

# Information technology governance mechanism to influence firm performance in an Indonesian state-owned company

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**Abstract.** Since 2014, digital disruption has been a threat for any company in any country. There is a long list 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. 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.

## 1. Introduction

Recently, the role of information technology (IT) in the industrial world has increasingly shown its strategic position for the business. A study conducted by the IBM Institute for Business Value [1] to 5,247 business leaders and 21 industries in over 70 countries, exposed a fact of what is currently being faced by business leaders. It is a competitor who has a business model that is clearly different, suddenly enters industry and puts some pressure on, which became the nightmare of the business leaders. How technology can change fundamental things of a business and cause entirely unpredictable impact if its influence has spread. Every year, the Wall Street Journal and Dow Jones Venture Source [2] record newcomers companies worth billions of dollars. In 2014, there were 43 newcomers where the highest market value reached 10 billion dollars. A year later, the newcomer reached 130 companies, and Uber led with a value of 51 billion dollars. Four months into 2016, the figure has reached 146 newcomers. They call it as digital disruptors, which can reduce, and even get rid of the market

share of large companies that had already evolved overcome the situation is emerged. Every year, the Wall Street Journal and Dow Jones Venture Source [2] record newcomers companies worth billions of dollars. In 2014, there were 43 newcomers where the highest market value reached 10 billion dollars. A year later, the newcomer reached 130 companies, and Uber led with a value of 51 billion dollars. Four months into 2016, the figure has reached 146 newcomers. They call it as digital disruptors, which can reduce, and even get rid of the market share of large companies that had already evolved. The problem is, many industries tend to focus on their core business and acquire their IT capabilities from external parties. According to [3], since the early 1990s, IT has undergone a significant transformation, and having a superior IT capabilities is no longer worth the same as gaining superior business performance. Multi-sourcing has been identified by both practitioner-related and scholarly literature as an emerging key strategy in today's IT outsourcing endeavors of many large corporations, according to [4]. Not only realizing the important role of IT governance, business leaders must also have clear strategy, so their decision to out-source the IT capabilities can overcome the disruptive challenge from online business and boost their firm performance. The next question is narrowed to how IT outsourcing strategies effectively mediates IT governance mechanism to influence firm performance. The remainder of this paper is constructed as follows. We first review the theoretical foundations of our model, synthesizing a diverse body of literature to present supporting perspectives on the link between IT governance mechanisms, outsourcing strategies, and firm performance. Next, we introduce our methodology and data, using partial least square structural equation modeling analysis to examine 114 responses from an Indonesian state-owned company. After discussing our results and their implications for other research and practice, we conclude with research findings and contributions.

## **2. Literature Review**

According to [5], it defines IT Governance (corporate governance of IT) as an integral part of corporate governance, which addresses the definition and implementation of processes, structures and relational mechanisms within the organization that allows business and IT people to execute their responsibilities in supporting the alignment of business / IT and the creation of business value from IT investments. In this context, IT governance mechanism means any element that is used to deploy IT governance in an organization [5] and used by IT managers on a daily basis [6]. According to Wu et al. [7], there are three types of IT governance mechanisms used: decision-making structures, formal process, and communication approaches, which is also aligned with [5] and [6]. All three definitions of governance mechanism types have in common processes, structures, and relational mechanisms as distinctive attributes. While also applying governance mechanisms to an external supplier in the context of IT outsourcing relationships, Behrens [8] adds the contract as a supplementary and distinct type of mechanism. This is supported by [9], who claim that contracts are of great importance in multi-sourcing. Based on [10], [8] and [6], the decomposition of IT governance mechanisms in this study consisted of three governance mechanisms: (1) Decision-making structure, (2) Formal process and (3) communication approach and (4) Contract. IT outsourcing has been accepted as part of modern business practice, according to [11]. The market capitalization of the global IT outsourcing is estimated at more than \$ 260miliar in 2009, refer to [12]. In this study, IT outsourcing is the contracting of various systems to outside information systems vendors [11]. Many studies have examined the reason behind the IT outsourcing phenomena, such as: cost reduction and efficiency,

business performance improvement, access to outsourcing provider capability and avoid a problem within the company [12]. In general, according to [13], the IT outsourcing strategy that has been successfully run on a wide range of the company, consists of five components: decision model, company expectation, outsourcing approach, the involvement of multi-expertise resources and communication strategy. In this study, we focus on strategic decision model which explains in three main strategies [13] called MCA models; Market, Competency and Advantage. Market, including the availability of an external supplier with a good level of maturity, in the business segment and the relevant market. Competency, including strategies related to the competence required and owned within the organization and the availability of external competencies that must be owned by the supplier. Advantage, is a strategy related to the competitive advantage that can be produced from an IT outsourcing, including financial benefits and customer experience, which will be expected from IT outsourcing. The comparative research on influence and mediation of IT governance mechanism is primarily referred to [7] in 2015, who has been successfully identified how strategic alignment mediates IT governance mechanism to influence organization performance. Previously, another research by [14] in 2013 explicitly showed significant influence of outsourcing strategy to corporate performance. The other researches, by [15]; [16] in 2012, highlighted IT governance mechanism, which dominantly influence outsourcing strategy in certain area of industries. None of them explicitly combine the inter-relationship between 3 components: IT governance mechanism, outsourcing strategy and firm performance. This research contributes to fulfil the gap as well as answer the most recent issue. We prove that outsourcing strategy is significantly needed to mediate IT governance mechanism to influence firm performance. We believe that Indonesia state-owned company leaders can overcome any disruptive technology innovation if they focus on managing IT governance mechanism, especially related to IT outsourcing strategy.

### 3. Research Method

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 [7].

Construct definition, items, and references:

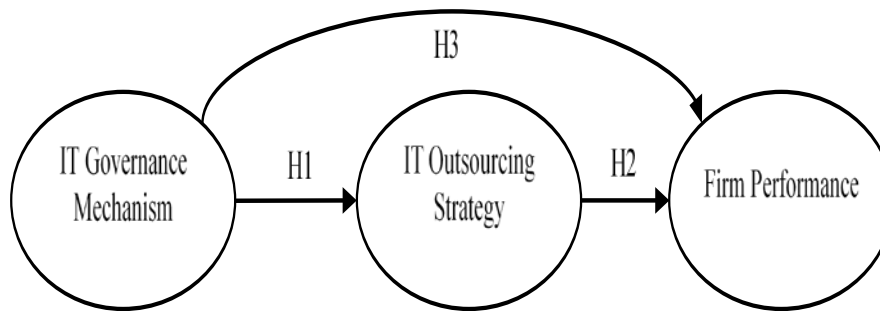
1. IT Governance Mechanism (1st Order), Degree to which an organization implements critical IT governance best practices. [5]; [10]
2. Decision-making Structure, The degree to which the organization has established organizational units and roles responsible for making IT decisions, IT steering committee and project steering committee, [10]
3. Formal Process (2nd Order), The degree to which the organization has established formal processes to monitor and ensure that IT policies are consistent with business needs, Vendor performance evaluation, business case, and benefit realization., [10]; [15].
4. Communication Approach (2nd Order), The degree to which the organization has established channels to ensure proper communication and disseminate IT governance

principles, Vendor knowledge management, evaluation meeting, executive meeting,. [15].

5. Contract (2nd Order), degree to which legal mechanisms has been established to protect organization and run mutual relationship with third parties. Service level assurance (SLA), penalty, change request, termination and renegotiation clauses,. [15]; [17].
6. IT Outsourcing Strategy (1st Order), The degree to which organization has established relevant strategies during planning, implementing and evaluating process of contracting any IT services to third parties. [13].
7. Market maturity (2nd Order), degree to which organization has provide relevant strategies to analyze the maturity of market environment in using outsourced capabilities. Supplier maturity, market segment maturity, and supplier alternative maturity. [13].
8. Competency (2nd Order), degree, measured by any strategies in defining which competencies to be retained inside organization, contracted to external parties or captured from external parties, Internal competency, supplier control competency, and strategic competency, [13].
9. Competitive advantage (2nd Order), degree to which strategy has been established to gain expected benefit from outsourcing, Internal and external competitive advantage, [13].
10. Firm performance (1st Order), degree to which organization performance is measured by its financial returns, customer perspective, and operational excellences. [18]
11. Financial return (2nd Order) , degree to which firm performance is achieved in each departments in term of financial measurement, Return on investment, lower business risk and good corporate [18]
12. Customer perspective (2nd Order), degree to which firm performance is achieved in each departments in term of customer perspective, Customer orientation, competitive product, service continuity, time-to-market and strategic decision making, [18]
13. Operational Excellence (2nd Order), degree to which firm performance is achieved in each departments in term of responsiveness and effective process, Simplify process, cost efficiency, external compliance, and increase productivity, [18]

In previous research, [17] 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.

The formative measurement is shown in fig 1 below :



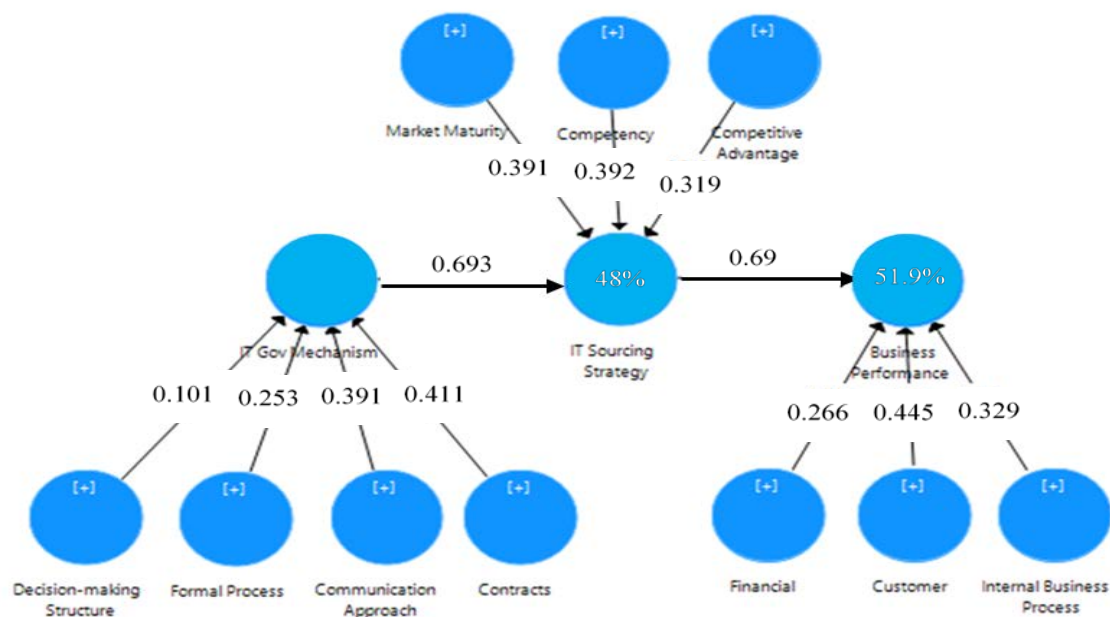
**Fig 1.**Research model

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 [19], there are several requirements that a model construction can be said to be formative. In previous research, [7] 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. Result and Discussion

This study used smart PLS version 3.2.4 application as the main tool to conduct a validation test, reliability, and data analysis. In accordance with the results of Chin [20], partial least square (PLS), which is one of structural equation modeling (SEM), is more suitable for complex models, which is a combination of formative (causal) and reflective (consequent) or full-formative models. Path is a hypothetical correlation between the variables that represent causes and construct in theoretical propositions [21]. Study on the relationship between the components of IT governance mechanisms, mediation strategic alignment of business / IT to organization performance, [7], used path analysis in hypothesis test, so did [16]. The first step of this data analysis is to evaluate the measurement parameters instruments, which includes reliability and construct validity. To validate the formative construct in our research model, we follow the steps recommended in [22]. As the results, there are four indicator variables are not significant and should be removed from the model. These variables include IT steering committee, business case, penalty, and renegotiation. After removing insignificant data from the model, the rest of the data was assessed using variance inflation factor (VIF) statistics to determine whether this correlated formative measurement is too high [25]. After knowing that the path coefficient of each construct variables are significant, we then construct new path model consisting of three main variables based on previous latent variable value: IT governance mechanisms (MTKI) as antecedent variable; IT outsourcing strategy (ITOS) as a mediator variable; and business performance

(KBIS) as output variable. This step generate significant influence power of 0.522. The path coefficient of direct influence is decreasing, down to 0.044, while enabling mediation and become statistically insignificant ( $p\text{-value} = 0.689$ ). For significance level of 0.05, Sobel test results shows a statistically highly significant value (5.94). Thus, it is obvious that IT outsourcing strategy fully mediates IT governance in positively influence business performance. After the entire test is carried out, in order to show how significant predictive power of the model, the model need to have high value and substantial variance, as well as the path coefficient [22]. The result shows that our model is able to explain 51.9% influence on business performance, and 48% influence on the IT outsourcing strategy. The result of both influence power and variance of the main model shows in fig 2 below:



**Fig 2.** Results of both influence power and variance of the main model

Thus, it is obvious that IT outsourcing strategy fully mediates IT governance in positively influence business performance. After the entire test is carried out, in order to show how significant predictive power of the model, the model need to have high value and substantial variance, as well as the path coefficient. From the research we can conclude that this model explain 51.9% of the impact to firm performance, especially to customer perspective, and 48% of mediation role of IT outsourcing strategy. This value is quite high and substantive compare to previous study done by Wu et al. [7], which had variance value of 30.3% and 27% on different issue, although there must be some points in this research need to be improved. However, it means that the model is a strong predictor of firm performance in the company and the role of IT outsourcing strategy is well explained by this model. By the mediation of IT outsourcing strategy, the influence of IT governance to firm performance is well established and increased. Then, the hypothesis, arguing that IT outsourcing strategy is positively mediate IT governance in influencing firm performance (H3), is substantially accepted. From the research we can conclude that this model explain 51.9% of the impact to firm performance, especially to customer perspective, and 48% of mediation role of IT outsourcing strategy. This value is quite high and substantive compare to previous study done

by Wu [17], which had variance value of 30.3% and 27% on different issue, although there must be some points in this research need to be improved. However, it means that the model is a strong predictor of firm performance in the company and the role of IT outsourcing strategy is well explained by this model. By the mediation of IT outsourcing strategy, the influence of IT governance to firm performance is well established and increased.

## 5. Conclusion

We can conclude that IT governance mechanism alone is not enough to influence firm performance significantly, IT outsourcing strategy is needed to mediate IT governance mechanism in increasing firm performance. In IT governance field of study, this literature contributes to give another example of practical inter-relationship between IT governance mechanism and IT outsourcing strategy analyzed by partial least square-structure equation model. Thus, further research is needed in wider industrial area comprising more extended fiscal years to reflect more clearly on firm performance

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