The Impact Of Digital Transformation On The Development Of Logistic Service: A Case Study Of Pt Sindu Wahana Berkah

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Abstract: *The background of this research is the increasing role of the logistics sector and the challenges faced by small and medium enterprises (SMEs) in adopting sophisticated digital solutions. The purpose of this study is to fill the literature gap related to logistics digitalization in small-scale companies, especially in the context of similar organizations. This study uses a quantitative approach with the Structural Equation Modeling (SEM) method through the SmartPLS application. Data was collected from 100 employees of PT Sindu Wahana Berkah through a structured online questionnaire with a 5-point Likert scale. The results of the study show that the five independent variables significantly affect the development of logistics at PT Sindu Wahana Berkah. The emerging digital trends had the highest positive influence (β = 0.275), followed by the required conditions (β = 0.274), the level of digital transformation (β = 0.272), and the needs of the organization (β = 0.255). In contrast, barriers in digital transformation showed a negative relationship (β = –0.148). This structural model explains 77.2% variability in logistics operational development, which underscores the importance of organizational readiness, digital trends, and government support in realizing a successful digital transformation. It can be concluded that to drive the development of logistics effectively, companies must integrate new technologies with a strong digital culture, supported by regulatory clarity and technical investment.*

Keywords: *digital transformation, logistics development, necessary conditions, organizational needs, evolving trends, obstacles.*

1. INTRODUCTION

The development of the logistics industry in Indonesia has experienced significant growth over the last decade, supported by various factors that have enhanced this growth, driven by several key factors. The advancements of technology have played a significant role in the rise of digitalization within the logistics industry (Gunawan & Melinda, 2021). According to (Aditya et al., 2022), digitalization is the act of adopting, applying, and utilizing digital tools within the socio-economic sphere. Many companies have started to integrate technology into their logistics operation, including Warehouse Management System (WMS), Transportation Management System (TMS), Enterprise Resource Planning (ERP), and Tracking Systems, such as Global Positioning System (GPS) (Negara, 2024). These systems significantly improve inventory control, enable real-time shipment tracking, and efficient route planning within the logistics industry. Nowadays, the emergence of technologies has inspired companies to be innovative by embracing and adopting automation, robotics, and Internet of Things (IoT) to streamline logistics operations. Moreover, the use of Artificial Intelligence (AI) and Big Data has allowed companies to predict supply and demand trends within the industry, as well as improve inventory management, consequently enhancing overall business activities. However, these technological advancements did not emerge on their own in Indonesia (Anwar et al., 2024). Through government initiatives, such as infrastructure development, which includes new roads, ports, and rails built, vastly intertwining major and industrially busy cities. In addition, through partnerships or establishing branches from foreign investments, which brought a surge to new technologies, capital, and expertise knowledge into the sector, greatly amplifying its development (Negara, 2024). Contrary to previous years, 2020 experienced a drastic decline of 191.96 trillion IDR or -21.8% compared to 2019 (Moldicz, 2025). This was mainly due to the global COVID-19 pandemic that plagues the world, resulting in a tremendous impact on the transportation and storage sector globally, especially in Indonesia. In total, it was reported that about 43 thousand SMEs have been impacted by the COVID-19 pandemic, which led to a decline in

economic growth ("COVID-19 Deals Crushing Blow," 2020). Numerous Indonesian government initiatives to prevent further infection spread affected the sector negatively, including: lockdowns, social distancing, and travel restrictions, which impeded logistics operations nationwide. Additionally, reduced consumer spending and goods being produced means less demand for logistics services, consequently, decreasing land transport availability, such as trucks, as well as air and sea freight, caused by many shipments being cancelled and delayed, which further led to scarcity of raw materials and goods. Despite its unfortunate situation, the e-commerce sector saw a whopping increase in demand as consumers began turned to online shopping during the COVID-19 pandemic, highlighting the needs for digitalization for companies as many began to adopt and invest in technological tools and systems that can maintain operation and withstand the dire situation (Mishrif & Khan, 2023).

Since its establishment, PT Sindu Wahana Berkah has experienced steady growth, and the technologies it has adopted have significantly contributed to that progress. For example, integrating GPS into dump trucks has enhanced both security and punctuality, minimizing risks of theft and route inefficiencies. However, the owner and key representatives have expressed concerns regarding the lack of expertise and skilled human resources needed to support broader digital adoption. They highlighted the risks associated with implementing unfamiliar technologies, especially under financial constraints. Attempting digital transformation without adequate preparation or technical understanding is considered too risky. Nonetheless, they also recognize the potential benefits that digital transformation could bring to their operations (PT Sindu Wahana Berkah, personal communication, November 2024) (Cichosz et al., 2020).

However, despite these advancements, there is limited research that specifically examines how factors such as readiness, necessity, technological trends, and perceived barriers influence digital transformation in small-to-medium logistics providers in Indonesia, especially in the case study on individual companies. This study seeks to fill that gap by analyzing PT Sindu Wahana Berkah as a case study, contributing both to academic understanding and practical strategy development for digital adoption in the logistics sector (PT Sindu Wahana Berkah, personal communication, November 2024).

Research by Hendayani and Febrianta (2020) entitled "Technology as a driver to achieve the performance of family businesses supply chain" published in the Journal of Family Business Management aims to investigate the relationship between technology, efficiency, and effectiveness in the performance of the halal family business supply chain. This study uses a quantitative approach with the Partial Least Square (PLS) method. Key findings show a positive and significant relationship between technology and effectiveness. This research has similarities with the current study because it both uses quantitative methods, PLS and discussions.

Moreover, in Hendayani et al. (2023) research entitled "The relationship between information technology and Halal logistics" published In Proceedings of the International Conference on Industrial Engineering and Operations Management aims to assess the relationship between IT adoption and the performance of Halal logistics among Halal food producers in Indonesia. This study uses descriptive quantitative through simple linear regression analysis. Key findings shows a significantly positive relationship between IT adoption and Halal logistics performance. This research has similarities with the current study because it both uses quantitative methods and focuses on IT's role in logistics service.

Anggadwita et al. (2021) research entitled "Role of Technology and Innovation Capabilities in Achieving Business Resilience of MSMEs during COVID-19: Empirical Study" published in 2021 9th International Conference on Information and Communication Technology (ICoICT) aims to analyze the role of technology and innovation in helping MSMEs to thrive during COVID-19. This study uses a quantitative empirical study. Key findings shows that robust technology and innovation support assists MSMEs to thrive business operations during COVID-19. This research has similarities with the current study because it both uses quantitative methods and highlights the role of digital transformation in MSMEs.

The purpose of this study is to analyze how various factors such as the level of digital transformation, necessary conditions, organizational needs, emerging technological trends, and existing barriers—impact the development of logistics operations at PT Sindu Wahana Berkah. This research aims to fill the gap in the

literature by specifically focusing on digital transformation within small-to-medium logistics companies in Indonesia, thereby offering both academic insights and practical strategies for effective technology adoption. The model of this study is adopted from Van Ha (2023) entitled "Analyzing the impact of digital transformation on the development of logistics service industry in Vietnam" published in Science Journal of Transportation. This study analyzed specific single-case company, which is PT Sindu Wahana Berkah to fill the research gap. This study is expected to improve the company's logistics development, which is analyzed through its relationship with each factor, including: LevelDT, Necessity, Needs, Trends, and Barriers.

2. METHOD

This research study uses a quantitative approach and a confirmatory research design to analyze the relationships between multiple independent variables and a dependent variable. This research study follows a deductive approach to theory development using the framework proposed by (Van Ha, 2023). It is framed within a single-case study context, focusing on PT Sindu Wahana Berkah, a third-party logistics (3PL) service company based in Indonesia. According to (Sekaran & Bougie, 2016), business research is defined as an inquiry into a specific problem in a business through a systematic, data-based, and critical examination in order to find answers or solutions to it. They described it as a process to provide necessary information to guide decision-makers in making informed decisions towards business challenges.

Quantitative research can be defined as a method of collecting data that is numerical in nature, which is typically analyzed through statistical means (Bougie & Sekaran, 2019). This method emphasizes objectivity, measurement, and replicability in order to minimize the researcher's bias through a normalized method. (Paramita et al., 2022) defined quantitative research as a systematic approach that tests hypotheses and research questions through numerical data collection and statistical analysis. Furthermore, variables are measured using instruments, such as surveys, experiments, questionnaires, etc., that are designed to be consistent and reliable.

Confirmatory research focuses on understanding and testing formerly established hypotheses to verify their validity (Sekaran & Bougie, 2016). This research approach is frequently used in businesses. Confirmatory research is an approach that aims to show whether the data supports the research construct based on the aforementioned findings. This type of research is structured and usually uses a quantitative method, such as regression analysis or structural equation modelling (SEM).

In this research, PT Sindu Wahana Berkah employees as a whole are the population. In total, the company has employed 149 employees. According to Sekaran & Bougie (2016), population is defined as the whole group of individuals or elements that a researcher is interested in studying, which includes a group of people, companies, products, or any other group of units that meets the criteria of the research. (Paramita et al., 2022) further defined it as a collection of individuals or items for which data can be gathered. The population can be either known or unknown.

In this study, a quantitative method is used to produce precise evaluations of participants' behaviors, knowledge, attitudes, and opinions (Indrawati, 2015). Quantitative analysis typically involves three main techniques: univariate, bivariate, and multivariate. The research examines several variables, multivariate analysis is utilized because it is the most suitable method, as it allows the examination of multiple variable relationships within a single analytical framework.

3. FINDINGS AND DISCUSSIONS

In this subsection, it shows that 100 respondents were categorized into educational background groups, including Senior/Technical High School, Diploma, Bachelor's Degree, Master's Degree, Doctoral, and Other. In total, 43 or 43% have finished Senior/Technical High School, 22 or 22% have received their diploma, 28 or 28% have graduated with Bachelor's Degree, 2 or 2% have graduated with Master's Degree, 0 or none have graduated with Doctoral Degree, and 5 or 5% have finished education from Other.

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Table 1 Respondents' Characteristics Categorized by Educational Background

Educational Background	n	Percentage (%)
Senior/Technical High School	43	43%
Diploma	22	22%
Bachelor's Degree	28	28%
Master's Degree	2	2%
Doctoral Degree	0	0%
Other	5	5%
Total	100	100

Source: Author's Processed Data (2025)

Evaluation Analysis of Measurement Model (Outer Model)

Assessing the outer model involves the examination of the outer loading for indicators. In this study, convergent validity, discriminant validity, and reliability test is used to assess the accuracy of the measurement, as well as its consistency (Russell & Taylor, 2019).

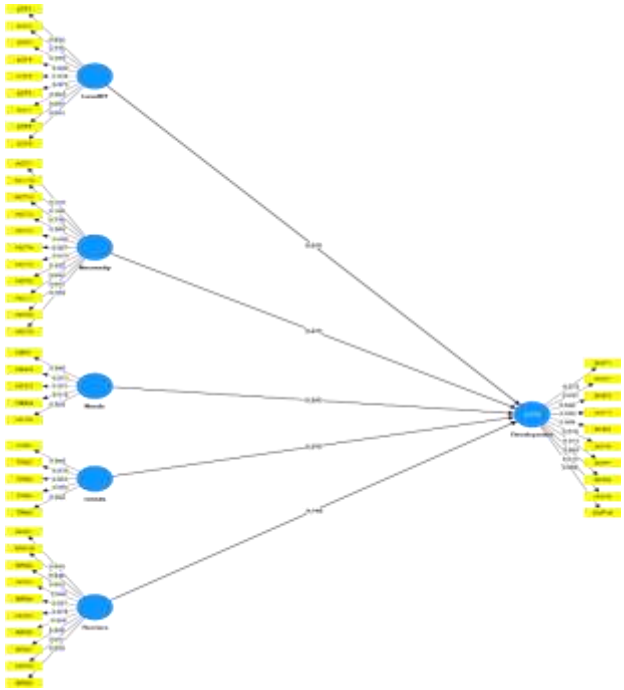

Figure 1 Outer Model
Source: Author's Processed Data (2025)

Convergent Validity

A high outer loading indicates a high degree of similarity in the construct. The minimum outer loading value is 0.7 (Hair & Alamer, 2022).

Table 2: Convergent Validity

Latent Variable	Item	Factor Loading	Conclusion
DEVELOPMENT	DVP1	0.879	Valid
	DVP2	0.893	Valid
	DVP3	0.842	Valid
	DVP4	0.880	Valid
	DVP5	0.869	Valid
	DVP6	0.879	Valid
	DVP7	0.874	Valid
	DVP8	0.866	Valid
	DVP9	0.832	Valid
	DVP10	0.882	Valid
LEVELDT	LDT1	0.804	Valid
	LDT2	0.776	Valid
	LDT3	0.835	Valid
	LDT4	0.849	Valid
	LDT5	0.849	Valid
	LDT6	0.873	Valid
	LDT7	0.863	Valid
	LDT8	0.893	Valid
	LDT9	0.903	Valid
NECESSITY	NCT1	0.870	Valid
	NCT2	0.866	Valid
	NCT3	0.866	Valid
	NCT4	0.867	Valid

	NCT5	0.87	Valid
	NCT6	0.835	Valid
	NCT7	0.862	Valid
	NCT8	0.853	Valid
	NCT9	0.808	Valid
	NCT10	0.786	Valid
	NCT11	0.778	Valid
NEEDS	NED1	0.889	Valid
	NED2	0.873	Valid
	NED3	0.872	Valid
	NED4	0.918	Valid
	NED5	0.860	Valid
TRENDS	TRN1	0.868	Valid
	TRN2	0.876	Valid
	TRN3	0.853	Valid
	TRN4	0.864	Valid
	TRN5	0.892	Valid
BARRIERS	BRS1	0.905	Valid
	BRS2	0.863	Valid
	BRS3	0.840	Valid
	BRS4	0.857	Valid
	BRS5	0.878	Valid
	BRS6	0.859	Valid
	BRS7	0.808	Valid
	BRS8	0.857	Valid
	BRS9	0.860	Valid

	BRS10	0.845	Valid

The results of the test show that all indicators have an outer loading value ≥ 0,70. It means that all indicators in the research are valid because each indicator represents its corresponding construct accordingly. Convergent validity refers to the extent to which a construct can measure each of its indicators. Convergent validity testing can be done by evaluating the Average Variance Extracted (AVE). According to (Hair Jr et al., 2014), when the AVE value is greater than 0.5, the construct is able to explain more than 50% of the variance of its indicators.

Table 3 Average Variance Extracted

Latent Variable	Average Variance Extracted (AVE)
DEVELOPMENT	0.757
LEVELDT	0.723
NECESSITY	0.710
NEEDS	0.779
TRENDS	0.758
BARRIERS	0.736

Source: Author's Processed Data (2025)

All constructs in the model have high AVE values, which are above 0.70, indicating that convergent validity is fulfilled. The highest AVE value is found in NEEDS at 0.779, followed by DEVELOPMENT at 0.757, TRENDS at 0.758, and other constructs such as BARRIERS, LEVELDT, and NECESSITY also show values above 0.70, indicating that the indicators in each construct consistently and strongly represent the variables they measure.

Discriminant Validity

In this study, an evaluation to assess how different one construct is from the others in capturing different research phenomena can be done using a discriminant validity test. Typically, researchers use several tests used in discriminant validity, such as the Fornell-Larcker criterion, cross-loading, and heterotrait-monotrait ratio (HTMT) (Hair et al., 2022).

Fornell-Larcker Criterion

Table 4 Fornell-Larcker Criterion

	BRS	DVP	LDT	NCT	NED	TRN
BRS	0.858					
DVP	-0.220	0.870				
LDT	-0.098	0.707	0.850			
NCT	-0.050	0.719	0.590	0.843		

NED	-0.085	0.689	0.523	0.597	0.883	
TRN	-0.038	0.637	0.458	0.454	0.421	0.871

Source: Author's Processed Data (2025)

It shows that the square root value of AVE for each construct is greater than the correlation with other constructs, which means that it meets the Fornell-Larcker criterion.

Cross Loading

Table 5 Cross-Loading

	BRS	DVP	LDT	NCT	NED	TRN
BRS1	0.905	-0.270	-0.113	-0.086	-0.120	-0.073
BRS2	0.863	-0.166	-0.106	-0.009	-0.068	0.003
BRS3	0.840	-0.109	-0.021	-0.027	0.013	0.000
BRS4	0.857	-0.207	-0.094	-0.086	-0.059	-0.046
BRS5	0.878	-0.202	-0.122	-0.091	-0.153	-0.012
BRS6	0.859	-0.131	-0.048	-0.021	0.044	-0.018
BRS7	0.808	-0.158	-0.018	-0.038	-0.027	-0.020
BRS8	0.857	-0.188	-0.050	-0.019	-0.109	0.036
BRS9	0.86	-0.118	-0.051	0.098	-0.008	-0.046
BRS10	0.845	-0.220	-0.137	-0.051	-0.107	-0.104
DVP1	-0.185	0.879	0.737	0.706	0.646	0.570
DVP2	-0.205	0.893	0.676	0.668	0.632	0.602
DVP3	-0.185	0.842	0.572	0.574	0.597	0.527
DVP4	-0.203	0.880	0.628	0.594	0.662	0.536
DVP5	-0.220	0.869	0.545	0.626	0.614	0.499
DVP6	-0.178	0.879	0.556	0.618	0.499	0.607
DVP7	-0.216	0.874	0.632	0.592	0.584	0.581
DVP8	-0.176	0.866	0.594	0.657	0.586	0.625
DVP9	-0.128	0.832	0.555	0.599	0.554	0.527
DVP10	-0.216	0.882	0.631	0.601	0.605	0.454
LDT1	-0.067	0.519	0.804	0.487	0.397	0.465
LDT2	-0.021	0.558	0.776	0.514	0.328	0.516
LDT3	-0.137	0.656	0.835	0.520	0.517	0.365
LDT4	-0.107	0.596	0.849	0.459	0.479	0.331
LDT5	-0.110	0.597	0.849	0.480	0.447	0.391
LDT6	-0.075	0.584	0.873	0.519	0.448	0.271
LDT7	-0.065	0.616	0.863	0.480	0.465	0.421
LDT8	-0.083	0.623	0.893	0.556	0.435	0.344
LDT9	-0.076	0.646	0.903	0.501	0.467	0.422
NCT1	-0.024	0.574	0.394	0.870	0.443	0.486
NCT2	-0.075	0.638	0.411	0.866	0.556	0.406

NCT3	-0.030	0.604	0.476	0.866	0.538	0.407
NCT4	-0.079	0.621	0.507	0.867	0.522	0.426
NCT5	-0.075	0.709	0.595	0.870	0.597	0.432
NCT6	0.025	0.525	0.490	0.835	0.421	0.300
NCT7	-0.016	0.574	0.437	0.862	0.431	0.356
NCT8	-0.088	0.627	0.563	0.853	0.518	0.343
NCT9	-0.004	0.597	0.470	0.808	0.646	0.334
NCT10	-0.063	0.600	0.550	0.786	0.425	0.301
NCT11	-0.007	0.557	0.560	0.778	0.394	0.401
NED1	-0.065	0.592	0.422	0.570	0.889	0.440
NED2	-0.071	0.558	0.446	0.516	0.873	0.353
NED3	-0.096	0.667	0.536	0.457	0.872	0.451
NED4	-0.138	0.679	0.513	0.601	0.918	0.313
NED5	0.020	0.515	0.363	0.487	0.860	0.291
TRN1	-0.073	0.592	0.396	0.433	0.401	0.868
TRN2	0.020	0.537	0.333	0.412	0.377	0.876
TRN3	-0.026	0.453	0.375	0.342	0.251	0.853
TRN4	-0.002	0.602	0.459	0.446	0.395	0.864
TRN5	-0.082	0.564	0.421	0.33	0.384	0.892

Source: Author's Processed Data (2025)

The outer loading of an indicator on a related construct must be greater than the cross-loading on other constructs. It can be stated that the value of each outer loading is higher than the cross-loading on other constructs.

Heterotrait-Monotrait Ratio (HTMT)

HTMT is the mean of all relationships between cross-construct indicators. According to Hair et al. (2022), the maximum HTMT correlation value is 0.9. If an HTMT correlation value is greater than 0.9, it indicates a lack of discriminant validity.

Table 6 Heterotrait-Monotrait Ratio

	BRS	DVP	LDT	NCT	NED	TRN
BRS						
DVP	0.214					
LDT	0.100	0.733				
NCT	0.082	0.742	0.617			
NED	0.099	0.719	0.547	0.627		
TRN	0.072	0.668	0.490	0.478	0.446	

Source: Author's Processed Data (2025)

It shows that there are no HTMT correlation values exceeding 0.9, meaning that each value meets the HTMT criteria and satisfies the discriminant validity test.

Reliability Test

The Cronbach's alpha value describes the correlation of indicators in a construct, while composite reliability looks at the differences in outer loading of indicator variables. According to (Pratama & Elistia, 2020), the accepted Cronbach's alpha and composite reliability values must be ≥ 0.7.

Evaluation Analysis of Structural Model (Inner Model)

The next evaluation is conducted when the model measurement is declared valid and reliable, including Structural Model Assessment, commonly referred to as inner model evaluation. According to (Hair et al., 2022), inner model evaluation is conducted through several tests, such as collinearity, significance and relevance of model relationships, Model's Explanatory Power, and Model's Predictive Power. In this study, path coefficient and R-squared are determined, and the T-value indicates the significance of the path coefficient.

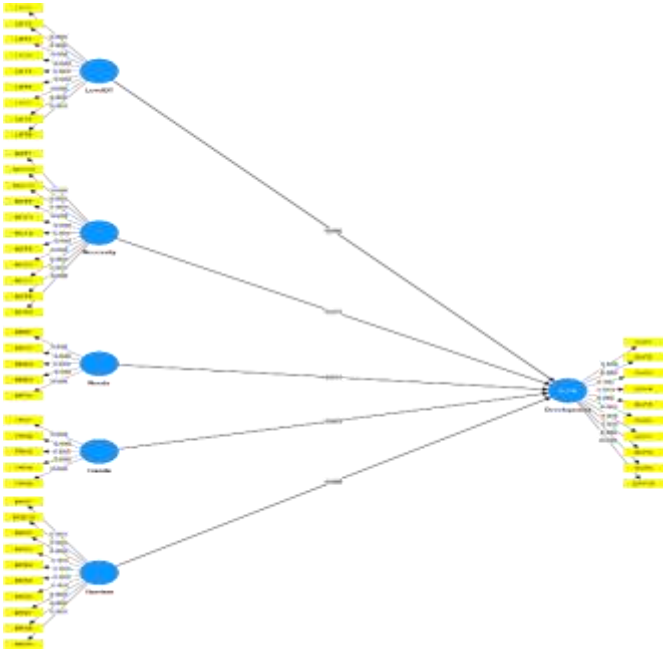

Figure 2 Inner Model
Source: Author's Processed Data (2025)

Path Coefficient, T-Value, and P-Value

A path coefficient value close to 1 indicates a positive relationship, while a value close to 0 indicates a weak relationship in the model structure. Furthermore, the T-value indicates the significance of a relationship between variables at a certain error level. In this study, a significance level error of 5% was used, which means that the T-value must be greater than 1,65 and the P-value must be less than 0.05 for the results to be accepted.

DISCUSSION

In this study, the data that have been collected from 100 respondents at PT Sindu Wahana Berkah shows that the majority of respondents are categorized as male, which is 79%. The dominant age among the respondents is categorized as 31-40 (40%). From educational background, the majority graduated from Senior/Technical High School (43%). Most respondents are affiliated with the Operational Department (59%).

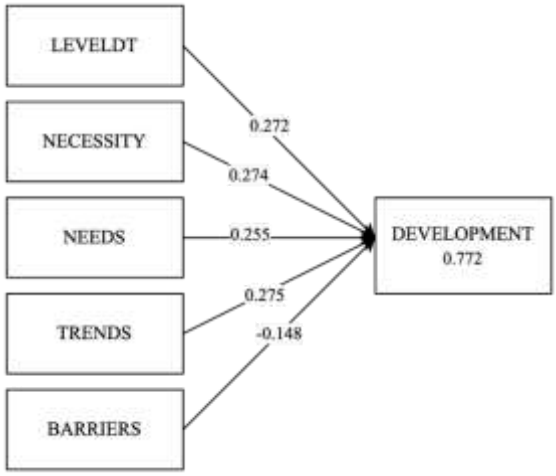

Figure 3: Research Results Applied to Research Framework
Source: Van Ha (2023), Author's Development (2025)

It shows the path coefficient of each independent variable with the dependent variable (Y). BARRIERS show a negative relationship with the DEVELOPMENT. In contrast, other variables shows positive relationships with the dependent variable (Y).

Descriptive Statistical Analysis Discussions
It can be summarized that each indicator resulted in agreeable outcomes with all of them categorized as "Good". A clear summarization is outlined, as follows.

Table 7 Summary of Descriptive Statistical Analysis

Latent Variable	Total Score	Ideal Score	Percentage (%)	Category
DEVELOPMENT	3879	5000	77,6%	Good
LEVELDT	3597	4500	79,9%	Good
NECESSITY	4458	5500	81%	Good
NEEDS	2022	2500	80,8%	Good
TRENDS	1973	2500	78,9%	Good
BARRIERS	4135	5000	82,7%	Good

Source: Author's Processed Data (2025)

It shows that all the indicators are categorized as "Good", meaning from respondents' perspective, it is acknowledge that each indicator affect development of logistics operations at PT Sindu Wahana Berkah. The consistent "Good" score category in all indicators means that the current methods are effective and the company has a strong foundation to improve and grow. Moreover, the results suggest that PT Sindu Wahana Berkah should continue to use its capabilities and keep reviewing these main factors to improve its strategies and remain competitive in the logistics industry.

The Impact of Level of Digital Transformation (LEVELDT) on the Development of Logistics Operations at PT Sindu Wahana Berkah

In this study, it can be seen from the result of hypothesis testing 1 that there is a significantly positive relationship between level of digital transformation (LEVELDT) with the development of logistics operations (DEVELOPMENT) at PT Sindu Wahana Berkah, which are shown by coefficient 0.272, T = 2.521, p = 0.006. It indicates that the more level of digital transformation, then the more it positively impact the improvement of logistics operations at the company, which means confirming the view that level of digital transformation plays a critical role towards the development. Furthermore, the results from this study corroborates with the findings of Van Ha (2023), which found that digital transformation is important for logistics service development, especially when it is applied in all key operational, infrastructure, and customer service areas.

The Impact of Necessary Conditions to Implement Digital Transformation (NECESSITY) on the Development of Logistics Operations at PT Sindu Wahana Berkah

In this study, it can be seen from the result of hypothesis testing 2 that there is a significantly positive relationship between necessary conditions (NECESSITY) with the development of logistics operations (DEVELOPMENT) at PT Sindu Wahana Berkah, which are shown by coefficient 0.274, T = 2.043, p = 0.021. It indicates that the more necessary conditions are completed, then the more it positively impact the improvement of logistics operations at the company, which means confirming the view that completion of necessary conditions plays a critical role towards the development. Furthermore, the results from this study corroborates with the findings of Van Ha (2023), which found that suitable technology, employee training and having a proper strategy are important for logistics development. It appears that following these conditions, especially by using operational technology and preparing employees.

The Impact of the Provision of Online Public Information by Government Management Agencies (NEEDS) on the Development of Logistics Operations at PT Sindu Wahana Berkah

In this study, it can be seen from the result of hypothesis testing 3 that there is a significantly positive relationship between urgent needs (NEEDS) with the development of logistics operations (DEVELOPMENT) at PT Sindu Wahana Berkah, which are shown by coefficient 0.255, T = 2.301, p = 0.011. It indicates that the more urgent needs are fulfilled, then the more it positively impact the improvement of logistics operations at the company, which means confirming the view that fulfilment of urgent needs, both internally and externally, plays a critical role towards the development. Furthermore, the results from this study corroborates with the findings of Van Ha (2023), which found that meeting the public information and regulatory needs of logistics enterprises, such as accessibility to updated policies, public data, and government digital platforms will positively influences logistics development. The significant effect in this study suggests that PT Sindu Wahana Berkah's responsiveness to both internal and external needs.

The Impact of Emerging Trends in Digital Transformation (TRENDS) on the Development of Logistics Operations at PT Sindu Wahana Berkah

In this study, it can be seen from the result of hypothesis testing 4 that there is a significantly positive relationship between emerging trends (TRENDS) with the development of logistics operations (DEVELOPMENT) at PT Sindu Wahana Berkah, which are shown by coefficient 0.275, T = 2.746, p = 0.003. It indicates that the more emerging trends are implemented, then the more it positively impact the improvement of logistics operations at the company, which means confirming the view that the adaptation to technological and industry trends of digital transformation plays a critical role towards the development. Furthermore, the results from this study corroborates with the findings of Van Ha (2023), which found that integrating innovations such as IoT, automation, and asset management improve operational efficiency and competitiveness in logistics companies. PT Sindu Wahana Berkah's proactive adoption of these trends likely contributes to its improved logistics performance, reinforcing the positive influence of embracing digital transformation.

The Impact of Barriers to Implementing Digital Transformation (BARRIERS) on the Development of Logistics Operations at PT Sindu Wahana Berkah

In this study, it can be seen from the result of hypothesis testing 5 that there is a significantly negative relationship between barriers to digital transformation (BARRIERS) with the development of logistics operations (DEVELOPMENT) at PT Sindu Wahana Berkah, which are shown by coefficient -0.148, T-statistic of 3.612, and P-value of 0.000. It indicates that the higher barriers are faced, then the more it negatively impact the improvement of logistics operations at the company, which means confirming the view that overcoming structural and technical, as well as organizational challenges are essential towards the development towards the development. Furthermore, the results from this study corroborates with the findings of Van Ha (2023), which found that high costs, a shortage of skilled employees and lacking infrastructures make it difficult for logistics companies to achieve success with digital transformation. The case of PT Sindu Wahana Berkah highlights how reducing these barriers can facilitate smoother adoption of digital technologies and enhance operational growth.

4. CONCLUSION

Digital transformation has a significant and positive influence on the development of logistics operations at PT Sindu Wahana Berkah. This is shown by the line coefficient value of 0.272, the T-statistical value of 2.521, and the P-value of 0.006, which confirms that the higher the implementation of digital transformation, the more the company's logistics operations will increase. In addition, important underlying conditions, such as technological infrastructure and organizational readiness, were also shown to have a significant and positive effect on logistics development, with a path coefficient value of 0.274, a T-statistic of 2.043, and a P-value of 0.021. These findings show that when these prerequisites are met, the implementation of digital transformation in logistics operations will run more optimally.

Furthermore, organizational needs, both internal and external, also have a significant and positive influence on logistics development, as shown by the path coefficient of 0.255, T-statistic of 2.301, and P-value of 0.011. This indicates that meeting the strategic needs of the organization also encourages the success of digital transformation in supporting logistics activities. Developing technology trends have also proven to contribute positively to the development of logistics, with a coefficient value of 0.275, a T-value of 2.746, and a P-value of 0.003, indicating that the adoption of the latest digital trends is able to increase the efficiency and effectiveness of the company's logistics operations. However, obstacles in digital transformation efforts, such as high costs, technical complexity, and limited competent human resources, have a significant negative impact on logistics development, as reflected in the line coefficient value of -0.148, T-statistic of 3.612, and P-value of 0.000. Therefore, while digital transformation brings great benefits, companies need to overcome these obstacles so that the transformation process can take place effectively and sustainably in supporting logistics performance.

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