

Impacts of IT Governance Mechanisms on Organizational Agility

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Abstract—Many attempts to operate online businesses have recently failed to survive the competitive environments. They typically expand quickly by providing a wide range of goods and services. However, there are still holes. It is evident that no literature has addressed the effects of IT-enabled dynamic capabilities and IT-strategic alignment on the agility of online businesses. The goal of the study was to verify and determine the degree to which IT governance has a favorable impact on organizational agility. Using a follow-up description model, the research employed a survey method with an explanatory design. 258 individuals were able to successfully send the researchers their surveys. For over five years, they have operated various web enterprises in Indonesia's West Kalimantan province. To process all of the data that were gathered and examined using the SEM-PLS approach, Likert scales were employed. On the other hand, bootstrapping was used to disperse the data in a typical way. Additional input was gathered. The findings show that IT governance is a key component and that dynamic capabilities afforded by IT have a variable impact on increasing organizational agility, particularly when it comes to online commerce.

Keywords—IT Governance Mechanisms, Organizational Agility, Online Businesses.

I. INTRODUCTION

Numerous businesses have been impacted by the rise of digital technology innovation, more intense rivalry, and shifting consumer behavior. As a result, it is inevitable that market shares and online businesses will disappear quickly. Because these organizations don't need to make costly investments, competition is extremely fierce. Additionally, clients can easily and accurately compare the goods and costs offered by different online retailers. Agility and constant quality and service improvement are necessary for survival and competitive advantage [1]. According to recent empirical research, organizational agility is essential for acquiring competitive advantages, and improving corporate performance is inextricably linked to it [2]. Businesses operating online might become more competitive by being more flexible thanks to information technology (IT) skills. The capacity to quickly adjust to any changes in the corporate environment is known as organizational agility [3]. It heavily depends on these companies' digital transformation, particularly on their ability to manage human resources in relation to digital skills, ongoing education, interdepartmental cooperation, and preparedness of their IT infrastructure [4]. Realizing the management's organizational agility takes time and calls for a clear task composition framework. Thus, the

preparedness of IT governance systems is necessary for the execution.

By allocating scarce resources wisely, new technology adoption in conjunction with appropriate IT governance frameworks can enhance operations and strategy. They assist businesses in determining which investments to make first, according to goals, so that funds can be prudently distributed to projects that will yield the most benefits. Organizations may be able to minimize needless spending and greatly concentrate on investing income through the efficacy of IT governance procedures [5]. Devices with efficient process coverage are also provided by IT governance. Therefore, internet businesses can become more competitive by using IT resources optimally and following appropriate procedures. The use of the newest IT innovations is encouraged by the governance's mechanisms, which also aid in the recovery of market share operational efficiency [6]. A collection of controls that promote organizational behavior in line with goals, strategies, norms, ethics, and sociocultural norms is essential to the effectiveness of IT governance.

Numerous earlier research show that IT governance measures have a direct and favorable impact on business performance [7,8,9]. Convenience, accuracy, and assurances of seamless business transaction processing can be obtained from the right ones. As a result, business performance productivity increases to an optimal level. Strict controls and monitoring protocols make data theft and leakage avoidable, and they also boost productivity through innovation. Establishing suitable IT governance also makes it easier to start developing new services or products, which boosts marketing efficacy and generates new business models [10]. For other competitors, this condition takes on a new subtlety [11,12]. Moreover, empirical research indicates that there is still a deficiency in the literature concerning the precise effects of IT-enabled dynamic capacities and IT-strategic alignment on the agility of online businesses.

This situation may be seen from a preliminary poll that shows most firms and stores operating online have not been able to endure the competition to date. They typically expand quickly by providing a wide range of goods and services. The concept can be implemented without having to abide by every rule, such as those pertaining to the opening of physical storefronts. Because of the lack of a defined and quantifiable business plan, connections between businesses and IT, responsiveness, and an emphasis on customer experiences, unstandardized media or platforms also make it possible for

anybody to run an online business, which frequently ends in failure.

The agility of online businesses has not generally been impacted by the linkages between IT strategy alignment and IT-enabled dynamic capabilities. By linking these two elements, they can modify the corporate environment [13]. IT is the foundation of commercial operations for internet enterprises. When IT is used successfully, business strategy and IT can be aligned to support the digital transformation of work processes and decision-making styles. This shows a connection between IT governance practices and business outcomes [14, 15]. IT-enabled dynamic capabilities, IT strategy alignment, and IT governance systems have not been directly correlated.

The study's compelling finding is that, in order to achieve organizational agility, IT-enabled dynamic skills and IT strategic alignment continue to be essential building blocks. Ensuring congruence of corporate strategy is crucial in the face of intensifying competition. Long-term internet company operations should be dependent on the accessibility of application devices, infrastructure, and compatibility. Putting IT-enabled dynamic capabilities and collaborative IT strategic alignment into practice becomes a top priority. They carry out related tasks to improve and realize organizational agility [16]. The ability to quickly and efficiently respond to changes in the business environment is a critical component of online business skills. Organizations that are adaptable and quick to react have a competitive advantage because they can adapt to changing market conditions and obstacles. IT-enabled dynamic capabilities are inextricably linked to IT developments. As a result, it is possible to predict a variety of factors and levels of preparedness associated with the intention to purchase via online media. With a range of new application features pertaining to IT dynamic capabilities, the use of complex applications for brief periods of time should be responsive and adaptive [17]. This situation is distinctive in that it highlights the dependability of IT-enabled dynamic capabilities and IT-enabled strategic alignment to maximize the utilization of IT resources, find new avenues for innovation, boost operational effectiveness, and make information more accessible. But few internet companies are able to quickly implement IT and boost organizational flexibility to deal with changes in the market in a sustainable way.

The study question is based on the idea that endogenous structures (like IT strategic alignment and IT-enabled dynamic capabilities) and external constructs (like IT governance processes) can both directly and indirectly affect an organization's ability to be more flexible. This research question fits with the main objective, which is to confirm and ensure the level to which IT-enabled dynamic capabilities and IT-strategic alignment lead to better organizational flexibility and readiness. With the rise of e-commerce and online business contests, more and more people are choosing to run their own businesses. This goal is very important.

II. LITERATURE REVIEW

A. IT Governance Mechanisms

IT governance mechanisms are a structure created to guarantee that, in accordance with business needs, IT management systems are used effectively and efficiently within businesses [18]. Stakeholders, IT teams, business users, and upper management are all involved in these

systems. IT governance is a tool for managing and controlling IT resources [19], helping organizations make strategic decisions about IT, controlling risks associated with IT, and guaranteeing accountability for IT use and administration. IT and businesses are better aligned when structures, procedures, and relationship mechanisms are in place [20]. IT governance methods are essential for maximizing the benefits of both IT and businesses because they impact how IT capabilities are managed and offer safe and secure environments for creative thinking that support the maintenance of competitive advantages.

B. IT Strategic Alignment

All investments in infrastructure resources, IT expertise, and administrative procedures must be in line with business strategy in order for IT to be strategically linked [21]. In addition, IT governance is necessary as the foundation for IT resource management. In essence, the IT strategic framework facilitates business activities that are aligned with the IT investment system [22]. When mapping business possibilities encompassing business strategy, IT strategy, business infrastructure and processes, and IT infrastructure and processes, IT professionals' top priority becomes IT strategic alignment [23].

C. IT-enabled Dynamic Capabilities

IT-enabled dynamic skills are the abilities to build and keep up an organization's performance by noticing changes in the market, taking new chances, and making operations more creative and effective [24]. Adding IT to a business can create and use competitive benefits, which can lead to additional opportunities [25]. IT-enabled dynamic capabilities [26] include the ability to sense, coordinate, learn, integrate, regularly rearrange, understand relevant technology, have the necessary technical skills, and be willing to change business processes in the best way possible.

D. Organizational Agility

The ability of an organization to foresee and react swiftly to changes in its surroundings is referred to as organizational agility. It entails acting quickly to seize fresh possibilities, decide, and carry out required tasks [27]. Organizations possess the ability to swiftly and successfully adjust to shifts in markets, technology, policies, or business conditions [28]. The ability to recover and survive potential crises depends on agility. Agility-driven organizations can react fast and bounce back effectively [29]. Components of organizational agility include two aspects, such as the business's capacity to recognize and react to changes fast in order to adjust and stay competitive [30].

III. RESEARCH METHOD

The research stages included background data, a review of the literature, the formulation of the problem and its constraints, the design of the hypothesis, data collecting and processing, data analysis, result description, and conclusion [31]. Convergent triangulation models were combined and subsequently employed as part of the study methodology to explain the feedback of the analysis outcomes [32]. In the meantime, all internet firms operating in West Kalimantan regions for more than five years were included in the research population. This period of time represented the performance outcomes, without distinction, of all internet businesses. Information that accurately reflected IT governance procedures was gathered between July and December of 2022.

There were 258 responders in total. Google Forms and a random sample strategy were used to electronically distribute the questions.

Likert scales with intervals from highly agree (Score 6) to strongly disagree (Score 1) were used to process the data. Because they remove the tendency toward hesitancy, ordinal numbers can yield more precise facts and certainty [31]. The created questionnaires made reference to several earlier research investigations. Because of the variations in the circumstances, times, and places, some further modifications were made to them. Additionally, tests were conducted on their validity and reliability. The partial least squares (PLS) method and structural equation modeling (SEM) formula were used. Conceptual models, algorithm analysis techniques, bootstrapping, path diagram models, model evaluation, conclusions, and recommendations are all included in the SEM-PLS stages [33]. Bootstrapping was used to disperse the data, with an emphasis on normalcy. Additionally, they underwent revalidation via in-depth interviews with five executives running various kinds of internet firms. Every important informant was handpicked using inclusive and exclusive methods. Feedback on the link between IT strategic alignment and IT-enabled dynamic capabilities, as well as the link between IT governance methods and IT strategic alignment and organizational agility, backed up the results of the path coefficients.

The hypotheses that were being looked into were linked to the study model. These are some of them: IT governance tools help align IT strategies, which is a good thing. It is possible that IT governance mechanisms will improve IT-enabled dynamic capabilities; it is also possible that IT governance mechanisms will improve organizational mobility; and it is possible that this will improve IT-enabled dynamic capabilities. H5: Aligning IT strategies with business goals makes organizations more flexible. H6: Using IT to create flexible skills makes organizations more flexible. The point of testing these ideas was to find out how much organizational agility—a very important factor—won in very competitive situations. The pros and cons of the relationships that show how suitable and engaging an online business is may be brought out by models and construct effects.

IV. RESULT AND DISCUSSION

Analyzing study model paths was one of the first steps in processing research outcomes. Furthermore, in order to meet the normalcy assumptions, bootstrapping and the PLS methods were used for estimate in order to achieve the optimal distributed data values. The bootstrapping method used methods that resulted in a considerable quantity of resampling. In particular, the replacement-with-resampling technique was applied. A set of randomly chosen rows from the original data sets that could be resampled were included in the calculation [33]. The SEM-PLS approach was used in the study to find latent endogenous and exogenous factors. IT-enabled dynamic capabilities, comprising of sensing, coordination, learning, integration, and routine reconfiguration; (b) IT strategic alignment, comprising business strategy, business infrastructure and processes, coordination, and learning; (c) IT governance mechanisms, comprising structures, processes, and relational mechanisms; and (d) organizational agility, encompassing the company's capacity to identify changes (OA1) and respond promptly to them (OA2).

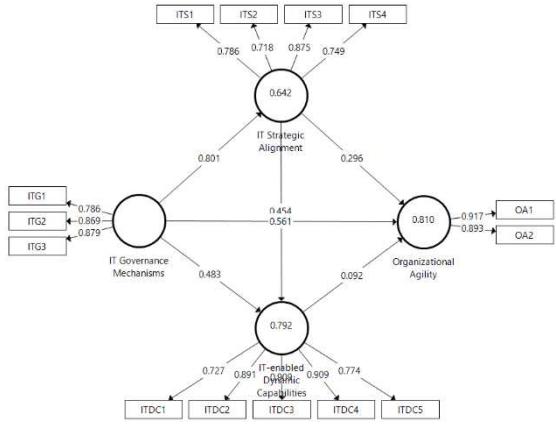


Fig. 1. Research Path Diagram

Additionally, using the Fornell-Larcker criterion, validity tests were performed to find the coefficients of convergent and discriminant validity for each and every Average Variance Extraction (AVE) result. The variation recorded by each concept in comparison to the variance resulting from measurement mistakes was measured using AVE values. Convergent validity was adequately covered by the representation. Stated differently, almost half of the average variance of each indicator may be explained by latent factors. The construct influences depicted by research path diagram models were revealed by the data processing findings of external models (refer to Figure 1). Additionally, the validity was tested using the Fornell-Larcker criteria in order to calculate the coefficients of discriminant and convergent validity. The AVE values were utilized to quantify the amount of variance that could be attributed to constructs as opposed to measurement errors. The values represented all average indicator convergent validity.

Diagram models of research paths display construct influences that are represented by processed data in outer models (refer to Figure 1). The correlation strength between each indicator and the associated concept was shown by the values. Furthermore, calculated loading coefficients revealed that every value was higher than 0.70, indicating the validity of every indicator and its suitability for use in research models [33]. Additionally, all constructs' discriminant validity coefficients needed to be tested using the Fornell-Larcker criteria (see Table I). However, Table II's content displayed all test results for validity and reliability based on specifics of computed AVE, Cronbach's Alpha (CA), and Composite Reliability (CR). To meet the requirements of fine reliability and validity, it is necessary for CR, CA, and AVE to be more than 0.80, 0.70, and 0.50 in that order [33].

TABLE I. DISCRIMINANT VALIDITY

Fornell-Larcker Criterion	ITG	ITS	ITDC	OA
IT Governance Mechanisms (ITG)	0.846			
IT Strategic Alignment (ITS)	0.801	0.784		
IT-enabled Dynamic Capabilities (ITDC)	0.847	0.842	0.846	
Organizational Agility (OA)	0.876	0.823	0.816	0.905

TABLE II. RELIABILITY AND VALIDITY OF CONSTRUCTS

Fornell-Larcker Criterion	CA	rho_A	CR	AVE
IT Governance Mechanisms	0.801	0.813	0.883	0.715
IT Strategic Alignment	0.792	0.811	0.864	0.615
IT-enabled Dynamic Capabilities	0.898	0.910	0.926	0.715
Organizational Agility	0.780	0.787	0.900	0.819

After that, an application called SmartPLS v.3.2.8 and a bootstrapping technique were used to investigate the inner models. In order to determine whether there were any links between the constructs in the study models, the significance of the indicators was nevertheless examined using the t-score values. There is a strong link between the indicator and a t-statistic if the z-score is greater than 1.96 and the chance value used to calculate the t-value is less than 0.05 [33]. All initial sample values were positive, according to the findings of the significance tests conducted on each path coefficient (see Table III). The endogenous constructs would be superior the better the exogenous constructs were.

Furthermore, t-statistic results exceeded t-table values, indicating positive and significant correlations between the constructs. Stated differently, there were external construct influences on endogenous ones. However, p-values were not subject to the current conditions. In this case, the effects of IT-enabled dynamic capabilities on organizational agility were not statistically significant (0.145), with probability values exceeding 0.05. Because the t-statistic value was only 1.459, which is less than 1.96, this circumstance happened. Tests of the research hypothesis made it evident that H6 was unproven and distinct from the findings of the prior study [26]. This discovery added a fresh, scientific perspective to existing assertions that the enhancement of organizational agility in online enterprises was influenced unevenly by dynamic capabilities afforded by IT.

TABLE III. PATH SIGNIFICANCE TEST

Fornell-Larcker Criterion	Original Sample (O)	T-Statistic (O/S TDEV)	P-Values
IT Governance Mechanisms → IT Strategic Alignment	0.801	32.986	0.000
IT Governance Mechanisms → IT-enabled Dynamic Capabilities	0.483	9.336	0.000
IT Governance Mechanisms → Organizational Agility	0.561	10.965	0.000
IT Strategic Alignment → IT-enabled Dynamic Capabilities	0.454	8.700	0.000
IT Strategic Alignment → Organizational Agility	0.296	6.306	0.000
IT-enabled Dynamic Capabilities → Organizational Agility	0.092	1.459	0.145

With a path coefficient of 0.561, the inner models analysis revealed that IT governance systems positively impacted organizational agility (see Table III). This need said that the availability of IT infrastructure, particularly the sufficiency of bandwidth capacity, a reliable internet connection, and

fundamentally, IT governance procedures, is necessary for operating online companies. As a result, the administration might be guided by decentralized systems and norms. IT governance mechanisms are relational, process, and structural frameworks for IT management activities. Additionally, they helped businesses make decisions that were accurate, timely, and sensitive to changes in the environment; maintain flexible and adaptable organizational structures; and profit more from IT. Moreover, efficient operations and well-defined regulations and processes decreased hazards. With corresponding path coefficients of 0.801 and 0.483, IT governance structures also had an impact on IT strategic alignment and IT-enabled dynamic capabilities. According to this interpretation, the former was best since it ensured IT strategic alignment and enabled online enterprises to continuously attain operational alignment. In order to ensure that management choices on IT risks and their effects on business operations are made, IT strategic alignment entailed the coordination and integration of businesses and IT functions. This alignment improved customer satisfaction, product or service quality, and operational efficiency in relation to organizational agility [21, 22, 23].

The effect of dynamic IT skills on organizational agility was shown to have a path coefficient (0.092) that was less than the route coefficient (0.296). As a result, there wasn't much room to adapt to changes in the work setting. Real-time data processing, chance discovery, decision-making acceleration, and cloud computing technologies were some of the dynamic capabilities made possible by IT [24, 25, 26]. These technologies also made IT infrastructure more flexible and scalable. On the other hand, there was a positive and significant path coefficient (0.454) between IT strategy integration and IT services that allow for dynamic capabilities. In other words, the better an online company built and used IT-enabled dynamic powers, the better their business plan and IT were matched [27]. In this case, the effects on organizational agility that are mediated by dynamic IT skills and the effects of aligning IT strategy on organizational agility were all present. Low path coefficients of direct and indirect effects showed that online businesses that set up and used IT-enabled dynamic capacities didn't have much market flexibility. To give an example of a new finding, online businesses rely on the readiness and availability of IT infrastructure in different ways.

As for a different outcome, an adjusted R-squared value of 0.810 (81%) showed that attempts to increase organizational agility were significantly impacted both directly and indirectly by the strategic alignment of IT, the readiness and availability of IT governance systems, and the dynamic capabilities that IT enables. However, other characteristics not included in study models had an impact on the remainder (19%). Additionally, the corrected R-squared values for IT-enabled dynamic skills and IT strategic alignment were 0.792 (79.2%) and 0.642 (64.2%), respectively. According to this interpretation, three of the components were impacted by IT governance mechanisms, but the remaining constructs were impacted by other constructs that weren't included in the study's influence models. An additional finding indicated that the R-squared predictive relevance was 0.986, or 98.6%. As a result, the research model was extremely practical and significant for predicting values of additional dependant variables in research models that have not yet been noted. The construct that discussed the impact of IT governance mechanisms on organizational agility had the greatest path

coefficient of all the constructs (0.801), suggesting that the ownership of these mechanisms had a significant influence on the agility of online organizations. There were also structures, processes, and relational mechanisms connected to putting IT strategic alignment into action. These show that the use of IT should be in line with the strategic goals of doing business online. Without IT governance tools, there could be more failed attempts to put IT strategies into action, IT use that doesn't match business needs, IT project costs that can't be controlled, and not following security rules and standards. Previous research [20, 22] provided support for this confirmation. It was distinct from other studies [24,26] and ran counter to the one that focused on how IT governance structures affect IT-enabled dynamic capacities (0.483).

In other words, rather than developing dynamic skills, there was a greater emphasis on using IT governance processes for risk management and standard and regulatory compliance. Another study indicated that internet businesses' IT systems and apps were assured to be secure and safe from cyberattacks. However, new product capabilities were built along with improved operating efficiency. After this, non-IT governance mechanisms frequently had an impact on the responsibilities of IT-enabled dynamic capacities, such as investments in the development of sophisticated IT and organizational cultures that foster innovation and collaboration, as well as the caliber of human resources.

Another finding that stands out is the positive path coefficient that illustrates how IT strategy alignment affects IT-enabled dynamic capabilities and organizational agility. On the other hand, organizational agility was not directly impacted by or enhanced by IT-enabled dynamic capabilities. They gave businesses the flexibility to adjust to shifting market conditions and provide value, but because of inevitable IT disruption, they sometimes affected their capacity to improve online operations and respond swiftly.

Lastly, suggestions for improving the accuracy of earlier analyses' findings were gathered. The five chosen informants were asked the same questions. Overall, the feedback gathered suggested that dynamic capabilities afforded by IT had negligible effects on organizational agility. The scope of the current study was restricted to building correlations between IT strategic alignment and IT-enabled dynamic capabilities and organizational agility; additional indicator analysis and path coefficient interpretation were not done.

V. CONCLUSION AND FUTURE RESEARCH

Through the successful integration of IT strategic alignment and businesses, IT governance systems play crucial roles in organizational agility. They reduce the risks associated with IT use and help businesses create dynamic capabilities offered by IT. This study can be extended to obtain more thorough results by doing confirmatory studies of indicators based on the involvement of all online businesses in West Kalimantan and other provinces, as well as direct and indirect effects of constructs. It is stated that there is a lack of awareness regarding the substantial use of IT governance systems in online business operations.

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