The Effect of IT Governance Implementation on Decision-Making Performance (Case Study in PT XYZ)

Annisa Mahri
Faculty of Economics and Business, Universitas Padjadjaran, Indonesia

Zaldy Adrianto
Faculty of Economics and Business, Universitas Padjadjaran, Indonesia

Abstract: *This study aims to determine the effect of IT governance implementation on decision-making performance. This study uses qualitative data, and the population of the research is from interview data with 5 respondents from PT XYZ in different divisions, which are the Management Information System division, Finance division, and consultant. The data was analyzed using Atlas.ti software for processing qualitative data. The results of the study show that the implementation of IT Governance at PT XYZ has a significant impact on decision-making performance by focusing on performance measurement and establishing clear KPIs for evaluation. Furthermore, the adoption of an ERP system allows all business units to function within an integrated framework, improving their ability to make quicker, more reliable, and data-driven decisions.*

Keywords: *IT governance, decision-making, organization performance, mining industry.*

1. Introduction

At present, organizations become rely on IT to manage and process information effectively. Organizations get the advantage of using IT to boost operational effectiveness, strengthen communication across departments, and foster innovation (Renaldo, n.d.). With the emergence of big data, organizations are trying to find the best way to utilize data to enhance decision-making (Visinescu et al., 2017). Organizations realize decision-making is a crucial part of their business. However, a study conducted by McKinsey in 2019 shows that only 20% of the respondents indicate that their organization excels at decision-making, while most of them are unable to utilize their time in making decisions. These studies also mention that ineffective decision-making could affect the organization's productivity. According to (Visinescu et al., 2017), the quality of decisions depends on both the effectiveness and efficiency of the decision-making process. It was also mentioned by (Huang et al., 2010) that organizations with well-structured IT governance mechanisms and managed effectively are expected to generate IT-related decisions, activities, and resources that closely align with the organization's objectives.

The mining industry become one of the important sectors in Indonesia. Indonesia has a wide variety of minerals, including nickel, iron, copper, aluminum, and coal. Indonesia placed among the world's top ten countries with the biggest reserves in the world in 2014, according to the Association of Indonesian Mining Professionals (PERHAPI) 2016 (Hanafi et al., 2019). In 2022, a survey conducted by the United States (US) Geological Survey (USGS) shows that Indonesia is ranked number 6 in Reserves of Gold Worldwide as of 2022 by Country. According to Statistics Indonesia (BPS), in 2022, mining industries will become one of the highest contributors to the Indonesian Economy through Gross Domestic Product (GDP).

Directorate General of Mineral and Coal (Ditjen Minerba) Ministry of Energy and Mineral Resources reported that as of December 16th, 2022, the non-tax state revenue (Pendapatan Negara Bukan Pajak/PNBP) from the mining sector is IDR 173.5 trillion. This significant revenue spike resulted in a 100% increase compared to the previous year, which reported IDR 75.48 trillion in 2021.

The mining sector in Indonesia has played a vital role in industry since 1970 and

consistently attracted interest on national and international scale (Hatane et al., 2019). There are several world-class mining organizations that are attracted to operate in Indonesia and become one of the biggest contributors to production, lifting, and increasing state revenue. One of them is PT XYZ. PT XYZ is a subsidiary of PT ABC, and they hold 48.76% shares of PT XYZ. According to the Mine 2023: 20th Global Mine Report by PwC, a study by S&P Global Market Intelligence and PwC analysis showed that the subsidiary of PT XYZ is ranked number 6th as the top global mining company in the world. A subsidiary of PT XYZ operates internationally with many subsidiaries. Managing their IT system to become fully integrated and highly automated has become one of the success factors of their business.

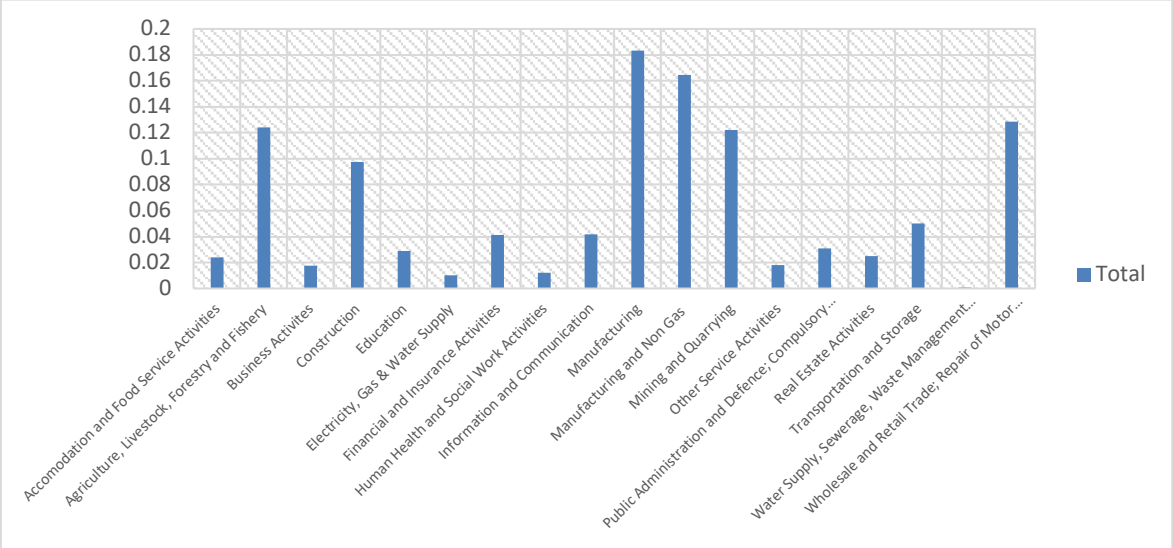

Figure 1. GDP Contribution of Indonesian Economy in 2022 by Sector

Another multinational mining industry that operates in Indonesia is PT Vale Indonesia, a subsidiary of Vale S.A. from Brazil. Vale began their operation in Indonesia in 1958 under the name of PT International Nickel Indonesia (INCO). Being in the same industry as PT XYZ, according to their contract of work, Vale's operation in Indonesia extracts laterite nickel ore. According to a survey of Leading Mining Companies Worldwide Based on Market Capitalization in March 2023 conducted by Thomson Reuters and published in Financial Times, Vale is ranked number 3.

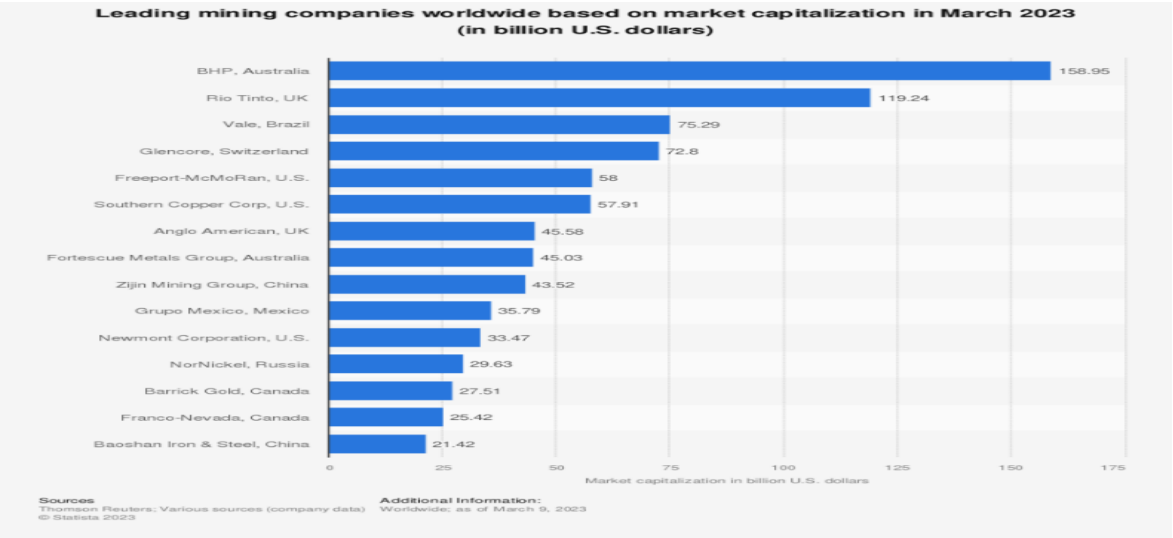

Figure 1. Leading Mining Companies Worldwide Based on Market Capitalization in March 2023

Mining industries are closely related to environmental issues. One of the instances is the Brumadinho ecological disaster in 2019. The failure of the tailing dam of an iron mine operated by Vale S.A. led to a death toll of 259, and 11 people are missing (Silva Rotta et al., 2020). The Brumadinho disaster is not the initial accident that involves Vale. Three years before, a serious ecological accident in Brazil occurred due to the Mariana's tailings dam rupture that was co-owned by Vale and Broken Hill Proprietary (BHP) Australia (Capelle-Blancard et al., 2021). In Indonesia, according to The Indonesian Forum for the Environment (WALHI) final report in 2021, their study and field investigation in August 2021 shows that there has been a deforestation of an area of 4,449.22 Ha. This deforestation is negatively affecting the preservation of the ancient lake located near PT Vale Indonesia's concession area. Mahalona Lake, located near Vale Indonesia's concessions area, is currently facing the siltation issue. Another similar issue also comes from PT XYZ regarding environmental issues.

Referring to those environmental and social issues, the needs of the government roles to review the regulation and the organization's policy in decision-making need to be reviewed. Then, the organization's performance can be evaluated, and the information generated from the evaluation can be used for better decision-making in the next period. Effective and efficient decision-making will affect the organization's performance. According to Haudi (2021), the most used data-driven decision-making approach is cost-benefit analysis, which can be described as the process of comparing estimated costs against related benefits in the decision-making process with the aim of determining whether the decision will be included in the program or not. According to Huang et al. (2010), the design of an IT governance system includes three primary considerations: identifying the IT-related decision that should be subject to a governance mechanism, assigning the decision-making authority to a specific authority, and determining the coordination of the decision process. Despite its drawbacks, over the past few years, the mining industry has increasingly embraced various digital innovations. Many organizations have automated their operation activities shifted from physical to digital by adding sensor-equipped machinery and implementing integrated communication networks to transmit data, according to the Deloitte report Tracking the Trends 2021: Trends 8 Advancing the Future of Work.

Currently, IT functions are being expanded from only being used at the operational level to being used at the strategic level. IT plays an essential role in every organization and becomes one of the important factors that help the organization achieve goals and strengthen its competitive advantage (Siregar & Harahap, 2021). For the most part, organizations realize that IT investment takes a large account of the organization's capital expenditure. IT resources investment potentially may represent approximately 50% of an organization's budget, which gives rise to the urgency to measure and generate the benefit from IT investment effectively (Joshi et al., 2022). According to the 2018 Deloitte Global CIO survey, most of the companies are having an increasing trend in their evolution of technology spending over the years of 2015 – 2018. Heading into 2023, a recent study by IBM and Morning Consult showed that 78% of Global Business leaders surveyed in the US, UK, India, China, Germany, Japan, and Canada, their business will be investing in technology in the next 12 months. As well as in the Asia Pacific region, PricewaterhouseCoopers (PwC) conducted the 26th Annual Global survey with a total of 1.643 CEOs in the Asia Pacific region, revealing that 71% of Asia Pacific CEOs tend to make their investment focusing on automating processes and systems, while 67% of them is focusing on deploying technology, such as cloud computing, Artificial Intelligence, and other advance technology.

As organizations invest more in IT and digital infrastructure, nevertheless, IT still has risk factors that organizations should take into consideration since there are many failure stories in which large IT investments become impractical (Siregar & Harahap, 2021). It is shown by the empirical evidence from the 1970s to the early 1990s that the surge in technological advancement is seemingly inconsistent with productivity

growth. This productivity paradox calls into question IT investment contribution to productivity. Brynjolfsson (1993) further explains the productivity paradox occurs because of four reasons: 1) The mismeasurement of output and input that are not being measured properly by the conventional approaches, 2) Time lags caused by learning and adaptation processes in realizing IT investment benefits, 3) Redistribution and dissipation of profits, 4) Mismanagement of IT caused by an absence of specific criteria in assessing information value led to potential misallocation utilization by managers.

While an increasing number of studies emerged, the productivity paradox's intensity declined by the mid-1990s due to the majority result of a positive relation between IT investment and productivity. In addition, Brynjolfsson (1993) mentions that productivity can't be counted on only from IT itself. Appropriate management should accompany the IT utilization. To help address those issues, an organization needs an effective IT governance implementation. Another issue that arises is IT doesn't align with the organization's objective, which leads to little influence on enhancing the organization's performance. Therefore, the need for an alignment between information technology with the organization's objective becomes an important factor for every organization (Adrian & Wang, 2023). The discrepancy issues of IT investment as the input and IT performance as the output in the productivity paradox can be mitigated by using effective IT governance. IT governance aims to align IT strategy with the organization's objective to deliver value creation. By setting the strategic alignment of IT investment and the organization's objective, prioritizing their IT investment in areas that can enhance productivity helps to prevent the unnecessary amount of technology investment that doesn't generate the expected returns. Effective implementation of IT governance is seen as a way for organizations to ensure that they get IT investment returns and have a positive performance of the company (Siregar & Harahap, 2021).

IT generates opportunities for an organization to create value; with adequate IT design, an organization can enhance its performance. However, the negative outcome may result from inadequate IT design and control. According to a study conducted by Harvard Business Review, IT projects incur cost overruns by an average of 27%, and more than 70% of IT projects incur schedule overruns (Wu et al., 2023). In the case where IT investment is low, an organization may not have expanded sufficient capabilities to support IT effectively. However, with the increase in IT investment, organizations could gain knowledge from IT practice and accumulate additional IT capabilities (Fang et al., 2020). IT capability refers to an organization's capacity to utilize and deploy resources based on IT effectively. It can be in combination with or alongside other resources and capabilities (Bharadwaj, 2000). The relationship between IT capability and the organization was thoroughly studied in the early 2010s (Ashrafi & Mueller, 2015); (Masli et al., 2011); (Muhanna & Dale Stoel, 2010) shows that organizations with superior IT capability typically achieve better organizational performance. Zhang et al. (2016) proposed that the implementation of effective IT governance allows an organization to generate IT capability and, therefore, improve the organization's performance. To achieve effective IT governance, it is necessary to analyze the decision-making process based on four key IT domains: principles, infrastructure, architecture, application requirements, and IT investment and prioritization (Weill et al., 2002). It is also being said that IT investment and prioritization include the entire process of decision-making process related to IT investment. The organizational structure, procedures, and relational mechanism are considered important governance mechanisms that empower IT and business executives to perform their decision-making and monitoring activities to support business alignment, which also contributes to the overall IT governance performance (Weill & Ross W. Jeanne, 2004).

There is plenty of previous research in IT governance that discusses IT governance from various aspects within the organizations (Alreemy et al., 2016); (Hamdan et al., 2019); (Turel et al., 2017); (Zhang et al., 2016). However, there is a gap where most of the previous research directly links IT governance to an organization's

financial statement. In Indonesia, research conducted (e.g., (Najwa & Susanto, 2018); (Nazief et al., 2019); (Yudatama et al., 2019) on IT governance is more concentrated on exploring the awareness and implication of IT governance evaluation. Thus, there is still limited research focusing on the correlation between IT governance and an organization's performance, especially in decision-making performance. Research conducted by (Hamdan et al., 2019); (Zhang et al., 2016) discusses IT governance and IT capability's effect on an organization's performance with various indicators, including CEO's background, audit committee, return on assets (ROA), etc.

This research refers to previous research conducted by Fitrisia (2020), which discusses the relationship between IT governance and an organization's performance in Indonesia using IT capability as a mediating variable using data sources from secondary data. The distinction between the research's reference and this research is the indicators used to define the organization's performance and the scope of the research. The previous research used Tobins'q value as the organization's financial performance measurement and used 9 variables in measuring IT governance. The scope of the research is a case study in PT XYZ. As the research's reference uses secondary data, this research uses both primary and secondary data to increase the result's credibility.

2. Review of related literature

2.1 Productivity Paradox

Due to the rapid advancement of IT in the past decades, organizations have been increasing their investment in IT to prop up their operations and enhance their competitive advantage. Nevertheless, according to Mendes Rei (2004), back in the 1970s, there was a slowdown in productivity growth, whereas IT expenditure increased. The inability of organizations to take advantage of the investment turns into questions of the relationship between IT investment and productivity, which became known as the "IT productivity paradox." The IT productivity paradox is one of the most controversial in Information System (IS) literature, introduced by Robert Solow in July 1987. In summary, Macdonald et al. (2000) define the IT productivity paradox as refers to the discrepancy between investment of IT (input) and IT performance (output). Weill and Olson (1988) define IT investment as the expenditure related to the acquisition of hardware, software, related personnel, overhead, and communications. Meanwhile, Fitzpatrick (2005) defines IT investment as the total cost of an entire project or project segment that includes IT, including the post-project cost of the implemented system. It can be concluded that IT investment is a decision made by the organization to allocate their expenditure to implement IT-related projects with the expectation of gaining benefits for the organization.

As stated by Macdonald et al. (2000), the development of the productivity paradox evolved gradually and went through some stages as follows:

1. Stage 1: Initially, since there was a significant perception interest in human labor that could be replaced by IT, there was also a significant focus on studying the relationship between labor productivity and IT. Consequently, it leads to an assumption that labor productivity is a suitable measurement for measuring the impact of IT.
2. Stage 2: Towards the late 1970s, the investment in computers was huge and continued to grow, although there are several emerging literature that indicates the performance of IT was less than expected.
3. Stage 3: During the early 1980s, there was a shift in the perspective of IT. It was considered a mistake to only view IT solely in terms of productivity. Rather, IT was to be used for broader purposes, especially in strategic aspects.
4. Stage 4: By the end of the 1980s, a significant amount of IT investment was allocated to the Management Information System (MIS), which was essentially designed as a control system and surveillance.
5. Stage 5: From the late 1980s onward, a significant portion of IT investment has been directed into telecommunications. Therefore, some argue that expectations of productivity increases are unrealistic.

After there have been many discussions of the productivity paradox, prior studies show mixed results. As stated by Roach (1991), throughout the 1980s, the massive investment in IT did not improve productivity. Instead, the increased spending on IT investment is treated as fixed assets, which leads firms to shift from variable to fixed cost without resulting in productivity benefits. Other studies conducted by Franke (1987) showed a negative impact of IT investment on an organization's performance. Strassmann (1990) analyzed the relationship between IT expenditure and the profitability of an organization and concluded that there is no identifiable association. Then, Strassman concluded that the key factors that determine the impact of IT are not based on the amount of money spent but rather on how an organization can manage IT assets effectively. The study conducted by Oliner et al. (1994) explained a comprehensive view of the productivity paradox at the macro level by using the growth-accounting equation. The estimation of the equation shows that even with the rapid rates of growth in IT capital, the resulting impact on productivity is relatively small. On the other hand, studies conducted by Brynjolfsson et al. (2002) and Dewan & Kraemer (2000) acknowledge that the impact of IT on an organization's strategic contribution is dependent upon several different factors (i.e., infrastructural aspects or outwardly focused). Brynjolfsson (1993) explains the reasons why the productivity paradox occurs. One of them is caused by mismanagement of IT. The issue is the investments made are not aligned with the best interest of the organization itself. Alignment become an important factor for organizations. Papp (1999) stated the main reason is to simplify the development and execution process of organizational and IT strategies. Through this alignment, organizations can be more concentrated on utilizing their IT to enhance their operation effectively.

2.2 IT Governance

Governance involves the efficient and effective utilization of resources to meet desired objectives. At the corporate level, corporate governance is designed to address issues related to the separation of control within organizations (Naguib et al., 2024). At present, IT governance has an important role, and organizations are integrating IT governance practices into their daily operations. According to the IT Governance Institute (ITGI, 2003), IT governance is defined as the management process that ensures the controlled and beneficial delivery of IT expected benefits, contributing to the long-term and sustainable success of the organizations. IT governance is an integral part of the enterprise governance. ITGI also mentions the objective of IT governance is to guide IT initiatives and ensure that IT performance aligns with the following objectives: 1) Aligning IT with the organization to achieve the expected benefits, 2) Leveraging IT to support the organization by taking advantage of the opportunities and maximizing benefits, 3) Responsible utilization of IT resources, 4) Effective management of IT-related risks.

IT governance focuses on achieving alignment, integration, and relationships within the organization. When IT is strategically utilized in a way that aligns with business, it becomes beneficial for the organization to achieve its objective (Siregar & Harahap, 2021). There are five distinct reasons that drive organizations to adopt IT governance strategies (Calder & Watkins, 2015):

1. Compliance with the requirements: In the US, listed companies are impacted by the Sarbanes-Oxley, and in the UK, they are required by the Combined Code and the Risk Guidance, and businesses everywhere follow the requirements of their national corporate governance.
2. To safeguard the intellectual capital value of the organization.
3. Alignment with the strategic objective: the necessity to ensure the IT is in line with the organization's objective to deliver expected value.
4. Reduce the information security threats.
5. The increase in compliance requirements related to IT and privacy requires organizations to increase their compliance.

The specific objective encourages organizations to consider their actions; by this means thoughtfully, each organization tends to adopt a distinctive approach to managing

their IT. Knowing that IT plays an important role in an organization, good IT management will lead to a positive impact on the organization, such as enhancing their performance and gaining a good reputation among the public. Implementing an IT governance process enables organizations to establish a systematic procedure that facilitates making decisions. Furthermore, governance provides a framework for decentralizing smaller decisions, leading to improved overall efficiency (Cervone, 2017). Information governance aims to achieve two primary goals: safeguarding information and maximizing its value. Consequently, implementing effective IT governance (ITG) is crucial for the success and prosperity of organizations (Naguib et al., 2024).

According to Aasi et al. (2017), the five key focus areas of IT governance are rooted in the stakeholder's value, the elements of strategic alignment, resource management, and performance evaluation are considered as the catalyst, while the value delivery and risk management are considered as the outcomes. The governance process initiates with the setting objective for the IT enterprise to provide initial direction. Later, a continuous cycle is established involving a performance evaluation, comparison against the objectives, and adjustment to activities that are needed. IT governance ensures that the IT management process functions in a regulated manner, supporting the business activities and contributing to the organization's long-term success.

According to a study conducted by Amali & Katili (2018), in Indonesia, IT governance revolves around managing IT processes through directing, monitoring, and evaluation mechanisms. This governance approach entails setting policies to set the objectives and constraints of IT processes. These processes contain system planning, IT investment 16 management, system realization, system operation, and maintenance. All the process goes through monitoring and evaluation to provide feedback on IT management to ensure the expected performance outcomes. IT governance implementation become a competitive advantage for organizations. IT governance objectives can be grouped into three main categories (Turedi & Zhu, 2019): 1) fostering an environment conducive to developing, utilizing, and maximizing IT resources and capabilities, 2) establishing a framework to effectively explore and clarify the relationships between the IT function and the rest of the organization, 3) identifying and supporting a set of organizational routines and procedures that enable the organization to realize the business value of IT while managing IT risks.

2.3 Decision-making Performance

Decision-making relates to choosing a course of action from multiple alternatives to achieve organizational goals. It includes rational, intuitive, and strategic approaches shaped by both individual and situational factors (Bag et al., 2021). The intuitive decision-making style refers to instances where managers or decision-makers impose patterns of action during uncertain situations based on the present context (Sinnaiah et al., 2023). Making effective decisions is essential for the performance of an organization. Decision-making performance is assessed based on the precision of the decision and the time taken to make the decision, according to Speier et al. (2003). Some research identifies decision-making performance in terms of decision effectiveness and efficiency Visinescu et al (2017) argued that the quality of decision-making performance relies on the caliber of information available, which can be ensured through contractual governance. An organization's performance is one of the factors that indicates the effectiveness and efficiency of an organization in achieving its objective. A study conducted by Turel et al. (2017) proved that an organization's performance will deliver influence on corporate governance. One of the most important things for the organization is related to information technology governance to support performance. IT Governance become an integral part of corporate governance. Organizations that have stronger IT governance will gain a competitive advantage by effectively supporting management associated with business strategies.

2.3 IT Governance and Decision-Making Performance

According to Joshi et al. (2022), IT

governance involves creating and applying procedures for making decisions related to IT, and the goal is to ensure the organization's objective is aligned with IT support. Another definition of IT governance by Weill & Ross (2004) is establishing the framework of decision rights and accountability to promote desirable behavior in IT utilization, and it also gives an important question to address effective IT governance, including 1) What decision must be made to guarantee effective management and utilization of IT resources?, 2) Who should be responsible for making this decision? 3) How will this decision be made and monitored?

To help answer those addressed questions, Weill & Ross (2004) provide the governance arrangement matrix that consists of five interrelated IT decisions: 1) IT principles: defines and clarifies the roles of IT; 2) IT architecture: describes the needs for integration and standardization, 3) IT infrastructure: identify shared services and facilitate overall function, 4) Business application needs: specify the business requirements for acquiring or developing IT applications, 5) IT investment and prioritization: selecting which initiatives to fund and determining the appropriate budget allocation.

Previous research indicates that organizations with effective IT governance have a higher performance rather than other organizations. The study conducted by Liang et al. (2011) finds that a higher level of maturity, decision-making involvement, and a focus on IT professionalism in IT governance contribute to strategic alignment, which results in improved organizational performance. According to Sinnaiah et al. (2023), organizational performance can be assessed based on the achievement of the organization's shared objectives, provided that the methods employed are used consistently.

Involving managers in IT decision-making and implementing the effective management of IT risks and benefits can increase the value of business investments, which also enhances overall performance (Joshi et al., 2022). Research conducted by Turedi & Zhu (2019) shows that managerial implications in decision-making mean that the structure of decision-making significantly impacts the relationship between IT investments and organizational productivity. Decision-makers must have decision-making skills that utilize strategic thinking processes to assess the organization's performance and environmental uncertainties to achieve desired objectives (Sinnaiah et al., 2023).

An organization often faces the challenge of selecting technology investment to be funded and the challenge of identifying the most critical factors for making investment decisions. Therefore, organizational leaders play an important role in strategic decisions to prioritize IT investment projects. According to Dean & Sharfman (1996), the decision making-performance affects managerial decisions when considering viable options for the organization. (Baum & Wally, 2003) views effective decision-making performance plays an important role in steering business processes regarding the succession of adoption of new products and services and helps to integrate with new technology. Which in turn leads to enhanced overall business process performance.

2.4 Internal Control Over Financial Reporting

The issue of major corporate scandals raises the importance of internal control. Many countries adopted laws and regulations with the aim of increasing the reliability of financial reporting. For instance, in the US, the Sarbanes–Oxley Act under section 404 stated that companies should identify, report, and find solutions to the weaknesses of their internal control system, including those related to IT.

With the interconnected business and IT, controls of IT are essential parts. IT control is to manage IT applications, systems, platforms, and environments, covering aspects such as system access, program and data access, computer operations, and the development and management of programs to meet the internal control assessment and reporting requirements of Section 404, companies and auditors need to align financial reporting control objectives with IT control objectives (Kuhn & Morris, 2017). Later, IT Governance Institute released a subset of frameworks, such as COBIT, ITIL, TOGAF, CMMI, etc. One of the most used

frameworks is COBIT. COBIT defines two main categories of IT internal controls: application controls and general controls. Application controls are embedded within specific software systems that support business processes and financial reporting. For instance, in SAP, an accounts payable user role is restricted to transactions necessary for processing accounts payable functions, thereby preventing segregation of duties violations. On the other hand, general controls encompass the entire IT infrastructure and are designed to ensure secure operations (Kuhn & Morris, 2017).

Kieso, Weygandt, and Warfield (2019) describe Internal Control over Financial Reporting (ICoFR) as a process developed by a company's top executive financial officers and other personnel to provide reasonable assurance about the reliability of financial reporting and the preparation of financial statements for external purposes, in alignment with generally accepted accounting principles. In the context of ICoFR, the most commonly used framework is the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework. COSO's definition of internal control and its three categories of objectives are as follows: 1) effectiveness and efficiency of operations, 2) reliability of financial reporting, and 3) compliance with applicable laws and regulations.

The three objectives of COSO are related to five integrated components. Each of the five components of internal control outlined in the COSO framework is crucial for ensuring the reliability of financial reporting. These following components work in unison to prevent, detect, and correct significant inaccuracies in financial statements (Rubino & Vitolla, 2014): 1) control environment, 2) risk assessment, 3) control activities, 4) information and communication, and 5) monitoring activities. In companies with effective IT governance, the temptation to underinvest in IT controls could be held in check by knowledgeable IT executives and board members who would support or encourage the use of effective IT controls to maintain data integrity, security, and quality and improve business processes (Boritz & Lim, 2008).

3. Research Methodology

3.1 Research Design

This research is conducted using a descriptive method with a qualitative approach. This research uses the case study method, which investigates deeper into a specific case by gathering various sources of information in PT XYZ. The object of this research is to determine how the implementation of IT governance affects the decision-making performance in PT XYZ. Variables of the research are IT governance and decision-making performance.

3.2 Population of Research

In this research, the population is the management of PT XYZ, which makes decisions from the divisions that are responsible for the implementation of the IT governance system at PT XYZ. Thus, in this research, there will be 5 informants with the details as follows:

1. As many as 3 informants should meet the criteria below: a) Management of PT XYZ has a decision-making function authority from the divisions that are responsible for the implementation of the IT governance system at PT XYZ, b) Management of PT XYZ is involved in the decision-making process from the divisions that are responsible for the implementation of the IT governance system at PT XYZ.
2. As much of 1 informant is the user that uses and/or is related to the decision-making generated from the divisions that are responsible for the implementation of the IT governance system at PT XYZ.
3. 1 informant is a practitioner who has experience in the field of IT governance and/or social accounting.

3.3 Type and Source of Data

The source of data used in this research is from primary sources. Primary data are collected first-hand for subsequent analysis to find solutions to the researched problem. Primary data used in this research include 1) Interviews and 2) Documentation. This research also uses secondary sources that are obtained from online data and the

organization's website.

3.4 Data Analysis Technique

There are three steps in analyzing qualitative data, which are: 1) Data reduction: after the Author gets the data, it will be collected and rearranged, and the units that have the same coding will be grouped together. To support the coding process, the Author used Atlas.ti software. This software is designed to facilitate the development, support, and organization of qualitative data analysis with a focus on the data coding process; 2) Data display: after the data has been reduced, it will be displayed in an organized and condensed manner 3) Drawing the conclusion: address the research question by determining the explanations of the observed patterns and connections.

4. Result

4.1 Credibility Test

Extension of Observation. According to the interview, the author extended the observation by comparing the interview results from the respondent's answer with other sources. The results show that IT governance implementation affects the company's decision-making performance by improving decision-making speed using agile method business-IT alignment and helps emphasize risk management practices and compliance with rules and regulations.

4.2 Triangulation

Triangulation of source. the author conducted source triangulation by cross-checking with 5 different respondents. 3 respondents were from the same department, 1 respondent was from the user point of view, and 1 respondent was from an experienced IT consultant. Triangulation of technique: the author conducted technique triangulation by interviewing 5 respondents and then cross-checking the interview results with other sources, such as journals, articles, and surveys. Triangulation of time: the author conducted the interview with respondents at different time ranges. Interview with Respondent 1 is conducted on 13 October 2023, respondent 2 is on 18 November 2023, respondent 3 is on 11 November 2023, respondent 4 is on 18 November 2023, and respondent 5 is on 6 November 2023. The author then cross-checks the responses from all of the respondents with other sources, such as journals, articles, and surveys from various time ranges. After the interview results are analyzed through the codification process, it can be shown as follows:

The effect of IT governance implementation on decision-making performance (case study in PTXYZ)	Sum of Grounded
3E concept in implementing IT governance	**21**
• adapt to new technology advancement	3
• effective and efficient IT governance leads to cost reduction	1
• evaluation from users develop for further improvements	2
• IT governance enhance company performance	2
• IT governance support business activities	9
• IT investment gain as expected results	2
• the development of project management	2
challenges in IT governance implementation	**4**
• challenges in aligning business-IT	1
• challenges in creating standardize platform	1
• challenges in methodology changes	1
• people perception of IT governance is rigid	1
does IT governance affect overall company performance?	**12**
• business digitalization enhance company's value	3
○ business understanding is a crucial phase	1
• IT governance affect overall company performance	4
• IT governance affect overall company performance is depends on valuation	1
• IT governance enhance data-driven decision-making	3
does IT Governance implementation affected decision-maker in the decision-making process?	**9**
• IT governance affect decision-maker in making decision	4
○ IT governance affect decision-making performance	5
does IT Governance implementation affected decision-maker in the decision-making process?how does the implementation of IT Governance at PT XYZ affect the decision-making performance	**3**
• IT governance aligned company's objective	3
does IT governance implementation have a positif impact on decision-making performance?	**5**
○ IT governance positively affect decision-making performance	5
does PT XYZ already implemented IT governance?	**3**
• already implemented IT governance	3
how does the implementation of IT Governance at PT XYZ affect the decision-making performance	**9**
○ data source is a determinant factor	2
○ IT governance ease decision-making process	1
○ IT governance enhance accuracy and accountability in decision-making	2
○ IT governance enhance reliability and credibility in decision-making	2
○ succession of IT governance need all stakeholders involvement	1
○ use of data sciences for business projection	1
how is the decision-making procedures in PT XYZ?	**3**
○ decision-making procedures according to the level of authority	3
how long IT governance already implemented?	**3**
• over 20 years of implementation	3
how to overcome challenges in implementing IT governance	**2**
• conduct learning management system for continuous learning	1
• conduct socialization of IT governance awareness	1
IT governance implementation in PT XYZ	**16**
• conduted IS audit	1
• PT XYZ used COBIT for IT governance framework	2
• support business activities according to user needs	7
• The urge of segregation of duties	4
○ transformation to business automation	1
• value measurement through product selection	1
performance measurement principle in IT governance implementation	**10**
• annual performance review	2
• measurable performance	3
• performance measured through KPIs	4
○ the importance of system can be reflected from user's feedback	1

resource management principle in IT governance implementation	**6**
• business automation support business activities	1
• manage resources	1
• people development programs for continuous learning	1
• the importance of resource mapping	3
risk management principle in IT governance implementation	**9**
• cybersecurity is the most significant risk	1
• perform risk prevention	1
• prevent cybersecurity risk by formed specialized team	1
• prevent IT risks by accsess resctriction	1
• prevent IT risks by conduct regular patches	1
• prevent IT risks by regularly updates antivirus	1
• safeguarding company's assets	2
• the importance of risk assessment	1
strategic alignment principle in IT governance implementation	**11**
• business-IT alignment	6
• IT alignment support business activities	4
• IT become one of the competitive advantage for company	1
the importance of IT governance implementation	**7**
• IT governance enhance company compliance	2
• IT governance facilitates standardization and system integration	5
the importance of IT governance implementationthe importance of IT governance role in decision-making	**2**
• IT governance play a significant role in decision-making process	2
value delivery principle in IT governance implementation	**11**
• analyze business value of every project	2
• business valuation using cost-benefit analysis	1
• IT governance helps company deliver the value	1
• PT XYZ core value	1
• security compliance enhance business value	1
• the importance of integrate value	1
○ the use of ERP as integrated system	1
• valuation of business value	2
• value delivery align with standard	1
Grand Total	**146**

5. Summary and suggestions

5.1 Summary of Findings

This research connects the implementation of IT governance to five focus areas of IT governance: IT strategic alignment, value delivery, performance management, risk management, and resource management, and how it affects decision-making performance. PT XYZ has already implemented IT governance for almost 20 years. In their evolving phase of implementation, they surely face challenges. One of them is IT-business alignment and lack of people knowledge regarding IT governance. To overcome the challenges, PT XYZ regularly offers educational content and outreach at both corporate and specific division levels to give socialization and utilizes a learning management system. Investing in business process automation has a huge advantage in boosting efficiency and productivity for PT XYZ. The Implementation of strategic alignment of IT governance in PT XYZ is reflected in using digitalization and creating an IT organization that supports the business needs. PT XYZ has experienced ERP changes, and choosing an ERP that suits user requirements and needs is very essential and satisfies the 3Es concept. In PT XYZ, analyzing the value at an early stage of every project or investment made is very crucial to ensure that investments that were made can generate the desired outcomes to create value for the company. In terms of the implementation of resource management, PT XYZ promotes continuous learning and development for personnel to be able to adapt in this fast-paced business environment. In terms of the implementation of risk management, the primary IT concerns are related to cybersecurity and potential system loss. To overcome these risks, PT XYZ has developed preventive measures, including the formation of specialized teams that create Q&A guidelines to minimize cybersecurity threats. The implementation of performance measurement in PT XYZ performance is measured by integration with human resources performance management and internal divisional metrics. The implementation of IT Governance at PT XYZ influences decision-making performance by emphasizing performance measurement providing the company with clear KPIs for assessment. Additionally, the use of an ERP system enables all business units to operate within an integrated framework, enhancing their capacity to make faster, reliable, and data-driven decisions.

5.2 Suggestions

This research has explored the implementation of IT governance and its effect on the decision-making performance of a company. According to the findings of this

research, there are several recommendations for future researchers related to this topic:

1. In-depth case studies research: since this research method is conducted in a descriptive method with the qualitative approach using a case study, further researchers may conduct in-depth case studies across different industries, which will enrich the topic understanding.
2. Cross-country comparative studies: to reach a broader scope of analysis, a comparative study on IT governance implementation in different countries and across industries can offer new insight into how continental and cultural factors influence IT governance practices.
3. Using another research method: this research method is conducted in a descriptive method with the qualitative. Further researchers may conduct research in quantitative ways to see different points of view by adding or changing the variables to measure the effect of IT governance. Through this recommendation, the author has in mind that future research can contribute to IT governance topics and provide new insight both for academic purpose and practitioner purposes.

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