value
Hypothesis 4. Leverage can moderate the effect of Business Intelligence on Firm Value
Hypothesis 5. Leverage can moderate the effect of Intellectual Capital on Firm Value
Hypothesis 6. Leverage can moderate the effect of Financial Performance on Firm Value

3.0 METHODOLOGY

Research Design

This study uses secondary data with a sample of manufacturing industry companies. 2013-2021 research period. The research design is structured to test the hypothesis using multiple regression with moderating variables. based on its type, it is included in causal research, because this research was conducted to explain causality between variables through hypothesis testing. The time dimension of this study, the researcher made measurements at a certain time with several observations or also called panel data (Gozali, 2013). namely a combination of cross-sectional (all manufacturing industry companies (Tbk)) and time series (data from 2013 to 2021). The criteria used as a sample:

1. Companies other than the property and financial sectors registered from 2013 to 2021
2. Complete financial reports related to research data.
3. Financial statements that only have positive cash flow.

The model test in this study used the F test to confirm the goodness of fit at the R2 value and the t and F-count values were statistically significant at the 5% level (Renaldo et al., 2022).

Table 1. Research Variable Measurement

Variable	Dimension	Measurement	References
Company Value	Market Value	Log (Company share price x Tradable share)	(Junaedi et al., 2023)
Business Intelligence	Promotion, Research, Information System Cost	(Promotion Cost + Research and Devepoment Cost + Information System Cost) / Sales	William and William (2003), Shubiri (2012)
Intellectual Capital	VACA, VAHU, and STVA	VAIC = VACA + VAHU + STVA	Nuryaman (2015), Sudibya and Restuti (2014)
Company Performance	Tobin's Q	Tobin's Q = (Market Value of Equity + Total Debt) / Total Assets	(Sudarno et al., 2022)
Moderation	Leverage	Leverage = Total Debt / Total Assets	Joshi (2012)
Control	Company Size	Size = Log (Total Assets)	(Renaldo et al., 2021)
	Growth	Sales Growth = ($Sales_t$ – $Sales_{t-1}$) / $Sales_{t-1}$	Khanqah, et al. (2012)
	Firm Characteristic	Firm Characteristic = How long company stay in main sector	Self

Data analysis techniques

The research model consists of the main model and the second model. The variables of business intelligence, intellectual capital, and company performance (as independent variables), leverage (as moderating variables), company size, and sales growth (as control variables) as well as interactions between the independent variables and the dependent variable). This research used moderated regression analysis (Renaldo, Suhardjo, et al., 2022; Suhardjo, Renaldo, Andi, et al., 2022).

4.0 RESULTS AND DISCUSSION

Descriptive Statistics

The research population totaled 420 companies obtained from 2013 - 2021. The research data used are companies that have positive cash flow, 299 of which have 284 complete financial statements. Based on this sample, the statistical description is shown in table 2.

Table 2. Descriptive Statistics

	Minimum	Maximum	Mean	Stdev
CV	22.274	33.487	27.168	1.818
BI	0.165	0.380	0.276	0.073

	Minimum	Maximum	Mean	Stdev
IC	-9.238	9.437	2.501	2.114
Size	25.079	32.798	28.157	1.256
Lev	0.190	7.160	0.403	0.146
CP	0.306	19.064	1.453	2.677
Gro	-0.309	2.247	0.106	0.078
FC	5.000	9.000	7.471	2.315

Source: Processed data, 2022

Classical Assumption Test Results

The classical assumption testing process includes a normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. Based on the results of the normality test using the Kolmogorov Smirnov as seen from asymp sig > 0.2, it means that the data is said to be normal. Multicollinearity test for all variables with a VIF value < 10 means that there is no collinearity. For the heteroscedasticity test using the scatterplot graph and from the graph there is no clear pattern and the dots spread below and above the zero on the Y axis, meaning there is no heteroscedasticity. For the autocorrelation test all sig above 5%.

Hypothesis Test Results

Based on the SPSS output results, it is known that the hypothesis of the influence of business intelligence, intellectual capital, and financial performance is supported, meaning that business intelligence, intellectual capital, and company performance have an effect on firm value. The output results of the first SPSS model before moderation can be seen in table 3 as follows.

Table 3. Regression Analysis Result

Dependent: Company Value	B	Sig	VIF	Adjusted R Squared
Constant	16.325	0.044		
BI	10.577	0.006	1.352	
IC	0.796	0.043	1.980	
Size	0.070	0.026	1.534	0.682
CP	0.175	0.007	1.535	
Gro	0.936	0.028	1.446	
FC	3.634	0.025	1.885	

Source: Processed data, 2022

Based on the test results prove that the first, second, and third hypotheses are accepted. This means that business intelligence, intellectual capital, and company performance have a positive effect on company value. The adjusted R squared value is 0.682, which means that the variables included in the first model have an effect of 68.2% on firm value, while the rest are influenced by other factors.

Table 4. Moderated Regression Analysis Result

	B	Sig	VIF	Adjusted R Square
Constant	16.723	0.040		
BI	4.860	0.007	2.169	
IC	0.001	0.026	3.244	
Size	0.165	0.046	1.282	
CP	0.738	0.046	2.151	
Gro	0.457	0.023	1.290	0.794
Lev x BI	11.637	0.037	1.406	
Lev x IC	0.456	0.061	2.662	
Lev x CP	0.483	0.048	1.814	
FC	2.434	0.032	1.904	

Source: Processed data, 2022

Based on the test results prove that the fourth, fifth, and sixth hypotheses are accepted. This means that business intelligence, intellectual capital, and company performance moderated by leverage have a strengthen effect on company value. The adjusted R squared value is 0.794, which means that the variables included in the second model have an effect of 79.4% on firm value, while the rest are influenced by other factors.

Discussion

Companies should use business intelligence and be supported by maximizing intellectual capital and the performance of the company owned can increase its value of the company. This is in accordance with the results of research by Williams and Williams, (2013). Maximum utilization of intellectual capital can be the main driver for companies that want to win the competition and prosper shareholders as the company's main goals. These findings support the research of Sudibya and Restuti (2014), Jacub (2012), and Putra (2012). Which shows intellectual capital has an influence on firm value. Intellectual capital includes all the knowledge of employees, the organization, and their ability to create added value and lead to sustainable competitive advantage and have an impact on increasing the value of the company.

Companies can use a combination of debt for corporate financing. The debt structure can interact with business intelligence, intellectual capital, and company performance with a significant influence on the control size and growth variables. The magnitude of the influence shows that the presence of debt to finance investment as long as it can produce cash flows that benefit the company can increase the value of the company. The role of leverage moderation on business intelligence and firm value includes pseudo moderation, intellectual capital leverage with firm value including predictor moderation, and financial performance with firm value including pseudo moderation.

5.0 CONCLUSION

Conclusion

Based on the results of data analysis for the main research model, the following conclusions are obtained:
1. Business intelligence has a significant positive effect on firm value
2. Intellectual capital has a significant positive effect on a firm value
3. Financial performance has a significant positive effect on a firm value
4. Leverage strengthens a positive effect of business intelligence on firm value
5. Leverage strengthens a positive effect of intellectual capital on firm value
6. Leverage strengthens a positive effect of financial performance on firm value

The control variable firm size, company growth, and firm characteristics has a positive and significant effect both individually and collectively on firm value. This shows that company size, sales growth, firm characteristics play an important role in increasing company value (Suhardjo, Renaldo, Suyono, et al., 2022). The bigger the company, continues to grow, and has the same characteristics, the more likely the company is to increase its value.

Implication

For theory implications, the research results are useful to provide empirical evidence about the factors that can affect firm value related to business intelligence and intellectual capital and are supported by firm performance and control variables.

For managerial implications, for companies, the results of this study indicate that companies need to take into account the cost of business intelligence to increase the value of the company because based on the results of this research it shows that the cost of business intelligence can increase the value of the company. With business intelligence and the quality of human resources owned and company performance, all the information available in the data bank can be run properly and support the increase in company value.

Limitation

In addition to the research findings that have been obtained, of course, this study has limitation in data processing, a number of outlier data were encountered so the number of samples was reduced. This condition affects the generalization of the research.

Recommendation

As for suggestions that can be given regarding the limitations of the research that has been done, future researchers are expected to further refine this research in the:
1. Add some theory and literature as well as the latest research results related to the variables studied such as business risk
2. Using research samples in different time periods
3. Using control variables other than company size, sales growth, and firm characteristic to increase company value.

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