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## Article

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# Exploring the Influence of Digital Model Business Innovation Factors on the Courier Service Company's Sustainability Innovation Performance

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## ABSTRACT

**Purpose:** The objective of this research was to empirically test several issues, including the effect of dynamic delivery system capability and adaptive product management on the sustainability innovation performance of Indonesian courier service companies. Furthermore, this study attempts to investigate the role of digital maturity level as a moderator that strengthens the relationship between the three variables.

**Design/methodology/approach:** Researchers used survey research as part of a series of quantitative studies to describe the profile or characteristics of the population being studied. Furthermore, this research method can be classified as goal formulation, strategy mapping, strategy operations, action plans, application frameworks, and evaluation and control plans. Meanwhile, data was collected using an online survey research method involving 378 courier service companies spread across Java from 20 June to 5 August 2021. The data was analyzed using the Structural Equation Modeling (SEM) method.

**Findings:** According to the findings of this study, dynamic delivery system capability and adaptive product management have a positive and significant impact on the long-term sustainability of innovation performance. Furthermore, as a moderator, the digital maturity level can strengthen the influence of dynamic delivery system capabilities, adaptive product management, and sustainability innovation performance.

**Research limitations/implications:** This study has several limitations, including the digital model's business innovation factor. Furthermore, the context on the sustainability of innovation performance is only limited in this study. In addition, this study only uses Java as a research location. As a result, the researcher hopes that more research will be conducted in the future. Particularly with the larger digital model business innovation variables or factors and more diverse research locations.

**Originality/value:** This is the first study on the courier service industry in Indonesia in terms of digital innovation and performance. Apart from courier services, this research concept is expected to be implemented in other service industries.

*Keywords: Digital model business, Sustainability innovation performance, Courier companies*

## I. Introduction

Merchant Machine, a British research institute, published a list of the ten countries with the fastest

growing E-Commerce in the world. With 78 percent growth in 2018, Indonesia leads the pack of these countries. The fact that Indonesia has more than 100 million internet users is one of the forces driving the growth of E-Commerce. Indonesians spend an average of US\$ 228 per person on online shopping sites, which equates to approximately Rp 3.19 million per person.

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The rapid increase in smartphone use is one of the factors driving the rapid increase in E-Commerce in Indonesia. Smartphones are significantly less expensive than computers and laptops, making them easily accessible to the majority of Indonesians. According to the McKinsey (2018) report, roughly 70% of the country's internet users are smartphone users. Furthermore, they point out that smartphones are used by nearly 75% of online shoppers in Indonesia.

According to McKinsey (2018), the E-Commerce ecosystem interacts with other sectors to ensure the flow of goods and information. Brands, platforms, marketing, payments, and deposit services are among the industries involved. According to E-Commerce IQ (2017), in Indonesia, e-commerce platforms are classified into four types: business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer (C2C), and peer-to-peer (P2P) (P2P). B2B is a business-to-business model that focuses on providing products from one company to another. B2C is an e-commerce transaction that is similar to the traditional retail model in that a company sells services or products to individuals, but the online platform has its own inventory of goods. C2C is a marketplace that connects sellers and buyers. Besides, P2P is an online buying and selling media without going through a marketplace, generally using social media.

Courier, express, and parcel services are one industry that plays an important role in the process of moving goods from one player to another in the E-Commerce ecosystem. According to the McKinsey report (2018), the deposit service industry in Indonesia has grown in recent years. This is bolstered further by Indonesia's rapid growth in online commerce.

The phenomenon of technological advancements has also altered the pattern of the courier service business, which was previously focused on sending letters, postcards, or personal packages. According to the BCG report (2020), the use of mail and postcards has decreased significantly (down -20%) as a result of the development of SMS, Email, Messenger technology, and even WhatsApp or Telegram. However, technological advancements have created new

business opportunities in the courier service industry, with an increasing number of transactions through E-Commerce requiring delivery of goods or courier services (Growing +140%). Personal shipments and corporate shipments, in addition to E-Commerce, can provide opportunities for the deposit service business. However, among the various deposit service providers today, E-Commerce has the largest market share.

According to the BCG report (2020), there are currently several deposit service companies in Indonesia, both within and outside the country, as well as several deposit services formed by E-Commerce. Although the growth of E-Commerce increases the demand for goods delivery, not all courier service companies are able to meet this demand.

According to the Enciety Business Consult Report (2020) on the Trends in the Performance of Custody Services in Indonesia, JNE was able to experience significant growth in the last decade, rising from the number three market share to the number one market share, while PT Pos, which was previously the number two market share, fell to the number six position. The phenomenon is nearly identical to that experienced by TIKI, which initially held the number one market share but now only holds the fifth rank market share. On the other hand, new companies such as JNT demonstrated a significant growth phenomenon, winning the second market share in just four years, and SiCepat, which had only been in operation for nearly three years, already held the third market share.

This sector's business competition is influenced by a variety of internal and external factors. However, the statistics above demonstrate how some courier service companies are having difficulty capitalizing on opportunities created by the growth of e-commerce. One of the causes is thought to be the deposit service provider company's innovation to adapt to the needs of customers and the market. (Kim & Min, 2015) demonstrate in their research that companies that implement new business models can improve their overall performance. He describes several innovations made by Indonesian courier service companies to meet the needs of courier service customers, both

e-commerce (B2C, C2B2C, or P2P) senders and non-e-commerce senders. Product and service features, customer satisfaction, participation in the E-Commerce marketplace, and delivery patterns are all examples of possible innovations.

Based on this context, this study will examine what factors influence the application of digital business model innovation, as well as the impact of these factors on the sustainability of innovation performance. The digitization factor will also be the focus of this research as a reinforcement or driver for the long-term performance of innovation. Furthermore, given that the impact of digital business innovation occurs across all industries, this research focuses on courier service companies in Indonesia, with participation from company leaders such as the board of directors, vice president, and general manager.

As a result, several research objectives were developed for this study, including empirically testing several issues such as the effect of dynamic delivery system capability and adaptive product management on the sustainability innovation performance of Indonesian courier service companies. Furthermore, this study attempts to investigate the role of digital maturity level as a moderator that strengthens the relationship between the three variables.

This study is expected to spur further research into dynamic delivery system capability, adaptive product management, and the company's digital maturity level in improving sustainability innovation performance in Indonesia's courier service industry. Furthermore, the government expects this research to be able to inform policies that encourage the courier service industry in Indonesia.

## II. Literature Reviews

### A. Dynamic Delivery System Capability and Sustainability Innovation Performance

According to some research, the dynamic capability of the delivery system has a positive effect on the

performance of innovation sustainability. Previous research has demonstrated the importance of dynamic capability in the long-term viability of innovation performance. According to (Giniuniene & Jurksiene, 2015), dynamic capabilities are critical for innovation creation. According to (C.-H. Lin et al., 2009; W. L. Lin et al., 2020), the innovation process involves operational capabilities and resources in the input, process, and output chains. (Helfat & Winter, 2011) define dynamic capabilities as the ability to update, integrate, and reconfigure current operational capabilities and resources.

According to (Liao et al., 2009), operational capabilities will remain constant unless dynamic capabilities cause them to change. In other words, (Pavlou & El Sawy, 2010) explain that resource and capability mobilization occurs in response to opportunities and changes. (Wang et al., 2018) describes dynamic capabilities as assisting organizational efforts to develop new products and processes within a specified time frame. As a result, (Danneels, 2011) contends that an organization's inability to change its resource base will undermine its efforts to develop new products. (Hsu & Sabherwal, 2012) found empirical evidence that dynamic capabilities influence innovation in public companies in Taiwan's securities market. (Winter, 2003) adds that investing in capabilities can affect a company's long-term performance or provide assurance of business sustainability. (Hamsal, et al. 2022) also adds that Dynamic capability has a positive and direct impact on organizational resilience. Based on this discussion, the following hypothesis is proposed:

**H1:** The delivery system's dynamic capability has a positive and significant impact on the performance of innovation sustainability.

### B. Adaptive Product Management and Sustainability Innovation Performance

Several studies have found that product adaptive management improves the performance of innovation sustainability. According to (J. Li et al., 2018)'s

research, all dimensions of managerial capability and adaptive capability aid in the development and improvement of organizational innovation performance. Furthermore, (Z. Li et al., 2020) stated that the magnitude of adaptive capability is determined by changes in market/product expectations and the company's ability to meet these expectations using existing resources and capabilities. According to (Klerkx et al., 2010), the work environment can increase the number of ideas; thus, the more a company scans the external environment, the more access it has to new knowledge, which can stimulate organizational innovation. Horizontal scanning is associated with increased product innovation. (Teece, 2007, 2010) defines adaptive capability as "the ability of an organization to respond to changing business needs by identifying and maintaining key capabilities, resources, and other organizational processes." According to (Klerkx et al., 2010), adaptive capabilities provide a competitive advantage, particularly in a constantly changing environment. Furthermore, (Klerkx et al., 2010) explain that adaptive management is critical in a successful reform effort. Innovation is the result of the interaction of many ongoing forms of assistance, and it is a highly unpredictable process. Based on this argument, the following hypothesis is formulated:

**H2:** Adaptive product management has a positive and significant impact on innovation sustainability performance

### C. Digital maturity Level, Dynamic Delivery System Capability, and Sustainability Innovation Performance

Several research findings indicate that digital maturity promotes the relationship between the delivery system's dynamic capabilities and the performance of innovation sustainability. According to (Plattfaute et al., 2015), digitalization can support organizational innovation by leveraging employee knowledge and ideas. According to (Grover & Kohli, 2013), research

on digital impact should be expanded from the current single-company focus to digitalization-based value co-creation. Inter-organizational IT, according to (Björk et al., 2010), can help to engage influences "from outside the boundaries of the organization," such as ideas and external knowledge from partners or customers, into service innovation activities.

Furthermore, (Hutter et al., 2011) explain that online innovation efforts, such as virtual contests, have a high potential for organizations to detect creative ideas from external experts (such as customers) and then provide a platform for discussion and collaboration with these parties. Based on this discussion, the following hypothesis is proposed:

**H3:** Digital maturity strengthens the relationship between dynamic capabilities of delivery systems and innovation sustainability performance

### D. Digital maturity level, adaptive product management, and sustainability innovation performance

According to some researchers, a company's digital maturity can foster a relationship between adaptive product management and innovation sustainability performance. In their study, (Hess et al., 2016) defined digital transformation as "changes that can be brought about by digital technology in a company's business model, resulting in product changes or organizational structure and process automation." (Yoo, 2010) explained in another study that digital innovation is said to stem from the digitization of everyday physical products, providing dramatically new functions that improve product design, production, distribution, and use. According to (Blayone et al., 2017), new digital technologies such as cloud computing and social media have the potential to speed up new product launches by increasing customer engagement.

Furthermore, (Autio et al., 2018) stated that the reprogrammability and homogenization of digital technology data has enabled the convergence and

genetics of digital innovation, resulting in new products, services, business models, strategies, and organizational forms. As a result, according to (Iansiti & Lakhani, 2017), digital technology can permeate the logic of traditional business models due to increased customer expectations for products or services that generate revenue and profits. Based on this argument, the following hypothesis is formulated:

- H4:** Digital maturity strengthens the relationship between adaptive product management and innovation sustainability performance

### III. Methods

Researchers used survey research as part of a series of quantitative studies to describe the profile or characteristics of the population being studied (Bandur, 2016; Bentler & Chou, 1987; Creswell, 2012; Jonker & Pennink, 2010; Mohajan, 2018). Furthermore, this research method can be classified as goal formulation, strategy mapping, strategy operations, action plans, application frameworks, and evaluation and control plans.

#### A. Survey Development

The questionnaire contains open and closed questions based on research variables that include two independent variables, dynamic delivery system capability and adaptive product management; one moderator variable, digital maturity level; and one dependent variable, sustainability innovation performance. The dependent variable was assessed using a Likert scale, while the mediator or categorical variable was assessed using a framed scale.

The online questionnaire used in this study is based on a Google form and contains 50 research statements, including 9 for respondent profiles, 7 for Dynamic delivery system capability, 6 for Adaptive product management, 6 for Sustainability Innovation Performance, and 7 for Digital maturity level.

The pre-test was carried out using a questionnaire that had been prepared to be filled out or answered by 30 general manager representatives from a total of 300 respondents. The questionnaire was revised as needed based on the analysis results to be used as a follow-up to the research questionnaire. An analysis of several questions that are still considered confusing is also performed at this stage. The findings of the analysis based on data collected in accordance with the modified questionnaire. SPSS was used to analyze the results and make any necessary adjustments to the questions or variables. In addition, the questionnaire was distributed to the entire sample.

In this study, the unit of analysis is a courier service provider company in Indonesia, and the unit of observation is the company's management. Furthermore, this study collects data from each deposit service company and uses each respondent's response (management from the surveyed courier service company) as a source of company data. Ethically, the researcher has also obtained permission to conduct a survey from ASPERINDO, the association that oversees Depository Service Providers in Indonesia.

#### B. Sample

The quantitative sampling technique used in this research is purposive sampling, and the unit of analysis is the courier service company in Indonesia, which has a population of 519 companies. This information is based on data from the National Association of Indonesian Shipping and Delivery Companies (ASPERINDO) for the year 2021. The sampling technique used takes into account the respondents' authority, capability, and knowledge in relation to the context of the research question. As a result, all respondents are representatives of the entrusted service company's management (Board of Directors, Vice President, or General Manager). Based on a review of the literature on sampling techniques, the researcher determined that a sample size of 300 representatives of courier service companies met the criteria presented by Krejcie and Morgan

(1970), Roscoe (1975), Cochran (1977), Isaac and Michael (Smith, 1983), and Saunders et al (2016).

This sample selection technique is also used to determine the research location, which focuses on the island of Java, which has a distribution of 378 companies and accounts for 73 percent of the total population in Indonesia (Katadata 2021). Several facts support the determination of the area in the Java area, including data from the Indonesian Internet Service Providers Association (APJII) that in 2019, internet penetration on Java Island reached 55.7 percent, the highest compared to other regions in Indonesia. According to the Asperindo 2020 report, this area accounts for 68 percent of total shipment distribution in Indonesia.

### C. Data Collection

Data collection is done only once (one-shot), also known as cross-sectional, according to the research design, which employs quantitative and qualitative methods. A cross-sectional study includes a number of variables, the patterns of which will be examined in light of the research objectives. Data is collected in Java, with the number of respondents determined by the number and criteria of the previous sample.

The survey was conducted using the online survey method in this study from June 20, 2021, to August 5, 2021. This period is determined at random by considering all times to be the same period or without any seasonal effect. While it takes approximately two months to complete the total number of questionnaires filled out by respondents.

### D. Data Analysis Method

The first type of analysis is descriptive statistics, which provide a general description of the respondents' demographics. The second method of analysis employs inferential statistical techniques (inductive statistics or probability statistics). Hypothesis testing uses Partial Least Square (PLS) SEM to predict the influence

of variables to strengthen pre-existing theories (D. A. Ghozali, 2015; I. Ghozali, 2011; Hair Jr et al., 2016; Supranto & Limakrisna, 2019).

## IV. Result

### A. Profile of the Respondents

According to the survey results, 20.3 percent of respondents were between the ages of 20 and 30 years old, 41.7 percent were between the ages of 31 and 40 years old, 28.3 percent were between the ages of 41 and 50 years old, and 9.7 percent were over 50 years old. Table 1 describes some additional important information.

According to the BCG Report (2020), only JNE, JNT, SiCepat, Tiki, Pos Indonesia, Ninja Express, and Wahana have been able to collaborate with E-Commerce. This company has a large network, a large number of employees, and capable supporting technology to service the E-Commerce Marketplace. This is reflected in the number of respondents with fewer than ten service points, employees, introductions, and qualified IT employees. In 2020, the number of daily E-Commerce transactions will reach 5 million, with a transaction value of \$266 trillion (Katadata, 2021).

### B. Measurement Model Results

The measurement model test is used to calculate the dimensions of a factor. A confirmatory factor analysis model will be used for the test. Following that, the test is performed by examining the results of the standardized regression weight in the output table. If an indicator has an estimate value with a significance level of 0.05, the indicator cannot describe the construct (Ferdinand, 2006). The following are the test results obtained using the confirmatory factor analysis model:

### C. Sustainability Innovation Performance (Z)

The following calculations show the results of the reliability and validity measurements:

According to the observations in Table 2, the standardized regression weights or loading factors on each dimension of the Sustainability Innovation Performance construct appear to be greater than 0.5, indicating that the three indicators are valid and can

form the Sustainability Innovation Performance construct. Furthermore, the composite reliability calculation result of 0.698 is greater than the cut-off value of 0.6 - 0.7, and the extracted variance calculation result of 0.536 shows that the construct meets the cut-off requirements above 0.50 (Ferdinand, 2006; I. Ghazali, 2008; Subiyanto & Ghazali, 2021). Thus, the dimensions used as observed variables for the construct or its latent variable, in this case Sustainability Innovation

**Table 1.** Profile of Respondents

Description	Indicator	Percentage (%)	Sample (n)
Enterprise Network Scale	City	1	3
	National	89	267
	Province	10	30
Gender	Male	26	78
	Female	74	222
Number of Company Service Branches	1-100 Branches	45	135
	101-500 Branches	42	126
	501-1000 Branches	11	33
	>1000 Branches	2	6
Experience (years)	<1 year	1	3
	1-2 years	16	48
	3-5 years	48	144
	>5 years	35	105
Number of Employees	1-100 Employees	29	87
	101-500 Employees	54	162
	501-1000 Employees	13	39
	>1000 Employees	4	12
Number of IT Employees	1-100 Employees	80	240
	101-500 Employees	11	33
	501-1000 Employees	8	24
	>1000 Employees	1	3

Source: Author's own research, 2021

**Table 2.** Reliability and Variance Extract Test for the Sustainability Innovation Performance Construct

Dimension	Std. Loading (Loading Factor)	Std. Loading <sup>2</sup>	Measurement Error (1 - Std. Loading <sup>2</sup> )	CR	AVE
Z1	0.763	0.582	0.418	0.698	0.536
Z2	0.700	0.490	0.510		
Total	1.463	1.072	0.928		

Source: Data Processed with AMOS 20.0, 2021



Performance, can be said to be able to explain the construct.

#### D. Delivery System Capability (X1)

The following calculations show the results of the reliability and validity measurements:

Table 3 shows that the standardized regression weights or loading factor values for each dimension in the Dynamic delivery system capability construct are greater than 0.5, indicating that the three indicators are valid and can form the Dynamic delivery system capability construct. Furthermore, the composite reliability calculation yields a value of 0.783 above the cut-off value of 0.70, and the extracted variance calculation yields a value of 0.547, indicating that the construct meets the cut-off requirements above 0.50. As a result, the dimensions used as observed variables are thought to be capable of explaining the constructs they form.

#### E. Adaptive Product Management (X2)

The following calculations show the results of the

reliability and validity measurements:

According to the observations in Table 4, the standardized regression weights or loading factors on each dimension in the Adaptive product management construct appear to be greater than 0.5, indicating that the three indicators are valid and can form the Adaptive product management construct.

Furthermore, the composite reliability calculation yields a value of 0.793 above the cut-off value of 0.70, and the extracted variance calculation yields a value of 0.562, indicating that the construct meets the cut-off requirements above 0.50. Thus, the dimensions used as observed variables for the construct or its latent variables, in this case Adaptive product management, can be said to be capable of explaining the constructs it has formed.

#### F. Digital Maturity Level (M)

The following calculations show the results of the reliability and validity measurements:

According to the observations in Table 5, the value of standardized regression weights or loading factor on the dimensions of the Digital Maturity Level construct has three dimensions with loading factor

**Table 3.** Reliability and Variance Extract Test for the Dynamic Delivery System Capability Construct

Dimension	Std. Loading (Loading Factor)	Std. Loading <sup>2</sup>	Measurement Error (1 - Std. Loading <sup>2</sup> )	CR	AVE
X11	0.714	0.510	0.490	0.783	0.547
X12	0.809	0.654	0.346		
<b>X13</b>	<b>0.69</b>	<b>0.476</b>	<b>0.524</b>		
Total	2.213	1.640	1.360		

Source: Data Processed with AMOS 20.0, 2021

**Table 4.** Reliability and Variance Extract Test for the Adaptive Product Management Construct

Variable Manifest/ Dimension	Std. Loading (Loading Factor)	Std. Loading <sup>2</sup>	Measurement Error (1 - Std. Loading <sup>2</sup> )	CR	AVE
X21	0.684	0.468	0.532	0.792	0.562
X23	0.691	0.477	0.523		
X32	0.86	0.740	0.260		
Total	2.235	1.685	1.315		

Source: Data Processed with AMOS 20.0, 2021

values less than 0.5, namely M5, M6, and M7.

Furthermore, the composite reliability calculation yielded a value less than the cut-off value of 0.70, and the variance extracted calculation revealed that the construct does not meet the cut-off requirements above 0.50. In order to produce valid results, the three dimensions are subtracted from the variables. The results are shown below after removing the observed variables with loading factors less than 0.5.

The standardized regression weights or loading factor values for each dimension in the Digital Maturity Level construct are greater than 0.5, indicating that the four dimensions are declared valid and can form a Digital Maturity Level construct. Furthermore, the composite reliability calculation result of 0.809 is greater than the cut-off value of 0.70, and the extracted variance calculation result of 0.525 shows that the construct meets the cut-off requirements greater than 0.50. As a result, the dimensions used as observed variables for the construct or its latent variable, in this case the Digital Maturity Level, can be said

to be able to explain the construct that has formed.

## G. Structural Equation Model (SEM) Analysis

Full Model Analysis, which is designed to put the models and hypotheses developed in this study to the test. The model was tested using two tests: the model suitability test and the causality significance test. A summary of the GoF test results is made from data obtained through a questionnaire using the path analysis estimation method with the AMOS algorithm, as shown in the table below.

Since the research model did not meet the recommended GOF Table 7, a model modification was carried out in this study. The model modification carried out in this study is based on the theory described by Arbuckle (2007), who discusses how to modify the model by examining the Modification Indices generated by the AMOS software. According to Arbuckle, Modification Indices provides several

**Table 5.** Reliability and Variance Extract Test for the Digital Maturity Level Construct

Dimension	Std. Loading (Loading Factor)	Std. Loading <sup>2</sup>	Measurement Error (1 - Std. Loading <sup>2</sup> )	CR	AVE
M1	0.585	0.342	0.658	0.363	0.390
M2	0.577	0.333	0.667		
M3	0.756	0.572	0.428		
M4	0.927	0.859	0.141		
M5	-0.259	0.067	0.933		
M6	-0.387	0.150	0.850		
M7	-0.638	0.407	0.593		
Total	1.561	2.730	4.270		

Source: Data Processed with AMOS 20.0, 2021

**Table 6.** Reliability and Variance Extract Test for the Digital Maturity Level Construct

Dimension	Std. Loading (Loading Factor)	Std. Loading <sup>2</sup>	Measurement Error (1 - Std. Loading <sup>2</sup> )	CR	AVE
M1	0.557	0.310	0.690	0.809	0.525
M2	0.591	0.349	0.651		
M3	0.741	0.549	0.451		
M4	0.944	0.891	0.109		
Total	2.833	2.100	1.900		

Source: Data Processed with AMOS 20.0, 2021

recommendations for adding a connecting line that can reduce the chi-square ( $\chi^2$ ) value and thus make the model more fit. Aside from Arbuckle's theory, the decision on which connection line to add is influenced by a number of other theories.

M.I. on the Table 8 stands for Modification Indices.

**Table 7.** Evaluation of Goodness of Fit Criteria

Goodness of Fit Index	Cut Off Value	Test results	Description
Chi Square ( $\chi^2$ )	The smaller, the better	429,144	
GFI	$\geq 0,90$	0,865	Marginal Fit
AGFI	$\geq 0,90$	0,810	Marginal Fit
CMIN/DF	$\leq 2,00$	3,547	Poor Fit
RMSEA	$\leq 0,08$	0,889	Poor Fit
CFI	$\geq 0,95$	0,889	Poor Fit
TLI	$\geq 0,95$	0,860	Poor Fit
CFI	$\geq 0,90$	0,889	Marginal Fit
PCFI	$\geq 0,60$	0,703	Good Fit
RFI	$\geq 0,90$	0,815	Marginal Fit

Source: Data Processed with AMOS 20.0, 2021

The number below it represents the chi-minimum square's value, which will decrease if the corresponding variable is connected (Arbuckle, 2007). The above modifications do not have to be completed all at once in order to obtain a model that fits or meets the recommended GoF value. The results of the GoF test of the modified model in the first stage are shown

**Table 9.** Evaluation of Goodness of Fit Criteria

Goodness of Fit Index	Cut Off Value	Test results	Description
Chi Square ( $\chi^2$ )	The smaller, the better	175,3	Good Fit
GFI	$\geq 0,90$	0,941	Good Fit
AGFI	$\geq 0,90$	0,901	Good Fit
CMIN/DF	$\leq 2,00$	1,736	Good Fit
RMSEA	$\leq 0,08$	0,959	Good Fit
CFI	$\geq 0,95$	0,973	Good Fit
TLI	$\geq 0,95$	0,959	Good Fit
PCFI	$\geq 0,60$	0,642	Good Fit
RFI	$\geq 0,90$	0,909	Good Fit

Source: Data Processed with AMOS 20.0, 2021

**Table 8.** Modification Indices

	M.I.	Par Change		M.I.	Par Change
e19 <--> X1	4.196	-.089	e7 <--> X1	6.381	.186
e18 <--> e2	4.508	-.118	e7 <--> e1	13.925	.275
e18 <--> e20	26.595	.123	e7 <--> e16	11.021	.256
e18 <--> e19	8.881	-.086	e7 <--> e15	14.015	.358
e17 <--> X1	4.398	.110	e7 <--> e11	6.525	-.217
e17 <--> e2	9.925	.178	e7 <--> e8	7.126	-.190
e17 <--> e20	6.728	-.064	e6 <--> e11	4.642	-.267
e17 <--> e19	52.856	.214	e6 <--> e9	4.447	-.230
e17 <--> e18	50.456	-.247	e5 <--> e17	13.217	.238
e16 <--> e19	6.859	-.115	e4 <--> X1	4.152	-.147
e16 <--> e18	5.966	.126	e4 <--> e1	10.127	-.231
e16 <--> e17	6.230	-.131	e4 <--> e2	6.095	.201
e13 <--> e20	4.158	-.076	e4 <--> e16	7.878	-.214
e12 <--> X1	10.231	.245	e4 <--> e14	4.946	-.213
e12 <--> e13	7.999	-.215	e4 <--> e12	5.980	.187
e9 <--> M	4.469	.073	e4 <--> e9	7.478	.203
e8 <--> e12	8.987	-.217	e4 <--> e5	9.326	.290
e7 <--> X3	6.303	-.183	e3 <--> e19	6.124	-.130

in the Table 9.

The summary of the GoF test results from the second stage of the modified model shows that the results are fit, so the modified model is used in the next analysis.

## H. Hypothesis Testing and Discussion

The purpose of hypothesis testing is to put the hypotheses proposed in the previous chapter to the test. Where the decision criteria for probability value (P) is 0.1 (10 percent),  $H_0$  is rejected, and vice versa. The results of the hypothesis test using the AMOS 20.0 research test tool are summarized Figure 1.

### Hypothesis 1

$H_0$ : There is no significant effect between Dynamic

delivery system capability on Sustainability Innovation Performance

$H_a$ : There is a significant effect between Dynamic delivery system capability on Sustainability Innovation Performance

The first hypothesis, the effect of Dynamic delivery system capability on Sustainability Innovation Performance, is found to have a p value less than 0.1 (0.005), so  $H_0$  is rejected, indicating that there is a significant effect between Dynamic delivery system capability and Sustainability Innovation Performance.

The positive estimate value is 0.965, indicating that the better the dynamic capability of the delivery system, the higher the performance of sustainable innovation for Indonesian courier service companies, and vice versa, if the dynamic capability of the delivery system deteriorates, it will have an impact on the performance of continuous innovation for Indonesian

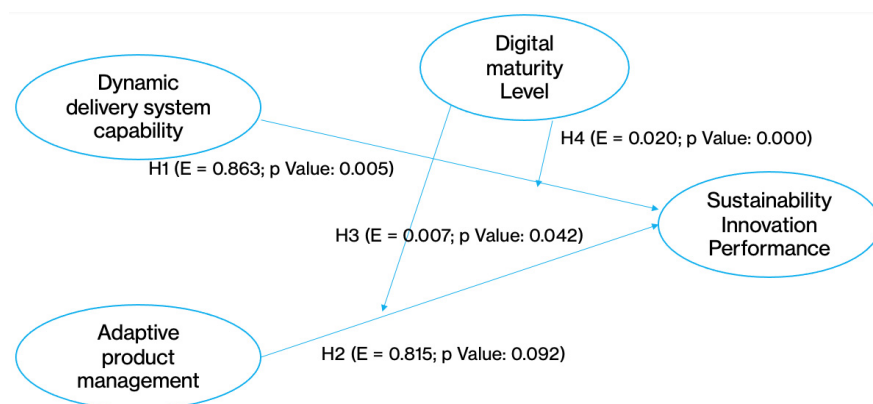


Figure 1. Hypothesis Test Results

Table 10. Resume of Hypothesis Test Results

Hypothesis	Estimate	P-Value	Conclusion
<b>Hypothesis 1:</b> Dynamic delivery system capability has a positive and significant effect on Sustainability Innovation Performance	0,965	0,005	<b>Hypothesis 1 is fail to reject</b>
<b>Hypothesis 2:</b> Adaptive product management has a positive and significant effect on Sustainability Innovation Performance	0,815	0,092	<b>Hypothesis 2 is fail to reject</b>
<b>Hypothesis 3:</b> Digital maturity Level strengthens the relationship between Dynamic delivery system capability and Sustainability Innovation Performance	0,007	0,042	<b>Hypothesis 3 is fail to reject</b>
<b>Hypothesis 4:</b> Digital maturity Level strengthens the relationship between Adaptive product management and Sustainability Innovation Performance	0,020	0,00	<b>Hypothesis 4 is fail to reject</b>

courier service companies, which will also deteriorate [Table 11].

### Hypothesis 2

H<sub>0</sub>: There is no significant effect between Adaptive product management on Sustainability Innovation Performance

H<sub>a</sub>: There is a significant influence between Adaptive product management on Sustainability Innovation Performance

In the second hypothesis, namely the effect of Adaptive product management on Sustainability Innovation Performance, the p value of 0.092 is less than 0.1, so H<sub>0</sub> is rejected, indicating that Adaptive product management has a significant influence on Sustainability Innovation Performance.

The estimate value is positive 0.815, indicating that the better the adaptive management of the product, the greater the impact on the performance of sustainable innovation in Indonesian courier service companies, and vice versa, if the adaptive management of the product deteriorates, the lower the impact on the performance of continuous innovation in Indonesian courier service companies [Table 12].

In addition, SEM analysis with moderating variables will be used in this study to test hypotheses 1, 2, 3, and 4, namely whether the Digital Maturity Level can moderate the effect of Dynamic delivery system capability, Adaptive product management, Dynamic Customer Requirements, and Digital business model innovation on Sustainability Innovation Performance.

The Ping method is one method for estimating

the moderating effect on a complex SEM. According to (Bentler & Chou, 1987) and (Subiyanto & Ghazali, 2021), a single indicator should be used as an indicator of a moderating latent variable. The single indicator is the sum of the exogenous (independent) latent variable indicator and the moderator variable indicator. The moderating variable will be divided into several parts, and the Chi Square, GFI, AGFI, or CFI values for the moderated model will be estimated and compared to the actual model (unconstraint). If there is a significant difference, the model has a moderating effect (I. Ghazali, 2011).

### Hypothesis 3

H<sub>0</sub>: The influence of Dynamic delivery system capability on Sustainability Innovation Performance is not strengthened by digital maturity level as a moderator.

H<sub>a</sub>: The influence of Dynamic delivery system capability on Sustainability Innovation Performance is strengthened by digital maturity level as a moderator.

The moderation model's estimation results show that the model is quite good, as evidenced by the values of Chi Square = 39.293, RMSEA = 0.074 0.08, GFI = 0.974 > 0.9, AGFI = 0.905 > 0.9, CMIN/DF = 2.616 > 2, TLI = 0.957 > 0.95, and CFI = 0.986 > 0.95. As a result, in this study, the model can be used to test hypothesis 8. The results of the moderation test are as follows:

In the third hypothesis, namely the moderating effect of the Digital maturity level variable on

**Table 11.** Regression Weight Hypothesis 1

	Relation		Estimate	S.E.	C.R.	P	Label
Z	<---	X1	.965	.347	2.779	.005	par_18

Source: Data Processed with AMOS 20.0, 2021

**Table 12.** Regression Weight Hypothesis 2

	Relation		Estimate	S.E.	C.R.	P	Label
Z	<---	X2	.815	.484	1.683	.092	par_20

Source: Data Processed with AMOS 20.0, 2021

Dynamic delivery system capability on Sustainability Innovation Performance, the p-value of 0.042 is less than 0.1, and  $H_0$  is rejected, indicating that the digital maturity level as a moderator strengthens the influence of the delivery system's dynamic capability on performance [Table 13]. Indonesian courier service companies' continuous innovation demonstrates that the level of digital maturity can explain the indirect effect between the dynamic capabilities of the delivery system and the performance of continuous innovation.

#### Hypothesis 4

$H_0$ : The influence of adaptive product management on sustainability innovation performance is not strengthened by digital maturity level as a moderator.

$H_a$ : The influence of adaptive product management on sustainability innovation performance is strengthened by digital maturity level as a moderator.

The moderation model's estimation results show that the model is quite good, as evidenced by the values of Chi Square = 45,472, RMSEA = 0.066 0.08, GFI = 0.972 > 0.9, AGFI = 0.923 > 0.9, CMIN/DF = 2.274 > 2, TLI = 0.965 > 0.95, and CFI = 0.984 > 0.95. As a result, in this study, the model can be used to test hypothesis 8. The results of the moderation test are as follows:

When the p value of 0.00 is less than 0.1 in the fourth hypothesis, namely the moderating effect of the Digital maturity level variable on Adaptive product management on Sustainability Innovation Performance,

$H_0$  is rejected, indicating that the digital maturity level as a moderator strengthens the effect of adaptive product management on performance [Table 14]. Indonesian courier service companies' continuous innovation demonstrates that the level of digital maturity can explain the indirect influence between adaptive product management and sustainable innovation performance.

### I. Theoretical Implications

The results of hypothesis testing show that dynamic delivery system capability has a positive impact on digital business innovation and the sustainability of innovation performance. The results of hypothesis testing show that adaptive product management has a positive impact on digital business innovation and the sustainability of innovation performance. Furthermore, the study's findings show that the digital maturity level can strengthen the relationship between dynamic delivery system capability variables and adaptive product management and the long-term performance of innovation. As a result, this research will continue to use the initial framework as a strategic application framework, with a focus on entrusting qualified IT service providers in Indonesia.

### J. Managerial Implications

Several managerial implications can be suggested based on the empirical evidence of this research and

**Table 13.** Regression Weight Hypothesis 3

		Relation	Estimate	S.E.	C.R.	P	Label
Z	<---	Interaction	.007	.004	2.033	.042	par_7

Source: Data Processed with AMOS 20.0, 2021

**Table 14.** Regression Weight Hypothesis 4

		Relation	Estimate	S.E.	C.R.	P	Label
Z	<---	Interaction	.020	.003	5.866	0,00	par_5

Source: Data Processed with AMOS 20.0, 2021

analysis of data collected from courier service companies in Java. First, this study demonstrates that dynamic delivery system capability and adaptive product management play a significant role in the digital business model innovation of courier service companies in Indonesia. Furthermore, dynamic delivery system capability and adaptive product management play an important role in the long-term viability of innovation performance. As a result, if a courier service company in Indonesia wants to innovate a digital business model with the goal of maintaining the sustainability of innovation performance, it is necessary to assess the organization's readiness, including whether it has dynamic capabilities for its delivery system and whether the company has an adaptive and agile product development mechanism, based on the findings of this study.

Second, digitalization is an important factor in sustaining the deposit service company's innovation performance. This is consistent with the findings of research, which show that the moderator variable of digital maturity level can improve dynamic delivery system capability, adaptive product management, and sustainability innovation performance. Third, digital collaboration is critical in implementing digital-based business innovation, particularly for companies that collaborate extensively with local businesses to expand their services. The implementation of new collaborations, accompanied by digital capabilities from partners, is critical to implementing digital business model innovation in order to have a significant impact on the long-term performance of innovation.

## K. Conclusion, Limitations, and Future Studies

The results and analysis explain that dynamic delivery system capability and adaptive product management have a positive and significant impact on digital business model innovation and sustainability innovation performance. This is in line with previous research as has been done by:

- Dynamic delivery system capability has a significant effect on digital business model

innovation (Amit & Schoemaker, 1993; BERND, 2019; Pfeffermann, 2017; Teece, 2010, 2014; Zhao et al., 2019).

- Adaptive product management has a significant effect on digital business model innovation (BERND, 2019; Bharadwaj et al., 2013; Klerkx et al., 2010).
- Dynamic delivery system capability has a significant effect on sustainability innovation performance (BERND, 2019; Chen et al., 2018; Lee et al., 2018; Zhao et al., 2019).
- Adaptive product management has a significant effect on the sustainability of innovation performance 1 (BERND, 2019; Teece, 2014).

Other research results show that the digital maturity level as a moderator is able to strengthen the influence of dynamic delivery system capabilities, adaptive product management, on sustainability innovation performance. This reinforces previous research which states that the level of digital maturity is one of the main factors in the success of a company's innovation performance (Autio et al., 2018; Bataev, 2019; Giniuniene & Jurksiene, 2015; Hortinha et al., 2011; TAVASSOLI, 2018).

This study has several limitations, including the digital model's business innovation factor. Furthermore, the context on the sustainability of innovation performance is only limited in this study. In addition, this study only uses Java as a research location. As a result, the researcher hopes that more research will be conducted in the future. Particularly with the larger digital model business innovation variables or factors and more diverse research locations. Apart from courier services, this research concept is expected to be implemented in other service industries.

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