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Intellectual capital disclosure factors: company age, company size, and gender diversity in property & real estate companies listed on the IDX

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ABSTRACT

Intellectual capital disclosure (ICD) is becoming increasingly important to increase corporate transparency and stakeholder trust. This study uses the ICD-In (Intellectual Capital Disclosure-Indonesia) index to examine how different variables affect intellectual capital disclosure. These characteristics include company age, company size, and gender diversity. Secondary data was employed for quantitative research method in this study. The analysis included all real estate and property companies listed on the Indonesia Stock Exchange from 2018 to 2022. The 85 data observations were purposefully sampled from 17 companies. The data was analysed using descriptive statistics and panel data regression. Company size, company age, and gender diversity are shown to have an impact on intellectual capital disclosure. Age of company and gender diversity do not effect on the disclosure of intellectual capital; nevertheless, the size of company size has a significant positive effect on intellectual capital disclosure.



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Introduction

Companies possess tangible and intangible assets that support their day-to-day operations and enable them to achieve their business objectives. In order for businesses to get the most out of the assets they own—both real and intangible—and to conduct their operations as profitably as possible, asset utilization is crucial. One of the intangible assets covered under PSAK No. 19 (Revised 2010) on Intangible Assets is intellectual capital. Intellectual capital encompasses both tangible and intangible assets, including intellectual property. These concepts are focused on people and infrastructure, which are necessary for the smooth operation of a business (Himawan & Widiastuti, 2021).

Based on Ulum (2020), there are primarily three types of capital: human, structural, and relational. According to Astuti et al. (2017), each company utilizes these three components in its business strategy with different emphasis, thereby helping to achieve optimal performance and providing added value for information users. The disclosure of intellectual capital is essential as it provides convincing information to users, adds value and innovation to the company, enhances competitiveness, and attracts the interest of stakeholders and investors. Companies that want to provide more information about their relational, structural, and human capital assets do so through intellectual capital disclosure. Reducing the information gap between the company and its constituents and increasing transparency on the business's operations and policies are the key objectives.

Intellectual capital disclosure includes both monetary and non-monetary data, according to Bukh et al. (2001) (Ulum, 2015). Non-monetary data includes things like employee satisfaction, job satisfaction, in-service training, and customer satisfaction. The ICD-In index (Intellectual Capital Disclosure-Indonesia), which was modified by Ulum (2015) in Ulum (2020) by altering the Guthrie et al. (1999) system, is used in this study to quantify intellectual capital disclosure.

That being said, disclosure of this kind is still optional, so each corporation will disclose it differently. Nevertheless, well-presented information can reduce information asymmetry and send positive signals to potential investors. According to signalling theory popularized by Spence (1973) in Nasution et al. (2019), signalling theory is information about a company that is used by management to provide guidance to external parties, such as investors, in making decisions. Information is an important factor for business actors as well as investors (R & Suzan, 2020). This theory highlights information asymmetry between insiders, such as managers, and outsiders, such as investors. Market participants view the company's signal, and the data about intellectual capital included in the annual report in particular, as a strong indicator of the company's quality. An effective way for an organization to demonstrate its excellence and set itself apart from inferior competitors is via the voluntary publication of intellectual property information (Ulum, 2020).

One of the industrial scopes that trades securities on the Indonesia Stock Exchange (IDX) is the property & real estate subsector. This subsector is a company that operates in the field of developing services and facilitating the construction of housing, apartments, offices, real estate and so on. Businesses in this sector are quite promising investments, such as land houses and other buildings because the asset value continues to increase and has a relatively low risk, making it attractive for the public to invest (Setyaningsih, 2021). Because they didn't disclose much intellectual capital on the IDX (Indonesia Stock Exchange) between 2018 and 2022, property and real estate companies may not understand its relevance. This lack of disclosure suggests that property and real estate companies may not fully grasp the significance of intellectual capital in enhancing transparency and attracting investor confidence.

Property & real estate subsector have relatively low values for intellectual capital disclosure. Property and real estate subsectors during 2018-2022 amounted to 47.15%. In 2018, intellectual capital disclosure was 45.96% and increased by 1.65% to 47.61% in 2019. Nonetheless, the proportion of disclosed intellectual capital fell to 46.97% in 2020, a fall of 0.64%. The amount of intellectual capital disclosed in 2021 has gone up once again, although only by 0.27%, or 47.24%, over the year before. Likewise, in 2022, the percentage of intellectual capital disclosure increased by 0.74% to 47.98%. For example, PT Metro Realty Tbk 2020 had the lowest disclosure score because it only disclosed 17 out of 64 maximum disclosure scores or only 26.56%. Meanwhile, PT Ciputra Development Tbk 2020 had the highest disclosure score because it disclosed 40 out of 64 maximum disclosure scores or 62.5%. Since companies are exempt from reporting intellectual capital by law, there is a discrepancy in the amounts revealed. This further demonstrates how real estate and property subsector businesses are unaware of the value of disclosing intellectual capital when creating annual reports.

Given the existing state of affairs, it is clear that IDX-listed property and real estate companies provide very little information regarding their intellectual capital. In fact, on average, companies in this sector utilize and prioritize their intangible assets in carrying out their business operations so that they have their own added value and can survive and be able to compete in the market. According to Bukh (2003) in Joson & Susanti (2015) intellectual capital disclosure is very useful for investors because it is useful for reducing uncertainty in terms of company prospects and makes it easier to evaluate companies. Companies must thus give stakeholders the finest information available in order to draw in new investors and be beneficial to them.

The factors that affect intellectual capital disclosure have been extensively studied. Almanda et al. (2021) finds that business age increases intellectual capital disclosure. Company age reflects the maturity of the company (A.P. et al., 2013). A more mature company possesses more experience, expertise, and resources used to produce more complex reports with a higher level of information disclosure. Moreover, mature companies are believed to create competitive advantages in innovation by disclosing intellectual capital, which positively impacts company efficiency (Zusmawati & Puryandani, 2019). This is in line with studies by Himawan & Widiastuti (2021); Almanda et al. (2021); Mulyana & Daito (2021); and Mulya & Faeni (2019); show that the age of the firm and the disclosure of intellectual capital have positive relationship.

H1: Company age partially has a significantly positive affect on intellectual capital disclosure.

The second factor that influences the disclosure of intellectual capital is the size of the company. Company size refers to the magnitude of a company (Nugraha & Dillak, 2018). It can be observed through various metrics such as total assets, equity value, market value of stocks, number of employees, log size, and others. According to (Zusmawati & Puryandani, 2019), calculating company size using log size or the natural logarithm of total assets is more stable and representative in indicating company size because assets are used in the company's

daily operational activities. Therefore, classifying company size based on log size is considered more effective. A company with substantial total assets indicates promising prospects for the future (Zusmawati & Puryandani, 2019). In order to prove they are sustainable, big corporations are under increasing pressure to disclose their intellectual capital (Herlina et al., 2021). Additionally, larger companies garner attention from stakeholders, prompting them to engage in broader intellectual capital disclosure (Astuti & Wirama, 2016). Larger companies tend to strive for transparent disclosure of all aspects and information related to their operations, including extensive intellectual capital disclosure (Nurmala & Adiwirowo, 2019). Previous research has shown that company size positively affects intellectual capital disclosure, Suzan & Nurhakim (2023); Nurmala & Adiwirowo (2019); and Zusmawati & Puryandani (2019).

H2: Company size partially has a significant positive effect on intellectual capital disclosure.

Gender diversity, or the proportion of women on the board, should be considered thirdly. Gender diversity in this research may be understood as the proportion of women serving on the board of directors. Scholars are still interested in delving further into the topic of gender diversity (Pratiwi et al., 2018). This problem emerged as more women were able to join corporate boards, despite cultural views that saw women as supportive of males or as secondary to them in decision-making, and doubts about their capacity for leadership. It is possible that intellectual capital disclosure is affected by the participation of female directors. This is a result of the fact that women are often better at expressing their intellectual capital extensively and considering choices in more depth (Suzan & Putri, 2022). Gender diversity significantly improves intellectual capital disclosure, according to study results published by Suzan & Nurhakim (2023). It is thought that women will provide a higher level of competence, collective wisdom, and intellect to the board, which can help the company succeed. Therefore, having women on the board can be advantageous. This is consistent with studies by Suzan & Nurhakim (2023); Dharmendra et al. (2022); and Nadeem et al. (2019) studies indicate that the disclosure of intellectual capital is positively impacted by gender diversity.

H3: Gender diversity partially has a significant positive effect on intellectual capital disclosure.

This study aims to examine, partially and concurrently, the impacts of company age, company size, and gender diversity on intellectual capital disclosure, taking into consideration acknowledged trends and variations in the findings of earlier research. Conceptual framework of this research as Figure 1 follows:

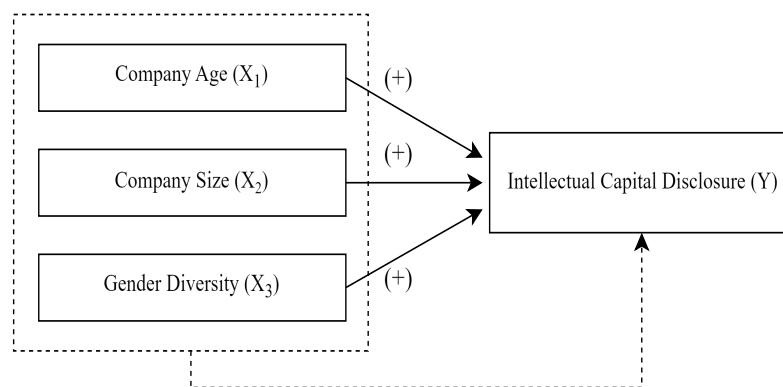


Figure 1. Research Model

Source: Processed data, 2024

Description:

- > : Partial
 - - - - -> : Simultaneous

Method

Due to its objectives, this research is primarily descriptive. Descriptive analysis is a statistical approach that aims to analyse data by presenting or summarizing objectively obtained facts without attempting to make broad generalizations or inferences. This study evaluated a particular population or sample and tested hypotheses using a quantitative research approach (Sugiyono, 2019). Companies listed on the Indonesia Stock Exchange (IDX) in the property and real estate subsector for the years 2018–2022, as well as their audited financial statements and annual reports, provided the secondary data. Any affiliated firms' websites or IDX's website (www.idx.co.id)

can provide access to the annual report. A panel data regression model is used to investigate its effect on the disclosure of intellectual capital. The variables used in this study include independent and dependent variables. The measurement of variables is presented in Table 1.

Table 1. Variable Measurement

Variables	Definition	Measurement
Dependent Variable		
Intellectual Capital Disclosure (Y)	In order to lessen information asymmetry, businesses can minimize information asymmetry by disclosing greater information about their relational, structural, and human capital (Ulum, 2015).	$ICDi = \frac{\text{Total Intellectual Capital Disclosure Score}}{\text{Maximum Total Intellectual Capital Disclosure Score}}$ (Ulum, 2020)
Independent Variable		
Company Age (X ₁)	Company age reflects the maturity of the company (A.P. et al., 2013).	$AGE = \text{The length of time the company has been listed on the IDX}$ (Wati, 2019)
Company Size (X ₂)	Company size refers to the magnitude of the company (Zusmawati & Puryandani, 2019)	$SIZE = Ln (\text{Total Assets})$ (Firmansyah & Estutik, 2021)
Gender Diversity (X ₃)	Gender diversity refers to the level of female participation in the board of directors.	$GD = \frac{\text{Female's Board Directors}}{\text{Total Board of Director}}$ (Rahayu et al., 2018)

The study's population consisted of property and real estate subsector enterprises that were listed on the Indonesia Stock Exchange (IDX) between 2018 and 2022. A subset of the characteristics and size of the population is captured in the sample in quantitative research (Sugiyono, 2019). This study used nonprobability sampling with purposive sampling technique. The criteria for selecting samples are detailed in Table 2.

Table 2. Sampling Criteria

No	Criteria	Total
1	Property & real estate subsector companies listed on the Indonesia Stock Exchange for the period 2018-2022	54
2	Property & real estate subsector companies inconsistent in issuing annual reports for the period 2018-2022	(11)
3	Property & real estate subsector companies without female directors for the period 2018-2022	(26)
Total companies used in the study		17
Total study years		5
Total observation data		85

Source: Indonesian Stock Exchange (IDX) (processed data), 2024

Table 2 shows up to 85 data samples might be employed, as evidenced by the fact that, over the course of five years, 17 firms in the property & real estate subsector and listed on the IDX based on these sample determination standards were obtained. Panel data regression is a form of data that mixes time series and cross-sectional data to provide insights into how each item changed over the course of the specified research period. One or more variables seen over a predetermined length of time in a single observation unit make up a time

series. On the other hand, observations from several observation units at one particular moment comprise cross-sectional data. In this research, the researcher used panel data regression analysis to show how company age, company size, and gender diversity affect disclosure of intellectual capital. The following formula was used to estimate the panel data model for this investigation:

$$ICDi = \alpha + \beta_1 AGE_{it} + \beta_2 SIZE_{it} + \beta_3 GD_{it} + e$$

The regression equation above includes the following variables: ICDi is an index of intellectual capital disclosure, α is constant, $\beta_{(1,2,3)}$ is the regression coefficients of each independent variable, AGE is company age, SIZE is company size, GD is gender diversity, i is unit analysed (company), t is time, and e is error. In order to do regression analysis on panel data, this study makes use of Eviews-12. Panel data regression is analyzed using three models: random effect, fixed effect, and common effect. We will choose a panel data model as part of an estimating approach by using the Chow, Hausman, and Lagrange-multiplier tests.

Results and Discussions

This study used descriptive statistics, which are measured on a ratio scale and include maximum, minimum, mean, and standard deviation. This study uses the ICDi as a surrogate for intellectual capital disclosure as its dependent variable. Company age, company size, and gender diversity are the three independent factors. The research is based on a sample of companies from the property and real estate subsector that were listed on the IDX between 2018 and 2022. The author employed a purposive sampling technique to draw 85 observations from annual reports covering 17 different companies. The descriptive statistical analysis yielded the following results:

Table 3. Descriptive Statistics Test Results

	ICD	AGE	SIZE	GD
Mean	0.471507	20.47059	30.05884	0.296882
Maximum	0.625000	33.00000	34.43116	0.666667
Minimum	0.234375	6.000000	24.84852	0.090909
Std. Dev.	0.091242	8.260042	1.847904	0.132817
Observations	85	85	85	85

Source: Eviews 12 Output Results (2024)

Based on table 3, intellectual capital disclosure represented by (ICDi), has a mean value of 0.471507, which is greater than its standard deviation of 0.091242, indicating relatively low variability in the data. The maximum value of 0.625000 is recorded for PT Ciputra Development Tbk between 2019 and 2021, while the minimum value of 0.234375 is recorded for PT Suryamas Dutamakmur Tbk in 2018 and 2019. For the first independent variable, company age (AGE), the mean value is 20.47059, which exceeds its standard deviation of 8.260042, indicating relatively low variability in the data. The maximum value of 33.00000 is recorded for PT Pakuwon Jati Tbk in 2022, while the minimum value of 6.000000 is recorded in 2018 for PT Bekasi Fajar Industrial Estate Tbk.

The descriptive statistic for company size (SIZE), has a mean value of 30.05884, which is greater than its standard deviation of 1.847904, indicating relatively low variability in the data. The maximum value of 34.43116 is recorded for PT Ristia Bintang Mahkotasejati Tbk in 2018, while the minimum value of 24.84852 is recorded for PT Metro Realty Tbk in 2022. With a mean value of 0.296882 and a standard deviation of 0.132817, gender diversity (GD), the third independent variable, shows that the data are much less variable. For PT Ristia Bintang Mahkotasejati Tbk, the greatest value was 0.666667 in 2020 and 2021, while the lowest value was 0.090909 in 2018 for PT Ciputra Development Tbk. To find out whether the independent variables in a regression model are strongly related, use a multicollinearity test. If there is less than 0.8 correlation between the independent variables, there is no multicollinearity. The multicollinearity test findings of the research show:

Table 4. Multicollinearity Test Results

	AGE	SIZE	GD
AGE	1.000000	-0.088160	0.349443
SIZE	-0.088160	1.000000	-0.089561
GD	0.349443	-0.089561	1.000000

Source: Eviews 12 Output Results (2024)

Table 4 indicates that the correlation coefficient value between the variables SIZE (X2) and AGE (X1) is -0.088160, while the correlation coefficient value between SIZE (X2) and GD (X3) is -0.089561. Since the total coefficient value is less than 0.8 (≤ 0.8), it may be said that the independent variables' multicollinearity is not an issue. A test for identifying uneven variance in a regression model's residual data is called heteroscedasticity. When the heteroscedasticity signal probability value exceeds 0.050, the test results suggest the absence of any heteroscedasticity signs. The results of this study's heteroscedasticity tests are shown below.

Table 5. Heteroscedasticity Test Results

F-statistic	2.446542	Prob. F(3,81)	0.0697
Obs*R-squared	7.062156	Prob. Chi-Square(3)	0.0699
Scaled explained SS	9.622509	Prob. Chi-Square(3)	0.0221

Source: Eviews 12 Output Results (2024)

According to Table 5, Breusch-Pagan-Godfrey heteroscedasticity approach, the value of Prob. Chi-Square (Obs *R-Squared) is $0.0699 > 0.05$, indicating that there is no heteroscedasticity issue.

Table 6. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	28.171573	(16,65)	0.0000
Cross-section Chi-square	176.054168	16	0.0000

Source: Eviews 12 Output Results (2024)

To determine whether of the Common Effect Model (CEM) and Fixed Effect Model (FEM) was more suitable, the Chow test was used. The Fixed Effect Model is the best fit for this investigation since the Probability Cross-section Chi-square value in Table 6 is $0.0000 < 0.05$, which means that we can accept H_1 and reject H_0 . Hausman test chooses the best panel data estimation is fixed or random effect model. If the cross-section random probability is greater than 0.050, then the random effect model works well. A good fit between the data and the fixed effect model is observed when the cross-section random is smaller than 0.050. The table below displays the results of the tests that were conducted in order to select the best models:

Table 7. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	41.483595	3	0.0000

Source: Eviews 12 Output Results (2024)

According to Table 7, the Hausman test findings show that H_1 is accepted and H_0 is rejected with a Probability Cross-sectional value of $0.0000 < 0.05$. The Lagrange Multiplier (LM) Test is unnecessary; use the Fixed Effect Model instead. This study examines independent-dependent relationships. Eviews 12 Fixed Effect Model (FEM) testing yielded these results:

Table 8. Fixed Effect Model Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.249442	1.182263	-1.902657	0.0615
AGE	0.002814	0.001659	1.696364	0.0946
SIZE	0.088476	0.039759	2.225311	0.0295
GD	0.013011	0.050645	0.256911	0.7981

Effects Specification

Cross-section fixed (dummy variables)

Root MSE	0.018252	R-squared	0.959510
Mean dependent var	0.471507	Adjusted R-squared	0.947674
S.D. dependent var	0.091242	S.E. of regression	0.020871
Akaike info criterion	-4.698548	Sum squared resid	0.028315
Schwarz criterion	-4.123807	Log likelihood	219.6883
Hannan-Quinn criter.	-4.467371	F-statistic	81.06970
Durbin-Watson stat	2.065711	Prob(F-statistic)	0.000000

Source: Eviews 12 Output Results (2024)

According to table 8, the following panel data regression equation to describe the impact of the study's variables:

$$ICDi = -2.249442 + 0.002814AGE + 0.088476SIZE + 0.013011GD + e$$

The intellectual capital discourse has a value of -2.249442 in the previous equation if gender diversity, firm size, and business age are all zero or constant. Assuming that all other variables remain at zero or remain constant, intellectual capital disclosure will rise by 0.002814 for every unit increase in company age, according to the firm age coefficient value of 0.002814. The company size coefficient, with a value of 0.088476, suggests that for every unit increase in firm size, there will be a corresponding 0.088476 rise in intellectual capital disclosure. If all other factors stay the same or are equal to zero, intellectual capital disclosure will increase by 0.013011 for every unit increase in gender diversity, according to the gender diversity coefficient value of 0.013011.

Coefficient of Determination (R²)

To check if the model can capture the dependent variable's variability, the coefficient of determination test is utilized. According to Table 8, Companies listed on the Indonesia Stock Exchange (BEI) in the property and real estate subsector from 2018 to 2022 exhibit intellectual capital disclosure that is explicable by factors such as company age, size, and gender diversity, as indicated by an adjusted R-squared value of 0.947674, or 94%. Last but not least, 6% are completely unscientific.

Simultaneous Test (F-Test)

For property and real estate firms listed on the Indonesia Stock Exchange (IDX) from 2018 to 2022, this study utilized the simultaneous test (F statistical test) to analyze the association between intellectual capital disclosure and company age, size, and gender diversity. Table 8 indicates that H_0 is rejected and H_a is accepted due to the Prob (F-statistic) value of $0.000000 < 0.05$. Company age, company size, and gender diversity affect intellectual capital disclosure for Indonesian Stock Exchange corporate property & real estate enterprises.

Partial Test (T-Test)

The independent factors were found to be statistically significant in the investigation. A probability of $0.0946 > 0.05$ is indicated by a regression coefficient of 0.002814 for the company age. There is little evidence that company age affects intellectual capital disclosure, which runs counter to H_a and lends credence to H_0 . The regression coefficient for firm size is 0.088476 and the probability is less than 0.05, specifically 0.0295. Firm size has a substantial effect on the disclosure of intellectual capital, indicating that H_a is true and H_0 is false. For gender diversity, the probability is 0.7981, which is above 0.05, and the regression coefficient is 0.013011. This finding supports the H_0 and contradicts the H_a that gender diversity has any effect on the disclosure of intellectual capital.

The effect of Company Age on Intellectual Capital Disclosure

The regression coefficient of 0.002814 and the probability of 0.0946 indicate that the partial test results for business age are more than the significant value of 5%. As a result, H_a is rejected and H_0 is approved. Thus, company age does not affect intellectual capital disclosure. This shows that it is not necessarily the case that companies with a longer listing age have continuously developing resources, sufficient expertise, sufficient experience, and high levels of management awareness regarding stakeholders' needs for company information. In addition, this is due to the fact that organizations with a longer operational history may not be able to give more comprehensive information than those that have recently started, because newly company may be able to provide a wider range of information about the intellectual capital that the company owns. Consequently, it can be said that age of company has no significant impact on intellectual capital disclosure, and the findings of this study are consistent with those of Nurmala & Adiwibowo (2019); Zusmawati & Puryandani (2019); and Ashari & Putra (2016) earlier research, which found no impact of company size on intellectual capital disclosure.

The effect of Company Size on Intellectual Capital Disclosure

A partial test with a probability value of 0.0295 reveals H_a acceptance and H_0 rejection depending on firm size. With a regression coefficient of 0.088476, the data is less than the significant value at 5%. The positive regression coefficient for firm size implies a positive link with intellectual capital disclosure. Thus, a company's intellectual capital transparency increases with size. It's evident that huge firms want better management techniques, such as disclosing intellectual capital. By disclosing more information, companies signal to the public that they are conducting their operations in accordance with principles of good management to maintain their reputation in the market. Thus, business size does positively effect intellectual capital disclosure to a lesser extent. This study also supports Herlina et al. (2021) and Astuti & Wirama (2016); findings that company size improves intellectual capital disclosure.

The effect of Gender Diversity on Intellectual Capital Disclosure

For gender diversity, regression coefficient is 0.013011 and a probability value of 0.7981 that exceeds the 5% (0.05) barrier, implying that H_0 is approved and H_a is rejected. There is no correlation between gender diversity and the disclosure of intellectual capital. Perhaps this is due to the fact that there are now no rules in Indonesia regarding the reporting of intellectual capital in company annual reports. Research by this group, as well as Suzan & Putri (2022) and Rahman et al. (2019) found no correlation between business size and disclosure of intellectual capital.

Conclusions

This study investigated the effect of company age, company size, and gender diversity on intellectual capital disclosure in IDX-listed property and real estate companies from 2018 to 2022. The simultaneous testing F-statistics demonstrate that gender diversity, business size, and company age significantly affect intellectual capital disclosure. A company's age doesn't greatly affect its intellectual capital disclosure. Established companies may not disclose as much information as newer ones. Larger organizations are more likely to disclose their intellectual property to attract investors, as firm size positively correlates with intellectual capital disclosure. Gender diversity may not affect intellectual capital disclosure in Indonesia because there is no law requiring corporations to disclose these components in their financial reports. However, it is important to note several limitations of this study. The sample size only includes companies in certain sectors, thereby limiting the generalizability of the findings to other sectors. For future research, it is encouraged to including issues outside the scope of this study, longer research periods, or different research objects in other fields. Therefore, future researchers are expected to provide a more comprehensive contribution to understanding intellectual capital disclosure and its influencing factors. Moreover, for property and real estate subsector companies to help entities improve their current intellectual capital disclosure conditions include regulations emphasizing the importance of understanding intellectual capital disclosure and the establishment of mandatory guidelines for intellectual capital disclosure. Additionally, companies are advised to include a separate section on intellectual capital disclosure in their annual reports to obtain a comprehensive overview of the intellectual capital condition of the company.

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