

# INTELLECTUAL CAPITAL AND FIRM PERFORMANCE WITHIN TELECOMMUNICATIONS INDUSTRY DURING THE NEW NORMAL ERA

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**Abstract:** In the post COVID-2019 era, companies are making a variety of changes to boost their performance. Companies need to understand that rivalry is for physical and intangible assets, such as intellectual capital, when they want to thrive and succeed in the market. Research on the relationship between intellectual capital and firm performance has become a study that has received wide attention from researchers from various disciplines. The purpose of this research was to analyze how intellectual capital, comprising human, structural and relational capital, affected firm performance in the telecommunications sector during post COVID-2019 era. Quantitative research using a questionnaire survey was used in this study. A valid research instrument was utilized to survey 115 employees from all telecommunications companies in Indonesia listed on the Indonesia Stock Exchange in 2019–2021. Human, structural, and relational capital were hypothesized to have a positive effect on company performance, and their relationship was investigated. Intellectual capital was found to have a statistically significant and positively impacting relationship with firm performance. Recommendations are then made for researchers and practitioners. This research has implications for practitioners. Practitioners can concentrate efforts on the three main components of intellectual capital management. Furthermore, managers in companies, especially telecommunications companies, understand how intellectual resources evolve following current developments and will ultimately positively impact performance. This is one of the very few studies examining the relationship between intellectual capital and firm performance in the Indonesian telecommunications industry and the first to investigate this relationship with perceptual measures in Indonesia.

**Keywords:** Intellectual capital, firm performance, telecommunications, Indonesian telecommunications companies, Indonesia.

**JEL Classification:** L25, L96.

**APA Style Citation:** Muftiasa, A., Wibowo, L. A., Hurriyati, R., & Rahayu, A. (2023). Intellectual Capital and Firm Performance within Telecommunications Industry during the New Normal Era. *E&M Economics and Management*, 26(1), 126–144. <https://doi.org/10.15240/tul/001/2023-1-008>

## Introduction

Companies are constantly on the lookout for methods to boost their performance (Bouwman et al., 2019; Jabbour et al., 2020; Taouab & Issor, 2019). The company will always work, earn, and maintain the constantly changing performance, including in the new normal era of the coronavirus disease 2019 (COVID-19) pandemic (Dora et al., 2021; Irawan, 2020; Jesus et al., 2020). The corporate world is not immune to the ripple effects of the COVID-19 pandemic. Companies need to understand that rivalry is for physical and intangible assets, such as intellectual capital, when they want to thrive and succeed in the market. The higher the level of intellectual capital, the better the company will develop its intellectual capital to increase investor and stakeholder confidence in the company. Better use of intellectual capital will improve the company's firm performance. Intellectual capital (IC) if we use the resource-based theory (RBV) reference, then we can state that IC is a unique resource that can be used in the preparation and implementation of corporate strategies to create competitive advantage and corporate value, which in turn can increase company performance.

Advanced companies have made great leaps in their progress depending on experience and knowledge under the industrial revolution 4.0. In the industrial revolution 4.0, companies are very dependent on the ownership of knowledge and its use. In the era of the industrial revolution 4.0, relying on digital advances and artificial intelligence, many companies have realized their value depends on intangible assets rather than physical and financial assets (Hussinki et al., 2017). Currently, companies are required to utilize all financial and intellectual resources to maintain the company's sustainability due to advances in information and communication technology. This encourages creativity and innovation as the key to becoming a superior company. Therefore, the company's attention has shifted from physical resources to intellectual capital (Li et al., 2017). Thus, the company's interest in IC becomes important so that it is expected that IC efficiency will have a direct impact on company performance (Clarke et al., 2011).

Research on intellectual capital (IC) has become a study that has received wide attention from researchers from various disciplines. This is in line with the growth of the knowledge-based

economy (Stähle et al., 2011). Research on the relationship between IC and firm performance has increased since the early 2000s (Molodchik et al., 2019). The vast majority of studies conclude that the IC dimension, by virtue of its emphasis on interactions and combinations, will boost organizational effectiveness (Abd-Elrahman et al., 2020). Gonzalez-Loureiro and Dorrego (2012) explained that human capital would improve firm performance. Another study found that the combination of employee knowledge will contribute to achieving superior performance (Bontis et al., 2018; Castro et al., 2013). Although IC is an important predictor of firm performance, several studies across companies, industries, and countries have found varying results revealing the relationship between IC and firm performance. This is based on the results of research from Agostini et al. (2017), Alrowwad et al. (2020), Andreeva and Garanina (2016), Bontis (1998), Cabrita and Bontis (2008), Cheng et al. (2009), Gonzalez-Loureiro and Dorrego (2012), Hameed and Anwar (2018), Imrie (2013), Bin Ismail (2005), Jardon and Martos (2012), Longoni and Luzzini (2016), Sharabati et al. (2010), Wang et al. (2014). Research from Agostini et al. (2017), Andreeva and Garanina (2016), Cabrita and Bontis (2008), Gonzalez-Loureiro and Dorrego (2012), Jardon and Martos (2012), Wang et al. (2014), place the human capital dimension as the highest predictor. The research of Alrowwad et al. (2020), Bontis (1998), Imrie (2013), Longoni and Luzzini (2016), Sharabati et al. (2010), found that relational capital was in the highest predictor position. Meanwhile, the results of research by Bin Ismail (2005), Hameed and Anwar (2018), place structural capital in the highest order.

In the context of the industrial sector, telecommunications is a technology and knowledge intensive industry. Also, the telecommunications industry is a dynamic and rapidly changing industry. Meanwhile, among the telecommunications industry companies, there is very few research on IC and it is found that managers have little knowledge of the IC concept (Sharabati et al., 2013). In addition, the impact of IC on the performance of telecommunications companies in Indonesia has not been studied, particularly among telecommunications companies listed on the Indonesia Stock Exchange. On the other hand, research by Mohammad et al. (2021) stated that Indonesia was included

in the TOP13 countries subscribed to IC and performance publications. In addition, research at IC is still in its early stage in most developing nations, especially Africa and Asia (Mohammad et al., 2021). This is one of the few studies examining the relationship between intellectual capital and firm performance in the Indonesian telecommunications industry and the first to investigate this relationship with perceptual measures (i.e., survey items) in Indonesia.

For the reasons stated above, it is essential to study the relationship between IC and firm performance in Indonesia's telecommunications industry. Therefore, the following question is addressed in this study:

*RQ1: How does IC (human capital, structural capital, and relational capital) affect the performance of the telecommunications industry (FP) during COVID-19.*

The purpose of this research was to ascertain the impact of IC, which includes human, structural, and relational capital on the performance of the telecommunications industry (FP) during COVID-19. Also, it is expected to assist companies to understand the significance of each element of intellectual capital (IC) required to improve performance.

This paper's remaining sections are structured as follows: the theoretical background, hypothesis and conceptual framework will be laid forth after this section, in section 2: research methodology, in section 3: results and discussion, and the last section highlights the conclusions, implications, limitations of the study, and future research perspectives.

## 1. Theoretical Background and Hypothesis Development

### 1.1 Resources Based Theory

Resources-based view (RBV) is used as the theoretical basis for this paper. The RBV analyzes how a company's internal strengths and shortcomings relate to its performance (Barney, 1991). For a long-term edge in the market, a company might leverage its own resources and strengths, as discussed by RBV (Barney, 1991; Peteraf & Barney, 2003; Ray et al., 2004). The term resource represents all capabilities, knowledge, assets, information owned by a company to have an effective and efficient strategy (Barney, 1991). As called the resource-based view, this theory explains the difference between a company's firm performance and

value creation through internal resources (Hansen & Schutter, 2009). In the field of strategic management, RBV has rapidly become a prominent area of study (Andersén et al., 2016; Barney et al., 2011; Lockett et al., 2009). RBV suggests that if a firm's resources are valuable, difficult to imitate, and difficult to replace, the firm can achieve a sustainable competitive advantage concerning its competitors (Hansen & Schutter, 2009); because competitive advantage can be obtained by creating more value than competitors in the market (Peteraf & Barney, 2003).

According to Barney (2001), these resources can be classified into three categories: physical resources such as factories, technology, and equipment; human resources such as training, experience, and knowledge; and organizational resources, namely the formal structure. The criteria that meet the characteristics of resources in order to create a competitive advantage and improve firm performance are met by intellectual capital. Resource-based theory strongly believes that when a company has a resource advantage, the company will have a competitive advantage. Intellectual capital is the key to providing added value for a company.

### 1.2 Intellectual Capital (IC)

The rapid development of innovation, technology, and knowledge-based corporate strategies is very influential in today's business environment. Indicators include an AI-powered IoT platform and the presence of a robotic wireless sensor network that has an impact on long-term efficiency in the workplace (Galbraith & Podhorska, 2021; Suler, 2021). Advanced monitoring, cognitive automation and artificial intelligence data-driven internet of things systems are critical in ensuring high-precision operations through predictive surveillance models and fault-tolerant management (Kovacova & Lăzăroiu, 2021). This makes a shift of attention from physical resources to intangible resources. Many companies face more competitive and dynamic challenges in the current era of globalization, thus encouraging the importance of intellectual capital management. Research into intellectual capital has flourished as its value has been acknowledged by top-level management at many successful businesses. Tom Stewart coined the term "intellectual capital" in 1991. Tom Stewart's piece "Brain Power: How intellectual capital is becoming America's

Most Valuable Asset” is often credited for sparking the IC field’s interest. This brings IC into the management discussion agenda. Research on intellectual capital (IC) has become a study that has received wide attention from researchers from various disciplines. This is in line with the growth of the knowledge-based economy (Stähle et al., 2011).

Scholars have extensively studied the IC concept since the late 1990s. According to Matos et al. (2020), IC is an organization’s invisible and intangible asset that contributes to value creation. This shows that IC is a digital technology, which is managed and utilized in agile companies that will define cost-effective management of skills, assets and data (Cunningham, 2021). In addition, the degree to which a company is able to leverage its IC or its knowledge resources effectively is directly correlated with its ability to be innovative (Cabrilo & Dahms, 2018; Masoomzadeh et al., 2020). Cabrila and Bontis (2008) developed IC as an asset of knowledge that could be optimized to create value. This relates to building and supporting connectivity between skills, competencies, and experiences inside and outside the company. Kianto et al. (2014) also suggested that the conceptualization of IC is the accumulation of all intangible resources and related knowledge that companies can use in their production processes to create value. Meanwhile, according to Lee and Wong (2019), a company’s intangible resources (knowledge, skills, expertise, workers, databases, intellectual property, technology, customers) have the potential to increase in value if they are managed and exploited effectively.

In order to get a deeper understanding of IC, it is necessary to study the elements that make up IC at the company or organizational level. According to Sveiby (1997), IC is a group of three intangible assets: employee competence or capacity, an internal structure developed by employees and belonging to the company, and an external structure in relationships with suppliers and customers. Bueno et al. (2011) classify IC as human, organizational, technological, social, customer, and business, while Youndt et al. (2004) classify it as human, social, and organizational. Bontis et al. (2000) stated that IC is generally identified in customer capital (CC), human capital (HC), and structural capital (SC). Also, it was stated by Chu et al. (2006); Seetharaman et al. (2004); Seleim et al. (2004). In this

paper, we decided to use this classification as it is the most widely used in the literature.

Recognition of the importance of human expertise dates to the early 1960s by Gary Becker, a recipient of the 1992 Nobel Prize in Economics. Gary states that “Spending on education, training, and medical care, ... generates human capital, not physical or financial, because you cannot separate a person from their knowledge, skills, health, or values for what they are. It is possible to transfer financial and physical assets while their owners remain” (Becker, 1964, p. 16). Human capital is a broader context than just labor in business as it requires specific individual competencies that can be knowledge, skills, and all something that can be attributed to an employee (McGregor et al., 2004). This human capital is dynamic and can move, so it does not belong to a particular organization, the owner of this human capital is an employee (Roos et al., 1997). Human capital is the position where all the stages will start as a source of innovation and the beginning of an insight (Stewart, 1997), and human capital is a source of strategic innovation of an organization that is very important (Bontis, 1999).

Many studies have shown that IC should be a concern in strategic execution. Human capital integrates the state of mind, knowledge, training, individual involvement, and inheritance in life and business. Human capital is the most significant resource in all businesses. According to Vargas and Lloria (2017), human resources can be an important strength or risk in an organization. According to Andreeva (2016), human capital correlates with talent specialization, learning process, development, and employee contribution to their organization. Human capital attainment can be seen as the goal of well-being, learning, inspiration, and talent, which results in its satisfaction and satisfaction for its owner. This is different from structural capital because human capital is constantly owned by the people who own it. On the other hand, the telecommunications industry, which is full of rapid changes and technological developments, requires employees who have sharp innovations, are more qualified, adaptive, fast, and customer-oriented with broader capabilities. In the current era of globalization, human capital is not only a company’s wealth but has become a necessity (Dzenopoljac et al., 2017).

Structural capital is closely related to the structure, organization, and business

information systems that lead to business intelligence. This structural capital can consist of all forms of knowledge, routine organizational processes, strategies, guidelines, process instructions, operating models, and databases (Maldonado et al., 2013; Ordonez De Pablos, 2004). Human capital is the primary driving force behind the growth of structural capital, thus it is no surprise that the two are inextricably intertwined. Knowledge gained by firm personnel during the day will not be lost after work. This is the remaining structural capital so that the owner of the remaining structural capital is the company (Ordonez De Pablos, 2004; Tovstiga dan Tulugurova, 2007). Objectively and independently, this structural capital exists even though it is influenced by human capital (Chen et al., 2004). An example is a patent created by human capital, but it belongs to the company after being made.

Structural capital includes the important things offered by the company in running its business, such as licenses, trademarks, and databases, to the culture and values that exist within the company. Structural capital is an item created or made by the company which over time, will remain attached or exist even though the individual or employee leaves (Kianto et al., 2014). This structural capital talks more about the aggressiveness of insights, equations, frameworks, strategies, models, licenses, and everything that makes the company higher in value than the price of the material it has (Andreeva, 2016). Structural capital can also be in the form of ideas, licenses, models, and frameworks created by employees but belonging to the company (Cabrita et al., 2017). This structural capital can also be acquired or purchased from elsewhere. When a company innovates, establishes internal business processes, sets standards, obtains licenses, this means its structural capital also increases and moves forward. Evidence shows that having a good organizational structure and talented and qualified process actors will result in better organizational performance (Soo et al., 2017).

As the third component of IC, relational modal refers to an organization's capacity to engage with members of the business community to facilitate wealth creation through the application of structural and human capital (Marti, 2001). Relational capital combines all the connections in the community and some other individuals or communities. These individuals

and communities combine customers, workers, actors, suppliers, groups, financiers, and so on (Dekoulou & Trivellas, 2017). This connection can be separated into two connections, namely the merging of relationships that look formal through contracts and the merging of casual connections.

This relational capital is capital in the form of knowledge in every relationship developed by the organization. Relational capital incorporates all information in all relationships carried out by the organization. This relationship can be an organization's relationship with competitors, customers, suppliers, or government agencies (Bontis, 1999). Relational capital, which is often said to be the main category, is customer capital, indicating the company's market orientation. There is no consensus in defining this market orientation according to Bontis et al. (2000), while according to Kohli and Jaworski (1990), this market orientation is the level of market intelligence, dissemination, the company based on current and future customer needs. This capital combines the quality and loyalty of customer relationships (Ferreira & Franco, 2017). The balanced scorecard (Kaplan & Norton, 1992) may serve as the initial acknowledgment, followed by the acknowledgement of customer capital (Bontis, 1998; Bontis et al., 2000) and relational capital (Bontis & Fitz-Enz, 2002), learning organizations (Armstrong & Foley, 2003; Dewhurst & Navarro, 2004; Senge, 1992).

The structural capital (SC) comprises an organization's non-human knowledge storehouses, such as databases, processes, organizational charts, strategies, and other factors that increase the company's added value. HC represents the employees' knowledge stock, attitude, education, and experience about life and business. CC comprises knowledge regarding marketing channels and the company's customer relationship in business development.

The intellectual capital (IC) invisible asset consists of human, customer, and process factors that contribute in realizing a company's competitiveness. Knowledge management and intellectual capital also play a pivotal role in determining creative output and market advantage (Rehman et al., 2022). It is an essential intangible asset, especially in knowledge and information. Nahapiet and Goshal (1998) defined IC as the abilities and knowledge of a social group,

such as an organization, professional practice, or intellectual community. It is a representation of a valuable resource with the potential to act on knowledge.

### 1.3 Firm Performance (FP)

Company performance describes the level of success of the company's management activities to achieve the company's business goals. The company cares about the strategies implemented to maintain life during intense competitive conditions (Snowden, 2016). The company's ability to adapt is the key to maintaining its business (Wardhani, 2021). Performance is important to know to be able to assess the level of success of the strategy implemented and can predict the company knowing the future. Company performance is an efficient measure of company efficiency (Munir et al., 2019).

Company performance can be measured through various instruments in perspective (Hameed & Anwar, 2018). This measurement instrument supports companies to decide how company assets are used (Nawaz & Haniffa, 2017). The measurement of this instrument is usually related to a financial perspective, but in many ways it is also related to dynamic skills through innovation to improve company performance (Chih-Hsingliu, 2017). According to Verboncu and Zalman (2005), performance is the result of management, marketing, and economics that characterizes efficiency, competitiveness, and organizational effectiveness, as well as procedural and structural components.

### 1.4 Research Hypotheses (Intellectual Capital and Firm Performance)

According to Molodchik et al. (2019), research on the relationship between IC and firm performance has increased since the early 2000s, both at the company and industry levels. Inkinen (2015) suggests that various IC and firm performance measurement models have been used to answer the main question, "Does IC systematically affect company performance?"

Most literature indicates that IC would raise firm performance through combinations and interactions. The literatures include Alrowwad et al. (2020), Andreeva and Garanina (2016), Bontis et al. (2018), Gonzalez-Loureiro and Dorrego (2012), Maditinos et al. (2010), Sharabati et al. (2010), suggest that human capital will build knowledge-based organizations that

will improve firm performance. The best recipe for achieving peak performance, according to another study, is a fusion of internal expertise with that gained from exposure to external networks (Bontis et al., 2018; Castro et al., 2013). Human and relational capital contributions are largely driven by structural capital, according to the available evidence (Madtinos et al., 2010). The study highlighted the significance of interpersonal connections in bringing about organizational innovation (Delgado-Verde et al., 2011; Wu et al., 2008). The results support the open innovation explanation about the relationship and interaction-based knowledge in creating new organizational ideas and effective collaboration (Huizingh, 2011; Molodchik et al., 2019). In general, many findings suggest that employees, organizational support structures, or interwoven relationships have little value in isolation but are strong drivers of organizational performance when combined.

The study confirmed the IC's positive impact on the various company's performance aspects, including social and financial performance (Bontis et al., 2018), operational and financial (Wang et al. 2014), global performance (Ling, 2013), customer performance (Agostini et al., 2017), and company growth (Gonzalez-Loureiro & Dorrego, 2012). Other performance aspects are innovation (Delgado-Verde et al., 2011), service quality (Abd-Elrahman et al., 2020), four balanced scorecard perspectives (Alrowwad et al., 2020), and general firm performance (Cabrita & Bontis, 2008).

Although IC is an important predictor of impact on firm performance, several studies across companies, industries, and countries have found varying results revealing the relationship between IC and firm performance. This is based on the results of research from Agostini et al. (2017), Alqershi et al. (2022), Alrowwad et al. (2020), Andreeva and Garanina (2016), Asiaei et al. (2022), Bontis (1998), Cabrita and Bontis (2008), Cheng et al. (2009), Gonzalez-Loureiro and Dorrego (2012), Hameed and Anwar (2018), Imrie (2013), Ibarra Cisneros et al. (2019), Bin Ismail (2005), Jardon and Martos (2012), Longoni and Luzzini (2016), Sharabati et al. (2010), Tjahjadi et al. (2019), Vătămănescu et al. (2022), Wang et al. (2014). Research Agostini et al. (2017), Alqershi et al. (2022), Andreeva and Garanina (2016), Asiaei et al. (2022), Cabrita and Bontis (2008), Gonzalez-Loureiro and Dorrego (2012), Ibarra Cisneros et al. (2019), Jardon and Martos (2012),

Tjahjadi et al. (2019), Wang et al. (2014), place the human capital dimension as the highest predictor. The research of Alrowwad et al. (2020), Bontis (1998), Imrie (2013), Longoni and Luzzini (2016), Sharabati et al. (2010), get relational capital in the highest predictor position. Meanwhile, the results of research by Bin Ismail (2005), Hameed and Anwar (2018), place structural capital in the highest order.

According to the results of these analyses, intellectual capital (IC), which includes human, structural, and relational capital, does have an effect on financial performance (FP), highlighting the need to investigate the impact of IC on the performance of businesses operating in the telecommunications sector. Improvements in IC (human capital, structural capital, and relational capital) are hypothesized to have a favorable effect on FP:

*H1: IC (human capital, structural capital, and relational capital) positively impacts FP.*

Fig. 1 is a graphical representation of the study framework that was created based on the aforementioned literature review and hypotheses.

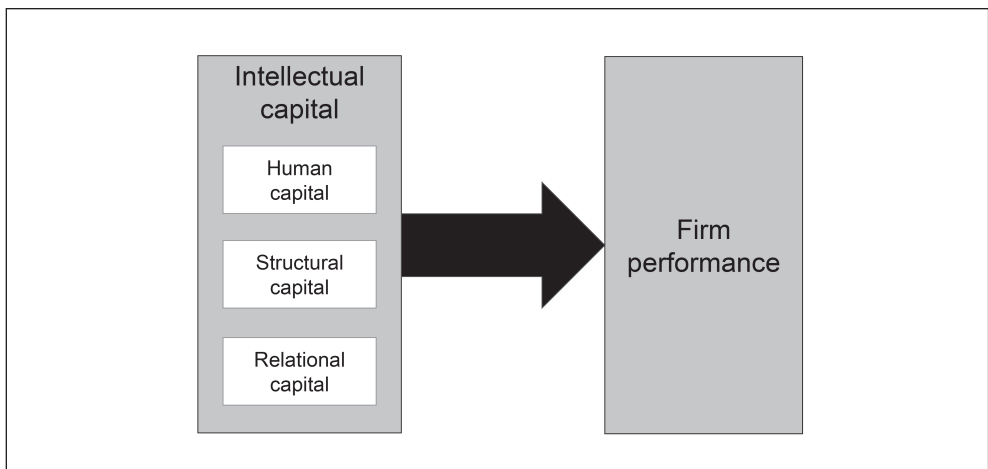
## 2. Research Methodology

This study uses quantitative methods in data collection and analysis using primary data

was obtained by making a questionnaire. The development of the questionnaire was carried out by adopting and modifying previous academic articles. In this study, the dimensions used to evaluate intellectual capital were adopted and modified from previous research conducted by Sharabati et al. (2010). The initial questionnaire was developed in English, and its contents were converted to the Indonesian language. This ensured the respondents understood the survey contents and increased their response rate. The draft questionnaire was then reviewed and assessed by academics from the Indonesian Education University, Telkom University, and Perjuangan University. In addition, three managers from telecommunications companies operating in Indonesia were added to assess and ensure that the questionnaire items were clear, relevant, and well understood. The piloting process is carried out after the questionnaire is made. This questionnaire was tested on 15 respondents to ensure that this questionnaire is effective and consistent as a measuring tool. This test goes through the validity test and reliability test.

Testing the validity and reliability of the questionnaire response data was carried out during the piloting process. The validity testing results on piloting indicate that the questionnaire results are valid. Likewise with the reliability

Fig. 1: Research framework



Source: own

**Tab. 1: Sample list of telecommunication companies recorded on the IDX in 2019–2021**

No	Exchange code	Company name	IPO date
1	TLKM	Telkom Indonesia (Persero) Tbk.	14 Nov 1995
2	EXCL	XL Axiata Tbk.	29 Sep 2005
3	ISAT	Indosat Tbk.	19 Oct 1994
4	FREN	Smartfren Telecom Tbk.	29 Nov 2006
5	KBLV	First Media Tbk.	25 Feb 2000
6	GHON	Gihon Telekomunikasi Indonesia	09 Apr 2018
7	LINK	Link Net Tbk.	02 Jun 2014
8	GOLD	Visi Telekomunikasi Infrastruktur	07 Jul 2010

Source: own

**Tab. 2: Respondents profile**

Characteristic	Frequency	(%)
<b>Company name</b>		
Telkom Indonesia (Persero) Tbk.	91	79.13
XL Axiata Tbk.	4	3.48
Indosat Tbk.	8	6.96
Smartfren Telecom Tbk.	8	6.96
First Media Tbk.	2	1.74
Link Net Tbk.	2	1.74
<b>Educational background</b>		
Diploma	4	3.48
Bachelor	63	54.78
Postgraduate	48	41.74
<b>Work experience</b>		
Less than two years	3	2.61
2–5 years	18	15.65
5–10 years	18	15.65
More than ten years	76	66.09
<b>Position in the company</b>		
Entry-level	19	16.52
Assistance manager	15	13.04
Manager	49	42.61
Senior management	32	27.83

Source: own



testing results, where the results of Cronbach's alpha in piloting was 0.934. The results of Cronbach's alpha indicate that the questionnaire results are reliable or consistent. After the two steps were carried out, the questionnaire adjustment results were prepared for primary data collection. The survey was conducted through the distribution of e-questionnaires to the appropriate respondents. The respondents were given a 5-point Likert scale on which to score their level of agreement or disagreement, with 1 representing strong disagreement and 5 representing strong agreement.

The whole unit of analysis that must be carried out in this research is the population. If it is not possible to test the entire population, a sampling method can be used. Sample selection is an important thing in a study. This study obtains primary data by making a questionnaire and distributing it to the targeted people. The people targeted for this questionnaire are employees of telecommunications companies in Indonesia listed on the Indonesia Stock Exchange in 2019–2021. The population of this analysis consists of, and is limited to, the telecoms firms registered on the Indonesia Stock Exchange between 2019 and 2021. Purposive sampling was employed to pick the samples, with the following criteria:

1. Listed as a telecommunications company on the Indonesia Stock Exchange in 2019–2021 and has never experienced a temporary suspension of stock trading (suspension) by the Indonesia Stock Exchange.
2. Companies that publish financial reports continuously during the research period, namely 2019–2021.

3. Have complete data for research.

Based on these criteria, the list of companies that will be the unit of analysis in this study was obtained from the selection results. The list of these companies is contained in Tab. 1.

Furthermore, to obtain the data, a questionnaire was distributed to the company's target employees. This questionnaire has been filled out by 115 employees from telecommunications companies in Indonesia which in 2019–2021 are listed on the targeted Indonesia Stock Exchange. Tab. 2 describes the profile of respondents, where the frequency of company names shows the proportion of respondents based on the name of the company where they work. The proportion of these respondents already represents the proportion of the number of employees in each company, as shown in Tab. 3. By looking at the comparison, it can be concluded that the proportion of the 115 respondents obtained has met the representativeness criteria.

The theoretical basis used to determine the number of samples of respondents to the questionnaire/survey to be used in this study is based on the theory according to Roscoe (1975) quoted by Hill (1998), which provides a general reference for determining sample size, namely:

1. Sample sizes of more than 30 and less than 500 are appropriate for most studies.
2. Sample sizes as small as 10–20 can yield reliable results in straightforward experiments with careful oversight.

Based on the theoretical explanation above, the number of respondents who filled out the questionnaire in this study had been fulfilled.

**Tab. 3: Proportion of the number of employees/employees in each telecommunication company in Indonesia (listed in 2019–2021 on the Indonesia Stock Exchange)**

Company name	Number of employees	(%)
Telkom Indonesia (Persero) Tbk.	25,348	75.54
XL Axiata Tbk.	1,614	4.81
Indosat Tbk.	2,266	6.75
Smartfren Telecom Tbk.	2,785	8.30
First Media Tbk.	649	1.93
Gihon Telekomunikasi Indonesia	27	0.08
Link Net Tbk.	844	2.52
Visi Telekomunikasi Infrastruktur	24	0.07

Source: own

After the process of distributing questionnaires and collecting data from respondents, the data was checked to ensure that the data provided was accurate and consistent. The next processing is to give weight to each question using the Likert scale. The measured variables are translated into indicators or variables. Furthermore, these results are entered into the software for the analysis process. After all the data has been tested and the scoring process is carried out, analysis is carried out. Questionnaire data were analyzed to get a description and can be interpreted. Descriptive analysis is used to describe respondents' perceptions of the application of IC variables and the role of FP indicators. To test the hypotheses, regression analysis was used to analyze the relationship between IC variables and FP. Regression analysis is robust against non-normality (Sharabati et al., 2013), therefore, can be applied in this case.

### 3. Results and Discussion

#### 3.1 Descriptive Analysis

Tab. 4 describes the average score of each variable and construct. All items were given an affirmative score (1 = strongly disagree, 5 = strongly agree, with three midpoints) with a mean score greater than 3.0. These results indicate that intellectual capital is an important factor in telecommunication companies listed on the Indonesia Stock Exchange. The respondents' average evaluation of the research variables is high, as indicated by the results obtained. In this context, the human capital indicator receives the highest marks. This is in

line with Andreeva and Garanina (2016), Wang et al. (2014), Ibarra Cisneros et al. (2019), Tjahjadi et al. (2019), Asiaei et al. (2022), Alqershi et al. (2022). The next order is structural capital, and the last is relational capital. This is different from the findings of Alrowwad et al. (2020), Bontis (1998), Moslehi et al. (2006), Sharabati et al. (2010), Sharabati et al. (2013), produce relational capital at the highest evaluation position. Meanwhile, the results of research by Bin Ismail (2005), Hameed and Anwar (2018), place the structural capital dimension in the highest order. This shows the importance of human capital and relational capital as IC elements in determining the performance achievement of telecommunications companies in Indonesia. In other words, companies should focus more on increasing human capital and relational capital, placing attention to structural capital next in line.

These results are further contrasted with previous studies conducted by Bin Ismail (2005), Bontis (1998), Moslehi et al. (2006), Sharabati et al. (2010), Sharabati et al. (2013), Tjahjadi et al. (2019), Ibarra Cisneros et al. (2019), Asiaei et al. (2022), as shown in Tab. 5 will be able to show the phenomenon of generalization. Tab. 5 provides an overview of the comparison of the results of this study with the average score of the variables in previous intellectual capital studies. These results demonstrate the consistency and importance of the value of intellectual capital regardless of sectoral context, industry, regional, or country differences. This is a positive signal that the results of this study can be used to generalize the results.

**Tab. 4: Variable summary statistical results**

	Mean	Std. deviation
<b>Intellectual capital variables</b>		
Human capital	4.47	0.565
Structural capital	4.41	0.609
Relational capital	4.28	0.620
<b>Business performance variables</b>		
Human capital & company's performance	4.58	0.546
Structural capital & company's performance	4.58	0.530
Relational capital & company's performance	4.44	0.533

Source: own

**Tab. 5: Comparison between mean scores across previous studies**

Variable	Current research Indonesia	Bontis (1998) Canada	Bin Ismail (2005) Malaysia	Moslehi et al. (2006) Iran	Sharabati et al. (2010) Jordan	Sharabati et al. (2013) Jordan	Tjahjadi et al. (2019) Indonesia	Ibarra Cisneros et al. (2019) Mexico	Asiaei et al. (2022) Iran
Human capital	4.47	4.02	3.36	3.15	3.43	3.84	4.09	3.61	5.93
Structural capital	4.41	4.08	3.39	2.23	3.06	3.44	3.91	3.31	5.78
Relational capital	4.28	4.18	3.36	3.85	3.45	3.48	3.89	3.59	5.83
Intellectual capital	4.39	4.09	3.37	3.08	3.32	3.59	4.57	3.50	5.89
Firm performance	4.54	6.52	3.01	2.40	3.46	3.68	4.14	4.01	5.94

Source: own

Note: The survey instrument used by Bontis (1998) and Asiaei et al. (2022) was a seven-point Likert-type scale.

**Tab. 6: Results of multiple regression analysis for testing the research hypotheses**

Independent variables	Dependent variable	B	Beta	t-test	Sig	R	R2	F	Sig
Human capital	Firm performance	0.326	0.359	3.285	0.001	0.605	0.366	21.384	0.000
Structural capital		0.077	0.092	0.840	0.403				
Relational capital		0.224	0.250	2.687	0.008				

Source: own

### 3.2 Hypotheses Testing

This study used SPSS to investigate the effect of human, structural, and relational capital on FP by applying the multiple regression analysis. Tab. 6 shows the analysis results.

The hypothesis testing results indicate that the significant value of  $F = 21.384$ ,  $p$ -value  $< 0.05$ . This value indicates the effect of IC on FP. The results of the hypothesis testing of the regression model prove statistically that intellectual capital has a positive and significant impact on FP. This is evidenced by a positive regression coefficient value of  $R = 0.605$  and a significance value of  $0.000 < 0.05$ . The coefficient of determination shows the  $R^2$  value of 0.366 or 36.6%. This means that the intellectual capital variable can explain the FP of 36.6%. Based on the regression coefficient analysis results, it was found that FP was calculated positively by human capital and relational capital. This was indicated by the

$p$ -value  $< 0.05$ . Human capital's effect on FP is greater than that of relational, although both have a positive effect on FP and are listed in order of their beta value. Contrarily, there is no correlation between structural capital and FP that can be reliably measured. Therefore, the hypothesis is only partially accepted.

The results showed that IC which consists of human capital, structural capital, and relational capital has a positive relationship with FP. In particular, the human capital variable has the most significant positive influence on FP, followed by the relational capital variables. These results are in line with research conducted by Alqershi et al. (2022). Human and relational capital were shown to have a considerable impact on organizational success, but structural capital was found to have no impact at all, according to research by Vătămănescu et al. (2022). Hameed and Anwar (2018), Ibarra Cisneros et al. (2019) got different results, namely

relational capital, structural capital, and human capital being significant predictors. In contrast, Hameed and Anwar (2018) found that all three types of capital had a positive effect on FP, with structural capital as the first. Meanwhile, human capital and relational capital followed in second and third place, respectively. This result supports Longoni and Luzzini (2016), Imrie (2013), Sharabati et al. (2013), Khalique et al. (2018) regarding the significant impact of relational capital. However, the findings contradict Cheng et al. (2009) concerning the human capital's insignificant effect.

Human and relational capital have a favorable effect on FP, according to the empirical evidence. This shows that the company's investment in human and relational capital significantly affects its firm performance. Human and relational capital affect FP more significantly than structural capital. It is valid to show that human capital has the highest impact of the other predictors. This is also consistent with the findings of previous studies where human capital is constructed as a central element in enhancing other IC elements (Agostini et al., 2017; Alqershi et al. (2022); Cabrita & Bontis, 2008; Gonzalez-Loureiro & Dorrego, 2012; Jaridon & Martos, 2012). Relational capital relates to knowledge and learning with the external environment. This is very important for the company because it will be decisive in converting IC into market value. In addition, it can bring new knowledge from outside into the company, thus opening up opportunities for new ideas and collaborations for value creation. Long-term and sustainable relationships with stakeholders are a source of information for companies to stay up-to-date and survive in a competitive business environment. In the case of the fast-changing and competitive telecommunications industry, relational capital is an absolute must if the products and services provided are to be accepted and appreciated by customers, or customers will easily switch to other service providers. Therefore, to strengthen the company's market position, boost its image among consumers, and expand its capacity for innovation, managers need to pay close attention to their interactions with customers and other interested parties (Abd-Elrahman et al., 2020). To achieve this, it is necessary to provide staff training to have adequate knowledge of market segments, build closer relationships with customers, provide better service solutions,

implement practices that foster an innovation climate, satisfy a wider customer base, build alliances and profitable strategic agreements with international operators in addition to local telecommunications companies.

This research also emphasizes the importance of companies being more proactive in utilizing their intangible resources. Collaborative activities in the same industry, such as forming business forums, customer communities, excellence development centers, and industry exhibitions, are examples that companies can do to strengthen the synergistic effect of collaboration (Molodchik et al., 2019). Therefore, managers must acknowledge the advantages of collaboration. Also, they should understand that firm performance could be hampered by the absence of intangible resources in the industry.

Another thing to note is that the IC situation in an organization is dynamic. Telecommunications companies continue to grow from time to time. Therefore, telecommunications companies must also continue to adjust IC consistently by selecting and evaluating IC accumulation within the company. Companies can design and develop strategies for value creation by developing the company's IC portfolio to achieve superior firm performance continuously. In the context of ever-increasing globalization, rapid technological developments, ever-changing customer demands, unpredictable political trade relations, and the occurrence of a pandemic (e.g., COVID-19), companies must adapt their corporate strategies to achieve conformity with the changing business environment quickly (Suddaby et al., 2020). COVID-19 has prompted companies to change the way they operate. Even after the COVID-19 pandemic, this change has become a new habit that will continue. Thus, telecommunications companies should leverage IC resources and manage them well to survive today's interconnected economy. Management should focus on IC resources because sustainable FP is based on IC's effective management and distribution.

## Conclusions

Companies engaged in the telecommunications industry must always achieve and maintain superior firm performance to maintain the company's sustainability. This is because the telecommunications industry is an industry that changes very quickly and is competitive. The determinants of superior firm performance based on IC factors in the telecommunications

industry are still unclear. This study aims to assess the effect of IC on firm performance in the telecommunications industry during the new normal era of the COVID-19 pandemic.

The respondents' average evaluation of the research variables is high, as indicated by the results obtained. Human capital is deemed the most important factor, and the next order is relational capital, while the last is structural capital. This shows the importance of human capital and relational capital as IC elements in determining the performance achievement of telecommunication companies in Indonesia. In other words, companies should focus more on increasing human capital and relational capital, placing attention to structural capital next in line.

Human and relational capital have a favorable effect on FP, as shown by the results. The results demonstrate the importance of the company's investments in human and relational capital to improve firm performance. Human and relational capital affect FP more significantly than structural capital. It is valid to show that human capital has the highest impact of the other predictors. Managers of Indonesian telecommunications companies must recognize that human capital is critical in influencing FP. For this reason, it is necessary to develop and develop training programs and special skills development for staff of Indonesian telecommunications companies that are associated with leading higher education institutions in Indonesia. Staff and prospective staff need to be equipped with special skills and skills that these staff can use in carrying out and completing tasks in telecommunications companies. This is because IC and its elements are contributed by the quality of human resources, failure to prepare competent staff will affect the position of competitive advantage of telecommunications companies. Other recommendations are related to the recruitment and selection process, where the process must screen staff who have high enough competence and are following the competitive business environment. Besides that, it also needs to be considered in other competencies such as social competence, employee motivation, and leadership abilities.

Relational capital relates to knowledge and learning with the external environment. This is very important for the company because it will be decisive in converting IC into market value. In addition, it can bring new knowledge

from outside into the company, thus opening opportunities for new ideas and collaborations for value creation. Long-term and sustainable relationships with stakeholders are a source of information for companies to stay up-to-date and survive in a competitive business environment. In the case of the fast-changing and competitive telecommunications industry, relational capital is an absolute must if the products and services provided are to be accepted and appreciated by customers, or customers will easily switch to other service providers. Managing the company's reputation, expanding its capacity for innovation, and creating a formidable market force all require managers to devote their whole attention to the company's relationships with customers and other stakeholders. To achieve this, it is necessary to provide staff training to have adequate knowledge of market segments, build closer relationships with customers, provide better service solutions, implement practices that foster an innovation climate, satisfy a wider customer base, build alliances and profitable strategic agreements with international operators in addition to local telecommunications companies.

This research also emphasizes the importance of companies being more proactive in utilizing their intangible resources. Collaborative activities in the same industry, such as forming business forums, customer communities, excellence development centers, and industry exhibitions, are examples that companies can do to strengthen the synergistic effect of collaboration. Therefore, managers must acknowledge the advantages of collaboration. Also, they should understand that firm performance could be hampered by the absence of intangible resources in the industry. Another thing to note is that the IC situation in an organization is dynamic. Telecommunications companies continue to grow from time to time. Therefore, telecommunications companies must also continue to adjust IC consistently by selecting and evaluating IC accumulation within the company. Companies can design and develop strategies for value creation by developing the company's IC portfolio to achieve superior firm performance continuously.

### **Theoretical Implications and Managerial Contribution**

This research adds to the existing body of IC literature by outlining the primary factors

influencing firm performance in terms of human, relational, and structural capital. The results show that IC plays an essential role in FP in the telecommunication industries. Furthermore, IC is essential in the realization of a company's competitive performance because it is a valuable, intangible, and inimitable resource. It potentially promotes companies to increase investment in human, relational, and structural capital to improve FP. Therefore, Indonesian telecommunications companies should manage IC to increase firm performance. In the context of ever-increasing globalization, rapid technological developments, ever-changing customer demands, unpredictable political trade relations, and the occurrence of a pandemic (e.g., COVID-19), companies must adapt their corporate strategies to achieve conformity with the changing business environment quickly. Telecommunications companies should leverage IC resources and manage them well to survive today's interconnected economy. Management should focus on IC resources because sustainable FP is based on IC's effective management and distribution.

This research provides several implications/benefits for practitioners and researchers. First, practitioners get reaffirmation that intellectual capital is an important factor in a company that impacts the performance of an innovative and superior company. Practitioners can concentrate their efforts on all three key components of intellectual capital management. In addition, intellectual capital development is carried out at all levels, both individuals, groups, companies, and countries. Strategic decisions involving intellectual capital can be made by professionals including accountants, business managers, regulators, and investors.

The next contribution is for managers in companies, especially telecommunications companies. This study provides empirical evidence about the importance of IC and its impact on the company's firm performance. In connection with this industrial sector, which is a very fast-changing industry, it will provide a better understanding of how intellectual resources can develop quickly to keep up with existing developments and ultimately positively impact performance.

The contribution of this study for researchers is that the multi-dimensional nature and diversity of intellectual capital provide many opportunities for interdisciplinary and

cross-functional learning and research. This study contributes to the measurement of IC, encouraging other researchers to use other theoretical approaches, model development, and refinement of measurement instruments.

### Limitations and Future Research Perspectives

As happened in other empirical research, this research also has limitations. There are two limitations to this research. First, the data collected is only from one industry, namely telecommunications, recorded on the IDX, where the number of publicly listed companies in this industry is limited. Second, the study was conducted in one country. Further research can be carried out using data from various industries, different countries, or various cultures.

Further research can confirm that these findings can be generalized to other sectors, industries, regions, and countries. This further research can be carried out by exploring various sectors, industries, including, for example, manufacturing companies, the software development industry, consulting, or even unicorn companies that are currently trending. These companies can operate across countries. The focus of the study can also be expanded by exploring diversified companies. This will contribute to the enrichment of research data.

Future research can also examine using other alternative approaches to show similar results. This alternative approach, for example, uses the ICBS methodology (Marti, 2001). Future research can also be attempted using alternative methodologies, such as in-depth interviews or case studies. This will provide insight and an in-depth understanding of the interaction of variables in the organization in certain contexts that will affect the relationship of intellectual capital with company performance.

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