

# INTELLECTUAL CAPITAL IMPACT ON TELECOMMUNICATION BUSINESS PERFORMANCE; IS IT REALLY MATTER?

Noel Singgih Haryo Pradono  
Treasury & Funding Department, PT Dayamitra Telekomunikasi  
Gd. Telkom Landmark Tower. Jl. Jend. Gatot Subroto Kav. 52, Jakarta Selatan  
noelsinggih.haryo@gmail.com  
Corresponding author: noelsinggih.haryo@gmail.com

## Abstract

*This study aims to determine the effect of Intellectual Capital (IC) represented by value added intellectual capital (VAIC) on Telecommunication (Telco) business performance from inside and outside perspective. This study use Return on Equity (ROE) to represent inside perspective and Market Value Added (MVA) per share to represent outside perspective on business performance. The sample consist of Telco listed on Indonesia Stock Exchange and used period of 2011 - 2018. This study conducts simple panel data regression statistic using random effect model for ROE and common effect model for MVA per share. The result showed that IC give significant impact on both on inside and outside business performance perspective.*

*Keywords: intellectual capital, MVA per share, ROE, telecommunication*

## INTRODUCTION

The characteristic of Indonesian telecommunication sector is under-penetrated and with the rise of Gen Y era, internet become primary needs. Younger generation with high disposable income support data consumption rate. This reason makes Indonesia a big attractive market for telecommunication services, applications, and devices. For Telecommunication company (Telco), this market provides some significant challenges like making reliable infrastructure across the archipelago type country, changing government regulation and high-cost land acquisition. Of course, whoever can solve these challenges will be rewarded with many business opportunities in telecommunication and its adjacent project (Global Business Guide Indonesia – 2015). For this moment, mobile services in Indonesia are provided by 5 different operators namely Telkomsel a subsidiary of state-owned Enterprise Telkom Indonesia, Indosat, H3I, SmartFren, XLAXiata, and Sampoerna. Telkomsel is the biggest operators with 59,2% market share after new government regulation to tighten registration for SIM card usage (Tim Peneliti Puslitbang SDPPI, 2018).

As more people discard their old type of phone and begin to use more advanced smartphones and tablet computers, the use of SMS and voice calls are slowly replaced by internet call, social media, and messaging application in term of source of revenue. At this moment, one in five phone users has a smartphone, with the rise of middle-income family, Telco have bigger opportunity in selling premium data package that offer more adjacent service and better connections. This recent situation makes perfect example that data service will slowly become the new focus for telco to capitalize and become the main driver for Indonesia phone market although still in relatively low market penetration (Global Business Guide Indonesia, 2015).

Telecommunication industry (Telco) is extremely knowledge intensive and highly dynamic. The development of this industry is based on several factors such as human resource, systems, technology infrastructure, and relationships between various parties. These factors are the core elements of IC. The definitions of IC have been recently developed, at this moment there is no universal agreement about its exact definitions and elements. Bontis (1999) noted that: “the IC definition is somehow still very abstract”. Moreover, Marr and Chatzkel (2004) concluded that: “IC as a term and theory are often poorly defined and researched”. Marr and Moustaghfir (2005) stated that “IC concept is often highly misunderstood” and they said that “the amount of confusion regarding IC is still high”. Pitkanen (2006) stated “there is almost no universal perspective on how to define, classify and evaluate IC”. Sharabati, Jawad and Bontis (2010) stated: The IC concept is rarely known among top level management in most middle east countries. Moreover, Manzari, Kazemi, Nazemi and Pooya (2012) added that each company should choose its own IC definition and its tools to measure it.

The aim of this study is to identify how significant IC impact on Telco internal and external Business Performance. Previous studies mostly found that IC has significant impact on financial performance (Mondal & Ghosh 2012; El-Bannany, 2008; Shih, Chang & Lin 2010; Pradono & Widowati, 2016). In Indonesia, IC Studies mostly conducted on banking sector (Kartika, 2013; Djamil et al 2013; Sidharta & Affandi 2016; Widowati & Pradono 2017). The reason behind why banking sector become subject for IC study is because it needs to upgrade and invest heavily on technology, procedure, human resource capability and relation. In this study, the scope of study is shifted to Telecommunication Company because according to recent phenomena in Indonesia, Telco is moving its core business on content, experience, and service by selling their infrastructure asset like tower (Pradono, 2019). This study argues that the new core business for Telco is heavily related to IC because it relies on how well the human resource and the system support new creative applications, contents, and relationship with customer (Ulum, 2010). Previous study about IC impact on telco business in Indonesia is limited. Pratiwi, Yusnaini and Ermadiani (2018) conduct IC Impact on Telco internal business performance and Ulum, (2010) study about IC disclosure on Telco. By referencing in these two previous studies, this study tries to address the gap how IC impact external business performance using market value as indicator and to add more evidence on how IC Impact Telco business performance in Indonesia.

## **LITERATURE REVIEW**

### **IC Definitions**

Skandia (1995) stated IC as knowledge possession, applied experience, owned technology, relationships between partners, and human resource professional skills that give Skandia organization with a competitive advantage among its competitors. Roos and Roos (1997) stated IC as the total of organization hidden assets which not fully written explicitly on the balance sheet or financial statement, and thus included both what is in the mind of human resource, and what is keep intact in the organization as a routine or system. Bontis (1999) define IC as the difference between what a company market value is and the assets replacing cost. Skandia (1998) defined IC as the leftover value between market value and book value of organization. Lev (2007) defined that IC is the intangible sources of value creation, generated by new idea, unique organizational structure, or organization member best practices. Zambon (2002) defined IC as profitable knowledge

that can be sell to market. Stewart (2003) stated IC as every knowledge that each member possesses and know that gives it an advantage; IC is nonphysical things. Then, Bontis (2004) defined IC as the supplies of valuable knowledge assets for the organization. It is consisting of human capital, structural capital, and customer capital. Garcia-Meca and Martinez (2005) stated IC as an asset that consist of knowledge, information, intellectual property, and experience that can be capitalize for profit in the long run. While MacDougall and Hurst (2005) described IC as a nonphysical asset that can be use as foundation to create market advantage. Lev (2007) stated IC is the intangible value sources, created by innovation, not replicable organizational structure, or human resource routine and procedure. Herman (2010) stated IC as the core employee competences, it consists of individual knowledge and skills. Gabriela, Dorinela and Alexandra (2012) defined IC as all circulated knowledge available for organization to be used. Finally, IC can be described from its form intangible asset and its nature as knowledge possess in an organization for value creation.

### **IC Classification**

Skandia (1995) make breakdown for IC into HC and SC. SC is divided into organizational capital and customer capital. Organizational capital in turn is divided into innovation capital and process capital. Sveiby (1997) classified IC into three parts: Internal structure, external structure, and individual competence. The combination of internal structure and individual competence can collectively be called the organization's knowledge capital, and Pulic (1998) classified IC into *Value Added Capital Employed* (VACA), *Value Added Human Capital* (VAHU) and *Structural Capital Value Added* (STVA) The combination of these three components create Intellectual Capital or as he called Value Added Intellectual Capital (VAIC). Bontis (2004) also break IC into three components. The first one is HC, its tacit knowledge stored in the minds of the employees. The second one is Structural Capital (SC): The organizational routines, systems, and procedures of conducting business. The third one is Relational Capital (RC): The knowledge used in the relationships with other parties outside organization. Stewart (2003) also divided IC into three categories HC, SC, and customer capital. Finally, Castro and Verde (2012) stated there are four elements of IC indicators (HC, OC, RC, and technological capital).

In conclusion, most of the previous studies divided IC into three elements but used different terms and definitions for each element they are human capital (individual skills and knowledge), structural (organizational) capital and relational (customer or external) capital. In summary, IC can be classified into three elements: human capital (individual competences), structural (organizational or internal) capital and relational (customer or external) capital.

### **Resource Based Theory**

Resource based theory is a perspective about how competitive advantage can be achieved by utilizing internal controlled resources (Wernefelt, 1984). Resources is defined widely not only possessed asset but also all skill, knowledge, and capabilities (Galbreath, 2005). Galbreath (2005) give three different resources type classification: (a) Tangible resources, including in this concept are financial and physical assets (Grant, 1991); (b) Intangible assets, including in this concept are intellectual property (Hall, 1992), organizational (Barney, 1991) and reputational assets (Roberts & Dowling, 2002); (c) Skill resources which include capabilities (Amit & Schoemaker, 1993).

## Hypothesis Development

Many Researchers found that there is a positive relationship between IC and Company performance Kalkan, Bozkurt, and Arman, (2014) at Antalya, Turkey. Ulum, Ghozali, and Purwanto (2014), Sharabati, Shamari, Nour, Durra and Moghrabi (2016), Widowati and Pradono (2017). This study tried to make simple model to find out the impact of IC in company performance in both internal and external perspective. In internal perspective this study use ROE to reflect internal business performance and Market Value Added per Share (MVPS) to reflect how the market respond on the performance. For intellectual capital this study use Value Added Intellectual Capital formula proposed (VAIC) by Pullic (1998). Based on previous research this study creates two hypotheses:

H1: VAIC has positive significance impact on ROE

H2: VAIC has positive significance impact on MVPS

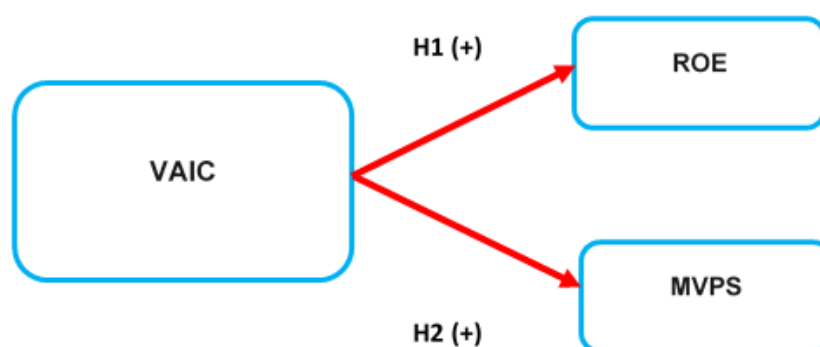


Figure 1. Research Framework

## RESEARCH METHOD

### Operational Definition and Measurement

#### VAIC

This study used Pullic (1998) method to measure VAIC, because according to Saleh, Rahman, and Hassan (2009) and Maditinos, Chatzoudes, Tsairidis, and Theriou (2011) VAIC has advantage for measurement tool such as: (a) VAIC value give standardization and can be compared across all company; (b) Data needed for VAIC calculation can be easily obtained from public company financial report; (c) Data is more reliable because financial reporting is audited by certified public accountant. This research used this step to calculate VAIC:

$$VA = OUT - IN$$

Description:

VA = value added; OUT = total revenue; IN = total expenses (human capital expenses not included)

Next step is calculate the VACA, VAHU dan STVA

$$VACA = VA / CE; VAHU = VA / HC; STVA = SC / VA$$

Description:

CE = Total Equity

HC = Human Resource Expense

SC = VA - HC

Last step to get VAIC value is to sum VACA, VAHU, STVA

$$VAIC = VACA + VAHU + STVA$$

### ROE (Return on Equity)

This research used standard formula to calculate Return on Equity,  $ROE = \text{Net Income} / \text{Equity}$ .

### MVPS (Market Value per Share)

This research use formula for market value per share,  $MVPS = [(\text{Closing Price} \times \text{Share Outstanding}) - \text{Total Equity}] / \text{Share Outstanding}$

### Sample & Statistic Tool

This study used four Telco that already going public in span of eight years from 2011 until 2018, see Table 1. All data were taken from corporate annual report published on each company's website. All data are expressed in billions of Rupiah (IDR). Balanced panel data regression used to determine the impact of IC on Company performance because it combines time series and cross section (Gujarati & Porter, 2009). This study used Chow Test, Hausman test and Lagrangian Multiplier test to determine which panel data regression method is appropriate for this data.

**Table 1. Sample List**

Name	Code	IPO Date
Telekomunikasi Indonesia (Persero)	TLKM	14/11/1995
Indosat	ISAT	19/10/1994
XL Axiata	EXCL	29/09/2005
Smartfren Telecom	FREN	29/11/2006

## RESULT AND DISCUSSION

The discussion begins with statistical descriptive results for the variables studied, namely VAIC, ROE and MVA per share, which can be seen in Table 2.

**Table 2. Descriptive Statistic**

	VAIC	ROE	MVA per share
Mean	2,44	0,43	1.548,46
Median	3,39	0,02	1.445,18
Maximum	6,79	0,29	3.841,02
Minimum	4,97	0,83	548,37
Std. Dev.	3,19	0,28	1.365,61
Skewness	0,80	0,98	0,09
Kurtosis	2,40	3,69	1,66

Average for VAIC is 2,44 and ROE -0,04 also MVA Per Share 1548,46. Maximum value of VAIC 6,79, ROE 0,29 and MVA per share 3.841,02. Minimum VAIC value -4,97, ROE -0,83 and MVA per share -548,37.

## VAIC Impact on ROE

### Preliminary Test-Chow Test

The next step is to do a chow test. This is to find out the appropriate model in this study, carried out whether the fixed effect model or common effect model. The Chow test result can be seen in Table 3.

**Table 3. Chow Test Result**

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3,59	-3,27	0,03
Cross-section Chi-square	10,75	3,00	0,01

According to Chow Test, the result of probability is lower than 5% (0,01) therefore the suitable model is fixed effect model.

**Table 4. Hausman Test Result**

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1,15	1,00	0,28

The next step is to do the Hausman test. According to Hausman test which can be seen in Table 4, the result of probability is higher than 5% (0,28), therefore it can be concluded that random effect model is better than fixed effect model.

## Regression Result

**Table 5. Regression Result for ROE**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VAIC	0,07	0,01	7,29	0,00
C	-0,22	0,05	-4,68	0,00
R-squared				0,64
Adjusted R-squared				0,63
F-statistic				52,93
Prob(F-statistic)				0,00

Table 5 show the regression result for ROE. According to regression result, it can conclude that VAIC has significant impact on ROE or internal perspective business performance (probability = 0,00) so we accept Hypothesis 1. This study also get significant number for prob F-statistic which means this model is fit for this research. Adjusted R-squared value is 0,63 (63%) which means dependent variable in this model can explains 63% that impact internal perspective business performance.

## VAIC Impact on MVA per Share

### Preliminary Test-Chow Test

According to Chow Test in Table 6., the result of probability is higher than 5% (0,46) therefore we choose common effect model better than fixed effect model. From

this result, thus the next step is to perform a Lagrangian multiplier test to ensure the most suitable model. The result of Lagrangian multiplier test can be seen in Table 7.

**Table 6. Chow Test**

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0,75	-3,27	0,53
Cross-section Chi-square	2,56	3,00	0,46

### Lagrangian Multiplier

**Table 7. Lagrangian Multiplier**

	Cross-section	Time	Both
Breusch-Pagan	0,34	4,40	4,74
	-0,56	-0,04	-0,03

According to Lagrangian Multiplier Test, the result of probability is higher than 5% (0,56) therefore the suitable model is common effect model. The next step is to estimate panel data regression for MVA per share. The regression result can be seen in Table 8.

**Table 8. Regression Result for MVA Per Share**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VAIC	314,08	52,99	5,93	0,00
C	782,17	210,84	3,71	0,00
R-squared				0,54
Adjusted R-squared				0,52
F-statistic				35,13
Prob(F-statistic)				0,00

According to regression result, this can be concluded that VAIC has significant impact on MVA per share or external perspective business performance (probability = 0,00) so the hypothesis 2 can be accepted. The result also obtain significant number for prob F-statistic which means this model is fit for this research. Adjusted R-squared value is 0,52 (52%) which means dependent variable in this model can explains 52% that impact external perspective business performance.

### Discussion

With the regression result, both clearly shows that VAIC significantly impact both internal and external perspective business performance. This result support Pratiwi et al (2018) in specific for Indonesia Telco and Kartika (2013), Djamil et al (2013), Sidharta and Affandi (2016), also Widowati and Pradono (2017) in support of VAIC significant impact on business performance. With this result this study can answer that intellectual capital is really matter and may give positive business performance both external and internal.

Internally, with the nature of Telecommunication industry, this study found that whoever possess greater content innovation and advance infrastructure will win the

competition. As an example at Telkom, it pushes all employee to be more creative and create more ideas through a program called HACK IDEA, offering substantial reward and benefit for the best innovation (Birdieani, 2018). Telkom also possess the largest infrastructure across the nation and available system waiting to be capitalized. These two factor, human resource and infrastructure give biggest advantage in the market, represented in their position as market leader. Another company for example PT. Indosat also beginning to conduct innovation competition for its own employee called Innovation@Work 3.0 to increase its portfolio in digital business and actively conduct market research to increase its knowledge on market behavior.

Externally, investors seems realize if IC play significant role on predicting on how well a company perform in industry competition. It represented on the share price especially on Telkom case which its share price is relatively stable. These phenomena give positive insight that our investors are careful enough to assess the company's fundamental position and give evidence that more important information can be extracted from financial report.

## CONCLUSION AND SUGGESTION

According to preliminary test the best model is random effect model for ROE and common effect model for MVA per share. Based on the regression result this study conclude that VAIC has significant impact on Telco's business performance. This evidence show that Telco must give attention to this trait. Not only internal performance, external performance such as market value for share also impacted by VAIC. Public shareholders may look closely on intellectual Capital because in this disruptive era they aware that without any ability to create or increase intellectual capital, any Telco may lose for market competition.

With the rise of startup company, each innovation in digital world can be a new threat for Telco. For example, how WhatsApp change people communicate and make people almost entirely dependent on using their application. This makes people less dependent on traditional voice line and change to data. This disruptive way significantly disrupts traditional Telco and wipe out their business in just a few years. This phenomenon force traditional Telco to change and dig new ideas to survive in tighter market competition.

For future research, another method to measure VAIC easily is needed, other methods mostly used survey to measure VAIC which is complex and need more effort. Other research in different country with higher level of technological advancement and financial literacy is needed to fill the gap.

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