

INTELLECTUAL CAPITAL ANALYSIS USING THE M-VAIC METHOD ON STOCK PRICES THROUGH PROFITABILITY IN COMPANIES IN THE IDXTECHNO INDEX ON THE INDONESIAN STOCK EXCHANGE

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ABSTRACT

This research aims to determine the influence of Intellectual Capital using the modified value added intellectual coefficient (M-VAIC) method on share prices through profitability in companies on the IDXTECHNO index on the Indonesia Stock Exchange. The research carried out was quantitative research in the form of descriptive verification methods and the type of data used was quantitative data. The population of this study consists of 42 companies listed on the IDXTECHNO index on the IDX for the 2017-2022 period. The sample for this research consisted of 8 companies based on the criteria set by the researchers. The data analysis method uses PLS (Partial Least Square) which is structural equation analysis (SEM) via SmartPLS software. The results of this research show that Intellectual capital is partially proven to have a positive and significant influence on share prices and profitability. Meanwhile, profitability is proven to have no significant influence on share prices. The next results prove that profitability is unable to mediate the influence of intellectual capital on share prices.

Keywords: *Share Price, Profitability, Return on Equity (ROE), Intellectual Capital, Modified Value Added Intellectual Coefficient (MVAIC)*

1. INTRODUCTION

The share price is the price that occurs on the stock exchange market at a certain time which is determined by market players and is determined by the demand and supply of the shares concerned in the capital market. (Pelle et al., 2022). The stock index functions to measure market sentiment towards existing stocks. The Indonesia Stock Exchange (BEI) has launched 11 (eleven) new sectoral indices which are incorporated into the IDX-IC Sectoral Index group on January 25 2021 with a base value of 1,000. IDX Industrial Classification (IDX-IC) is an index that measures the price performance of all shares in each sector which refers to the IDX-IC classification. It is hoped that the grouping and measurement of shares in this sectoral index will facilitate investment by stakeholders. One of the sectoral indices in IDX-IC is IDXTECHNO which measures the performance of all stocks in the Technology Sector based on the IDX Industrial Classification (IDX-IC). This sector index consists of 42 issuers operating in the fields of software, information technology services, hardware and technological equipment. Since the beginning of 2021, the technology index has risen high from 1,873 until July 2021 has increased to 11,732 or an increase of 526% since the beginning of the year. The increase in share prices of technology issuers was triggered by the increasing use of digital technology since the COVID-19 pandemic. The large use of digital technology and new opportunities in digital business have the potential to increase the income of technology issuers.

One of the risks of investing in shares is a decline in share prices. The performance of the IDXTechno index shows a sharp decline of -42.6% (ytd) as of December 2022. IDXTECHNO has a weight on the IHSG of 4.39% or is in seventh place out of 11 sectors (Kartika, 2022). As a result, this decline has made IDXTechno a plummeting index on the Indonesian Stock Exchange. Generally there are two approaches to assessing shares, namely the fundamental approach and the

technical approach. The fundamental approach refers to the company's intrinsic value which shows the company's prospects. Meanwhile, the technical approach refers to the security price section, where investors predict prices for the future based on past stock movements and analysis.

Resource-based theory is one of the theories that is widely accepted in the field of strategic management (Newbert, 2007). Resource-based theory states that valuable and rare company resources can be directed to create competitive advantages so that the resources owned are long-lasting and not easily imitated, transferred or replaced. Intellectual capital is an intangible asset that can add value to the company. Modified value-added intellectual coefficient (M-VAIC) is an intellectual capital performance measurement model based on the IC measurement model developed by Pulic, VAIC™. VAIC uses three components consisting of human capital efficiency (HCE), structured capital efficiency (SCE) and capital employed efficiency (CEE). M-VAIC adds one more component, namely relational capital efficiency (RCE) in its calculations (Ulum et al., 2014). Chen et al. (2005) argue that the existence of intellectual capital as an intangible asset is believed to play an important role in improving company performance. Each company has unique knowledge and intangible assets in the form of brand, skills, innovation and expertise are starting to be considered by investors. Pulic (1998) developed a method used to measure efficiency regarding the components of intellectual capital which consist of physical capital and non-physical capital based on the concept of value added, where intellectual capital will provide an overview of the performance of Intellectual Capital (IC) for the company. This is in line with stakeholder theory, where companies are obliged to provide benefits to their stakeholders.

Miller (1999), in Wijayanti (2012) stated that in line with signaling theory, disclosure of intellectual capital in financial reports by companies is carried out in order to meet investors' information needs and support company value. Based on this argument, it shows that the higher the company's intellectual capital indicates that the company's ability to generate profits will increase, which is reflected in the company's financial performance, and can influence the increase in share prices (Kurniawan, 2014). In fact, investors will be interested in shares that can provide large returns or profits. The greater the company's profitability value, the more optimal the use of company equity in generating profits and increasing profits means progressive growth of the company, thus share prices will also rise. A company's ability to achieve profitability largely depends on the company's ability to develop and market the business efficiently and optimize its resources. It is hoped that this research will be useful for investors in assessing shares properly while minimizing risks when investing in shares. Based on the background of this problem, this research aims to: determine and analyze the influence of Intellectual Capital on share prices through profitability in companies on the IDXTECHNO Index on the Indonesia Stock Exchange.

2. LITERATURE REVIEW

2.1. Resource-based Theory

According to resource-based theory (RBT) proposed by Wernerfelt (1984), companies have valuable and rare resources to form competitive advantages and can guide companies to have good long-term performance. Each company has unique knowledge, different human resources, skills and values as intangible resources, which can be converted into 'value' in the market.

2.2. Stakeholder Theory

Stakeholder theory explains that a company is an entity that does not only operate for its own interests but is obliged to provide benefits to its stakeholders or shareholders. The position of stakeholders is prioritized in disclosing company report information which is used as material for consideration by company management.

2.3. Signaling Theory

Signaling theory was first put forward by Spence (1973) who argued that the owner of the information provides a signal in the form of information that describes the condition of a company which is beneficial for the recipient (investor). Leland & Pyle (1977) stated that signals mean the efforts made by the old owner of the company to channel the information they have to investors.

2.4. Intellectual Capital

According to Stewart (in Irawan, 2021) intellectual capital is a collection of information knowledge, technology, intellectual property rights, experience, organizational learning and competence, team communication systems, customer relationships and brands that are able to create value for the company. Advantages are created from value that grows and provides efficiency, opportunities and trust that help companies achieve competitive advantage (Ulum et al., 2017). *Modified value-added intellectual coefficient* (M-VAIC) is an Intellectual Capital performance measurement model modified by Ulum (2014) based on the IC measurement model developed by Pulic in 1998, namely the value added intellectual coefficient (VAICTM). MVAIC is a new measurement model by adding a Relational Capital Efficiency (RCE) component which is measured by marketing costs. M-VAIC provides information regarding the efficiency generated in the process of creating value from tangible assets and intangible assets owned by the company. In this case, IC performance is measured by Value Added (VA) which is built by several components, namely CEE (capital employed efficiency), HCE (human capital efficiency), SCE (structural capital efficiency) and RCE (relational capital efficiency).

Human Capital includes the collective knowledge, competencies, experiences, skills, and talents of humans within an organization. It also includes the creative capacity of the organization and its ability to be innovative. Structural capital is defined as the knowledge that exists in an institution at the end of the working day. It consists of governance principles, organizational routines, procedures, systems, culture, databases, publications, intellectual property, and others (Widyastuti & Aprillia, 2019). Furthermore, Relational Capital (RC) is a resource related to the relationships owned by the company and its partners, whether from quality suppliers, from the company's loyal customers, shareholders, R&D partners, or from relationships between companies/government/society. Capital employed efficiency is a company's ability to utilize its resources in the form of physical and financial capital.

2.5. Profitability

Profitability is one measure of company performance, company profitability describes the company's ability to generate profits during a certain period at certain levels of sales, assets and equity. According to Kasmir (2012:196) "Profitability Ratio is a ratio to assess a company's ability to make a profit." Meanwhile, in this research, the profitability ratio used in this research is Return on Equity (ROE).

2.6. Share Prices

According to Jogiyanto (2003:88), the share price is the price of a share that occurs on the stock market at a certain time determined by market players. A share has a value or price that is determined based on the supply and demand for shares on the stock exchange market (Suhermin, 2014). According to Purwanti & Nurastuti (2020) share prices are divided into 3, namely nominal price, initial price, and market price. Stock price fluctuations will be determined by the interaction of supply and demand. Factors that influence share price fluctuations according to Veronica & Pebriani (2020) consist of internal factors and external factors.

Table 1. Operational definitions and variable measurements

Variable	Definition	Variable Measurement	Scale
Intellectual Capital (X)	M-VAIC is a development of the VAICTM measurement which provides information regarding the efficiency generated in the value creation process from tangible assets and intangible assets owned by the company.	M-VAIC $ICE+CEE$ ICE $HCE+SCE+RCE$	= Ratio =
Stock price (Y)	The share price is the price of a share that is determined while it is taking place on the stock exchange market, which is based on the demand and supply of market participants.	Closing Price (Closing Price)	Ratio
Profitability (Z)	Profitability describes a company's ability to generate profits during a certain period at certain levels of sales, assets and equity.	ROE $Net Income$ $= \frac{Net Income}{Shareholder's Equity}$	Ratio

Several previous studies related to this research, namely research by Wardifa & Yanthi (2022), prove that Intellectual Capital has a positive and significant influence on financial performance, share prices and company value, respectively. *Intellectual capital* increasing profitability which can then support company value and investor confidence, increasing share prices. Research by Fuad & Nustini (2022) shows that the Modified value added intellectual coefficient (M-VAIC) has a positive effect on the company's financial performance as projected by ROA and ROE. Meanwhile, Wijayanti (2012) concluded that Intellectual Capital has an indirect effect on share prices through financial performance which is calculated through EPS, but not through ROE.

3. RESEARCH METHODS

This research is classified as quantitative research in the form of a descriptive verification method which is a method that aims to describe whether existing facts are true or not and explain the relationship between the variables studied by collecting data, processing, analyzing and interpreting data in hypothesis testing (Sugiyono, 2013). The data used in this research is quantitative data and the data source uses secondary data in the form of the company's annual financial report. The population in this study was 42 companies registered with IDXTECHNO on the IDX. The sample for this research consisted of 8 companies based on the criteria set by the researchers. The data collection method in this research is the documentation method, namely collecting documentary data sources in the form of company annual financial reports that have been audited. Data analysis using SmartPLS software which has two types of models formed in it, namely the measurement model (outer model) and the structural model (inner model). The measurement model is used to test validity and reliability, while the structural model is used to test causality (testing hypotheses with prediction models). After testing the outer model, the next step is to test the inner model by considering the R-Square value for the dependent variable, testing the path coefficient and testing the hypothesis by looking at the probability value.

4. RESULTS AND DISCUSSION

4.1. Results

Table 2. Descriptive Statistical Analysis

		Minimum	Maximum	Mean	Std. Deviation
Intellectual Capital	8	- 0.079	7,12 4	3,61 3	1,48 2
Stock price	8	50	13,0 00	2,14 3,833	2,93 4,660
Profitability	8	- 4,861	0.88 8	- 0.043	0.77 3

Outer Model Analysis

Table 3. Convergent Validity

	Intellectual Capital	Stock price	Profitability
	1,000		
		1,000	
			1,000

Table 4. Discriminant Validity

	Average Variance Extracted (AVE)
Stock price	1,000
Intellectual Capital	1,000
Profitability	1,000

Based on the data presented in table 3, all indicators used in the intellectual capital, share price and profitability variables have loading factor values greater than 0.7. This shows that all indicators in these variables have a high level of validity, so they meet convergent validity. Furthermore, it is known that the AVE value in table 4 for each variable is greater than the value of 0.5. Thus, it can be stated that each variable in this research model has good discriminant validity.

Table 5. Reliability Test

	Composite Reliability	Cronbach's Alpha
Stock price	1,000	1,000
Intellectual Capital	1,000	1,000
Profitability	1,000	1,000

Based on the data in Table 5 above, it can be seen that the composite reliability and Cronbach's alpha values for all research variables are greater than 0.7 (> 0.7). These results show that each variable has met composite reliability and Cronbach's alpha so it can be concluded that all variables have a good level of reliability and can be declared reliable.

Inner Model Analysis

Table 6. R-Square Test

	R Square	R Square Adjusted
Stock price	0.077	0.036
Profitability	0.114	0.095

Presentation of data in Table 6 shows that the value *R-Square* obtained in the research model on share prices is 0.077, this explains that the percentage of share prices that can be explained by intellectual capital is 7.7%. Meanwhile, the rest is explained by other variables not used in this research. Meanwhile, the R-Square value obtained for profitability explains that the percentage of profitability that can be explained by intellectual capital is 11.4%.

Table 7. Path Coefficients & Hypothesis Testing

	Path Coefficients	T Statistics (O/STDEV)	P Values
Intellectual Capital -> Stock Price	0.283	2,364	0.018
Intellectual Capital -> Profitability	0.337	3,640	0,000
Profitability -> Share Price	-0.021	0.224	0.823
Intellectual Capital -> Profitability -> Share Price	0.337	0.150	0.881

Based on Table 7. it can be concluded that the relationship between intellectual capital to share price is 0.283. The relationship between intellectual capital and profitability is 0.337. Meanwhile, the relationship between profitability and share price is -0.021. The description of these results shows that the independent variable, namely intellectual capital, has a path coefficient with positive numbers both on profitability and on share prices. Meanwhile, profitability has a negative path coefficient value on share prices, which means the relationship between profitability and share prices is negative.

4.2. DISCUSSION

The Influence of Intellectual Capital on Stock Prices

The research results prove that the T Statistics value is 2.364 and the P-Values < 0.05 or the resulting P Values are 0.018 < 0.05 so it can be concluded that intellectual capital is proven to have a positive and significant influence on stock prices. Companies with high intellectual capital will generally have superior knowledge and expertise in developing new products or services, more innovative technology, or more efficient business processes. So investors tend to give a higher assessment to companies that have high intellectual capital and have the potential to generate sustainable profits. The results obtained in this research are in line with the results of previous research conducted by Suhermin (2014); Halim, et al. (2016); and Wardifa & Yanthi (2022) which states that intellectual capital is proven to have a positive and significant influence on share prices.

The Influence of Intellectual Capital on Profitability

The research results prove that the T Statistics value is 3.640 and the P-Values < 0.05 or P Values 0.000 < 0.05 so it can be concluded that intellectual capital is proven to have a positive and significant influence on profitability. Intellectual capital allows companies to develop new

innovations, improve business processes, and optimize operational efficiency. The specialized knowledge and expertise possessed by a company can accelerate the development of innovative new products or services, generate competitive advantages, and increase revenues and profit margins. The results obtained in this research are in line with the results of previous research conducted by Fuad & Nustini (2022) and Nunki, et al. (2014) stated that intellectual capital has a positive and significant effect on profitability.

The Effect of Profitability on Stock Prices

The results of hypothesis testing show that the T Statistics value is 0.224 and the P Values $0.823 > 0.05$, so it can be concluded that profitability is proven to have no significant influence on stock prices. This profit is the main factor in measuring the company's effectiveness and efficiency in utilizing all existing funds and resources. A high level of profitability is attractive to investors. Investors tend to be attracted to companies that are able to generate high and stable profits. In the long term, increased interest from investors can have a positive impact on the company's share price. However, this research cannot prove this effect because the results in this research show that profitability has no effect on stock prices. The results obtained in this research are in line with the results of previous research conducted by Wijayanti (2012) and Nabella, et al., (2022) which stated that profitability has no effect on stock prices.

The Influence of Intellectual Capital on Stock Prices through Profitability

The results of hypothesis testing in Table 7 show that the T Statistics value is 0.150 and the resulting P Values are $0.881 > 0.05$, so it can be concluded that profitability has proven unable to mediate the influence of intellectual capital on stock prices. Investors and potential investors tend to be interested in investing their capital in companies that have high intellectual capital. Because investors realize that companies with high intellectual capital have the potential to generate consistent profits and provide added value for shareholders. Profitability reflects a company's ability to generate profits by utilizing the resources and capabilities it has. So the higher the profitability, the better the company's financial performance, and this can provide a boost to share prices. However, this research is not in line and cannot prove this influence because the results in this research show that profitability is proven to be unable to mediate the influence of intellectual capital on company share prices. This shows that profitability does not have a sufficient contribution to increase the company's share price. The results obtained in this research are in line with the results of research conducted by Kurniawan (2014) who in his research showed that profitability was unable to mediate the influence of intellectual capital on stock prices.

5. CONCLUSION

The results of this research provide several conclusions that can be drawn based on the discussion of the problem that has been carried out. The following are the conclusions in this research:

1. *Intellectual capital* proven to have a positive and significant influence on share prices in companies on the IDXTECHNO index on the Indonesia Stock Exchange.
2. *Intellectual capital* proven to have a positive and significant influence on profitability of companies on the IDXTECHNO index on the Indonesia Stock Exchange.
3. Profitability proven to have no significant effect on share prices in companies on the IDXTECHNO index on the Indonesian Stock Exchange.
4. Profitability is unable to mediate the influence of intellectual capital on share prices on companies on the IDXTECHNO index on the Indonesian Stock Exchange.

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