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The Manifestation Of Digital Transformation Concept In Indonesian Logistic Firms

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Abstract: Digital transformation has become an important challenge for logistic firms to achieve competitive advantages. However, the digitization process's implications on a firm's performance still need to be fully understood since transitioning from one method to another creates specific challenges. This study examines the effects of digital transformation on logistic firm performance in Indonesia and looks at the process of organizational learning and innovation as determinants of digital transformation. This study uses a quantitative method with data from 165 respondents of logistic firms that have implemented digital technology in their business operations. The PLS method is used as a data analysis method. Results showed that digital transformation positively and significantly affects logistic firm performance. It was also found that organizational innovation significantly affects digital transformation, ultimately affecting logistic firm performance. Meanwhile, organizational learning capabilities showed no direct effects on digital transformation.
Keywords: Resource Orchestration; Digital Entrepreneurship; Organizational Learning Capabilities; Innovation Capabilities; Logistic Firm Performance.

Abstract: Transformasi digital menjadi tantangan penting untuk mencapai keunggulan bersaing bagi perusahaan logistik. Namun, implikasi dari proses digitalisasi terhadap perusahaan masih belum jelas karena transisi dari satu proses ke proses lainnya merupakan tantangan bagi semua pihak yang terlibat. Penelitian ini mengkaji pengaruh transformasi digital terhadap kinerja perusahaan logistik di Indonesia dan juga melihat proses pembelajaran organisasi dan inovasi sebagai penentu transformasi digital. Penelitian ini dilakukan dengan menggunakan metode kuantitatif dengan menggunakan data yang dikumpulkan 165 responden perusahaan logistik yang sudah mengimplementasikan teknologi digital dalam operasi perusahaannya. Metode PLS digunakan sebagai metode analisis data. Hasil penelitian ini menunjukkan adanya pengaruh positif dan signifikan antara transformasi digital terhadap kinerja perusahaan logistik. Selain itu juga didapatkan bahwa inovasi perusahaan mempunyai pengaruh yang signifikan terhadap transformasi digital dan pada gilirannya berpengaruh terhadap kinerja perusahaan logistik, sementara kapabilitas pembelajaran organisasional tidak mempunyai pengaruh langsung terhadap transformasi digital.
Kata Kunci: Orkestrasi Sumber Daya; Kewirausahaan Digital; Kemampuan Pembelajaran Organisasi; Kemampuan Inovasi; Kinerja Perusahaan Logistik.

INTRODUCTION

Technological advances have created an enormous demand for organizational capacities to deal with business dynamics. (Franco and Rodrigues, 2021) Stated that firms need to adapt to market dynamics, be more proactive in exploiting opportunities, and make improvisations to stay competitive in their business environments. Nowadays, one of the most important challenges for every firm is integrating digital technology into their business operations since the industrial sector, and firm operations will only be unaffected

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by digital transformation. Digital transformation is a strategic response towards global economic trends that drives firms to act fast and respond, so digital transformation has become a strategic priority to increase competitive advantages(Wang et al., 2020). Digital transformation creates business opportunities arising from the exploitation of various digital technology developments, and transforming companies to be able to exploit them is a challenge and priority for contemporary companies (Sousa et al., 2020)

The great impact of the presence of digital technology, in general, can be seen in the increasingly competitive business environment, the overall transformation in the business environment (industry), the dynamics of competition, distribution channels, and customer relationships that encourage companies to adopt appropriate strategies related to digital transformation. The changes brought about by technological advances in every level of companies, including the exploitation of digital technology to improve process performance and the exploitation of digital innovation, will potentially change the business model (Franco et al., 2021). However, (Wang et al., 2020) explained that the implementation of digital transformation is challenging to be elaborated in a dynamic environment since the concept of digital transformation hints at a new direction for firms or exhibits a blueprint for a business transformation as well as providing a guide for management to integrate and utilize digital technology in implementing digital transformation. Further, (Steiber et al., 2020) explained that the main challenge for firms is not only about adding a digital touch to their current practices and products but also about fully empowering the potential of digital technology transformation in their business operations.

The changes brought about by digital transformation affect all kinds of industries, including the logistics industry (Cichosz et al., 2020). Digital transformation in the logistics industry sector includes both digital services and products as well as the handling of logistic processes inside firms that are experiencing rapid changes (Büyüközkan and Göçer, 2018). To benefit from digital activities, companies need to put forward new approaches, including transformation with the application of renewable technologies (Cichosz and Knemeyer, 2020). This study defines digital activities as a bunch of activities connected by the utilization of digital technology in the supply chain process between firms and their suppliers and customers. In other words, digital transformation in the logistics sector is a new and smart process that has added value by utilizing a new approach brought about by new technology to create competitive value and a wider network effect. This activity is made possible by the existence of smart technology (platform), a phenomenon present in a device that simplifies and further optimizes company operations. (Nasiri et al., 2020).

Digital transformation allows firms to utilize new technological features in the form of smart technology (platform), a phenomenon manifested in the form of gadgets or devices to help make firms' activities easier to operate. The logistics industry has been described as one in which many firms need a proper initiative or strategy to face the digitization era and a clear program for adopting digital transformation processes. The logistics industry in Indonesia is fragmented and requires more transparency and real-time information. For example, 80 per cent of the trucks are owned by small and medium industry players who have yet to adopt information technology within their companies fully. It is also found that 90 per cent of orders and matching are done offline.

Furthermore, 80 per cent of deliveries are carried out manually, with slow verification and a lack of initiatives to speed up the process (Sousa et al., 2020). Like other

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industries, the logistics industry is described as one in which many companies need the right initiatives and strategies to respond to digitalization and clear programs for adopting digital transformation (Tijan et al., 2021). With the desire to implement effective digital transformation, logistics companies are embracing technology to become leaner, faster and more efficient. Using a combination of sensor technology, robotics, IoT (Internet of Things), and Data analytics will completely revolutionize the operations of logistics companies (Verhoef et al., 2021).

Digital transformation in the logistics industry is a challenge for all parties involved. When firms evolve to adapt to the changes in modern society, the challenges become real. The challenges are different for each firm and worker, where digital transformation must be manageable but effective and efficient (Hernandez and Wagner, 2022). Moreover, many researchers mentioned that new resources and capabilities are needed to effectively compete in a digital era (Sousa et al., 2020). Another important aspect is that firms must adopt entrepreneurial mindsets in digital transformation (Antonizzi and Smuts, 2020). all companies in the logistics industry must pay attention and come together to prioritize digital transformation initiatives, given the potential for much higher and sustainable value to be created for the company (Tsou and Chen, 2021); (Hernandez and Wagner, 2022).

Previous studies have identified factors and conditions pertinent to the successful adoption of digital transformation, such as compatibility between the technology utilized by the firm and their management tools or resource orchestration (Chen and Tian, 2022), entrepreneurial mindsets (Ladeira et al., 2019) and organizational learning capabilities (Lara and Salas-Vallina, 2017), innovation capabilities (Tsou and Chen, 2021), among others. Recently, there has been research on how logistic firms implemented new digital technology (Cichosz et al., 2020).

Digital transformation has become a new norm and is a crucial component of changing organizational business. Digital transformation has revolutionized the way firms do their business. However, there needs to be literature that extensively examines the holistic impacts of the main antecedents of digital transformation on firms, especially in the case of logistical services providers. Recent studies highlighted that digital transformation is a complex and challenging phenomenon (Eller et al., 2020) and still needs to be fully understood in theory and practice (Sousa et al., 2020). (AlMulhim, 2021) found that digital transformation has no direct significant effect, which contradicted some other studies. One that draws much attention is the probability of another variable that strengthens the impact of different variables on firm performance.

(Verhoef et al., 2021) It was explained that digital transformation allows companies to develop capabilities in studying situations, continue to innovate in dynamic conditions, and be more responsive in seizing opportunities in the industry. Digital transformation is described as a process that requires a system that can achieve real-time transparency from supplier to customer, connected operations, decentralization and autonomous management (Cichosz et al., 2020). Several companies are actively adapting to the changes and uncertainties of this environment, seizing business opportunities, changing business behaviour, and initiating digital transformation because it can ensure that companies remain competitive in a rapidly changing business environment (Chen and Tian, 2022). Research shows that digital transformation can drive business innovation, enhance the consumer experience (Zaheer et al., 2019), and upgrade (Wang et al., 2020); (Ferreira et al., 2019); (Martínez et al., 2018). With the constant influx of technological innovations,

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Digital Transformation has completely transformed businesses and can offer new opportunities (Verhoef et al., 2021).

Digital transformation has become the norm and is considered a critical component for changing a company's business. This has revolutionized the way companies do their business. However, the literature has yet to extensively examine the holistic impact of the main antecedents of digital transformation on companies, especially logistics service providers. Recent studies have highlighted that digital transformation is a complex and challenging phenomenon (Hennelly et al., 2019); (Eller et al., 2020); (Chen and Tian, 2022) and is still poorly understood, both in theory and practice (Sousa et al., 2020). The study (AlMulhim, 2021) found that digital transformation does not directly have a significant effect, in contrast to several other studies. One thing that is of concern is the presence of other variables to be able to strengthen the influence of different variables on company performance.

The academic literature that examines the impact of this transformation on logistics companies in a sustainable manner still needs to be improved. In addition, empirical studies carried out previously to investigate the relationship between the two concepts in the context of developing economies and markets still need to be improved. The different results in implementing digital transformation have generated significant interest among researchers and practitioners (Eller et al., 2020); (Martínez et al., 2018). (Wang et al., 2020) and (Tsou and Chen, 2021) focus on how different types of digital transformation affect companies and the boundary conditions for these relationships (Martínez et al., 2018). In particular, information technology (IT) competencies are widely recognized as playing a critical role in determining the extent to which firms benefit from digital transformation (Martínez et al., 2018); (Wang et al., 2020); (Tsou and Chen, 2021). However, theoretical and empirical research on how digital transformation is affected still needs to be developed. As a result, normative guidelines for predicting and recommending specific informatics technology deployment strategies that may be effective are limited, as evidenced by the various results of digital transformation implementations among enterprises.

To fill this gap in our understanding of digital transformation, this study investigates how firms can exploit their potential in digital transformation in a conducive way to accomplish the benefits of digital transformation. This study uses resource orchestration theory, an extension of a resource-based view theory, to develop the study model. It is an empirical study to show the effects of digital transformation on firms based on several determinant factors.

THEORETICAL REVIEW

(Nambisan et al., 2019) They have Characterized digital transformation as creation and alterations brought about by market offers, business processes, or models born by digital technology. Digital transformation forces firms to rethink the role and value of their data in their business model (Mugge et al., 2020). Digital transformation is a multi-interpretive phenomenon because it imposes different aspects and implications on each firm in another way. (Vial, 2019) defined several frameworks and agreed that digital transformation represents a significant change in the basic pattern of how firms create values. In this way, many firms digitally transform themselves by inventing new ways to

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create a new income stream by utilizing new advances in digital technology (Carnes et al., 2017).

Resource Orchestration and Organizational Learning Capability. Based on resource orchestration theory, firms can materialize their resource value if they can effectively manage them. Firms will try hard to determine which resources need to be targeted and how to exploit those resources to achieve business performance in the whole organizational operations (Kristoffersen et al., 2021). Firms need to devise and manage their resources to create new values and improve their systems during digital transformation processes (Chen and Tian, 2022). Organizational learning facilitates organizational upgrades over their superior assets and special capabilities to maintain or improve their relatively superior performance (Thomas et al., 2017). Some studies have further developed this view on resources by emphasizing that knowledge is a critical strategic resource for firms (Martínez et al., 2018). The development of organizational capability needs the integration of specific resources. Furthermore, their development and implementation occasionally make them inherent and unique, thus becoming a source of competitive advantages (Ricciardi et al., 2020). As such, the following hypothesis can be formulated:

H1: Resource orchestration positively affects organizational learning capability.

Resource Orchestration and Organizational Innovation Capability. It is important to understand how firms manage their resources to create innovation. Innovation development needs specific capabilities resulting from resource integration obtained and developed by firms (Carnes et al., 2017). Assets represent organizational resources in the form of both physical and intellectual assets. At the same time, skills are usually pertinent to human physics, information, or corporate capital, combined to create the desired results (Verhoef et al., 2021). Specifically, a study is needed to help understand how firms pursue growth through innovation in a different context (Carnes et al., 2017). Previous studies primarily focused on the number of resources needed to develop innovation or the effect of specific resources on innovation. However, precisely how the manager arranged those resources is also important for innovation. Through creation, firms can determine and control changes in their external environments and, most importantly, their role in building long-term organizational competitive advantages (Celtekligiland Adiguzel, 2019). Resource orchestration for innovation is managing all corporate resources to create a combination of capabilities and delivering a new problem-solving ability into well-managed and effective resource exploitation (Li and Jia, 2018). Based on this premise, a hypothesis can be formulated as follows:

H2: Resource orchestration positively affects organizational innovation capability.

Digital Entrepreneurship and Organizational Learning Capability. (Alerasoul et al., 2021) found in their study that organizational learning plays a comprehensively mediating role in the relationship between learning orientation and entrepreneurial orientation. (Oh et al., 2018) identified the organizational learning process as a key means to achieve corporate strategic upgrades. Learning activities such as gaining or creating new knowledge along with its distribution and integration into the company will make it a significant strategic resource and allow firms to upgrade themselves to become more

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competitive. (Alerasoul et al., 2021) mentioned that both learning orientation and entrepreneurial orientation will affect organizational innovation. Digital technology makes it possible for firms to build calculated products and services that have capacities to propel changes that will lead to corporate growth (Zaheer et al., 2019). Another advantage of digital technology is its flexibility as the driving force for rapid learning and experimentation. Furthermore, a dynamic process inherent in digital technology will drive faster iterations in non-linear pathways within entrepreneurial processes (Lara and Salas-Vallina, 2017). Thus, the following hypothesis can be formulated:

H3: Digital entrepreneurship positively affects organizational learning capability.

Digital Entrepreneurship and Innovation Capability. (Alerasoul et al., 2021)concluded that both market orientation and entrepreneurial orientation positively affect innovation, in which their influences on organizations are mediated by learning orientation. Further, (Lafuente et al., 2019) conceptualized entrepreneurship as a particular economic function that drives organizational development by promoting innovations propelled by entrepreneurship that create new combinations of inputs and outputs in which innovations gradually become the central element in business competitiveness. Innovation becomes the determinant factor for logistic firms where a resource in the form of vast knowledge is needed to maintain a strategic position and to stay competitive in their business environments, including the virtual environment (Ferreira et al., 2019). Digital entrepreneurship creates new and challenging market opportunities for firms eager to develop and introduce innovations based on their entrepreneurial ideas (Lafuente et al., 2019). (Nadkarni and Prügl, 2020) explained that organizational entrepreneurship is related to two phenomena: the emergence of new business opportunities in the form of internal innovations or ventures and organizational transformation through the reinvention of key ideas as their driving forces in the form of strategic upgrading based on digitization. Based on this premise, a hypothesis can be formulated:

H4: Digital entrepreneurship positively affects innovation capability.

Organizational Learning Capability and Innovation Capability. Holistic organizational learning is considered a prerequisite for innovation because it requires assimilating and implementing new ideas (Martínez et al., 2018). This process starts with the identification of needed knowledge and ends with the preservation of this knowledge in the organizational repository. This process is crucial for all organizations, and more importantly, it has a bigger impact on organizational competitive advantages (Magistretti et al., 2021). The more innovative the products, services, or methods are, the more critical capacity levels, skills, and newly relevant knowledge are needed (Halpern et al., 2021). The extensive studies about organizational innovation received significant contributions from studies about organizational learning in the last decade, which showed a positive relationship between organizational learning capabilities and organizational innovation (Gomes et al., 2020). The study by (Gomes et al., 2020) also showed a positive relationship between organizational learning and innovation while explaining that cultural values promote and support innovation. Furthermore, transforming ideas into new services will depend on the skills to gain and employ new knowledge from their internal and external environments. Thus, the following hypothesis can be formulated:

H5: Organizational learning capability positively affects innovation capability.

Organizational Learning Capability and Digital Transformation. (Sousa et al., 2020) showed that firms will gain significant growth when supported by digital transformation. Other studies also examined the role of organizational learning capabilities and tried to explain how this might mediate the association between digital transformation and corporate operations. Firms that cannot develop these capabilities will be left behind in a highly dynamic digital economy environment. The successful response to achieve and maintain competitive advantages will depend on the organizational capabilities to identify and respond to challenges while at the same time reconfiguring their business elements in a precise and continuous way (Vial, 2019). Thus, the following hypothesis can be formulated:

H6: Organizational learning capability positively affects organizational digital transformation.

Organizational Innovation Capability and Digital Transformation. (Steiber et al., 2020) Explained that digital innovation is a process of assimilation between digital technology and related digitization processes to create new ideas and developments. The technological features are inherent parts that drive innovations. Theoretical and empirical studies showed that technology plays a crucial role in developing new products and processes and radically changes the fundamental structures of industry and redefined competition rules. Studies have demonstrated how digital technology drives new forms of innovation and entrepreneurial initiatives that transcend the traditional sectors and industrial boundaries, embracing networks, ecosystems, and communities; integrating digital and non-digital assets; and speeding up the starting, mapping, and evolution of new businesses (Nambisan et al., 2019). Based on this premise, the following hypothesis can be formulated:

H7: Organizational innovation capability positively affects organizational digital transformation.

Digital Transformation and Logistic Firms Performance. (Eller., 2020) elaborated digital transformation benefits for firms, such as better access to improved skills and abilities, more access points to markets, more comprehensive access to the financing sector, better communication and collaboration, and more access to the implementation of technology and application programs. To fully exploit the potential of digital transformation and improve operational performance, firms must continually expand their experiences in adapting to new digital concepts, keep investing in the digital domain, and improve their skills and capabilities in digital management. Through continuous digital technology implementations, firms can promote automation and sophistication of internal operations, reduce costs significantly, improve operational efficiency and management quality, and transform business processes and business model innovations, ultimately optimizing customer experiences (Wang et al., 2020). Thus, the following hypothesis can be formulated:

H8: Digital Transformation positively affects logistic firm performance.

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A research model can be developed based on the above research hypotheses, as seen in **Figure 1.**

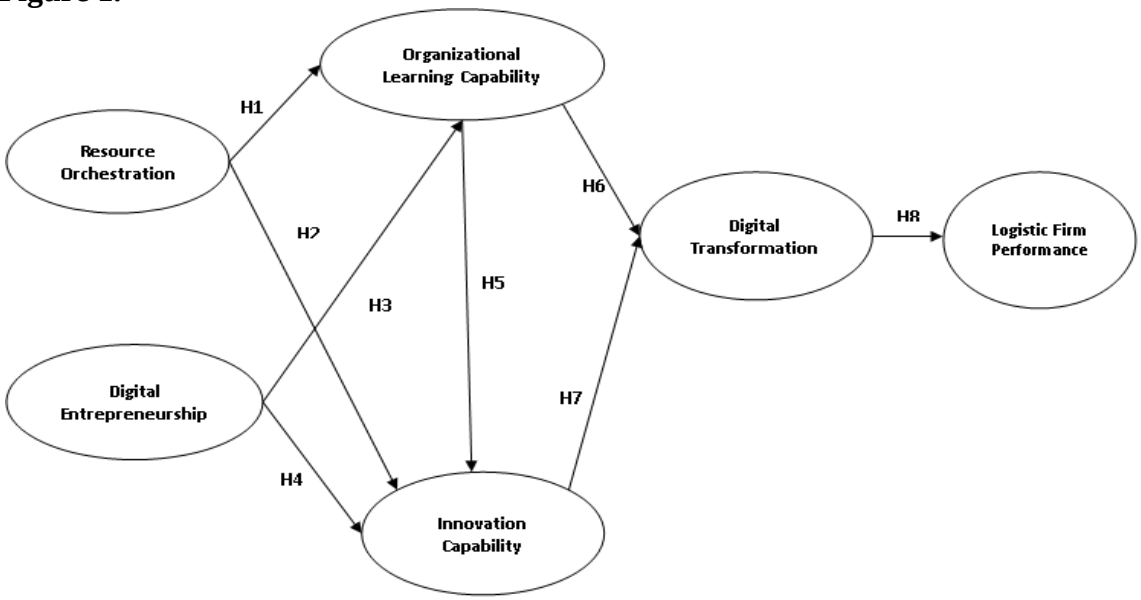

Figure 1. Research Model
Source: Primary data processed

METHODS

In this study, a population of Indonesian logistic firms were sampled. Logistic firms that were included in this study were firms that have implemented digital technology. The respondents in this study were top management or managers of logistic firms that have adopted digital technology regardless of the extent of their digital technology applications. The sampling methods used in this study were purposive.

Next, the instruments that were used to measure constructs of resource orchestration theory were instruments that were developed by (Cichosz et al., 2020), (Wang et al., 2020), and (Kristoffersen et al., 2021) which consist of 5 items. To measure digital entrepreneurship constructs, instruments that were developed by (Franco et al., 2021), (Hennelly et al., 2019), and (Beliaeva et al., 2019), which consist of 10 items, were used. Instruments developed by (Sousa et al., 2020) and (Tortorella et al., 2020) comprised ten things to measure organizational learning capability constructs. Next, innovation capability constructs were measured using instruments developed by (Tsou and Chen, 2021) consisting of 8 items. To measure digital transformation constructs, instruments developed by (Hennelly et al., 2019) and (Tsou and Chen, 2021), which consist of 8 items, were used. Constructs for logistic firm performance were measured using instruments that were developed by (Akdoğan and Durak, 2016) (Irfani et al., 2021); (Li and Jia, 2018), which consisted of 14 items.

The PLS-SEM method was used to test the conceptual model of this study using SmartPLS 3.2 software. Next, model evaluation in SmartPLS was performed in two steps: (1) evaluation of the measurement model (outer model) and (2) evaluation of the structural model (inner model) (Ghozali, 2021). The Outer Model was evaluated by examining (1) Convergent Validity, (2) Discriminant Validity, (3) Composite Reliability, and (4)

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Cronbach's Alpha. The Outer model was used to evaluate the relationship between a construct and its indicators, consisting of two elements: convergent validity and discriminant validity. The structural model in PLS was assessed using R2 for dependent constructs, path coefficient values or t-value of each path to examine the significance of inter-constructs within the structural model (Hair, 2017). This study's second evaluation was performed to examine the inner model.

RESULTS

The following is 165 respondents' demographic data, as shown in **Table 1.**

Table 1. Respondents' Characteristics Data

Respondents' age		
21 to 30 y.o.	35	21.210 per cent
More than 30 to 40 y.o.	49	29.690 per cent
More than 40 to 50 y.o.	57	34.550 per cent
More than 50 y.o.	19	11.520 per cent
	165	
Tenure		
1 to 5 years	39	23.660 per cent
More than 5 to 10 years	31	18.780 per cent
More than 10 to 15 years	39	23.630 per cent
More than 15 years	56	33.930 per cent
	165	
Job Title		
Top Management	43	26.060 per cent
Middle Management	88	53.330 per cent
Junior Management	34	20.600 per cent
	165	
Business Fields		
Loading-Unloading	46	27.870 per cent
Cargo	5	3.030 per cent
Distribution	7	4.240 per cent
Customs/Export-Import	1	0.610 per cent
Port Management	32	19.390 per cent
Maritime Shipping	25	15.150 per cent
Transportation	18	10.910 per cent
Ekspedisi	20	12.120 per cent
Warehousing	10	6.060 per cent
	165	

Source: Primary data processed

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Table 2 shows the final evaluation results for convergent validity with its loading factor; by eliminating some indicators that have values less than 0.500 and subsequently re-estimated, it was revealed that all indicators/items have loading factors larger than 0.500 and are thus considered valid. On the other hand, convergent validity can also be measured by estimating each indicator on AVE. The indicator to estimate AVE is that when the AVE value is larger than 0.500, the item on that variable has enough convergent validity (Hair, 2017). Next, based on the above table, estimation results for convergent validity with AVE showed that each variable's AVE value is larger than 0.500. Thus, this study's data has met the convergent validity criteria.

Table 2. Results of Validity and Reliability Tests

Variable	No Item	Factor Loading	Composite Reliability	AVE
Resource Orchestration	RO1	0.939	0.951	0.795
	RO2	0.826		
	RO3	0.819		
	RO4	0.914		
	RO5	0.953		
Digital Entrepreneurship	DE1	0.81	0.956	0.688
	DE2	0.916		
	DE3	0.787		
	DE4	0.805		
	DE5	0.778		
	DE6	0.939		
	DE7	0.777		
	DE8	0.891		
	DE9	0.786		
	DE10	0.784		
Organizational Learning Capability	OLC1	0.851	0.965	0.733
	OLC2	0.938		
	OLC3	0.726		
	OLC4	0.891		
	OLC5	0.778		
	OLC6	0.792		
	OLC7	0.872		
	OLC8	0.943		
	OLC9	0.813		
	OLC10	0.929		
Innovation Capability	INNO1	0.914	0.959	0.748
	INNO2	0.853		
	INNO3	0.804		
	INNO4	0.957		
	INNO5	0.768		
	INNO6	0.871		
	INNO7	0.795		
	INNO8	0.938		
Digital Transformation	DT1	0.948	0.961	0.758
	DT2	0.752		
	DT3	0.773		
	DT4	0.885		
	DT5	0.877		
	DT6	0.842		
	DT7	0.942		

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	DT8	0.924		
	FP1	0.846		
	FP2	0.920		
	FP3	0.775		
	FP4	0.844		
	FP5	0.731		
	FP6	0.839		
Logistic Firm Performance	FP7	0.703	0.962	0.647
	FP8	0.779		
	FP9	0.853		
	FP10	0.674		
	FP11	0.767		
	FP12	0.683		
	FP13	0.913		
	FP14	0.876		

Primary data processed

Figure 2 shows the results of PLS-SEM analysis depicting test results for research hypotheses.

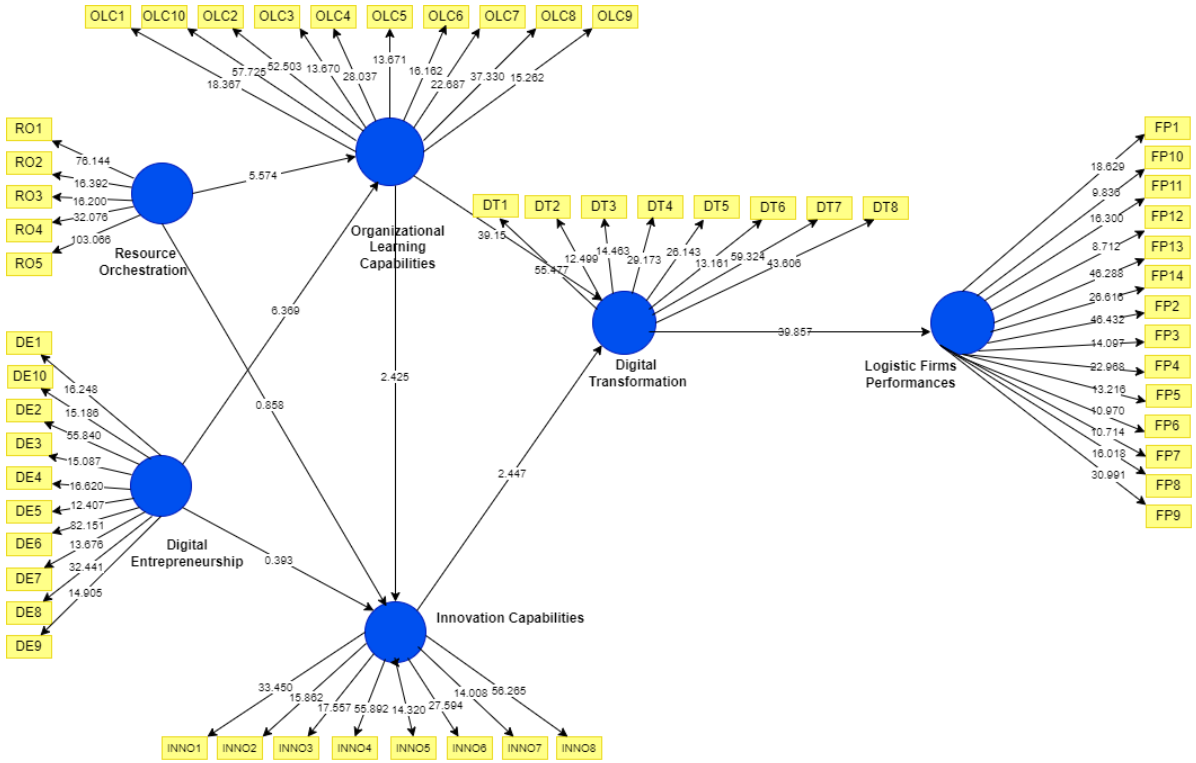

Figure 2. PLS Algorithm Results

Based on the results in the R-Square table, the R2 value for organizational learning capabilities was 0.967, which can be considered a good value and indicated a contribution of 96.700 per cent effects from both resource orchestration and digital entrepreneurship variables. Next, the R-Square value for innovation capabilities was 0.878, which can be categorized as a good value, which indicated a contribution of 87.800 per cent effects from

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resource orchestration, digital entrepreneurship, and organizational learning capabilities variables. R-Square value for digital transformation was 0.716, which was categorized as a good value, which indicated a contribution of 71.600 per cent effects from both organizational learning capabilities and innovation capabilities variables. Lastly, the R-Square value for firm performance was 0.653, categorized as a good value, indicating a contribution of 65.300 per cent effects from the digital transformation variable. Lastly, based on this estimation results, a Q-square value was estimated at 0.999 or 99.996 per cent; thus, it can be concluded that the diversity of research data in this study was as large as 99.960 per cent and the rest of it at 0.040 per cent, was explained by other variables outside of this study.

The following is the evaluation results for all research hypotheses in this study:

Table 3. Results of T-Statistic Tests for Research Hypotheses

Hypothesis	Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	t-value	Result
H1	Resource orchestration → organizational learning capabilities	0.471	0.470	0.085	5.574	Supported
H2	Resource orchestration → innovation capability	0.170	0.181	0.198	0.858	Not Supported
H3	Digital entrepreneurship → organizational learning capabilities	0.527	0.528	0.083	6.369	Supported
H4	Digital entrepreneurship → innovation capability	0.131	0.151	0.133	0.983	Not Supported
H5	Organizational learning capabilities → Innovation capability	0.684	0.655	0.282	2.425	Supported
H6	Organizational learning capabilities → digital transformation	0.264	0.231	0.271	0.976	Not Supported
H7	Innovation capability → digital transformation	0.670	0.704	0.274	2.447	Supported
H8	Digital transformation → Logistic firm performances	0.876	0.879	0.022	39.857	Supported

Source: The result from Smart PLS Data Processed from Questionnaire

Based on the test results of these direct effect hypotheses with path coefficients, the next step is to test the hypotheses by comparing t-statistic results to t-table (1.975) at a significance level of 5 per cent (0.050). The results showed that Resource orchestration did not have a significant and positive effect on organizational innovation, Digital entrepreneurship did not have a significant and positive impact on corporate innovation, and Organizational learning capabilities did not have a significant and positive effect on digital transformation.

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DISCUSSION

As shown in **Figure 3**, the proposed research model was examined to accomplish the research objectives and to provide answers to the research questions (straight lines indicate the results can be accepted at a significant level). Overall, this study's results confirmed a significant correlation between digital transformation and logistic firm performance. It was found that the effect of digital transformation on logistic firm performance was manifested through a long process. The interesting point found in this study was that logistic firms' capabilities to accomplish digital transformation were determined by their innovation capabilities. Organizational learning capability did not directly determine digital transformation but was mediated by the formation of organizational innovation capabilities. Resource orchestration and digital entrepreneurship could only develop innovation capabilities but they develop organizational learning capabilities.

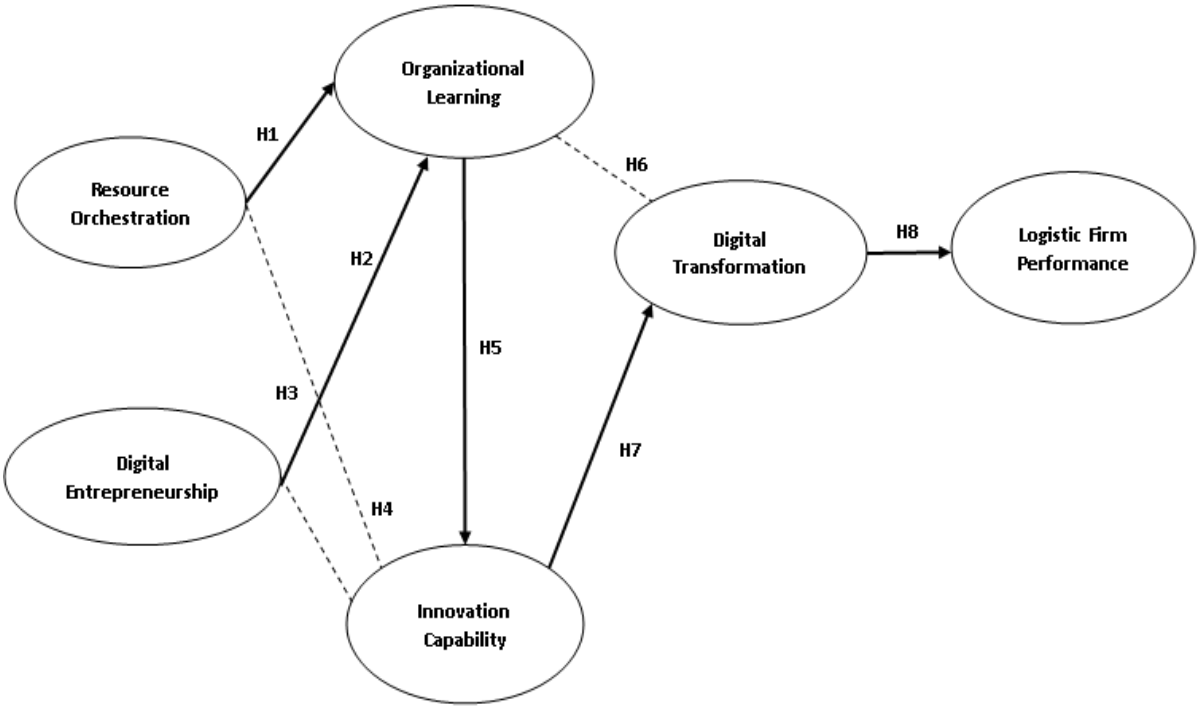

Figure 3. Research Model after the Hypotheses-testing
Source: Primary data processed

Logistic firms are urged to optimize their resources; to accomplish that, digital entrepreneurship mindsets will be needed in its implementation process. Those resources and perspectives are managed through an organizational learning process to optimize the corporate transformation. This is in line with (Martínez et al., 2018), who concluded that digital transformation is the main component for improving organizational performance in dynamic and technologically laden environments. Digital transformation alters the nature of the required dynamic capabilities since, in essence, organizational capabilities in digital transformation can be gained by exploiting skills, abilities, knowledge and experiences

that are related to the management of digital technology in combination with corporate innovation, as suggested by (Halpern et al., 2021).

Study results showed that the correlation between resource orchestration and innovation capabilities could be more consistent with (Urbinati et al., 2021), who stated that the intensive use of digital technology for resource management in innovation process development will lead to digital transformation. Resource orchestration must first achieve organizational learning as the basis for forming innovation capabilities. Qualified resources can be gained through resource mobilization (RO5) by corporate vision and mission. Resource mobilization is consistent with INNO4 indicators, where firms exploit their resources to improve organizational learning and creativity to support digital transformation.

Logistic firms must be ready for digital implementation that will bring many benefits, such as cost efficiency, improved asset productivity, and innovation, enabling firms to survive in a highly dynamic environment and achieve better performance. Results from this study indicated that resource orchestration did not significantly affect the innovation capabilities of logistic firms. The organizational learning process was also found to be independent of logistic firms' digital transformation directly. This study discovered several weak indicators for resource orchestration and innovation capability variables. This might explain that firms need to improve their digital technology implementations to optimize their resources and achieve superior organizational capabilities. This is also indicated in INNO5, which explains that firms can only accomplish a renewable approach with the support of qualified resources. RO2 indicators also explained that firms could not minimize their suboptimal resources, which might hinder their implementation of the renewable approach.

Organizations need to focus on managerial commitment, system perspective, openness and experimentation, and the transfer and integration of knowledge to achieve business innovation. It is implied that regardless of firm size, management must focus on successfully implementing digital entrepreneurship in conjunction with organizational learning capabilities and innovation processes to maintain organizational performance improvements by creating more digitized organizations. (Halpern et al., 2021) They have explained that the significant and positive effects of organizational innovation capabilities on the digital transformation process showed that it is important for firms to improve their digital proficiency to develop new digital products to cater for new customer demands.

This also suggests that logistic firms must improve their digital entrepreneurship orientation by strengthening their resource orchestration to enhance competency and gain new knowledge. Organizational learning can become a crucial vehicle for logistic firm management. A structured learning strategy allows firms to fully exploit new opportunities to transfer helpful expertise and transform it into a successful innovation and achieve a fully implemented digital transformation (Martínez et al., 2018).

Building and perfecting digital capabilities and taking them to the whole level of organization will be the key for firms to transform their digital strategies into daily organizational activities. The corporate learning process can be achieved through training programs for the whole level of the organization. Training can build mindsets about the importance of having digital entrepreneurship ideas and the capability to think creatively. The learning process can be achieved through training since corporate objectives can model organizational resources to have the ability to implement new approaches periodically, both inside the industry and towards their customers. Therefore, managers

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must focus on continuously improving their organizational structures and enforcing learning processes at the whole level of the organization to facilitate innovation efforts with the basic foundation of digital transformation.

Furthermore, organizational learning can significantly affect digital transformation when supported by the development of corporate innovation. (Martínez et al., 2018) Explained that innovation has become more complex in the last few decades and requires the assimilation of external ideas, emphasizing the importance for firms to be open to embrace and acquire new external knowledge to be developed through the innovation process. For this purpose, it will be beneficial to collaborate with external agents to gain new knowledge that can be implemented into products, processes, or organizational systems (Martíneze et al., 2018). In this study, as indicated in OLC8 and INNO4 constructs, external agents (suppliers, vendors, and customers) were the main components that can bridge the combination of organizational learning and the improvements of organizational innovation capabilities. (Alerasoul et al., 2021) added that corporate innovation was confirmed to have a significant result that was mediated by learning orientation and inter-function coordination with the support of corporate resources, wherein, as indicated by both resource orchestration and digital entrepreneurship variables, it was found that according to respondents, they were always looking for creative ideas to create innovation by mobilizing resources accurately (RO5) and that firms were also actively looking for inputs from their customers (DE6) through the role of a senior figure in their organizations. Study results also explained that organizational learning can bridge the creation of qualified resources and the formation of digital mindsets through a senior figure or an external source of information (INNO8 and INNO2) to achieve an effective innovation level in their organizations.

Firms need to empower innovative culture and implement organizational learning processes that support acquiring and exploiting new knowledge to achieve digital transformation improvements as the corporate objectives. (Konopik et al., 2022) They added that firms could create a difference in performance by examining and adjusting their business models to the constantly changing (digital) world. This finding is also consistent with (Khin and Ho, 2019), who stated that technological orientation benefits technologically based innovations. Considering the importance of organizational capability for the success of digital transformation, firms must devote their resources to maximize their internal capabilities by honing skills and abilities through training, outsourcing, creating alliances or collaborating with more capable partners. In essence, organizational qualifications in the digital transformation process can be built through skills, abilities, knowledge and experiences related to managing digital technology in conjunction with corporate innovation (Ferreira et al., 2019) (Halpern et al., 2021).

(Cichosz et al., 2020) (Tijan et al., 2021) explained that digital transformation in logistics companies can be driven by several factors including collaboration with other parties (suppliers, vendors and customers), companies are encouraged to be more creative in meeting customer needs which can be realized significantly through the implementation of digital technology and how to adopt it. Technology in all business lines of logistics companies. In this study, it was also found that innovation significantly supports digital transformation; according to research by (Khin and Ho, 2019) and (Halpern et al., 2021), the significant positive effect of innovation capabilities on the digital transformation process indicates that it is important for companies to improve their digital skills in the development of new digital products to meet new customer needs. On the other hand,

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organizational learning was insignificant to digital transformation. However, what can be found is how the figure of an agent or leader is part of the corporate learning process, where, according to the majority of respondents who have more than 15 years of experience in their company, the role of an agent is crucial where existing resources can be directed according to the vision and mission company so that it has a good capacity in processing creative ideas for the company.

Looking more broadly at the respondents in this study, it was found that the majority of respondents aged 41 to 50 years with more than 15 years of service explained that resources could be mobilized by the company's vision and mission where respondents felt this was very well embedded in the mindset of members the company is by the results of the RO5 and DE6 indicator analysis tests in which the company is responsive to consumer input. The company's response is by the application implemented according to the respondent's tenure. However, with the majority of respondents aged 41 to 55, it was found that technology adoption in resource mobilization and consumer input needed to be improved. Furthermore, it was found that most respondents were positioned as senior company managers, indicating the implementation of learning within the company according to the company's vision and mission structure (OLC8). With the majority of the age of the respondents and the position of the respondents in the company, innovation in the company is driven by quite a lot of creative ways (INNO4) and tries to stay in line with the learning being done, but is constrained in a renewable approach (INNO5) where this reflected in the mindset and resources that have not been fully integrated with technology.

Furthermore, companies must rely on an innovative culture and implement enterprise learning processes that support the acquisition and use of this knowledge so that the company's goals in enhancing digital transformation can be achieved and that companies can create performance differences by studying and adapting their existing business models to the changing (digital) world. This finding is also in line with the results of (Khin and Ho, 2019), which state that technology orientation is beneficial for technology-based innovation. Given the importance of capabilities in dealing with digital transformation, companies should devote their resources to maximizing their inherent capabilities by engaging in training, outsourcing, or having alliances or collaborations with stronger partners. Company capabilities in digital transformation can be built with skills, talents, knowledge and experience related to managing digital technology combined with company innovation (Ferreira et al., 2019); (Halpern et al., 2021).

CONCLUSIONS

The logistics industry is relatively complex, and this study found the importance of the learning process as a basic guideline for logistics companies to implement digital transformation. This study also showed that organizational learning capability does not affect digital transformation, where a positive influence on digital transformation must go through an innovation process first. Then, this study found that selecting related resources and applying digital entrepreneurship thinking cannot directly influence company innovation but must go through a learning process first.

The results of this study have added an essential foundation for the study of digital transformation in the logistics industry. The results showed a positive correlation between digital transformation and logistic firm performance. Innovation capabilities significantly affect digital transformation. On the other hand, organizational learning capabilities did

not considerably affect digital transformation. Further, it was found that organizational learning capability significantly affected innovation capability. Innovation capability has a direct effect on digital transformation in logistics firms. In contrast, organizational learning capability did not directly affect digital transformation but was mediated by the creation of innovation capability.

Logistics companies need to focus on digital implementation readiness, which will encourage cost efficiency, asset productivity, and innovation so that companies can survive in very dynamic situations and create good performance. Building and refining digital and other capabilities and bringing them to scale across the enterprise will be key as companies translate strategy into day-to-day enterprise activities. This implementation can be created by appointing a qualified agent or leader so that existing resources can have a proven mindset and are capable. The important role of a leader is one of the things that needs to be considered because the leader's vision reflects the vision of the entire team in the company.

Next, the results of this study showed that resource orchestration had a significant effect on organizational learning capability but did not have a substantial effect on innovation capability. Further, digital entrepreneurship also had a considerable impact on corporate learning capability but did not substantially affect innovation capability. Resource orchestration and digital entrepreneurship indirectly significantly affected innovation capability through organizational learning capability, which suggested that resources and digital entrepreneurship mindsets need a corporate learning process in a series of actions to build organizational innovation capabilities.

Logistic firms must promote digital transformation through organizational innovation and digital technology implementation by incorporating a flexible, dynamic, and innovative basic foundation. The head of logistics firms must understand that the elements of digital technology are rapidly changing and that these changes are highly correlated to the aspects of market characteristics and their customers. This study also clarified managerial understanding of the requirements of organizational innovation for firm performance, especially the different aspects of organizational innovation concepts that are commonly applied.

There are also some limitations of this study, which could be opportunities for further research. First, this research is limited to more than just a few sub-sectors of the logistics industry, such as port management, loading and unloading, transportation and shipping. Therefore, further research is needed with a more diverse industrial sample. This research was implemented in collaboration with companies from specific logistics sectors, which opens up further opportunities for future studies with the broader logistics sector. This study obtained data that was not evenly distributed on several demographic characteristics. This can lead to bias due to the tendency of unequal data in certain groups. Hence, the researchers conducted a differential test to prove differences between demographic characteristics groups, which shows limitations in describing logistics companies broadly. However, researchers have used channels that allow them to reach respondents with more diverse characteristics. Furthermore, this research focuses on implementing digital technology within companies through managerial roles, which are reflected in the figures of decision-makers in logistics companies, so there is no inclusion of control variables in the category of company size (profit, number of employees, etc.).

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