

How Hybrid IT Governance Mechanisms Influence Digital Transformation and Organizational Performance in the Banking and Insurance Industry of Indonesia

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Abstract

Incumbent businesses need to accelerate their digital transformation due to disruption from digital technologies, competition, behavioural changes, regulation, and pandemics. Nevertheless, many digital transformation investments have failed due to poor governance. Previous research has identified the hybrid of traditional and agile-adaptive IT governance mechanisms that influence digital transformation. However, it is important to measure the extent of mechanisms' influence on organizational performance. Therefore, online survey data from 338 Indonesian banking and insurance respondents have been collected and analysed using the SEM-PLS. The results show that hybrid IT governance mechanisms have moderate influences on digital transformation, and digital transformation strongly influences organizational performance. The study contributes to research by analysing the effect of hybrid IT governance mechanisms on organizational performance, fully mediated by digital transformation. In practical terms, the measurement items from the hybrid IT governance mechanisms, digital transformation and organizational performance dimensions can be useful for guiding digital transformation journeys.

Keywords: IT Governance, Digital Transformation, Organizational Performance, Survey, SEM-PLS, Indonesia.

1. Introduction

Disruptive innovation, driven by the use of digital technology in organizations, competition from the new-born digital company, and changes in the stakeholders behaviour, has expedited the digital transformation journeys of many established organizations [1]. Moreover, the importance of digital transformation has been increased due to regulators' direction [2] and the worldwide changes due to the COVID-19 outbreak [3]. **Digital transformation** is defined by Gong and Ribiere [4, p. 12] as "*a fundamental change process, enabled by the innovative use of digital technologies accompanied by the strategic leverage of key resources and capabilities, aiming to radically improve an entity [e.g., an organization, a business network, an industry, or society] and redefine its value proposition for its stakeholders.*" Meanwhile, digital technologies are defined as "*the combination of information, computing, communication, and connectivity technologies*" [5], which consists of matured technologies regularly used by businesses (e.g., social networks, mobile technologies, cloud computing, big data, and Internet of Things) and emerging technologies (e.g., artificial intelligence, virtual and augmented reality, drones and robotics) [6].

However, Obwegeser et al. [7], have demonstrated that many digital transformation

investment failures are caused by "poor governance". Previously, Vejseli and Rossmann [8] has shown that "traditional" IT governance impacts risk and resources optimisation, towards value realisation. *"IT governance is an integral part of corporate governance, for which the board is accountable, that involves the structure (i.e., Chief Information Officer, CIO), processes (i.e., IT strategic planning), and relational mechanisms (i.e., IT leadership) that enable both business and IT stakeholders to execute their responsibilities in support of business/IT alignment and the creation and protection of IT business value"* according to De Haes et al. [9, p. 3].

Inspired by the **IT ambidexterity/bimodal** [10] and **agile-adaptive governance** concepts [11], we describe the **hybrid IT governance** as the combination of traditional and agile-adaptive IT governance mechanisms that balances the dynamic of exploration and exploitation allowing organizations to optimise their digital & IT risks and resources towards value realisation. Where, **IT ambidexterity/bimodal** is defined as *"the ability of firms to simultaneously explore new IT resources and practices (IT exploration) as well as exploit their current IT resources and practices (IT exploitation) to enable organizational agility and firm performance,"* according to Lee et al. [10, p. 400]. On the other hand, **agile governance** is a method that *"facilitate quick responses"* while **adaptive governance** is *"the ability to deal with complex societal issues involving many stakeholders, diverging interests, and uncertainty,"* according to Janssen and Van Der Voort [11, p. 1].

Nonetheless, concerns have been raised about the traditional IT governance's efficacy in the digital age [12]. The findings from a research literature review and a Delphi study [13, 14] have exposed the influence of hybrid IT governance mechanisms on digital transformation. Moreover, several Indonesian banking and insurance case studies [15-19] have explored the IT governance mechanisms influence on the digital transformation dimensions and organizational performance. The previous studies' findings are correlated with the IT governance ambidexterity that impacts business/IT alignment in various industries in Europe, according to Vejseli et al. [20]. Moreover, Jöhnk et al. [21] have also argued the significance of adopting a hybrid ambidexterity approach to govern and manage the digital transformation.

However, there is still a need to measure the **extent of influence** of the previously found hybrid of traditional and agile-adaptive IT governance mechanisms on digital transformation [13, 14] and the digital transformation influence on organizational performance case studies [15-19]. In this paper, a survey was used as the research strategy. Conducting this survey within the Indonesian banking and insurance industries is important because the intense competition from financial technology has a significant impact on these sectors [22]. Measuring this effect will show the relevant importance of the hybrid IT governance mechanisms, digital transformation and organizational performance dimensions. Besides that, Indonesia was chosen due to its significant economy as G20 country, which is predicted have the largest development in digital economy, reaching USD 146 billion in the south east Asia countries, ASEAN [23]. Therefore, this study aimed to answer the **research question**, *"To what extent do the traditional and agile-adaptive IT governance mechanisms influence digital transformation and organizational performance in the Indonesian banking and insurance industry?"*

2. Theoretical Foundation

2.1. Traditional IT Governance Mechanisms Influence on Digital Transformation

IT governance is an integral part of **corporate governance theory**, which is a set of principles, systems and models that are concern with how organizations are controlled and dictated. As Tricker [24, p. 7] coined, if management is concerned with running the business then governance is concerned with making sure that a business is successful. There are three different sorts of IT governance mechanisms, that is, structures, processes, relational mechanisms, as mentioned by Peterson [25]. Numerous academics have demonstrated the significance of IT governance for organizational success, for example, Vejseli and Rossmann [8]. However, in today's digital organizations, the old notion of IT governance may no longer be relevant [12]. This may be indicated by the many recent failures of digital transformation investments, not living up to or exceeding expectations because of the poor governance, as

disclosed by Obwegeser et al. [7, p. 1]. Davenport and Westerman [26, p. 4] also emphasizes the importance of emerging IT governance since many organizations are currently being “attacked” by new digital corporate raiders. Likewise, Jewer and Van Der Meulen [27, p. 6644] highlighted that governance must adapt in order for organizations to undergo digital transformation. Therefore, according to the previous studies [13, 14], the dual governance for business/IT alignment concept [20], and the hybrid ambidexterity to govern and manage digital transformation [21], the **traditional IT governance mechanisms** are still required besides the agile-adaptive ones to facilitate digital transformation journey. According to prior studies [13, 14, 27-30], a few examples of **Traditional Structures** are Chief Executive Officer (CEO), Chief Information Officer (CIO), IT Steering Committee, Project Management Office (PMO), IT Planning, IT Development, IT Operation, IT Risk, IT Audit functions, etc. Moreover, **Traditional Processes** consist of two levels, the Board-level Governance (evaluating, directing, and monitoring the resource, risk, and value optimisation of IT initiatives) and the Management-level Governance (planning, building, running, and monitoring the IT initiatives). Whereas the **Traditional Relational mechanisms** examples are the IT Leadership and Behaviour. Hence, the traditional IT governance mechanisms extent of influence is the firstly tested hypothesis in this study:

H1: Traditional IT governance mechanisms positively influence digital transformation.

2.2. Agile-Adaptive IT Governance Mechanisms Influence on Digital Transformation

A further required investigation is the influence of **ambidexterity theory** from March [31], which emphasised how important "exploration" and "exploitation" were in the struggle for organizations' dominance, which has triggered the IT bimodal/ambidexterity concept from Lee et al. [10]. The traditional IT governance adaptation and IT bimodal/ambidexterity concepts have led to the emergence of **Agile-adaptive IT governance mechanisms**, as discovered by the prior studies [13-19]. Similarly, how agility might be integrated in IT governance has also been elaborated by Vejseli et al. [20]. Correspondingly, Jöhnk et al. [21] exposed the structural and contextual ambidexterity approaches of traditional and agile IT governance, as well as the interplay of duality and mutually enablement of each exploration and exploitation mechanisms. According to previous studies [13-19, 27-30, 32], a few examples of **Agile-adaptive Structures** are Chief Digital Officer (CDO), Transformation Committee, Product Leadership (manager, owner), Specialized Business Resources (domain expert), Technical Resources (engineer, scrum master, architect, user experience, cybersecurity, etc.). Moreover, **Agile-adaptive Processes** consists of two levels, the Board-level Governance (evaluating, directing, and monitoring the resource, risk, and value optimisation of digital initiatives) and the Management-level Governance (planning, building, running, and monitoring the digital initiatives). Whereas the **Agile-adaptive Relational mechanisms** examples are Leadership (transformational, entrepreneurial), Behaviour (digital, risk-taking), and Collaborations (cross-functional, external), etc. However, there are no measurement of how much the extent of agile-adaptive approach influence the digital transformation journey. Therefore, the agile-adaptive IT governance mechanisms extent of influence is the secondly tested hypothesis empirically:

H2: Agile-adaptive IT governance mechanisms positively influence digital transformation.

2.3. Digital Transformation Influence on Organizational Performance

To survive the disruption and the emergence of complex decision-making, Hitt et al. [33] introduced the **strategic entrepreneurship theory**. In digital transformation, it is required not only to focus on the advantage-seeking activities by managing the resources strategically and continuous innovation, but also in the opportunity-seeking activities by the entrepreneurial mindset in a disruptive environment, supported by the leadership and culture. The strategic entrepreneurship lens has inspired the **digital transformation dimensions** concept [34-41].

The first digital transformation dimension is the **Strategic Vision**. It is a reference to coordinate, prioritize, and carry out the transformation efforts to achieve the intended future state of being digitally changed [34]. The strategic vision are represented by digital vision and transformation strategy [35]. Tsou and Chen [36] mentioned that digital transformation strategy and organizational innovation act as an important mediator for achieving organizational

performance. Afterwards, the second dimension is the **Strategic Alignment** that consists of the innovative and differentiative product arrangement approach (product alignment), the fresh and comprehensive marketing approach (marketing alignment), and the efficiency in goods and services for a quality-oriented mindset (quality alignment) [37]. The strategic alignment dimension is similar to Business/IT alignment concept, which, according to Ping-Ju Wu et al. [38], plays a crucial role as a mediator towards organizational performance. Moreover, the third digital transformation dimension is **Technology Assets**. They are the digital technologies that include mobile technologies, big data, mining, analytics, cloud computing, Internet and wireless communication, and other emerging technologies such as artificial intelligence, blockchain, etc. [6]. Tsou and Chen [36] argued that those digital technologies affect organizational performance. Furthermore, the fourth dimension is the **Know-How & Intellectual Property** that encompass organization's knowledge of customer, product, and supplier, including their intellectual property assets [34]. Cegarra-Navarro et al. [39] explicated that knowledge acquisition, conversion, and application are necessary to achieve organizational agility and performance. Next, the fifth digital transformation dimension is **Digital Capability**. It is an organization's capacity to use digital technologies to generate new products [40]. Khin and Ho [40] also revealed that digital capability is an important construct to achieve organizational performance. Finally, the last dimension is the **Culture of Innovation**. It is a pattern of shared basic assumptions learned by a group and taught to its new members to solve its problem by external adaptation and internal integration [41]. Khin and Ho [40] exposed that the culture of innovation fosters digital innovation towards organizational performance.

Subsequently, Ping-Ju Wu et al. [38] and Vejseli et al. [20] argued that there are some **organizational performance dimensions** such as Financial Returns, Customer Perspective, and Process Excellence, which are influenced by digital transformation dimensions. Additionally, Zhu et al. [42] also revealed those similar dimensions, including another one, the Industry Presence. First, the **Financial Returns** dimension is a gauge of how well a firm using its resources to create financial value that consists of growth, sales volume, and value [38]. Second, the **Customer Perspective** is the ability of an organization to produce high-quality goods or services and first-rate customer support that exceeding its customers' expectations, such as the customer satisfaction, customer base, and brand image [20]. Third, the **Process Excellence** is the capacity of an organization to carry out its business activities effectively, efficiently, and consistently, including the process efficiency, process data analytics, and process security [38]. Lastly, the **Industry Presence** is the organization's capacity to have a solid presence and reputation inside its industry, that involves network coverage and industry collaboration [38]. Those previous dimensions are used to measure the influence extent from digital transformation to organizational performance as the thirdly tested hypothesis:

H3: Digital transformation positively influence organizational performance.

2.4. Research Conceptual Framework

A research conceptual framework has been developed and shown in **Fig. 1**, based on the related theories and concepts, presented in the sections 2.1 to 2.3.

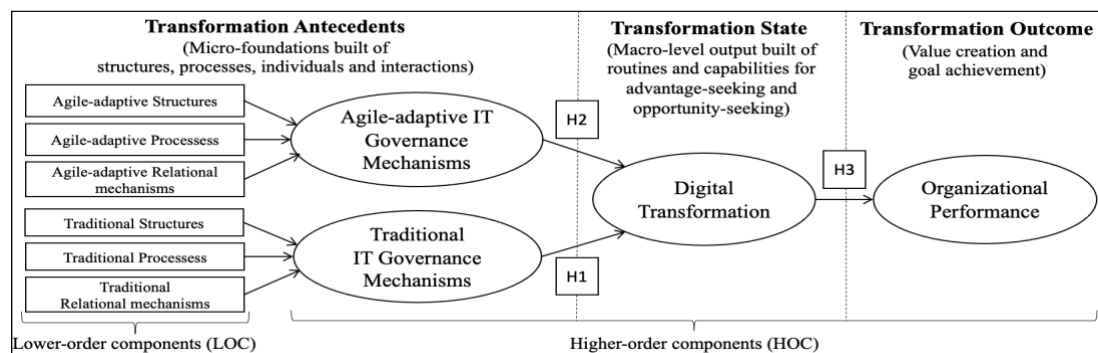


Fig. 1. Research Conceptual Framework

The transformation antecedents are the two components in the left area, that is, the traditional and agile-adaptive IT governance mechanisms. In the lower left area, there are

traditional structures, processes, and relational mechanisms that affect the higher-order component Traditional IT governance mechanisms. While in the upper left area, there are the agile-adaptive structures, processes, and relational mechanisms that affect the higher-order component Agile-adaptive IT governance mechanisms. Both the hybrid IT governance mechanisms hypothetically indirectly influence the organizational performance as the transformation outcome, mediated by the digital transformation in the centre area. The possibility of direct influence is also being examined. Therefore, both traditional and agile-adaptive IT governance mechanisms influence on digital transformation, is evaluated through H1 and H2, and then the influence of digital transformation on organizational performance, is evaluated through H3. The explanation of each related concept in **Fig. 1** has been described in the previous theoretical foundation (see Chapter 2).

Moreover, the examination of H1, H2, and H3 are supported by the **four constructs** of *traditional & agile-adaptive IT governance mechanisms, digital transformation, and organizational performance dimensions*, which consist of **42 corresponding measurement items** as shown in **Table 1**.

Table 1. Constructs and Corresponding Measurement Items

| Constructs | Measurement Items | Ref. |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Traditional IT Governance Mechanisms (n=7) | <ul style="list-style-type: none"> Traditional Structures (TS1: Traditional Board & Management, TS2: Traditional Committee, TS3: Traditional Functions) Traditional Processes (TP1: Traditional Board-level Governance, TP2: Traditional Management-level Governance) Traditional Relational (TR1: Traditional Leadership, TR2: Traditional Behaviour) | [13, 14, 27-30, 32] |
| Agile-adaptive IT Governance Mechanisms (n=8) | <ul style="list-style-type: none"> Agile-adaptive Structures (AS1: Agile-adaptive Board & Management, AS2: Agile-adaptive Committee, AS3: Agile-adaptive Roles) Agile-adaptive Processes (AP1: Agile-adaptive Board-level Governance, AP2: Agile-adaptive Management-level Governance) Agile-adaptive Relational (AR1: Agile-adaptive Leadership, AR2: Agile-adaptive Behaviour, AR3: Collaborations) | [13, 14, 27-30, 32] |
| Digital Transformation (n=16) | <ul style="list-style-type: none"> Strategic Vision (SV1: Digital Vision, SV2: Digital Transformation Strategy) Strategic Alignment (SA1: Product Alignment, SA2: Quality Alignment, SA3: Market Alignment) Technology Assets (TA1: Mobile & Wireless Technologies, TA2: Big Data, Mining & Analytics, TA3: Cloud Technologies, TA4: Emerging Technologies) Know-how & Intellectual Property (KIP1: Customer Understanding, KIP2: Product Know-how, KIP3: Supplier Interaction) Digital Capability (DC1: Digital Skills, DC2: Innovative Skills) Culture of Innovation (CI1: Digital Culture, CI2: Risk-taking Culture) | [6, 13, 14, 33-41] |
| Organizational Performance (n=11) | <ul style="list-style-type: none"> Financial Returns (FR1: Growth, FR2: Sales Volume, FR3: Value) Customer Perspective (CP1: Customer Satisfaction, CP2: Customer Base, CP3: Brand Image) Process Excellence (PE1: Process Efficiency, PE2: Process Analytics, PE3: Process Security) Industry Presence (IP1: Network Coverage, IP2: Industry Collaboration) | [15-20, 38, 42] |

As mentioned by Chan and Reich [43], **control variables** might be required to conclude the influence towards organizational performance. A few examples of related control variables are, for example, organization size and industry type [38]. Since the survey is performed in a similar type of financial industry (banking and insurance), the only control variable examined is the **organization size**.

3. Research Methodology

The goal to determine the influence between constructs indicates that a **survey** is the appropriate research strategy for testing theoretical linkages and interactions between variables utilising a substantial amount of quantitative data based on Denscombe [44]. Accordingly, we followed the research process as shown in **Fig. 2**.

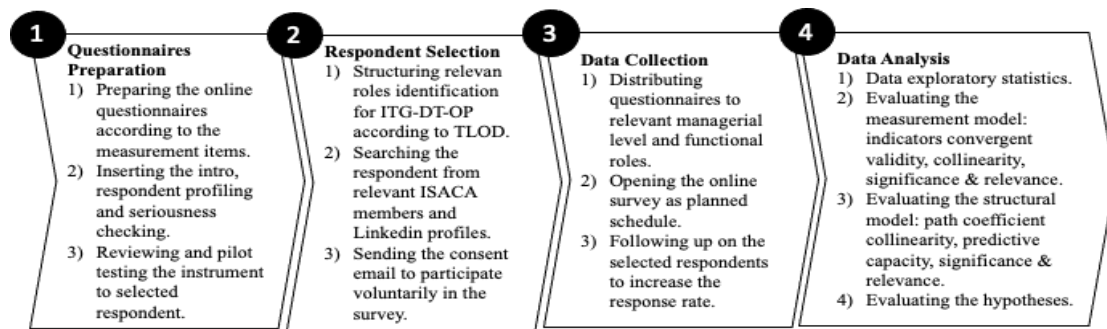


Fig. 2. Research process

A survey research strategy has been conducted by collecting the data through an online questionnaire based on the instrument items presented in **Appendix A**, and distributed to essential respondents with knowledge related to digital transformation in Indonesian banks and insurances. In order to identify respondents, both relevant LinkedIn profiles and ISACA members (in Indonesia) were targeted. ISACA is the largest global association in IT governance, risk management, compliance, and cybersecurity professions that also provide the relevant best practice frameworks and professional certifications. The invited respondents were carefully chosen by their expertise in the relevant field based on their professional certifications and related experience, ensuring that the sample consisted of individuals with expertise in the field under investigation. Prior to participation in the survey, potential respondents were informed about the study's objectives and the nature of the questionnaire. They were explicitly informed that their participation was voluntary and that they were free to decline if they felt they were not suitable to answer the questionnaire.

The data has been analysed using the **Structural Equation Modelling-Partial Least Square** (SEM-PLS) using SmartPLS tool. SEM-PLS is a statistical technique to investigate the relationship patterns between variables and their indicators and one variable to others. In this study, SEM-PLS serves to test the hypothetical model that consists of structural models (inner) and measurement models (outer) in the form of path diagrams [45]. To conduct this research study, the **ethical standards** of Vetenskapsrådet [46] for suitable research practises were followed. For this purpose, four guiding principles were monitored: refraining from dishonesty; conducting operations with scientific integrity; protecting participant interests through voluntary contributions; and adhering to laws and organizational standards at the national and international levels.

3.1. Data Collection Method

Our theoretical model was developed based on the results of a literature review and Delphi study conducted with the experts' support in the Indonesian banking and insurance industry [13, 14] as well as the measurement items discoveries from the prior case studies in the same country [15-19], and subsequently, we gathered data through a survey from a carefully chosen sample of experts in the industry. The survey was conducted in accordance with the Three Lines of Defence framework with relevant respondents in Indonesian banking and insurances [47]. The chosen leaders of risk owners' line are from business & IT, risk management and compliance, and internal auditors, as shown in **Table 2**.

Table 2. Sample demographics (sample size [n]=338)

| Organization Type | Sample Size | % | Organization Size | Sample Size | % | Organization Size (cont.) | Sample Size | % |
|--------------------------------|-------------|------|---------------------------|-------------|------|---------------------------|-------------|------|
| Bank | 177 | 52.4 | >5000 | 76 | 22.5 | 251-1000 | 98 | 29.0 |
| Insurance | 161 | 47.6 | 1001-5000 | 144 | 42.6 | 100-250 | 20 | 5.9 |
| Respondent Years of Experience | Sample Size | % | Respondent Last Education | Sample Size | % | Respondent Job Level | Sample Size | % |
| >30 | 37 | 10.9 | Doctoral | 9 | 2.7 | Supervisory Board | 6 | 1.8 |
| 21-30 | 134 | 39.7 | Master | 161 | 47.6 | Management Board | 134 | 35.8 |
| 10-20 | 167 | 49.4 | Bachelor | 168 | 49.7 | Executive Management | 198 | 58.6 |

Given our particular field of study, probability sampling was ruled improper for this study. However, only those respondents who are knowledgeable about IT governance

mechanisms, digital transformation dimensions, and organizational performance were chosen, and according to their managerial level and functional roles within their respective organizations Denscombe [44].

A sample of 30 respondents from three banks and three insurance companies were randomly chosen to **pre-test** the online survey questionnaire. Before the survey's link was distributed to 467 chosen respondents, minor adjustments to the questionnaire were made to resolve any flaws that were found. Furthermore, a **dummy question** was added in addition to the demographic inquiries to weed out frivolous answers. A total of 338 complete questionnaires were received in 60-day online survey, showing a very good **response rate** of 72.4%, according to Sivo et al. [48].

3.2. Data Analysis Method

To analyse the quantitative data, SEM-PLS was used. This is because the purpose of our study is to evaluate the influence (i.e., causal prediction) of various IT governance mechanisms, digital transformation and organizational performance dimensions. Therefore, SEM-PLS was judged appropriate for the use of **formative measurements** to operationalize our constructs. Since we are interested in capturing the various facets of the organizational and management elements, our choice of formative measures was justified compared to reflecting measures (i.e., unidimensional) [49].

The data analysis was carried out in two steps, first, it was done by evaluating the measurement model and second, the structural model, as recommended by Hair et al. [50]. We assessed the convergent validity, indicator collinearity, statistical significance & relevance of the indicator weights because all of our constructs are formative. The structural model was evaluated using three criteria in the second step: collinearity, predictive capacity, statistical significance and relevance of path coefficients. The latest **SmartPLS** Professional version 4 was used to conduct the data analysis [51].

4. Results

Hair et al. [50] suggest that the first step is to examine the path coefficients and analysing the statistics of collinearity. Accordingly, a path-weighting option was chosen with a maximum iteration size of 10,000 while running the PLS-SEM algorithm. Then, the next step is to calculate the significance by using a bootstrapping method with the same maximum iterations. **Fig. 3** displays the PLS-SEM analysis's outcome.

4.1. Measurement Model

First, the **collinearity** statistics calculation of Variance Inflation Factor (VIF) was conducted for the measurement models investigation [50]. The goal was to ascertain whether any formative indicator may be impacted by other formative indicators connected to the same construct. For each of the indications, we found that VIF values were lesser than 5.0 which meant there is no collinearity problem based on Hair et al. [50]. Afterwards, we investigated the **statistical significance & relevance** of the indicator weights by evaluating the t-values. The results showed that the weight in 13 of the 16 categories appeared to be significant at 1 percent, exceeding the threshold point of 2.576, except for the three indicators Strategic Alignment (SA), Technology Assets (TA), and Financial (FI). As mentioned by Hair et al. [50], an indicator weight that is not significant is not necessarily indicative of poor quality. Therefore, we assessed the three formative indicators' absolute contribution to their respective constructs by evaluating the outer loadings from SA to digital transformation (0.618), TA to digital transformation (0.741), and FI to organizational performance (0.770). All of the outer loading results exceeded 0.50, allowing us to retain the three indicators, based on Hair et al. [50].

4.2. Structural Model

In this stage, the structural model and constructs shown in **Fig. 3** are being evaluated.

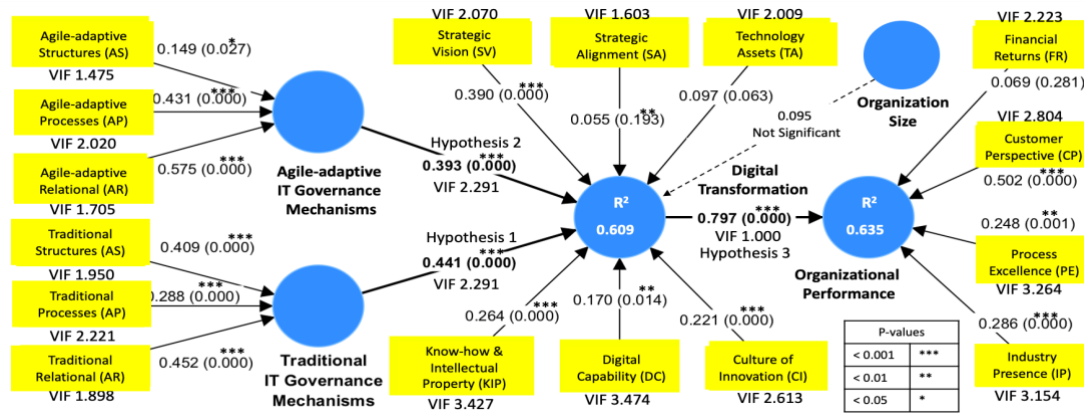


Fig. 3. Structural model evaluation results

First, the model's **predictive capacity** was assessed. According to Wong [52], SEM-PLS estimations are based on the variance, in contrast to other structural equation modelling methods. The examination of organization size control variable showed a no significant value (0.095), which is similar with the prior literature result from Ping-Ju Wu et al. [38]. Afterwards, the R² was calculated to test the theoretical model's relationships. Hair et al. [50] claims that R² values, which range from 0 to 1, represent the explanatory strength of a model (i.e., 0.75 = substantial, 0.5 = moderate, and 0.25 = weak). **Fig. 3** illustrates how the model appears to explain the “**moderate value**” of the two constructs (IT governance mechanisms = 60.9% and digital transformation dimensions = 63.5%).

Table 3. Structural equation model analysis results

| Hypotheses & Path | Path Coeff. (β) | P-Value | Decision |
|-----------------------------------------------------------|-----------------|---------|----------|
| H1: Traditional IT governance → Digital Transformation | 0.441 | 0.000 | accepted |
| H2: Agile-adaptive IT governance → Digital Transformation | 0.393 | 0.000 | accepted |
| H3: Digital Transformation → Org. Performance | 0.797 | 0.000 | accepted |

The relevance and statistical significance of the path coefficients were assessed in the next phase. **Path relationships** indicate the magnitude of the interaction between variables. Cohen [53] claims that the path coefficients can indicate a prediction power might be strong (0.5 or higher), moderate (greater than 0.3 but less than 0.5), or small (higher than 0.1 but less than 0.3). As shown, all paths in our theoretical model are significant. Thus, our theoretical model is supported. However, the degree of influence seems to vary. *Both Traditional and Agile-adaptive IT governance mechanism are “moderately” influencing digital transformation dimensions by 0.441 and 0.393. Whereas the digital transformation dimensions are “strongly” influencing organizational performance by 0.797.* In addition, the three path coefficients also have p-value less than 0.001 which mean they are “**statistically highly significant.**”

Lastly, a **mediation analysis** to check the significance of direct and indirect effect of the exogenous construct is performed according to Hair et al. [50], as shown in **Table 4**.

Table 4. Direct and indirect effect of the paths

| Path | Direct Effect | P-Value | Significance (p<0.05) | Indirect Effect | P-Value | Significance (p<0.05) |
|----------------------------------------------------------------------|---------------|---------|-----------------------|-----------------|---------|-----------------------|
| Traditional IT governance mechanisms → Organizational performance | 0.043 | 0.107 | No | 0.351 | 0.000 | Yes |
| Agile-adaptive IT governance mechanisms → Organizational performance | 0.038 | 0.143 | No | 0.313 | 0.000 | Yes |

As is shown in **Table 4**, the significance of the indirect influence of traditional and agile-adaptive IT governance mechanisms via digital transformation was found to be significant (0.351 with p-value 0.000 for traditional and 0.313 with p-value 0.000 for agile-

adaptive). Therefore, a mediation relationship is likely present in the conceptualized model. Then, the direct effect was analysed. The analysis showed that the result was non-significant (0.043 with p-value 0.107 for traditional and 0.038 with p-value 0.143 for agile-adaptive). Therefore, the “**full mediation**” occurs [50]. Thus, H3 is also supported.

5. Discussion

This study aimed to fill a gap in the research literature by examining the relationship between IT governance, digital transformation, and organizational performance. Despite each construct gaining attention in different studies [6, 20, 27-30, 32-42], few research that has explored the **extent of influence** from the hybrid of traditional and agile-adaptive IT governance mechanisms towards organizational performance achievements, mediated by digital transformation dimensions. The prior works are based on survey in five specific case studies in Indonesian banks and insurance with very limited sample size (n=50-70) [15-19], which is improved by this study with proper sample size (n=338) and including Indonesian banking and insurances representatives. The previous Balanced Scorecard-based organizational performance construct measurement items [15-19] also have been replaced by more theoretical concepts as mentioned in section 2.4 and **Table 1**. To address the knowledge gap in the research question, three hypotheses were formulated (H1, H2, and H3). These hypotheses have been confirmed based on the survey data analysis results. The H1 has been accepted because there is a **moderate** influence from Traditional IT governance mechanisms to digital transformation dimensions ($\beta=0.441$ and $p\text{-value}=0.000$). Similarly, the H2 has been accepted because of the **moderate** influence from Agile-adaptive IT governance mechanisms to digital transformation dimensions ($\beta=0.393$ and $p\text{-value}=0.000$). Lastly, the H3 has also been accepted because of the **strong** influence from digital transformation dimensions to organizational performance ($\beta=0.797$ and $p\text{-value}=0.000$). The result showed the **fully mediation** of the hybrid IT governance mechanisms to organizational performance via digital transformation dimensions. The results are also consistent with the prior five case studies [15-19] that showed the moderate influence from both IT governance mechanisms to digital transformation and strong influence from digital transformation to organizational performance.

This study has also revealed interesting **comparative finding** concerning traditional and agile-adaptive IT governance mechanisms adoption between Indonesian banking and insurance industry in Indonesia as a developing country, versus prior similar research in developed countries. The results of this study, have also revealed the influence of each Traditional and Agile-adaptive IT governance mechanisms to digital transformation, that has a similar “**moderate**” level. The result is **different** than of the prior research from Vejseli et al. [20], which has shown the “**strong**” influence of agile IT governance mechanisms on Business/IT Alignment ($\beta=0.7416$ and $p\text{-value}<0.001$), compared to the “**weak**” influence of traditional IT governance mechanisms on Business/IT Alignment ($\beta=0.1218$ and $p\text{-value}<0.01$). Although Business/IT Alignment is a different construct from digital transformation, it is similar to the Strategic Alignment as one of the six digital transformation dimensions of Gurbaxani and Dunkle [34]. This is very likely due to the difference in adoption level of agile-adaptive IT governance mechanisms in the location where the prior research was conducted, namely Germany, Switzerland and Austria, representing the developed countries, compared to Indonesia, which is a developing country. Nevertheless, the “**strong**” influence extent from Business/IT Alignment to organizational performance in prior research ($\beta=0.824$ and $p\text{-value}<0.001$) is **similar** with the “**strong**” influence of strategic alignment of digital transformation to organizational performance evaluated in this study. This means that strategic alignment dimension is still an important digital transformation dimension, that act as a mediator toward performance.

6. Conclusion

The findings of this study contribute to the research in IT governance and digital transformation in the banking and insurance industry. In terms of research, we contend that our findings may confirm and extend previous research on the extent of influence that a hybrid of traditional and agile-adaptive IT governance mechanisms has on digital transformation. Moreover, we broaden the measurement of the influence of digital transformation on organizational performance.

The practical implications of this study are a better understanding of the numerous traditional and agile-adaptive IT governance mechanisms that are influencing organizations' digital transformation in the Indonesian banking and insurance industry. This will in fact help practitioners as well managers involved in digital transformation to understand more about the digital transformation dimensions and related factors that influence the digital transformation and what kind of organizational performance measures to relevantly gauge to a successful digital transformation. The conveyed knowledge will guide the leaders on how they should deploy their resources, to adopt the appropriate hybrid IT governance mechanisms, both traditional and agile-adaptive ones, as well as relevant digital transformation and performance measurement dimensions. This is particularly relevant given the positive causal relationship we found between IT governance mechanisms and organizational performance, fully mediated by digital transformation.

However, the study has some limitations, and therefore, the results of our investigation should be interpreted with caution. Our analysis is based on cross-sectional survey data on the effects of various hybrid IT governance mechanisms on digital transformation and organizational performance within the context of the Indonesian banking and insurance industries. The outcome of using longitudinal data based on the same analysis procedure could have been different in result. The additional limitations are connected to our sample techniques. Due to the non-random selection of respondents, the final list maybe biased, potentially affecting the study's findings. Moreover, since the data was gathered in Indonesia, there may be contextual biases in the responses. Therefore, future research could replicate the study in other type of organizations and industry sectors in Indonesia to generalize the findings. Future research could also extend the study by using different methodologies to provide a more nuanced and comprehensive view of the context.

Appendix A – Instrument Items

Scale: SD (Strongly Disagree); D (Disagree); N (Neutral); A (Agree); SA (Strongly Agree)

| No. | Measurement Items | Scale | | | | |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|----------|-----------|
| | | SD | D | N | A | SA |
| I. | Traditional IT Governance Mechanisms that Influence DT | | | | | |
| TS1 | Our company has traditional board & management ITG structures (Boards, Chief [Executive, Information, Financial, Human Resources, Operation, Risk] Officer, Chief Audit Executive, etc.) | O | O | O | O | O |
| TS2 | Our company has traditional committee ITG structures (IT Steering, Risk, Audit, etc.) | O | O | O | O | O |
| TS3 | Our company has traditional functions ITG structures (PMO, IT Planning, IT Development, IT Operation, IT Risk, IT Audit, etc.) | O | O | O | O | O |
| TP1 | Our company has traditional board-level ITG processes (evaluating, directing, and monitoring the resource, risk, and value optimisation of IT initiatives) | O | O | O | O | O |
| TP2 | Our company has traditional management-level ITG processes (planning, building, running, and monitoring the IT initiatives) | O | O | O | O | O |
| TR1 | Our company has traditional leadership relational mechanisms (IT) | O | O | O | O | O |
| TR2 | Our company has traditional behaviour relational mechanisms (IT) | O | O | O | O | O |
| II. | Agile-adaptive IT Governance Mechanisms that Influence DT | SD | D | N | A | SA |
| AS1 | Our company has agile-adaptive board & management ITG structures (CDO-digital, CDO-data, CISO/cybersecurity, etc.) | O | O | O | O | O |
| AS2 | Our company has agile-adaptive committee ITG structures (Digital Steering, Transformation, etc.) | O | O | O | O | O |
| AS3 | Our company has agile-adaptive roles ITG structures (Product Leadership [manager, owner], Specialized Business Resources [domain expert], Technical Resources [engineer, scrum master, architect, user experience, cybersecurity], etc.) | O | O | O | O | O |
| AP1 | Our company has agile-adaptive board-level ITG processes (evaluating, directing, and monitoring the resource, risk, and value optimisation of digital initiatives) | O | O | O | O | O |
| AP2 | Our company has agile-adaptive management-level ITG processes (planning, building, running, and monitoring the digital initiatives) | O | O | O | O | O |
| AR1 | Our company has agile-adaptive leadership relational mechanisms in leadership (transformational, entrepreneurial, digital, etc.) | O | O | O | O | O |
| AR2 | Our company has agile-adaptive behaviour relational mechanisms (digital, risk-taking, etc.) | O | O | O | O | O |
| AR3 | Our company has agile-adaptive collaboration relational mechanisms (cross-functional, external, etc.) | O | O | O | O | O |

| No. | Measurement Items | Scale | | | | |
|-------------|--------------------------------------------------------------------------------------------------|-----------|----------|----------|----------|-----------|
| DQ | Please answer Strongly Disagree (SD) (dummy question) | O | O | O | O | O |
| III. | Digital Transformation (DT) dimensions that influence OP | SD | D | N | A | SA |
| SV1 | Our company has better digital vision because of hybrid ITG | O | O | O | O | O |
| SV2 | Our company has better digital strategy because of hybrid ITG | O | O | O | O | O |
| SA1 | Our company has better product alignment because of hybrid ITG | O | O | O | O | O |
| SA2 | Our company has better quality alignment because of hybrid ITG | O | O | O | O | O |
| SA3 | Our company has better market alignment because of hybrid ITG | O | O | O | O | O |
| TA1 | Our company has adopted mobile & wireless technologies governed by hybrid ITG | O | O | O | O | O |
| TA2 | Our company has adopted big data, mining & analytics governed by hybrid ITG | O | O | O | O | O |
| TA3 | Our company has adopted cloud technologies governed by hybrid ITG | O | O | O | O | O |
| TA4 | Our company has adopted emerging technologies driven by governed ITG (AI, IoT, blockchain, etc.) | O | O | O | O | O |
| KIP1 | Our company has a better digital customer understanding driven by hybrid ITG | O | O | O | O | O |
| KIP2 | Our company has a better digital product know-how driven by hybrid ITG | O | O | O | O | O |
| KIP3 | Our company has a better digital supplier interaction driven by hybrid ITG | O | O | O | O | O |
| DC1 | Our company has better digital skills driven by hybrid ITG | O | O | O | O | O |
| DC2 | Our company has better innovative skills driven by hybrid ITG | O | O | O | O | O |
| CI1 | Our company has a better digital culture driven by hybrid ITG | O | O | O | O | O |
| CI2 | Our company has a better risk-taking culture driven by hybrid ITG | O | O | O | O | O |
| IV. | Organizational Performance (OP) achievements because of DT | SD | D | N | A | SA |
| FR1 | Our company has a higher income growth because of DT | O | O | O | O | O |
| FR2 | Our company has a higher sales volume because of DT | O | O | O | O | O |
| FR3 | Our company has a higher transaction value because of DT | O | O | O | O | O |
| CP1 | Our company has a higher customer satisfaction because of DT | O | O | O | O | O |
| CP2 | Our company has a higher customer base because of DT | O | O | O | O | O |
| CP3 | Our company has a higher brand image because of DT | O | O | O | O | O |
| PE1 | Our company has a higher process efficiency because of DT | O | O | O | O | O |
| PE2 | Our company has a higher process data analytics because of DT | O | O | O | O | O |
| PE3 | Our company has a higher process security because of DT | O | O | O | O | O |
| IP1 | Our company has better network coverage because of DT | O | O | O | O | O |
| IP2 | Our company has better industry collaborations because of DT | O | O | O | O | O |

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