American Journal of Humanities and Social Sciences Research (AJHSSR) e-ISSN : 2378-703X Volume-3, Issue-5, pp-187-197 www.ajhssr.com Research Paper

Influence of Information Technology Governance to Company Performance with Mediation of Information Technology Capabilities in Indonesia

Gede Dion Syailendra¹

¹ Economy and Business Faculty, Airlangga University, Indonesia

ABSTRACT : This research was conducted to implement the research model undertaken by Zhang, Zhao, and Kumar (2016) who found the relationship between information technology governance, information technology capability, and company performance. The study was conducted by taking samples of listed companies listed on the Indonesia Stock Exchange as many as 553 companies to retrieve the data required in this study. Hypothesis testing is done by using statistical tool Warppls version 5 where the test results indicate that information technology capabilities have a non-significant positive relationship to company performance. The results also show that information technology capabilities do not mediate the relationship between information technology governance and company performance. The low significance of the relationship between information technology in their daily operations are still low where this is indicated by at least open companies in Indonesia who won awards in the field of information technology.

KEYWORDS: capabilities, companay performance, governance, information technology

I.

INTRODUCTION

Information technology has the ability to combine efficiently and effectively between organizational resources with organizational and managerial processes in which it indicates that organizations are dependent on information technology (Zhang et al., 2016). Rapid changes in information technology as well as an increasing number of investments made by organizations aim to enhance the competitiveness of enterprises (Li & Ye, 1999). Farhanghi, Abbaspour, and Ghassemi (2013) explain that information technology becomes an important element in relation to the growth rate and ability of the company to survive in its industry where information technology becomes an integral and fundamental part in supporting, maintaining and developing a business.

In a company not only information technology is needed in support of all activities of the company, but an adequate information system also become a matter of concern every company. The information system is one of the relevant components to be used in today's business environment where it provides a great opportunity for companies that want to succeed, giving companies the capability to collect, process, distribute and share data in an integrated and scheduled way (Almazan, Tovar, & Quintero, 2017). In addition, information systems help companies to shrink geographic differences, improve the efficiency of work done, as reflected in improvements in enterprise business processes, administration, and information management, which results in a positive implication of company productivity and competitiveness (Bakos & Treacy, 1986; Rai, Patnayakuni, & Seth, 2006)

Information technology capabilities have an influence on the performance of the company where this is the result of several studies that have been done by some researchers for example, Barua, Kriebel, and Mukhopadhyay (1995); Bharadwaj, Bharadwaj, and Konsynski (1999); Santhanam and Hartono (2003); Aral and Weill (2007); and Ashrafi and Mueller (2015). In these studies it is concluded that companies with adequate information technology capabilities generally have good company performance.

In the theory of strategy selection, the attributes contained in the organizational stewardship structure (such as the size and competence of information technology) influence the board's involvement in information technology governance (Zhang et al., 2016). Jewer and Mckay (2012) explains that the theory explains that board involvement enhances organizational strategy, which will then improve the company's performance. In his research, Zhang et al. (2016) argue that effective information technology governance enables companies to create information technology capabilities which will result in better corporate performance.

Open Access

This study was conducted using a journal written by Zhang et al. (2016) as the journal of reference in the study. Zhang et al. (2016) conducting research to determine the implications of information technology governance and information technology capabilities on the creation of corporate value and sustainable accounting performance. The study was conducted to find the relationship between information technology governance with information technology capabilities as well as how they relate to company performance. The study was conducted to test the relationship between the variables of the study. Zhang et al. (2016) conducted research using company data ranked in the Information Week bulletin and the results of the study provide a model that can be used to examine the implications of information technology governance and information technology capabilities with the performance of firms.

This article is structured in a systematic manner consistent with applicable rules. In the next section will be discussed about the literature review that is relevant to the research to be conducted. Then, in the next section will be discussed about the development of hypotheses from research where in it will be discussed about the operational definition of research variables and provide research models to be tested. Research methods and data collection procedures will be explained in the fifth section. The sixth section will explain the empirical findings related to the study and the final part of the article will conclude with a conclusion and suggestion.

II. LITERATURE REVIEW

Information technology capabilities and company performance

Research on the implications of information technology capabilities on company performance has been widely practiced (Zhang et al., 2016). The first research conducted to determine the implications of information technology capabilities and company performance is done by Bharadwaj (2000) where the results showed a relationship between information technology capabilities and company performance measured based on accounting parameters. The research by Bharadwaj shows that information technology capabilities create unique competitive advantages and intangible assets for a company. Furthermore, companies with high information technology capabilities will acquire and maintain good performance based on profit and cost measurements (Zhang et al., 2016). Same with research conducted by Bharadwaj (2000), advanced analysis done by Santhanam and Hartono (2003) by controlling the financial performance of the previous year and concluding that firms with adequate information technology capabilities will show good company performance compared to the average performance of firms in the industry.

Some literature on the information technology capabilities of organizations argues that information technology implies enterprise performance through a variety of business capabilities or processes such as talent management, business flexibility, enterprise entrepreneurship and knowledge management (Benitez-Amado, Llorens-Montes, & Fernandez-Perez, 2015; Chen et al., 2014; Iyengar, Sweeney, & Montealegre, 2015). As an example, Benitez-Amado et al. (2015) investigate the implications of information technology on talent management and environmental sustainability and advise that information technology infrastructure capabilities improve talent management, which will then improve the operating strategy of a sustainable environment that will ultimately improve company performance.

As for, Zhang et al. (2016) examine how the influence of information technology governance on corporate performance through information technology capabilities. More recent studies have investigated the impact of information technology capabilities on the company's competitive advantage where results vary widely (Zhang et al., 2016). Wang and Alam (2007) for example, exploring the relationship between information technology capabilities and corporate valuation, uncertain future earnings, and the accuracy of financial analyst estimates. They found that information technology capabilities are relevant, and provide a strong explanation of the company's judgment compared to traditionally-acquired accounting information. Muhanna and Stoel (2010) using two unique archive data sets in which the data represent pre-Internet (1992-1994) and post-Internet (1999-2006) situations with the intent to test the effects of information technology capabilities and information technology are of relevant value, and, furthermore, positively associated with actual future earnings.

Information technology governance and company performance

Information technology governance is part of corporate governance as a whole (Heart, Maoz, & Pliskin, 2010; Joshi, Bollen, & Hassink, 2013). Judge and Zeithaml (1992) provides empirical evidence that board involvement in corporate governance has a positive relationship with company performance. Research on information systems that have been done before shows an important role of information technology governance (Jewer & Mckay, 2012). Information technology governance as defined by ITGI is the responsibility of the Board of Directors and executive management. It is an integral part of corporate governance that consists of leadership and organizational structures and processes that ensure that organizational information technology sustains and broadens organizational strategy and objectives (Institute, 2001).

In addition, information technology governance can be seen as an organizational capacity run by the Board, executive management and information technology management to control the formulation and implementation of information technology strategies and in this way ensure the incorporation of business and information technology (Haes & Grembergen, 2005). Several studies related to information technology governance show mixed results. Weill and Ross (2004) conducted a survey of information technology governance in 256 companies worldwide during the 1999-2003 period. They find companies with good information technology governance have an advantage of at least 20% higher than companies with poor information technology governance, where the strategic objectives of these firms are the same (Weill & Ross, 2004). In the results of their study, it is explained that information technology governance is strongly related to overall company performance. Chatterjee, Richardson, and Zmud (2001) using an event study methodology to test the market reaction to the announcement of information from the new Chief Information Officer (CIO) position where the outcome is the market will react in response to the announcement of the new Chief Information Officer (CIO) primarily for companies experiencing a high transformation of information technology.

Boritz and Lim (2008) investigating the relationship between effective information technology governance, information technology weaknesses, and firm performance. From their research results, companies that have information technology governance mechanisms (information technology strategy committees, CIO) generally have company performance at a higher level. They measure the effectiveness of information technology governance as a function of the information technology strategy committees, and the term of CIO. As for this research, we build more measures of information technology governance (ITGOVScore) with reference to the categories that have been compiled by Zhang et al. (2016) which consists of three categories: oversight, information technology leadership background, and the importance of information technology leadership. For a description of information technology governance measures will be discussed in the next section.

Information technology governance and information technology capabilities

Previous research has examined the role of senior executives of information technology to information technology capabilities (Lim, Stratopoulos, & Wirjanto, 2012). Lim et al. (2012) found a positive relationship between the hierarchical power of senior executives of information technology and the possibility that the company will develop superior information technology capabilities. They also suggest the contribution of information technology executives who have the power in which they are forced to maintain that capability. Based on the results of research conducted by Lim et al. (2012), Zhang et al. (2016) argues that there is a positive relationship between information technology governance and the possibility that the company will develop its information technology capabilities even better.

III. DEVELOPMENT OF HYPOTHESES

Information technology governance and information technology capabilities

Information technology governance involves a set of mechanisms to ensure the achievement of required information technology capabilities (Haes & Grembergen, 2005). In particular, information technology governance affects the company's ability to utilize information technology synergies across business units (Gu, Xue, & Ray, 2008). Companies with stronger information technology governance are more likely to have the business knowledge and information technology needed to be used as organizational learning materials. In the study Zhang et al. (2016), information technology governance includes three categories: oversight, information technology leadership background, and the importance of information technology leadership.

Daily and Dalton (1993) states that board members can enhance the company's reputation because of their own experience, achievements, and exposure. In addition, such members are generally in tune with the ideas mentioned in the resource independence theory, which demonstrate the effectiveness and efficiency of a company depending on the ability of key organization members to act as keys and provide oversight functions (Daily & Dalton, 1993). Therefore, Zhang et al. (2016) believes that when firms have strong oversight functions, their outside board members (eg the Big4 audit committee) are more likely to evaluate internal board members with regard to their information technology activities.

In addition, if companies have more independent directors, they can develop stronger monitoring functions to help reduce the risk of enterprise information technology, thereby creating more sustainable information technology capabilities (Zhang et al., 2016).

Next, Zhang et al. (2016) also stated that companies whose leadership has more experience and knowledge of information technology tend to have the ability and skills to disseminate information technology innovation. In addition, with the company's operational dependence on information technology, CIO and information technology strategic committees, which have the greatest knowledge

on information technology (including information technology risks, costs, and competitive risks), can better manage the company (Nolan & McFarlan, 2005). Based on the previous explanation, the hypothesis is built as follows:

H1: Information technology governance will have a positive association with the capabilities of enterprise information technology.

Information technology capabilities and company performance

Company performance refers to competitive advantage, which is defined as an advantage over competitors with several measures such as cost, quality, or speed, leading to greater market control and earnings than average (Rainer & Turban, 2009). Research conducted by Zhang et al. (2016) measure with firm performance from both categories namely accounting performance and market value perspective. As for this research, company performance will be measured from accounting performance taking data on annual report of company. Detailed description of the measurement will be explained in the section "Operational Definition".

The definition of information technology capability is available in a wide variety of literature. Bharadwaj (2000) defines the capabilities of information technology as its ability to mobilize and disseminate information technology-based resources in combination with other resources. Lim et al. (2012) explained that the capability of information technology as a company's ability to integrate, build, and reconfigure information technology with organizational and managerial processes in order to change the environment quickly and competitively. Wang and Alam (2007) explains that information technology capability depends on how companies use information technology investments with other resources through an innovative way and create unique competitive advantages and intangible assets, such as technical and managerial skills, asset-based knowledge, customer orientation, and synergy. Zhang et al. (2016) defines the capabilities of information technology resources to obtain alignment of information technology / business and create competitive advantage. RBT states that the company's competitive advantage is determined by its resources including tangible and intangible assets, competencies, abilities, knowledge, and skills (Zhang et al., 2016).

Companies with high information technology capabilities have better ability to make decisions that affect investment and information technology development (Zhang et al., 2016). Thus, they tend to turn information technology investments into real value in terms of, among others, increased productivity and efficiency, improved marketing channels, product quality/product differentiation, and improved customer service (Bharadwaj, 2000). Zhang et al. (2016) believes that these efforts should be able to increase profits and potential revenue of a sustainable company, such as upgrading the company's ability to apply information technology with strategic objectives. Based on the explanation, the information technology capability is expected to affect the company's performance so that the hypothesis formed is:

H2: Information technology capability has a positive association with company performance.

Information technology governance and company performance

Information technology governance is an integral part of corporate governance, and is implemented using a combined process, structure, and relational mechanism, enabling both information technology and business people to carry out their responsibilities in supporting information technology / business alignment, and results in value creation business information technology (Heart et al., 2010; Heroux & Fortin, 2014; Joshi et al., 2013). In addition, based on the theory of strategic choice, the attributes of the board of the organization (eg, insider representation, board size, and information technology competencies) impact on board involvement in information technology governance (Zhang et al., 2016). This theory argues that board involvement enhances organizational strategy and avoids risk, which in turn affects company performance (Jewer & Mckay, 2012; Judge & Zeithaml, 1992).

Effective information technology governance refers to the principles of corporate governance in better managing and utilizing information technology in an effort to achieve high corporate performance (Zhang et al., 2016). Boritz and Lim (2008) examines the relationship between information technology governance and company performance, and suggests information technology governance mechanisms to contribute to improving corporate performance after taking into account the impact of material weaknesses on internal control of information technology.

Effective information technology governance distinguishes organizational assets used in information technology while ensuring compliance with the company's overall vision, mission and principles (Zhang et al., 2016). Zhang et al. (2016) argues that companies with effective and efficient information technology governance can maintain assets in human resources related to information technology such as expertise and experience in the utilization of information technology, and resources that support information technology such as knowledge and information technology processes. Information technology governance can affect corporate performance through other resource mediation roles, such as linkages with information technology, strategic target alignment, and business process linkages (Lazic, Groth, Schilinger, & Heinzl, 2011). Zhang et al. (2016)

defines the linkage of information technology as the extent to which multi-business firms use information technology resources and information technology management processes across their business units. The linkage of business processes is defined as the use of general business processes across business units (Lazic et al., 2011). With regard to the results of the above explanation, the hypothesis formed is:

H3: The capabilities of information technology mediate the relationship between information technology governance and company performance.

Operational definition

Based on the hypothesis formed and refers to the research undertaken oleh Zhang et al. (2016), then the performance of the company will be influenced by information technology governance and information technology capabilities where information technology governance will affect information technology capabilities. Thus the research model can be described as follows:



Dependent variable (company performance measurement)

In terms of marketing and finance, the performance of a company is rated as a competitive advantage in terms of financial profitability (Benitez-Amado et al., 2015). For this study we measure company performance from an accounting perspective. The measure of company performance that we use is the rate of return on profit compared to assets owned by the company or commonly referred to as Return on assets (ROA). Tanriverdi (2005) explains that ROA is usually used to measure company performance from an accounting perspective where ROA is a measure of performance gained from past activities conducted by the company. ROA identifies a company's ability to generate profits from its assets, and has been widely used in previous studies (Bharadwaj, 2000; Rai, Patnayakuni, & Patnayakuni, 1997; Tanriverdi, 2005).

Independent variable (measurement of information technology capability)

Information technology capabilities are classified into two categories: macro level and micro level (Braojos-Gomez, Benitez-Amado, & Llorens-Montes, 2015). In this study, we define information technology capabilities with reference to the definitions made by Zhang et al. (2016) where it covers both categories. The reason is that we operationalize the information technology capabilities based on the company's award from the Chief Information Officer (CIO) community in Indonesia, or so-called iCIOs, and awards received from Major Itech in the Top IT & Telco category where both types of awards can used to assess how well the capabilities of information technology within the company. We will code the company as 1 if it gets one of the awards from iCIO or Itech Magazine; while if the company does not get the award, then the company we will give the code 0.

Independent variables (measurement of information technology governance)

Information technology governance is one aspect corporate governance, therefore we use the information technology governance matrix based on the research undertaken by Zhang et al. (2016). Therefore we follow the GOV-Score used by Zhang et al. (2016) and built by Brown and Caylor (2006) and builds the value of ITGOV that represents both internal and external IT governance.

The level of effectiveness of the board in its oversight function is determined by its independence, size, and composition (insiders and outsiders) (John & Senbet, 1998). Research on the auditor generally focuses on the knowledge and expertise it has (Zhang et al., 2016). Large accounting firms, such as Big4, result in higher quality audits and oversight of information systems and assets (Cater-Steel, 2009). The background of information technology leadership shows the extent to which experience in information technology and knowledge of executives, boards of directors, and audit committees (Zhang et al., 2016). The importance of leadership in information technology demonstrates the importance of information technology in the overall management of the enterprise. This is because for effective and efficient IT governance is the result of a combination of business activities and information technology. Zhang et al. (2016) using 11 factors that have

been identified in calculating the score of information technology governance are: Big4, independent board members of directors, CEOs or CFOs with information technology experience, top management (TMT) with information technology experience, board of directors with information technology experience, audit committee with information technology experience, CIO Position, CIO term of office, CIO compensation, payroll disbursement gap between CIO-TMT, and IT strategy committee. However, in this study we will not use two factors: CIO compensation and payments gap between CIO-TMT due to the lack of sufficient data availability from the data sources used in the study.

Table 1 provides a complete list of 9 factors under each category. For coding of each factor is as follows. Big4 is the four largest international service network of accounting firms including Deloitte, Ernst & Young, PricewaterhouseCoopers, and KPMG. We give Big4 code as 1 if the company uses external auditors from Big4 and 0 companies instead. Information technology strategy committees should ensure that information technology governance is adequately addressed and advise on strategic directions (ISACA); it is encoded as 1 if the company has an information technology strategy committee and 0 otherwise. To factor CEO or CFO with the information technology experience encoded as 1 if the CEO or CFO has experience related to information technology and 0 otherwise. Furthermore, we coded top management factors with information technology experience, an audit committee with information technology experience, a director with an information technology experience, and an independent board of directors as a ratio between 0 and 1. We assigned the CIO's working code by dividing it by 10 to get the ratio between 0 and 1.

Variable	Observable Measure	Definition
ROA	·	The rate of return on profit compared to total
		assets owned by the company for 1 year
IT Capability		1 if the company receives an award from iCIO
		and Itech Magazine; 0 otherwise
IT Governance	Big4	1 if the auditor performing the audit is a big
		four accounting firm; 0 otherwise
	INDBRD	Percentage of independent board members
		within the company
	CEFOIT	1 if the CEO or CFO has IT related experience;
		0 otherwise
	MGMTIT	Percentage of top management that has IT
		related experience
	BRDIT	Percentage of boards of directors who have IT
		related experience
	COMMIT	Percentage of audit committee members with
		related IT experience
	CITO	1 if the company has a CIO or CTO position; 0
		otherwise
	CITOYR	Long work someone in position of CIO or
		СТО
	ITSTRCOMT	1 if the company has IT strategy committee; 0
		otherwise
	UMUR (AGE)	Logarithm of company age is established
	LABA (EARNINGS)	Earnings before other income
	ROA (t-1)	The rate of return on profit compared to the
		total assets owned by the company 1 year
		before the time of study
	PERTUMBUHAN	Sales growth rate
	PENJUALAN (SG)	
	BIAYA IKLAN (ADV)	Advertising cost / Sales
	BIAYA RISET DAN	Research and Development cost / Sales
	PENGEMBANGAN (R&D)	
	BELANJA MODAL (CAP)	Capital Expenditures / Sales

Table 1 Variable Definition

Control variables

Based on a review of previous studies on information technology investment and company performance, Zhang et al. (2016) controlling earnings and the possibility of a halo effect from previous performance, which may have an impact on the company's information technology capabilities. Zhang et al. (2016) incorporating a sales growth rate (SG) in the model to control future earnings growth. Other than that, Zhang et al. (2016) controlling for advertising (ADV), research and development (R & D), and capital expenditures (CAPs) that have the potential to have value relevance with intangible assets that are not included in the balance sheet, and may be related to company performance. In this study, we used all the control variables used by Zhang et al. (2016). Table 1 summarizes the definitions and description of the variables in this study.

IV. **RESEARCH METHODS**

Resources and data collection

In previous studies (Bharadwaj, 2000; Lim et al., 2012; Muhanna & Stoel, 2010; Zhang et al., 2016) the data used is taken from Information Week 500 (IW500) which is a database that provides ratings for companies based on the quantity of technology or investment services company, as well as the quality of innovation from the use of information technology resources. The annual ranking index listed in the IW500 used in previous research is to identify companies with superior information technology capabilities.

In Indonesia there is no data base that gives ratings for companies related to the utilization of information technology in its activities. However, in Indonesia there are various awards given to companies that utilize and implement information technology in their company. The awards presented by iCIO, a CIO community in Indonesia, to company leaders or company staff who handle information technology that has led the company in creating new business value and using information technology in an innovative way. The award has been made since 2014 (a year since the founding of the community) and has resulted in the leadership and staffing of companies that implement information technology in their companies innovatively.

In addition to the awards given by the CIO community, in Indonesia there is also an award given by a magazine that is in the segment of information technology. Itech Magazine provides TOP IT & Telco awards organized collaboratively and supported by several TELCO IT associations such as ASPEKTI (Association of Indonesian Telematics Consultant Company), IKTII (Indonesian IT Consultant Association), MASTEL (Indonesian Telematics Society), ATSI (Association of All Telecommunication Providers Indonesia), ABDI (Association of Big Data Indonesia) and FORTI (BUMN IT Forum), and supported by the Ministry of Communication and Information (Kominfo) and several other institutions. The assessment process is conducted by judges who have expertise in their respective fields.

The data used by the researcher is the data of financial statements and annual reports of companies listed on the Indonesia Stock Exchange in 2016. Researchers take samples of all companies that are already open and listed on the Exchange. Researchers obtained a sample of 553 listed companies listed on the stock. From the sample, the researcher performs the data entry into the table contained in the Microsoft Excel program to include the variables to be studied. The result of data input shows that as many as 47 companies whose data are incomplete due to annual report or financial report is not available on the Indonesia Stock Exchange website. Therefore, the company's incomplete data was omitted from the research sample so that the number of companies sampled in this study were 506 companies (Table 2).

Year of	Data	Sample Research
Research	Population	
2016	553 companies listed on BEI	506 companies listed on BEI
		47 companies are not used as research samples because the data is incomplete

Table 2 Selection of Research Samples

V. DATA ANALYSIS

From the results of data collection seen that the percentage of the number of companies that have information technology capabilities only amounted to 4.74%. This small percentage indicates that not all companies listed on the Indonesia Stock Exchange received awards in the field of information technology means that many open companies still have insufficient information technology capabilities.

The data that have been collected is processed using Warppls version 5 statistical tool to test the relationship between the variables to be tested in this research. Each hypothesis will be tested on the data already obtained. Then, for testing of hypothesis 3 which in the hypothesis there are mediation variables will be tested as much as

2019

two stages to see whether the capabilities of information technology mediate the relationship between information technology governance and company performance.

The results of the first hypothesis testing can be seen in the picture below.



Based on the picture above, it can be seen that the value of $\beta = 0.18$ so that information technology governance has a positive association with the capacity of information technology company. In addition, it can be seen that p-value <0.01 so it can be concluded that the governance of information technology has a significant relationship to the capacity of information technology company.

Then, the result of testing the second hypothesis is as follows.



Based on the picture above, it can be seen that the information technology capacity has a positive association with the company's performance. It can be proved by the value of $\beta = 0.03$. However, the relationship is not significant because p-value = 0.26 is greater than the error rate ($\alpha = 5\%$).

For testing the third hypothesis, the test results can be seen as follows:



To prove the capabilities of information technology mediate the relationship between information technology governance on company performance, will be seen the relationship of information technology to the company's performance either directly or indirectly. Directly obtained the value of $\beta = 0.08$ and p-value = 0.03, it can be concluded that the governance of information technology has a significant positive relationship to the performance of the company. Indirectly proven two ways, namely information technology governance of information technology capacity and information technology capacity obtained to company performance. Relationship of information technology governance to information technology capacity obtained value $\beta = 0.18$ and p-value <0.01 so it can be concluded the relation is significant positive. While the relationship of information technology governance to company performance obtained $\beta = 0.02$ and p-value = 0.35 so it can be concluded the relationships, the information technology capabilities do not mediate the relationship between information technology governance and firm performance.

VI. CONCLUSION

Much of the research on the relationship between information technology capabilities and firm performance provides the result that there is a positive and significant relationship between superior information technology capabilities and high firm performance as done by Barua et al. (1995); Bharadwaj et al. (1999); Santhanam and Hartono (2003); Aral and Weill (2007); and Ashrafi and Mueller (2015).

2019

2019

The results of the research show the opposite. Testing conducted for the second hypothesis shows that information technology capability has a positive relationship to company performance but the relationship is not significant. This means that the company's performance is not so influenced by the capabilities of information technology owned by a company. This kind of thing is possible, especially in Indonesia, because companies with high information technology capability are only few in number. The test results also show that companies in Indonesia have not fully utilized information technology for their daily operational activities. The low level of significance of the relationship between information technology capabilities and company performance is also found by Liu, Ke, Wei, and Hua (2013) and Chae, Koh, and Prybutok (2014).

In addition, the results also show that information technology capabilities do not mediate from the relationship between information technology governance and company performance. Information technology governance has a positive and significant direct relationship to company performance based on test results from the first hypothesis. The capability of information technology does not mediate from the relationship between information technology governance and company performance allegedly due to high corporate performance largely influenced by information technology governance. The information technology capabilities have a positive effect on the company's performance but not significant, this is possible because of the indirect relationship between information technology capabilities and company performance.

For further research, it is advisable to take the number of years of more research and to describe the definition of information technology capability in more detail so that the results of research more adequate and can be a reference about the condition of information technology relations and company performance in Indonesia.

REFERENCES

- [1]. Almazan, D. A., Tovar, Y. S., & Quintero, J. M. M. (2017). Influence of information systems on organizational results. *Contaduria y Administracion*, 62, 321-338. doi: <u>http://dx.doi.org/10.1016/j.cya.2017.03.001</u>
- [2]. Aral, S., & Weill, P. (2007). IT Assets, Organizational Capabilities, and Firm Performance: How Resource Allocations and Organizational Differences Explain Performance Variation. *Organization Science*, 18(No. 5), 763-780. doi: 10.1287/orsc.1070.0306
- [3]. Ashrafi, R., & Mueller, J. (2015). Delineating IT Resources and Capabilities to Obtain Competitive Advantage and Improve Firm Performance. *Information Systems Management*, 32(No. 1), 15-38. doi: 10.1080/10580530.2015.983016
- [4]. Bakos, J. Y., & Treacy, M. E. (1986). Information Technology and Corporate Strategy: A Research Perspective. *Management Information System Quarterly*, 10(No. 2), 107-119. doi: <u>http://dx.doi.org/10.2307/249029</u>
- [5]. Barua, A., Kriebel, C. H., & Mukhopadhyay, T. (1995). Information Technologies and Business Value: An Analytic and Empirical Investigation. *Information Systems Research*, 6(No. 1), 3-23.
- [6]. Benitez-Amado, J., Llorens-Montes, F. J., & Fernandez-Perez, V. (2015). IT impact on talent management and operational environmental sustainability. *International Technology Management*, 16, 207-220. doi: 10.1007/s10799-015-0226-4
- [7]. Bharadwaj, A. S. (2000). A Resouce-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *Management Information System Quarterly*, 24, 169-196.
- [8]. Bharadwaj, A. S., Bharadwaj, S. G., & Konsynski, B. R. (1999). Information Technology Effects on Firm Performance as Measured by Tobin's q. *Management Science*, 45(No. 7), 1008-1024.
- [9]. Boritz, J. E., & Lim, J.-H. (2008). IT Control Weaknesses, IT Governance and Firm Performance. *Annual Conference Paper*. doi: <u>http://dx.doi.org/10.2139/ssrn.1082957</u>
- [10]. Braojos-Gomez, J., Benitez-Amado, J., & Llorens-Montes, F. J. (2015). Impact of IT infrastructure on customer service performance: The role of micro-IT capabilities and online customer engagement. *Pacific Asia Conference on Information Systems (PACIS) Preoceedings*.
- [11]. Brown, L. D., & Caylor, M. L. (2006). Corporate governance and firm valuation. *Journal of Accounting and Public Policy*, 25, 409-434. doi: 10.1016/j.jaccpubpol.2006.05.005
- [12]. Cater-Steel, A. (2009). Information technology governance and service management: Frameworks and adaptations K. Klinger (Ed.)
- [13]. Chae, H.-C., Koh, C. E., & Prybutok, V. R. (2014). INFORMATION TECHNOLOGY CAPABILITY AND FIRM PERFORMANCE: CONTRADICTORY FINDINGS AND THEIR POSSIBLE CAUSES. *Management Information System Quarterly, 38*(No. 1), 305-326.
- [14]. Chatterjee, D., Richardson, V. J., & Zmud, R. W. (2001). Examining the shareholder wealth effects of announcements of newly created CIO positions. *Management Information System Quarterly*, 25(No. 1), 43-70.

- 2019
- [15]. Chen, Y., Wang, Y., Nevo, S., Jin, J., Wang, L., & Chow, W. S. (2014). IT capability and organizational performance: The roles of business process agility and environmental factors. *European Journal of Information Systems*, 23, 326-342.
- [16]. Daily, C. M., & Dalton, D. R. (1993). Board of directors leadership and structure: Control and performance implication. *Entrepreneurship Theory and Practice*, 17(No. 3), 65-81. doi: https://doi.org/10.1177/104225879301700305
- [17]. Farhanghi, A. A., Abbaspour, A., & Ghassemi, R. A. (2013). The Effect of Information Technology on Organizational Structure and Firm Performance: An Analysis of Consultant Engineers Firms (CEF) in Iran. *Procedia Social and Behavioral Sciences*, 81, 644-649. doi: 10.1016/j.sbspro.2013.06.490
- [18]. Gu, B., Xue, L., & Ray, R. (2008). IT governance and IT investment performance: An empirical analysis. *International Conference on Information Systems (ICIS) Proceedings*.
- [19]. Haes, S. D., & Grembergen, W. V. (2005). IT governance structures, processes and relational mechanisms: Achieving IT/business alignment in a major Belgian financial group. *Paper presented at the 38th Hawaii International Conference on System Sciences, Big Island, HI.*
- [20]. Heart, T., Maoz, H., & Pliskin, N. (2010). From governance to adaptability: The mediating effect of IT executives' managerial capabilities. *Information Systems Management*, 27, 42-60. doi: 10.1080/10580530903455163
- [21]. Heroux, S., & Fortin, A. (2014). Exploring IT dependence and IT governance. Information Systems Management, 31(No. 2), 143-166. doi: https://doi.org/10.1080/10580530.2014.890440
- [22]. Institute, I. G. (2001). Board briefing on IT governance
- [23]. Iyengar, K., Sweeney, J. R., & Montealegre, R. (2015). Information technology use as learning mechanism: The impact of IT use on knowledge transfer effectiveness, absorptive capacity, and franchisee performance. *Management Information System Quarterly*, 39(No. 3), 615-641.
- [24]. Jewer, J., & Mckay, K. N. (2012). Antecedents and Consequences of Board IT Governance: Institutional and Strategic Choice Perspectives. *Journal of the Association for Information Systems*, 13(No. 7), 581-617.
- [25]. John, K., & Senbet, L. W. (1998). Corporate governance and board effectiveness. *Journal of Banking & Finance*, 22, 371-403.
- [26]. Joshi, A., Bollen, L., & Hassink, H. (2013). An Empirical Assessment of IT Governance Transparency: Evidence from Commercial Banking. *Information Systems Management*, 30, 116-136. doi: https://doi.org/10.1080/10580530.2013.773805
- [27]. Judge, W. Q., & Zeithaml, C. P. (1992). Institutional and strategic choice perspectives on board involvement in the strategic decision process. *Academy of Management*, 35(4), 766-794.
- [28]. Lazic, M., Groth, M., Schilinger, C., & Heinzl, A. (2011). The impact of IT governance on business performance. *Proceedings of the Seventeenth Americas Conference on Information Systems*.
- [29]. Li, M., & Ye, L. R. (1999). Information technology and ®rm performance: Linking with environmental, strategic and managerial contexts. *Information & Management*, 35, 43-51. doi: https://doi.org/10.1016/S0378-7206(98)00075-5
- [30]. Lim, J.-H., Stratopoulos, T. C., & Wirjanto, T. S. (2012). Role of IT executives in the firm's ability to achieve competitive advantage through IT capability. *International Journal of Accounting Information Systems*, *13*, 21-40. doi: 10.1016/j.accinf.2011.07.001
- [31]. Liu, H., Ke, W., Wei, K. K., & Hua, Z. (2013). The impact of IT capabilities on firm performance: The mediating roles of absorptive
- [32]. capacity and supply chain agility. *Decision Support Systems*, 54, 1452-1462. doi: <u>http://dx.doi.org/10.1016/j.dss.2012.12.016</u>
- [33]. Muhanna, W. A., & Stoel, M. D. (2010). How do investors value IT? An empirical investigation of the value relevance of IT capability and IT spending across industries. *Journal of Information Systems*, 24(No. 1), 43-66. doi: 10.2308/jis.2010.24.1.43
- [34]. Nolan, R., & McFarlan, F. W. (2005). Information technology and the board of directors. *Harvard Business Review*.
- [35]. Rai, A., Patnayakuni, R., & Patnayakuni, N. (1997). Technology investment and business performance. *Communications of the ACM*, 40(No. 7), 89-97. doi: 10.1145/256175.256191
- [36]. Rai, A., Patnayakuni, R., & Seth, N. (2006). Firm Performance Impacts of Digitally Enabled Supply Chain Integration Capabilities. *Management Information System Quarterly*, *30*(No. 2), 225-246.
- [37]. Rainer, R. K., & Turban, E. (2009). Introduction to information systems: Supporting and transforming business B. Golub (Ed.)
- [38]. Santhanam, R., & Hartono, E. (2003). Issues in Linking Information Technology Capability to Firm Performance. *Management Information System Quarterly*, 27, 125-153.
- [39]. Tanriverdi, H. (2005). Information technology relatedness, knowledge management capability and performance of multibusiness firms. *Management Information System Quarterly*, 29(No. 2), 311-334.

- [40]. Wang, L., & Alam, P. (2007). Information technology capability: Firm valuation, earnings uncertainty, and forecast accuracy. *Journal of Information Systems*, 21(No. 2). doi: 10.2308/jis.2007.21.2.27
- [41]. Weill, P., & Ross, J. W. (2004). *IT governance: How top performers manage IT decision rights for superior results*. Boston, Massachusetts: Harvard Business School Press.
- [42]. Zhang, P., Zhao, K., & Kumar, R. L. (2016). Impact of IT Governance and IT Capability on Firm Performance. *Journal Information Systems Management*, 33(No. 4), 357-373. doi: http://dx.doi.org/10.1080/10580530.2016.1220218