

The Impact of IT Governance Mechanism on Firm Performance: An Empirical Study

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Abstract. Digital disruption has been a threat for any company in any country. There is a longlist of former top companies that have lost market share or totally disappeared. According to a PricewaterhouseCoopers survey, most or 83% of the CEOs do not have a clear strategy in running its information technology (IT) resources to elevate competitive advantage or at least overcome the issue. Previous researches have proposed how IT governance mechanisms affect organizational performance, some proposed organizational and environmental factors affecting firm performance through ‘make versus buy’ IT outsourcing strategy, some others proposed IT governance mechanisms, including contract clauses, affecting IT outsourcing decision. Yet, in spite of this valuable work, it is still unclear how IT outsourcing strategy mediates IT governance mechanism to influence firm performance. By consolidating IT governance mechanism and strategic outsourcing models, this research proposes a theory-based empirical approach using nomological dual-order formative model. We used partial least squares-structural equation modeling technique to examine 114 responses from an Indonesian state-owned company. We uncover a positive, significant, and impactful linkage between IT governance mechanisms and firm performance through mediation of IT outsourcing strategy

Keywords: firm performance, IT governance mechanism, IT outsourcing strategy, partial least square, structural equation model.

1. Introduction

The role of information technology (IT) in the industrial world has recently shown a strategic position for business. Currently, there is a need for an IT governance – integrated into corporate governance – that regulates and implements processes, structures, and relationship mechanisms within the organization that result in business/IT alignment to create value for the business (Fortune.com 2016). Research which shows that high-end companies get the value of benefits from their IT investments up to 40 percent higher than their competitors, due to the preparation and communication of IT governance processes. the good one. changing the management of IT costs into managing the business value of IT, including building the right pattern in making decisions about what and how to sourcing a service (CIOForum 2016; Weill et al., 2009). IT has undergone a significant transformation and having superior IT capabilities is no longer the same value as obtaining superior business performance (Van Grembergen et al., 2009). The increasingly common outsourcing mechanism is one of the developments that has made IT more accessible and homogeneous. Multi sourcing has been recognized, both by practitioners and academics, as an important key strategy in implementing IT outsourcing for many large companies (Weill et al., 2004). According to Chae et al., (2014), describe multi sourcing as a unified service from internal companies, groups, and external vendors. Based on the performance reports in the last three years, the profit that was recorded by the biggest Airline Firm Company in Indonesia is always no more than five percent of total revenue or even loses. Various reasons are mentioned as the cause: starting from the increase in world oil prices, high inflation, the weakening of the rupiah exchange rate, the economic slowdown in various parts of the world, to various natural disasters that have directly or indirectly impacted the performance of the aviation industry, especially in Indonesia. According to Bapna et al., (2010), the increase in subsidized fuel prices in the middle of the year has triggered domestic inflation of up to 8.4% and the increasing current account deficit has caused the Rupiah to depreciate very sharply. The high inflation and the weakening of the Rupiah caused the demand for air transportation services, especially in the full service airline market such as Garuda Indonesia, to decline. Not only individual customer segments have to undergo adjustment in spending patterns due to inflationary pressures and currency depreciation, but corporate customers also have to reduce their transportation spending budget. According to Cohen et al., (2006), In 2014 (Garuda Indonesia Annual Report, 2014), although the policy normalization of the United States Central Bank was able to increase their economic growth rate by around 3.0%, which also had a positive impact on the economic growth of developed countries, this did not apply to developing countries. -Countries in the ASEAN region experiencing a downward trend in commodity prices causing people's purchasing power to decline, due to the economic slowdown in China. In addition, Garuda Indonesia also has to face the burden of high import duties for spare parts, inadequate infrastructure, and

avtur prices which are 12.0% more expensive than the previous year. Although it experienced a decline at the end of the 2014 period, it did not sufficiently affect the financial performance for the financial year. Garuda Indonesia's operating profit in 2014 was recorded at negative USD368.9 million, far from the previous year's positive USD62.9 million. The biggest cause is the weakening of the Rupiah against the US Dollar. For every IDR100 weakening, the burden on Garuda Indonesia will reach around USD12.8 million. In addition, the number of disasters in the first quarter of 2014 caused many flights to be canceled or reduce the frequency of flights. Related to Janischowsky et al., (2009), Economic development in 2015 was marked by weakening growth, both in developed and developing countries (Garuda Indonesia Annual Report, 2015). Recognizing the importance of the role of IT governance in optimizing the benefits of IT investment to the business, the problem then narrows to what kind of effective IT governance mechanism is related to an effective and efficient outsourcing strategy. An appropriate IT governance mechanism is needed to ensure a balance with the organization's mission, strategy, values, norms and culture (Lenina et al., 2008; Oshri et al., 2009; Ali et al., 2012). Finally, knowing the variables of information technology governance mechanisms related to outsourcing strategies that affect business performance at Garuda Indonesia is very important and needs to be done immediately, in order to optimize efficiency and profit value for the company. Research on the impact of effective IT governance on business performance has been well established in previous studies. Likewise research on IT governance mechanisms that have a significant effect on decision making and outsourcing strategies, including their impact on business performance. However, there is still a gap that explains thoroughly and in detail whether the IT outsourcing strategy has a significant effect in mediating the IT governance mechanism on business performance at Garuda Indonesia and which IT governance mechanism has the most positive influence in determining the company's performance.

2. Related Works

According to (De Haes et al., 2005), effective IT governance is the most important predictor of the value an organization generates from IT. Research by Weill and Ross (2009) shows that high-performing companies generate up to 40 percent higher returns on their IT investment than their competitors because companies can get more value from IT by designing and communicating IT governance well. In other words, business value can be created by implementing an effective IT governance framework (De Haes et al., 2009). According to (Herz et al., 2012), IT Governance is a governance practice that involves leadership efforts in an organization which will influence decisions related to information technology through correct decision making and the structure of the decision making process. Information technology must be embedded in the budget and security activities, the management of which is required in daily operations. In a successful company, IT governance must be able to

penetrate all areas (Huang et al., 2010). Related to (Bradley et al., 2012), IT Governance is a useful mechanism in reducing the risks associated with ERP implementation. The aim is to explore the relationship between risk factors and IT Governance. According to Peterson (2000), there are three types of IT governance mechanisms. Related to (Wu et al., 2015), there are four types of IT governance mechanisms relevant to outsourcing: contracts, processes, structural linking devices, and relational norms. In his research, Tsai et al., (2013) made one hypothesis, namely whether the alignment of business and IT strategies positively mediates the effect of IT governance mechanisms on organizational performance. To answer this hypothesis, three main construct variables are defined as first-order constructs, each of which has a subconstruct variable as the second-order construct. The result from Tsai et al., (2013) is succeeded in proving that IS strategic alignment, in full, mediates the positive influence of IT governance mechanisms on organizational performance. According to (Gellings 2007), succeeded in proving that the sourcing strategy has a significant influence on the performance of companies in the e-retail sector, as well as the strategic role of IT. This research was conducted on 307 e-retail companies from 2006 – 2010. The study from (Henderson et al., 1992) also investigated IT governance mechanisms on the effectiveness of IT governance which then supported IT outsourcing decisions. Based on this research, it is known that 110 respondents in Australia, whose companies outsource part or all of their IT services, stated that the IT governance mechanism has a significant effect on the effectiveness of governance, including the involvement of senior management in IT, ethics, culture, corporate communication. and performance systems. Likewise, the relationship between the effectiveness of IT governance has a significant effect in reducing the level of outsourcing in the company. According to Chan et al., (1997), this research produces a new framework in a body of knowledge of IT governance mechanisms that apply in the case of multi sourcing. Implementation of the IT governance mechanism in the contractual with vendors can be done by including service level agreement and penalty clauses, as the most critical factor in supporting the success of IT outsourcing. This research was conducted on 3 banks in Germany (Grembergen et al., 2009).

3. Research Methodology

This research was conducted within the scope of the Garuda Indonesia Company, so that the population is equivalent to the number of Garuda Indonesia ground employees. This has been determined at the outset considering that the involvement of ground employees in IT-related activities in the company is very minimal, because in the process, the need for IT solutions for airborne employees is represented by competent ground employees. So the total population in this study was 3284 people. In order to empirically validate our research models, field studies carried out. For data collection, research instruments validation is created to adapt to any questions they might have. Items related to construction were assessed using a five-point Likert scale.

For the purpose of validity of the content, semi-formal interviews with senior management of the company was performed to evaluate the feasibility of language and ease of understanding of the content of items to measure the research variables. We collect data from respondents with IT and business point of view, considering IT governance as an "end-to-end" solution which is a joint responsibility between business and IT.

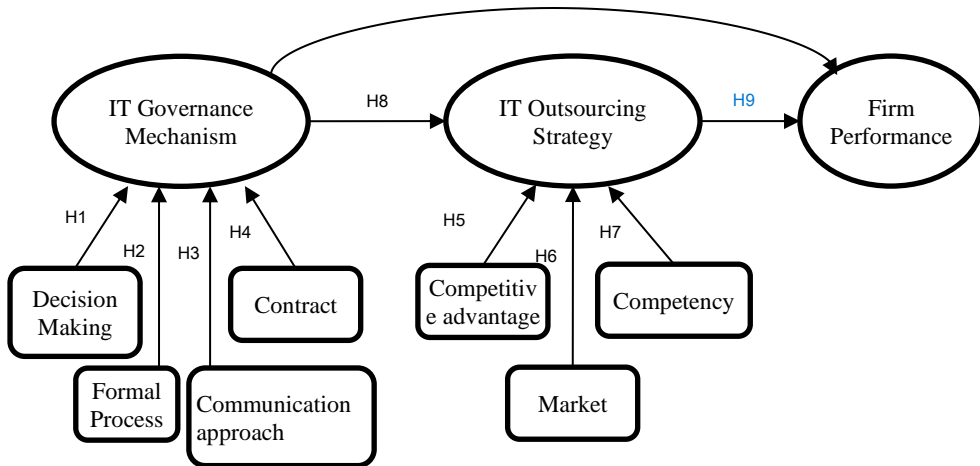


Fig. 1: Research model.

Based on Figure 1 above, we can immediately note that this research model is the two-order formative measurement, because one of the characteristics of formative measurement is that indicator variables' arrow centrally point to a latent variable. It means that a latent variable is a construct of several indicators that are not interchangeable. Latent variables which are connected directly with some formative indicators is a first-order and it is also called outer models. While some latent variables that make up the other latent variables, called the inner model (structural model), which is the second-order formative measurement. According to Karimi et al., (2000), there are several requirements that a model construction can be said to be formative, which are:

1. The direction of causality is from the indicator variables to construct. This means that any change in the indicator variables will lead to changes in the variables construct, but not vice versa.
2. The indicator variables are not interchangeable.
3. Covariation among indicators is not present. This means that in the formative measurement, the influence of several indicators together to construct, does not occur or is very low.
4. Nomological net of each indicator can vary. Indicator is not required to have a common factor between antecedent and outcome.

In previous research, Bapna et al., (2010) has shown that the relationship between IT governance and its mechanism is formative. Similarly, the relationship between indicator variables, such as the financial benefits, customer perspective and operational excellence, and firm performance, is also formative. Therefore, the construction of the variables in this study, which consisted of two orders, can only be modeled as formative. However, to ensure construct validity and reliability of the model, this study will continue to test the validity and reliability of the model with several steps that will be described later.

4. Results and Discussion

Demographics of respondents in this study represent the number of respondents who come from the IT unit is as many as 16 of the 66 population. This means that 24% of the population of IT units responded to the questionnaire submitted. Meanwhile, 98 respondents from non-IT units or business units are needed in this research, related to their insight into business performance represented by their respective business units. Figure 2 below shown the results of Data Analysis on Dual-Order Formative Model

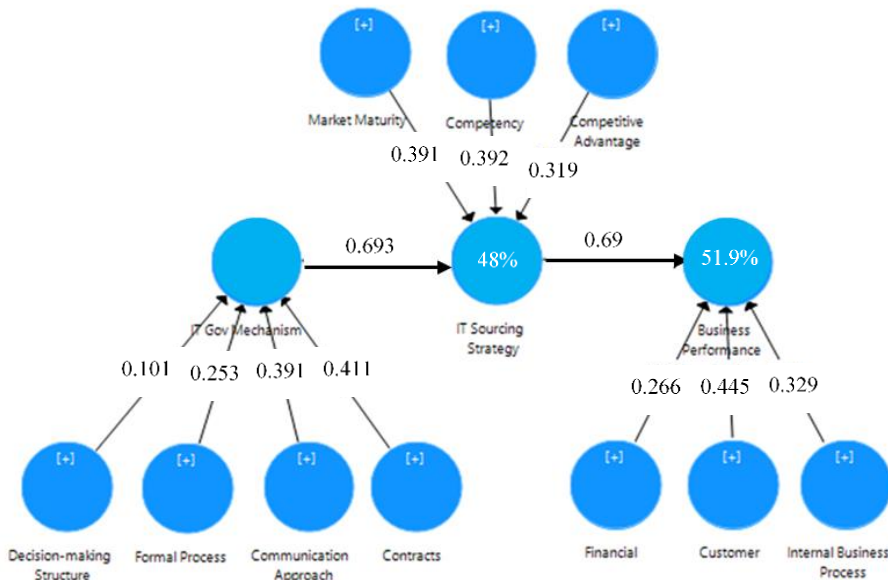


Fig. 2: Results of data analysis on dual-order formative model.

Based on all the data analysis above, the hypotheses generated in this study are as follows:

Table 1: Hypothesis summary.

Hypothesis	Sign	Path Coef (β)	T Statistics	P Values	Result
H1 : Contract \rightarrow IT Governance Mechanism	+	+0.101	5.556	0***	Accepted
H2:Communication approach \rightarrow IT Governance Mechanism	+	+0.253	18.832	0***	Accepted
H3:Formal process \rightarrow IT Governance Mechanism	+	+0.391	24.462	0***	Accepted
H4:Decision making structure \rightarrow IT Governance Mechanism	+	+0.411	20.584	0***	Accepted
H5: Competency \rightarrow IT Outsourcing Strategy	+				Accepted
H6: Market Maturity \rightarrow IT Outsourcing Strategy	+	+0.391	20.543	0***	Accepted
H7:Competitive advantage \rightarrow IT Outsourcing Strategy	+	+0.392	17.352	0***	Accepted
H8: MTKI ITOS	+	+0.693	10.822	0***	Accepted
H9: ITOS KBIS	+	+0.69	7.076	0***	Accepted
H10: MTKI KBIS (without mediation) is smaller than	+	+0.522	5.051	0***	Accepted
H10:MTKI \rightarrow ITOS \rightarrow KBIS and MTKI \rightarrow KBIS (with mediation) not significant	+	+0.044	0.401	0.689	Accepted

Hypothesis Testing Results

H1 : Contract \rightarrow IT Governance Mechanism

Hypothesis H1 in the research conducted states that the Decision-Making Structure is the first-order factor of the IT Governance Mechanism. From Table 12, it can be seen that the p-value is smaller than the significance value of 0.001. Therefore, the hypothesis H1 which states that the Decision Making Structure is the first order factor of the IT Governance Mechanism can be accepted very significantly.

This explains that the results of this study are in accordance with the literature which states that the decision-making structure is one of the factors of the IT governance mechanism. Because of its very significant influence, it is necessary for companies to consider ensuring the establishment of an organization or function, such as the IT Project Steering Committee, which is responsible for making IT-related decisions.

H2 : Communication approach \rightarrow IT Governance Mechanism

Hypothesis H2 in the research conducted states that the Formal Process is the first-order factor of the IT Governance Mechanism. From Table 12, it can be seen that the p-value is smaller than the significance value of 0.001. Therefore, the hypothesis H2 which states that the Formal Process is the first order factor of the IT Governance Mechanism can be accepted very significantly.

This explains that the results of this study are in accordance with the literature which state that formal processes are one of the important factors of IT governance mechanisms. Because of its very significant influence, it is necessary to consider companies to ensure the establishment of formal processes in evaluating vendor performance on an ongoing basis and measuring the realization of the benefits of IT investment.

H3 : Formal process → IT Governance Mechanism

Hypothesis H3 in the research conducted states that the Communication Approach is a first-order factor of the IT Governance Mechanism. Therefore, the hypothesis H3 which states that the Communication Approach is the first order factor of the IT Governance Mechanism can be accepted very significantly. This explains that the results of this study are in accordance with the literature of) which states that the communication approach is one of the important factors of the IT governance mechanism. Because of its very significant influence, it is necessary for companies to consider ensuring the establishment of a good communication approach between stakeholders in order to convey the principles of IT governance, including maintaining effective communication commitments between company executives and vendors, sharing knowledge and evaluation meetings related to planning and solving IT problems.

H4 : Decision making structure → IT Governance Mechanism

Hypothesis H4 in the research conducted states that the contract is the first order factor of the IT Governance Mechanism. Therefore, the hypothesis H4 which states that the Contract is the first order factor of the IT Governance Mechanism can be accepted very significantly. This explains that the results of this study are in accordance with the literature which state that the contract is one of the most important factors of the IT governance mechanism. Due to its very significant influence, it is necessary for companies to consider ensuring the establishment of legal references that can support the implementation of IT governance principles, including articles related to service guarantees (SLAs), terminations and requests for changes.

H5 : Competency → IT Outsourcing Strategy

Hypothesis H5 in the research conducted states that Market Maturity is the first order factor of the IT Outsourcing Strategy. Therefore, the hypothesis H5 which states that Market Maturity is a first-order factor of the IT Outsourcing Strategy can be accepted very significantly. This explains that the results of this study are in

accordance with the literature which states that market maturity is one of the important factors of an IT outsourcing strategy. Due to its very significant influence, it is necessary for companies to consider determining the IT outsourcing strategy based on the availability of alternative external suppliers with good maturity levels, in relevant business segments and markets.

H6 : Market Maturity → IT Outsourcing Strategy

Hypothesis H6 in the research conducted states that Competence is the first order factor of the IT Outsourcing Strategy. Therefore, hypothesis H6 which states that Competence is a first-order factor of the IT Outsourcing Strategy can be accepted very significantly. This explains that the results of this study are in accordance with the literature which states that competence is one of the factors of an IT outsourcing strategy. Because of its very significant influence, it is necessary to be a consideration for companies to ensure the determination of an IT outsourcing strategy based on a good vision related to internal competencies that will be maintained, owned and needed by the company and external competencies that must be owned by suppliers.

H7 : Competitive advantage → IT Outsourcing Strategy

Hypothesis H7 in the research conducted states that Competitive Advantage is the first order factor of the IT Outsourcing Strategy. Therefore, the hypothesis H7 which states that Competitive Advantage is a first-order factor of the IT Outsourcing Strategy can be accepted very significantly.

This explains that the results of this study are in accordance with the states that competitive advantage is a first-order factor of the IT outsourcing strategy. Because of its very significant influence, it is necessary for the company to consider determining the IT outsourcing strategy based on an assessment of the IT activities that are already owned and produce a good competitive advantage value and external IT activities that can be brought into the company in order to generate competitive advantage the good one

H8: MTKI → ITOS

Hypothesis H8 in the research conducted states that the IT Governance Mechanism has a positive influence on the IT Outsourcing Strategy. Therefore, the hypothesis H8 which states that the IT Governance Mechanism has a positive influence on the IT Outsourcing Strategy can be accepted very significantly. This explains that the results of this study are in accordance with the literature when explaining the factors that influence the success of KLM airlines in overcoming their IT problems, all of whom stated that the IT governance mechanism had a positive effect on the IT outsourcing strategy. Because of its very significant influence, it is necessary for companies to consider ensuring the establishment of IT governance mechanisms, such as decision-making structures, formal processes, communication and contracting approaches, in order to support the right IT outsourcing strategy for the company.

H9: ITOS → KBIS

Hypothesis H9 in the research conducted states that the IT Outsourcing Strategy has a positive influence on Business Performance. Therefore, the hypothesis H9 which states that the IT Outsourcing Strategy has a positive influence on Business Performance can be accepted very significantly.

This explains that the results of this study are in accordance with the literature which state that the IT outsourcing strategy has a positive influence on business performance. Because of its very significant influence, it is necessary for companies to take into account the establishment of determining the right IT outsourcing strategy, including considering maturity, competence and competitive advantage for the company.

H10 :

Hypothesis H10 in the research conducted stated that the IT Outsourcing Strategy managed to mediate better, the effect of the IT Governance Mechanism on Business Performance, compared to the influence of the IT Governance Mechanism directly (without mediation) on Business Performance. It can be seen that the influence value (path coefficient) that uses IT outsourcing strategy mediation is greater than that which does not use mediation with a significance value of less than 0.001 and the direct path coefficient of the IT governance mechanism on business performance becomes insignificant when there is an IT outsourcing strategy that mediates it. Therefore, the hypothesis H1 which states that the IT Outsourcing Strategy succeeded in full mediation is better, the effect of the IT Governance Mechanism on Business Performance, compared to the direct (without mediation) effect of the IT Governance Mechanism on Business Performance can be accepted very significantly.

This explains that the results of this study find that one of the significant influences in supporting the company's business performance is to consider the right IT outsourcing strategy, as a mediator for the establishment of established IT governance mechanisms. IT governance mechanisms that are already running are not enough to affect business performance, especially in conditions where the involvement of third parties in realizing the benefits of IT investment for the company is getting higher.

5. Conclusions

From the research results, it can be concluded that the research model built is quite significant in explaining the effect of IT outsourcing strategy in bridging the influence of IT governance mechanisms on company performance at PT. Garuda Indonesia (Persero) Tbk, particularly related to service to customers. This shows that IT governance alone is not applicable enough to have a direct impact on company performance. Therefore, with the increasing demand for information technology solutions at Garuda Indonesia, the strategy to transfer these services also has a

positive effect on realizing these IT solutions into competitive advantages and benefits for the company. A strategy to see the maturity of the condition of suppliers and competitors, a strategy to determine what competencies need to be built, and maintained within the company and what competencies need to be acquired/handed over from/to external parties, as well as a strategy to maintain IT management to outsiders have high competitive benefits for the company, all three in balance support the achievement of better business performance. This is also the case with the IT governance mechanism which according to Weill and Ross (2004) contributes positively in a balanced way in supporting the outsourcing strategy to be able to support the improvement of company performance. Although the results of the study show different levels of influence between each component, the decision-making structure, formal processes, communication approach and good contract management, show the same high significance in building effective IT governance.

This research also provides a new insight into the importance of the executive's role in evaluating vendor performance, assessing the realization of benefits, demonstrating commitment with third party executives to mutually establish mutually beneficial cooperation for both companies. All of that is then stated in the service guarantee to the user and the related termination consequences in a contract. To achieve the company's future targets, the results of this study indicate that it is important for companies to consider the three aspects of the IT outsourcing strategy, mainly the competitive advantage factor, then competence and maturity in the company's internal and external environment.

For the world of research in the field of IT governance, the results of this study contribute to providing a case study for large-scale companies at the national level, that in today's industrial development, where in the case of the airline industry, for example, when the need for benefits that can be obtained from outsourcing work to third parties becomes crucial, then based on the results of this study, the factors that construct IT outsourcing strategy needs to be improved, it is not enough just to run IT governance.

It is recognized that this research can continue to be developed and deepened, especially in overcoming existing limitations. However, methodologically, the technique used is proven to have advantages in analyzing complex formative models.

1. In the initial validation process of the content of the questionnaire instrument used, many adjustments were made to terms, language and terminology commonly used in Garuda Indonesia. As a suggestion, this mechanism can be carried out, but through several sources who represent the characteristics of the respondents.
2. Questions in the questionnaire should be short but clear and at this level it is interesting to try to vary the reflective and formative indicators.

3. The same research can be continued with a wider population from various industries, as did Wu et al. (2015).

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