

Corporate Governance And Firm Value: The Mediating Role Of Intellectual Capital Disclosure In Indonesian Manufacturing Firms

Radhi Abdul Halim Rachmat¹, Disman², Nugraha³, Ikaputera Waspada⁴

^{1,2,3,4}Universitas Pendidikan Indonesia, Bandung, Indonesia

Abstract - *The objective of this study is to examine the relationship between corporate governance (managerial ownership and institutional ownership) and firm value with intellectual capital disclosure as a mediating variable for a panel sample of 358 manufacturing firms in Indonesia during 2016-2018. We found that corporate governance is associated with intellectual capital disclosure and firm value. Intellectual capital disclosure has a positive effect on firm value. Splitting the firms into small and large firm subsamples, we observe some influence of corporate governance on intellectual capital disclosure and firm value. Furthermore, intellectual capital disclosure mediates the effect of some corporate governance on firm value for the large firms.*

Keywords: *corporate governance, firm value, institutional ownership, intellectual capital disclosure, managerial ownership*

1. INTRODUCTION

The purpose of this study is to find out whether intellectual capital mediates corporate governance (managerial and institutional ownership) on firm value. Various studies have examined the direct effect of this corporate governance on firm value (Ararat, Black, and Yurtoglu 2017; Connelly et al. 2017; Husaini 2017; Li and Zaiats 2018, 2017; Zargar and Sheikh 2018), also the effect of corporate governance on intellectual capital disclosure (Al-Musali and Ismail 2015; Appuhami and Bhuyan 2015; Baldini and Liberatore 2016; Bhattacharjee, Chakraborty, and Bhattacharjee 2017; Yan 2017), and the effect of intellectual capital disclosure on firm value (Berzkalne and Zelgalve 2014; Chen, Cheng, and Hwang 2005; Li and Zhao 2018; Nuryaman 2015).

To answer the question of whether intellectual capital disclosure mediates the effect of corporate governance on firm value is important for several reasons. First, corporate governance may not have a direct effect on firm value. If corporate governance does not have a direct effect on firm value, then we will include a mediating effect namely intellectual capital disclosure in firm value to explain the mixed results regarding the effect of corporate governance on firm value. Second, by seeing intellectual capital disclosure as one of the potential mediators, we can have a better understanding of how corporate governance influences firm value. Third, the application of good corporate governance can increase the knowledge assets in the company, which can be seen from intellectual capital disclosure, increasing the company's knowledge assets. The disclosure can increase the value of the company in minimizing asymmetric information.

An increasingly unstable economy requires companies to be able to maintain or increase company value, for those companies are required to be able to manage the company well. The value of the company is the value of future profits (Van Hornes,2002). The firm value is one measure of success over the implementation of financial functions. The company's goal for the long term is to optimize firm value by minimizing the firm's capital costs. The high firm value will make investors interested in investing in these companies. Before investors make stock investments in a company, they will make stock valuations in advance based on the information they get from the capital market (Siegel, 2002).

The interest of investors in Indonesia to invest at the end of 2018 has decreased. This can be seen from the average daily transaction value on the Indonesia Stock Exchange (IDX) which declined 10.29% over the previous week, to Rp7.31 trillion. This condition was followed by a decline in the average daily transaction volume from 9.67 billion shares last week, to 9.36 billion shares on the following week, down 3.2%. Stock exchange capitalization value during the week was also decreased by 0.06% to Rp6.79 trillion from Rp6.80 trillion at the close of last week. This value dropped 20.2% compared to last year which reached Rp111.7 trillion. Also, the Investment Coordinating Board noted the realization of foreign investment in the third quarter of 2018 was only Rp 89.1 trillion. The Composite Stock Price Index (CSPI) also closed session I with a decline; The CSPI dropped 31.36 points or 0.50% to 6,179.33. Only the mining sector is still closed in the green zone with an increase of 0.90%. Nine other sectors weakened. The biggest decrease came from the infrastructure sector which eroded 0.88%. The financial sector fell 0.71% the trade sector fell 0.54%. The miscellaneous industry and basic industry sectors each dropped 0.52%.

The investment value of the manufacturing industry sector in 2018 decreased. Total investment from the manufacturing group reached Rp 122 trillion through 10,049 projects or accounted for 33.6% of the total investment value of Rp 361.6 trillion. However, investment in the manufacturing sector fell compared to the same period last year of Rp 146.1 trillion. The Ministry of Industry noted, during the first semester of 2018, domestic investment (PMDN) from the industrial sector reached Rp 46.2 trillion. This number decreased compared to the first semester of 2017 amounting to Rp 52.11 trillion. Meanwhile, foreign investment (PMA) from the industrial sector was able to penetrate up to the US \$ 5.6 billion or Rp. 75.8 trillion. This amount is also down compared to the value of the foreign investment in the first semester of 2017 which reached the US \$ 7.06 billion. The highest domestic investment contribution was from the manufacturing sector, including the food industry by 47.50% (valued at Rp 21.9 trillion), the chemical and pharmaceutical industries 14.04% (Rp6.4 trillion), and the metal, machinery industry, and electronics with a portion of 12.70% (Rp5.8 trillion).

Furthermore, the highest contribution of foreign investment came from the manufacturing sector, which included the metal, machinery and electronics industries at 39.69% (the US \$2.2 billion), followed by the chemical and pharmaceutical industries 18.84% (the US \$1,1 billion), and the food industry 10.41% (the US \$586 million). According to the Minister of Industry, the injection of investor funds is a force for the national economy, and that the industry is the main driver of the national economic growth target. This investment can strengthen the industrial structure in the country and can be a substitute for imported raw materials. In 2017 investment realization of around 13.1 percent is still low when compared to neighbouring countries that can penetrate 20-30 percent such as Malaysia, Thailand, and India which can reach 50%.

Companies are required to be able to increase the value of the company to attract investors to invest in the company. Various large-scale corporate scandals that occur throughout the world have drawn public attention to the failure of corporate governance in many public companies locally and internationally. Companies in Indonesia are increasingly aware of the importance of implementing the Good Corporate Governance (GCG) program as part of their business strategy. The implementation of GCG is a factor that can affect the value of the company (Ararat et al. 2017; Connelly et al. 2017; Li and Zaiats 2017; Nguyen et al. 2018; Nini, Smith, and Sufi 2012). Nevertheless, the implementation of GCG in Indonesia is currently relatively low (Syafitri, Nuzula, and Nurlaily 2018). According to a survey from the Asian Corporate Governance Association (ACGA) on business behaviour in Asia, Indonesia still ranks 10th in the field of GCG, as described in Table 1.

Table 1 GCG Market Ranking in Asia 2016

| Ranking | Country |
|---------|-------------|
| 1 | Singapore |
| 2 | Hong Kong |
| 3 | Japan |
| 4 | Taiwan |
| 5 | Thailand |
| 6 | Malaysia |
| 7 | India |
| 8 | Korea |
| 9 | China |
| 10 | Indonesia |
| 11 | Philippines |

Source: www.new.acga-asia.org

The literature on the influence of corporate governance on company performance has developed in recent years. While several studies show there is a direct relationship between corporate governance and firm value (Connelly et al. 2017; Nguyen et al. 2018). However, there are also researchers examining the indirect effect between corporate governance and firm value. First, examining the effect of corporate governance on the value of a company by including leverage as a mediating effect, the results show that financial leverage mediates the effect of audit committee size on firm performance for large companies (Detthamrong, Chancharat, and Vithessonthi, 2017). Second, several studies examined the effect of good governance on firm value by using Research and Development investment as mediation/moderation. Empirical studies of companies registered in the Chinese IT industry during the 2007-2008 period showed that R&D investment was not moderate, but mediated the relationship between corporate governance and company performance (Zhang, Chen, and Feng 2014). Third, examining the effect of good governance on firm value by using earnings management as an intervening variable (Achyani, Triyono, and Wahyono 2015). The results show that earnings management does not mediate the effect of corporate governance practices on firm value. This shows that the role of the audit committee has been able to increase the value of the company when they detect earnings management performed by company managers. Fourth, examine the effect of intellectual capital on firm value with financial performance as an intervening variable in companies listed on the Indonesia Stock Exchange (Sunarsih and Mendra 2014).

Maximizing the value of the company is one of the objectives of the company that must be achieved. The effort that can be made by owners or shareholders to maximize the value of the company is to hand over the management of the company to experts or professionals, namely the management. In Agency Theory, company management is said to be an agent. However, to increase the value of the company, a conflict of interest will arise between the agent (manager) and the principal (shareholder) called the agency conflict. Agency theory explains the problems that arise when shareholders rely on management to provide services on their behalf (Jensen and Meckling 1979). Management tends to maximize their welfare opportunistically by misusing company resources and making suboptimal decisions, usually at the expense of shareholders, thereby creating "agency costs" (Fama 1980).

To overcome agency problems, companies need to implement corporate governance. Good corporate governance (GCG) is definitively a system that regulates and controls companies that create added value for all stakeholders (Monks and Minow, 2003). There are two things emphasized in this concept: first, the importance of the right of shareholders to obtain information correctly and on time and, secondly, the company's obligation to make disclosures in an accurate, timely, transparent manner to all company performance information, ownership, and stakeholders. The essence of corporate governance is improving company performance through supervision or monitoring of management performance and the existence of management accountability to other stakeholders, based on the applicable rules and regulations (Kaihatu, 2006).

Previously, the main source of wealth was physical resources, now wealth is a product of knowledge. Knowledge and information are not only scientific knowledge, but news, advice, entertainment, communication, services have become the main raw material of the economy and the most important products (Kopp, Howaldt, and Schultze 2016). One approach used in the assessment and measurement of knowledge assets is intellectual capital (IC) which has become the focus of attention in various fields: management, information technology, sociology, and accounting (Petty and Guthrie 2000).

Stakeholder theory explains that all company activities lead to value creation, ownership, and use of intellectual resources that enable companies to achieve competitive advantage and increase the added value (Edvinsson and Malone 1997). Companies that have good corporate governance are expected to increase the value of the company, as revealed by previous researchers. It is interesting whether the disclosure of knowledge assets (intellectual capital) will strengthen the influence of good governance on the firm value. Research on intellectual capital and its determinants is limited and inconclusive (Hidalgo et al. 2011). In the accounting area, research on intellectual capital is still in its infancy (Archer 2007). Information about intellectual capital is needed by investors as information for making a decision. Information about intellectual capital is very relevant disclosed by the company as one of the parameters regarding company performance when faced with asymmetric information problems and agency problems.

The signaling theory states that high-performance companies (good companies) use financial information to send signals to the market (Dainelli, Bini, and Giunta, 2013). The cost of bad news signals is higher than the good news. Therefore, managers are more motivated to express intellectual capital as private information voluntarily. This is due to the manager's expectation that providing a good signal about the company's performance to the market will reduce information asymmetry (Mavlanova, Benbunan-Fich, and Koufaris, 2012).

Awareness of the role of intellectual capital in addition to financial capital and physical capital in the process of creating organizational value is increasing, including the need for

disclosure of intellectual capital in the company's annual report. Some empirical findings show that companies listed on the IDX in 2007-2010 have not fully disclosed intellectual capital where the level of intellectual capital disclosure is only 34.5% (Suhardjanto and Wardhani 2010). Intellectual capital information is one of the information needed by the company's stakeholders, especially investors (Goh and Lim 2004; Huss and Britzelmaier 2014; Petty and Guthrie 2000). Disclosure of intellectual capital for investors is useful information to predict the company's prospects and provide a more accurate valuation for the company (Bukh, 2003). The extent of intellectual capital disclosure will give a positive impression on investors because intellectual capital reflects the quality of reliable human resources, high creative ideas of the company, a good relationship with stakeholders, and a strong organizational structure. Some researchers say that many benefits will be received by the company if the company discloses intellectual capital information (Archer 2007; Caputo et al. 2016; Faisal et al. 2016; Goh and Lim 2004; Hidalgo et al. 2011; Suhardjanto and Wardhani 2010; Tejedo-Romero, Rodrigues, and Craig 2017).

In this research, it is assumed that good corporate governance of the company can increase transparency and solve problems regarding asymmetric information including disclosing the intellectual capital (knowledge assets) owned by the company to increase the firm value. Thus the focus of this research is to analyze the mediating role of intellectual capital disclosure

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In this section, we will examine several studies that have been conducted by previous researchers relating to firm value, intellectual capital, and corporate governance. This section will also discuss developing hypotheses for the relations of firm value, corporate governance, and intellectual capital. Next, we propose several hypothesis proposals that can be tested.

2.1. CORPORATE GOVERNANCE AND INTELLECTUAL CAPITAL

Corporate governance is one of the frameworks that can be used to solve agency problems between management and shareholders. Corporate governance can build an environment of accountability, trust, and transparency (Detthamrong et al. 2017). Intellectual capital is a source of capital that companies must have to build sustainable competitive growth (Bhattacharjee et al. 2017). Corporate governance may be a tool that can be used to build and create knowledge capital so that in turn it can create good value for the company. Some researchers have conducted studies on the relationship between corporate governance and intellectual capital such as research conducted by Bhattacharjee et al. (2017) which states that several indicators of corporate governance significantly influence intellectual capital. Other research shows that board diversity influences intellectual capital when the board is effective (Al-Musali and Ismail 2015). Therefore, we propose the following hypotheses.

2.1.1. MANAGERIAL OWNERSHIP AND INTELLECTUAL CAPITAL

According to Saleh et al., (2009) in managerial ownership, managers will tend to engage in value creation activities that can increase long-term competitive advantage for companies because they feel they have a responsibility towards the company. One of the efforts made by managers to increase the value of the company is to pay attention to and develop the company's intellectual property, because intellectual capital has an important role in the business world today, and the company discloses this intellectual capital in its annual report. Intellectual capital reporting can be a positive signal for investors to influence their investment decisions. Companies with high managerial ownership will try to increase their intellectual capital, while companies with low managerial ownership tend to have low levels of intellectual capital because management does not feel they own the company. We, therefore, propose the following hypothesis.

Hypothesis 1.1. Managerial ownership is positively associated with intellectual capital.

2.1.2. *INSTITUTIONAL OWNERSHIP AND INTELLECTUAL CAPITAL*

Asymmetric agency theory and information have been used to explain how the concentration of company ownership can hurt intellectual capital disclosure. To minimize agency costs incurred as a result of conflicts of interest between principals and agents, the shareholders monitor the managers who need more information (Cerbioni and Parbonetti, 2007). According to Fama and Jensen (1983), if ownership is widespread, the prospect of a conflict of interest between the principal and the agent is greater than that of a company with a high concentration of ownership. Companies with greater ownership dispersion tend to have more pressure from shareholders to reduce agency costs and information asymmetries and therefore have greater incentives to voluntarily provide information. Companies that have a higher concentration of ownership have lower information asymmetry because dominant shareholders usually have access to the information they need through private meetings. Li et al., (2008) argue that this applies specifically to the disclosure of intellectual capital. On the one hand, the study of White et al. (2007), Whiting and Woodcock (2011), Singh and Van der Zahn (2008), found no relationship between the disclosure and the level of ownership concentration. On the other hand, Oliveira et al. (2006), Li et al. (2008), and García-Meca & Sánchez-Ballesta (2010) found that companies with a low concentration of ownership, or property with more people, were more likely to provide disclosures about intellectual capital. These studies show a relationship between the level of intellectual capital disclosure and the concentration of ownership, and especially the negative relationship between the two variables, in the sense that the higher the concentration of ownership the smaller the disclosure of information about intellectual capital provided by the company. We, therefore, propose the following hypothesis.

Hypothesis 1.2. Institutional ownership is positively associated with intellectual capital.

2.2. *CORPORATE GOVERNANCE AND FIRM VALUE*

Corporate governance (CG) is a system of supervision and management that influences the determination and achievement of company goals. This CG is a way to assess and control company risk and ensure effective implementation. Good corporate governance structures encourage companies to create value through operations, research, and innovation development. CG also provides a reliable and adequate control system. Since the 1997 Asian Financial Crisis, companies in Indonesia as well as in other crisis-stricken countries need to reduce their weaknesses/vulnerabilities to economic shocks and improve corporate governance practices (Detthamrong et al. 2017). Some researchers have previously examined the relationship between corporate governance and firm value. Connelly et al. (2017) showed a positive relationship between corporate governance and corporate value in Ho Chi Minh City. However, there are differences in the results of research for companies in the city of Hanoi, that corporate governance does not affect the firm value of the company. There are research inconsistencies regarding corporate governance and firm values. Therefore, we propose the following hypotheses.

2.2.1. *MANAGERIAL OWNERSHIP AND FIRM VALUE*

The relationship between managerial ownership and firm value can be seen from the contracting theory approach. According to this theory, the optimal percentage of managerial ownership can overcome agency problems. The company owner compensates the manager in the form of share ownership so that thinking is in line and the firm value is always tried to be optimized for the welfare of shareholders. What needs to be done by shareholders is to form an optimal managerial ownership composition that can increase the firm value of the

company(Olweny 2012).The results of other studies indicate that managerial ownership harms firm value(Budianto and Payamta 2014).The ownership structure is a potential negative that can affect the value of the company. The information asymmetry between company management and outsider allows high transaction costs for outsiders. The inclusion of management as the company's shareholder is assumed to reduce the risk of an outsider because the management also bears the risk of the firm value of the company(Budianto and Payamta 2014; Lee and Ryu 2003).Therefore, we propose the following hypothesis.

Hypothesis 2.1. Managerial ownership is positively associated with firm value.

2.2.2. *INSTITUTIONAL OWNERSHIP AND FIRM VALUE*

Shleifer and Vishny (1986) found evidence that a significant proportion of institutional ownership had a positive effect on the market value of the company. The finding is supported by several other researchers(Clay 2002; Ovtcharova 2003).Various studies on institutional ownership and corporate value show the diversity of results. Higher institutional ownership will increase control by external parties to the company so that agency costs incurred decrease and the value of the company increases. This is realized by the disclosure of information about the company's condition, although it has consequences for the costs incurred to provide information to the public (cost of equity capital)(Brush, Bromiley, and Hendrickx 2000).Research conducted by Schmidt and Fahlenbrach (2017) shows that the variable structure of institutional ownership has a significant effect on firm value. Conversely, other studies show that there is no relationship between institutional ownership and firm value(Demsetz & Lehn, K. 1985). Therefore, we propose the following hypothesis.

Hypothesis 2.2. Institutional ownership is positively associated with firm value.

2.3. *INTELLECTUAL CAPITAL AND FIRM VALUE*

Based on the resource-based theory, a company is perceived as a collection of tangible and intangible assets and capabilities(Firer and Williams 2003).This theory suggests that the performance of a company should be defined as a function of effective and efficient use of tangible or intangible assets (or intellectual ability) owned by a company. This is in line with the Stakeholder theory which states that Value Added is a more accurate measure in measuring a company's performance compared to accounting profit which is only a measure of return for shareholders. Intellectual capital is believed to play an important role in increasing firm value and financial performance, as has been examined in several previous studies(Berzkalne and Zelgalve 2014; Firer and Williams 2003; Sunarsih and Mendra 2014). Therefore, we propose the following hypothesis.

Hypothesis 3. Intellectual capital is positively associated with firm value

2.4. *THE MEDIATING EFFECTS OF INTELLECTUAL CAPITAL ON THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE AND FIRM VALUE*

In this session, it can be stated that corporate governance does not affect company performance directly but rather affects firm value indirectly through intellectual capital. Based on the previous discussion, corporate governance influences the disclosure of intellectual capital, and intellectual capital can affect firm value. The diverse results of the study lead to the statement that the relationship between corporate governance and firm value can be mediated by intellectual capital. There are two reasons why intellectual capital is used to mediate the effects of corporate governance on firm value. First, weak corporate governance can result in poor employee performance and cause employees to not be able to create and innovate so intellectual capital, which should be able to develop, becomes undeveloped. Second, intellectual capital can produce an increase in firm value and is

intended to allow the company to benefit from opportunities that are better than those obtained by competitors and provide increased income in the future. Intellectual capital management can provide an efficient methodology for identifying, measuring, managing, and disseminating knowledge; this is what is called a proper way to improve transparency and internal management. Intellectual capital can identify and assign values to organizational knowledge assets. The influence of these assets through the sharing of knowledge and creating new knowledge (Spender 2008) to increase the value of the company. Based on the description above, we propose the following hypothesis.

Hypothesis 4.1. Intellectual capital mediates the effect of managerial ownership on firm value.

Hypothesis 4.2. Intellectual capital mediates the effect of institutional ownership on firm value.

Based on the developing hypotheses for the relations of firm value, corporate governance, and intellectual capital, the research framework of this study is illustrated in Figure 1.

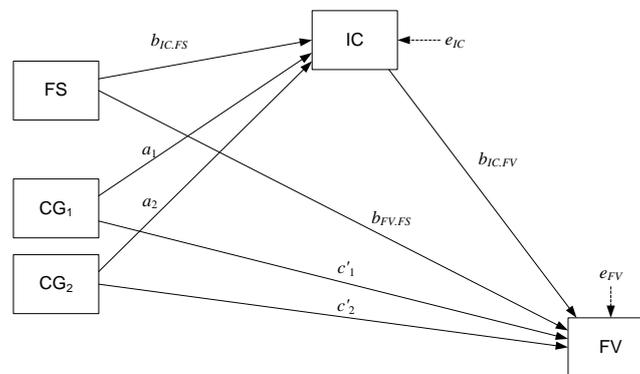


Figure 1 Research Framework

3. RESEARCH METHODOLOGY

In this paper, the quantitative approach is employed because it is better suited to empirically address the research question. Within this method, the hypotheses are tested. The research question, that intellectual capital is a mediating variable between corporate governance and firm value, is estimated by regressions using OLS.

The impact of corporate governance on intellectual capital is estimated by a series of panel OLS regressions of corporate governance on intellectual capital and a control variable (Firm Size). To test Hypotheses 1.1–1.2, which predict the effect of the corporate governance on intellectual capital, we estimate the model in Equation (1) as follows:

$$IC = i_{.IC} + a_1CG_1 + a_2CG_2 + b_{IC.FS}.FS + e_{.IC}$$

To test Hypotheses 2.1–2.2 that forecast the effect of the corporate governance on the firm value, we estimate the model in Equation (2) as follows:

$$FV = i_{.FV} + a_1CG_1 + a_2CG_2 + b_{FV.FS}.FS + e_{.FV}$$

To test Hypothesis 3, which predict the effect of the intellectual capital on firm value, we estimate the model in Equation (3) as follows:

$$FV = i_{.FV} + b_{IC}IC + b_{FV.FS}.FS + e_{.FV}$$

To test Hypotheses 4.1–4.2, which predict the effect of the corporate governance on firm value, mediated by intellectual capital, we estimate the model in Equation (4) as follows:

$$FV = i_{.FV} + c'_1GC_1 + c'_2GC_2 + bIC + bFS + e_{.FV}$$

where FV is firm value as the dependent variable, IC is the intellectual capital, i is constant of IC and FV, a_{1-5} is regression coefficient for each corporate governance (GC_{1-5}) variable, b is regression coefficient for intellectual capital and Firm Size (FS), c' represents the relative direct effect of CG on FV, and e is the error. CG_{1-5} represents a firm's corporate governance variables (see Table 2). Table 2 describes the variables used in this study.

Table 2 The variables used in the study

| Variable code | Variable name | Variable description |
|-----------------------|-------------------------|--|
| Corporate governance: | | |
| CG1 | Managerial Ownership | The ratio of share ownership of management that actively participates in corporate decision making (directors and commissioners) with total outstanding shares |
| CG2 | Institutional Ownership | The proportion of share ownership by the institution |
| IC | Intellectual Capital | Value-added intellectual capital measured by Pulic's VAIC TM |
| FV | Firm Value | Current financial market estimates of the returns on every dollar of investment (Tobin's Q) |
| Control Variable | | |
| FS | Firm Size | A natural logarithm of the firm size. |

Secondary data are data that have been available previously obtained from other parties, collected from various documents. In this study, secondary data are used with the consideration that the data have the validity guaranteed by other parties so it is reliable for use in research. The main sources of this study are company annual reports and stock trading reports, which are published through the Indonesia stock exchange, the websites of companies listed on the IDX, and other supporting websites.

To test the hypotheses, we construct a sample that initially contains all manufacturing firms (basic industry & chemical, miscellaneous industry, and customer good industry) listed in Indonesia Stock Exchange (IDX) over 3 years from 2016 to 2018. Using the availability of sample selection criteria, thus, we have panel data of 1,074 firm-year observations of all manufacturing firms. The sample selection criteria are presented as follows.

Table 3 Sample selection criteria

| | |
|---|------|
| Number of companies listed on the Indonesia Stock Exchange (IDX) until 2019 | 671 |
| Number of companies listed on the Indonesia Stock Exchange (IDX) until 2019, which are active on the stock exchange | 653 |
| Number of companies listed on the Indonesia Stock Exchange (IDX) in 2016-2018 | 627 |
| Companies that have not consistently published audited financial statements for 2016-2018 in a row | 80 |
| Companies that have negative profits in the 2016-2018 reporting year | 189 |
| The total sample of companies | 358 |
| Number of observations 2016-2018 | 1074 |

4. RESULTS AND DISCUSSION

4.1. DESCRIPTIVE STATISTICS

Table 4 presents the descriptive statistics of the variables used in this article for the final sample of 1,074 firm-year observations over the period 2016–2018. The mean (median) value of CG1 is 4.702 (0.000), whereas the mean (median) value of CG2 is 0.507 (0.518). The mean (median) value of FS is 14.904 (14.685), suggesting that the average firm in Indonesia is still in medium-sized. The mean (median) value of IC is 5.297 (4.560), suggesting that the average firm in Indonesia has not paid attention to the development of intellectual capital. Last, the mean (median) value of FV is 0.165 (0.116), suggesting that the average firm in Indonesia has a relatively low firm value.

Table 4 Descriptive statistics on keys variables

| | Mean | Median | S.D. | Minimum | Maximum |
|-----|--------|--------|--------|---------|---------|
| CG1 | 4.702 | 0.000 | 14.519 | 0.000 | 89.440 |
| CG2 | 0.507 | 0.518 | 0.210 | 0.064 | 0.900 |
| IC | 5.297 | 4.560 | 2.737 | -0.099 | 15.487 |
| FV | 0.165 | 0.116 | 0.175 | 0.007 | 0.977 |
| FS | 14.904 | 14.685 | 1.770 | 11.157 | 19.392 |

This table reports summary statistics for key variables for the sample of 1,070 firm-year observations over the period 2016–2018. Please see Table 2 for the variable description.

Table 5 presents the correlation coefficients of key variables for the final sample of 1,070 observations. As the correlation coefficients between explanatory variables are generally below 0.50. As expected, IC and FV are moderately correlated ($r= 0.139$), thereby indicating that they can be used almost interchangeably as a proxy for firm value.

When looking at correlation coefficients between intellectual capital and corporate governance variables, it is found that the signs are generally consistent with the hypotheses. Besides, when looking at correlation coefficients between firm value and corporate governance variables, we also find that the signs are somewhat inconsistent with the hypotheses. For example, the relationship between institutional ownership (CG2) and firm value (FV) is positive, while the relationship between managerial ownership (CG1) and firm value(FV) is negative.

Table 5 Descriptive statistics on keys variables

| | FV | CG1 | CG2 | IC | FS |
|----|-------|-----|-----|----|----|
| FV | 1.000 | | | | |

| | | | | | |
|-----|----------|----------|---------|-------|-------|
| CG1 | -0.051 | 1.000 | | | |
| CG2 | 0.211** | 0.011 | 1.000 | | |
| IC | 0.129* | 0.228** | 0.116* | 1.000 | |
| FS | -0.333** | -0.208** | -0.134* | 0.064 | 1.000 |

This table reports correlation coefficients between key variables for a sample of 1,074 firm-year observations covering the period 2016–2018. Please see Table 2 for the variable description. *, and **represent statistical significance at the 10% and 5%, respectively.

4.2. THE EFFECT OF CORPORATE GOVERNANCE ON INTELLECTUAL CAPITAL

In this section, we present our empirical results regarding the effects of corporate governance characteristics on intellectual capital. To test the direct effect of corporate governance on intellectual capital, the OLS regression was used. The summary of the model is presented as follows:

Table 6 Intellectual Capital Model Summary

| Hypothesis | Antecedent | | IC (Intellectual Capital) | | | Significance |
|-----------------|------------|-------------|-------------------------------|-------|-------|--------------|
| | | | Coef. | SE | p | |
| Hypothesis 1.1. | CG1 | c'_1 | 0.050 | 0.013 | 0.000 | significant |
| Hypothesis 1.2. | CG2 | c'_2 | 1.749 | 0.830 | 0.036 | significant |
| | FS | $b_{IC.FS}$ | 0.212 | 0.101 | 0.036 | significant |
| | Constant | i_{IC} | 1.079 | 1.634 | 0.510 | |
| | | | $R^2 = 0.286$ | | | |
| | | | $F(1.970) = 2.699. p < 0.000$ | | | |

The statistical significance is at 5% and 10%

The estimated model of intellectual capital influenced by corporate governance and firm size can be formulated as follows:

$$IC = 1.079 + 0.050CG_1 + 1.749CG_2 + 0,212FS$$

These findings provide supports for Hypotheses 1.1 and 1.2 that predict the significant effect of corporate governance on the degree of intellectual capital. It seems that firm size can enhance the effect of corporate governance on intellectual capital. The result of R^2 , which is low (0.082), shows that the variances of corporate governance in the companies are also high.

4.3. THE EFFECT OF CORPORATE GOVERNANCE ON FIRM VALUE

In this section, we exhibit the calculation of the effect of corporate governance and firm size as a control variable on firm value. To test the direct effect of corporate governance on firm value, the OLS regression was used. The summary of the model is presented as follows:

Table 7 Firm Value Model Summary

| Hypothesis | Antecedent | | FV (Firm Value) | | | Significance |
|-----------------|------------|-------------|-------------------------|-------|-------|--------------|
| | | | Coef. | SE | p | |
| Hypothesis 2.1. | CG1 | a_1 | -0.002 | 0,001 | 0,044 | significant |
| Hypothesis 2.2. | CG2 | a_2 | 0.139 | 0,050 | 0,006 | significant |
| | FS | $b_{IC.FS}$ | -0.033 | 0,006 | 0,000 | significant |
| | Constant | i_{FV} | 0.598 | 0,09 | 0,000 | |
| | | | $R^2 = 0.154$ | | | |
| | | | $F(1.970) = 8.671. p <$ | | | |

| | | | | |
|--|--|--|-------|--|
| | | | 0.000 | |
|--|--|--|-------|--|

The statistical significance is at 5% and 10%

The estimated model of firm value influenced by corporate governance and firm size can be formulated as follows:

$$FV = 0.598 - 0.002CG_1 + 0.139CG_2 - 0.033FS$$

These findings provide supports for Hypotheses 2.1 and 2.2 that predict the significant effect of corporate governance on the firm value. It seems that the firm size variable gives a negative effect on firm value.

4.4. THE EFFECT OF CORPORATE GOVERNANCE AND INTELLECTUAL CAPITAL ON FIRM VALUE

In this section, we display the calculation of the effect of corporate governance and intellectual capital (and firm size as a control variable) on firm value. To test the direct effect of corporate governance and intellectual capital on firm value, the OLS regression was used. The summary of the full model is presented as follows:

Table 8 Full Model Summary of Firm Value

| Hypothesis | Antecedent | | FV (Firm Value) | | | Significance |
|-----------------|------------|-------------|--------------------------------|-------|-------|--------------|
| | | | Coef. | SE | p | |
| Hypothesis 4.1. | CG1 | c'_1 | -0.002 | 0.001 | 0.007 | significant |
| Hypothesis 4.2. | CG2 | c'_2 | 0.120 | 0.050 | 0.017 | significant |
| | FS | $b_{FV,FS}$ | -0.036 | 0.004 | 0.000 | significant |
| Hypothesis 3 | | $b_{FV,IC}$ | 0.011 | 0.006 | 0.005 | significant |
| | Constant | i_{FV} | 0.587 | 0.097 | 0.000 | |
| | | | $R^2 = 0.181$ | | | |
| | | | $F(1,970) = 13.220. p < 0.000$ | | | |

The statistical significance is at 5% and 10%

The estimated model of firm value influenced by corporate governance, intellectual capital, and firm size can be formulated as follows:

$$FV = -0.458 - 0.002CG_1 + 0.120CG_2 - 0.036FS + 0.011IC$$

These findings provide supports for Hypotheses 4.1 and 4.2 that predict the significant effect of corporate governance and on the firm value. It seems that the firm size variable gives a little bit of effect on firm value if the model includes intellectual capital.

4.5. THE MEDIATING EFFECT OF INTELLECTUAL CAPITAL

To test the mediating effect of intellectual capital for corporate governance and firm value, the Sobel test was used. In summary, the results of the Sobel test on each variable are presented in Table 9.

Table 9 Mediating Effect of IC

| Variable | Sobel Z | p-value | Results |
|----------|---------|---------|---------------------|
| CG1 | -1.351 | 0.176 | no mediating effect |
| CG2 | 1.456 | 0.145 | no mediating effect |

From Table 9, it is found that intellectual capital has no mediating effect for managerial ownership and institutional ownership. These results confirm several previous types of research that intellectual capital may mediate or may not mediate the influence of corporate governance on firm value.

5. CONCLUSION

We found that managerial ownership and institutional ownership are associated with intellectual capital disclosure and firm value. Intellectual capital disclosure has a positive effect on firm value. From the firm size, we observe the influence of managerial ownership and institutional ownership on intellectual capital disclosure and firm value. Furthermore, intellectual capital disclosure does not mediate the effect of managerial ownership and institutional ownership on firm value. The main managerial implication of this study is that the firm size is not a reference for companies to invest in intellectual capital.

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