Journal of Economics
AND MANAGEMENT SCIENTIES
https://jems.ink
ISSN 2655-1934 (print), 2655-6685 (online)

Dynamic Logistic Agility as a Mediator: Aligning Digital Transformation, Business Model Innovation, and Logistic Competency for Superior Business Performance

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ARTICLE HISTORY
Received: 27 November 25
Final Revision: 20 December 25
Accepted: 04 January 26
Online Publication: 31 March 26

KEYWORDS
Dynamic Capabilities, Digital Transformation, Business Model Innovation, Logistics Competency, Digital Logistics Agility

A B S T R A C T

The global supply chain environment requires Third-Party Logistics (3PL) providers to adopt digital capabilities in order to maintain their edge over competitors. This study explores the effects of Digital Transformation (DT), Business Model Innovation (BMI), and Logistics Competency (LC) on Business Performance (BP), both directly and indirectly through Digital Logistics Agility (DLA) at PT Laju Prima Logistik. Employing a quantitative methodology with Partial Least Squares Structural Equation Modeling (PLS-SEM) on data gathered from 34 managers and supervisors, the results confirm that the theoretical framework has strong predictive power, with the model accounting for 80. 8% of the changes in BP. The analysis demonstrates that DLA (β =0.577, P=0. 004) and BMI (β=0.553, P=0.012) are the most important direct factors influencing BP. Notably, the research uncovers a critical implementation gap, even though there is a substantial intent (DT coefficient of 0. 504), neither DT nor LC plays a significant role in predicting DLA, indicating that LPL's strategic goals are not effectively being converted into flexible technological capabilities. This shortcoming is associated with limited uptake of sophisticated systems such as AI/ML (DLA2 average score of 4.85). The failure to systematically generate DLA results in the dismissal of all mediating hypotheses. Strategic advice includes focused investments in advanced digital micro-foundations (AI/ML) and addressing underlying process issues (LC3) to enable sustainable growth.

KATA KUNCI
Kapabilitas Dinamis, Transformasi Digital, Inovasi Model Bisnis, Kompetensi Logistik, Agilitas Logistik Digital

A B S T R A K

Dinamika rantai pasok global menuntut penyedia Jasa Logistik Pihak Ketiga (3PL) untuk mengintegrasikan kapabilitas digital demi mempertahankan keunggulan kompetitif. Penelitian ini menginvestigasi bagaimana Transformasi Digital (DT), Inovasi Model Bisnis (BMI), dan Kompetensi Logistik (LC) memengaruhi Kinerja Bisnis (BP) secara langsung dan tidak langsung melalui Agilitas Logistik Digital (DLA) pada PT Laju Prima Logistik. Dengan menggunakan pendekatan kuantitatif dengan *Partial Least Squares Structural Equation Modeling* (PLS-SEM) pada data yang dikumpulkan dari 34 responden manajerial dan supervisor, temuan memvalidasi kekuatan prediktif kerangka teoretis yang tinggi, dengan model menjelaskan 80.8% variasi dalam BP. Secara empiris, DLA (β =0.577, P=0.004) dan BMI (β =0.553, P=0.012) terbukti sebagai penentu langsung BP yang paling signifikan. Yang krusial, penelitian ini mengungkap adanya kesenjangan implementasi signifikan, terlepas dari niat yang substansial (koefisien DT sebesar 0.504), baik DT maupun LC tidak secara signifikan memprediksi DLA. Kegagalan ini terkait dengan rendahnya adopsi sistem canggih seperti AI/ML (skor DLA2 rata-rata 4.85). Kegagalan dalam menghasilkan DLA secara sistematis ini menyebabkan ditolaknya semua hipotesis mediasi. Rekomendasi strategis menekankan investasi yang ditargetkan pada fondasi digital tingkat lanjut (AI/ML) dan penyelesaian gesekan proses laten (LC3) untuk mencapai peningkatan skala yang berkelanjutan.

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DOI
10.37034/jems.v8i2.309

1. Introduction

The logistics sector is a vital component of the global supply chain, performing the crucial function of ensuring the timely availability and delivery of goods, particularly for high-volume sectors like Fast Moving Consumer Goods (FMCG). Operational efficiency directly influences cost reduction and market competitiveness. PT Laju Prima Logistik (LPL), a key 3PL provider in Indonesia, aims for a sustainable scale-up by increasing volume capacity from 30% to 50% to support its FMCG clients. This goal is challenged by fundamental price uncompetitiveness; internal data shows LPL ranked 3 (most expensive) on four important container routes, necessitating strict control over operational costs. Achieving this scale efficiently requires transforming internal capabilities, specifically through investments in Digital Transformation (DT),

Logistics Competency (LC), and Business Model Innovation (BMI).

Certain research**Error! Reference source not found.Error! Reference source not found.** assert that effective supply chain and logistics management is essential for cutting costs, boosting competitiveness, and enhancing operational performance. They also indicate that improving logistical functions (such as shipping, storage, and inventory management) can lead to greater company efficiency, customer satisfaction, and competitive advantage [1].

Dynamic capabilities refer to the ability to systematically address challenges by recognizing opportunities and threats, making timely decisions, and executing strategic choices. This ability is crucial for maintaining a competitive edge [2]. Dynamic capabilities can be broken down into the ability to identify and influence opportunities and risks, to take advantage of opportunities, and to stay competitive by improving, merging, safeguarding, and, when needed, reorganizing the company's tangible and intangible resources. These skills are crucial for companies to develop, implement, and safeguard the intangible resources that contribute to exceptional long-term business success, particularly in rapidly changing, globally competitive markets characterized by swift innovation [3].

In certain article highlights the crucial role of business models in commercializing technology and uncovering hidden economic value [4]. BMC model enables organizations to recognize innovations not only in products but also in systemic elements like Revenue Streams or Cost Structure. These adjustments in the business model are essential as the company undergoes Digital Transformation [5].

This study is theoretically grounded in the Dynamic Capabilities Theory (DCT) [6], an extension of the Resource-Based View (RBV), where competitive advantage derives from the ability to integrate and reconfigure resources [7]. Logistics Competency (LC) forms the resource base, while DCT micro-foundations drive adaptation: Sensing (DT), Seizing (BMI), and transforming. The central dynamic capability examined is Digital Logistics Agility (DLA), defined as the ability to quickly adapt operations through digital technology. The framework tests how DT, BMI, and LC influence long-term Business Performance (BP) via the mediating role of DLA, addressing a gap in the literature regarding the causal mechanism of digital impact.

The core idea presented and suggests that digital transformation involves using technology to significantly enhance a company's performance or reach. Their research highlights that a successful transformation is not solely about adopting new technologies, but also about becoming a Digital Master. Digital Masters know where and how to invest in the digital opportunity [8].

To evaluate organizational agility, we can refer to the model created by certain researchers, which categorizes agility into four interconnected dimensions [9]:

a. Strong Strategy. The ability to possess a clear shared goal, quickly seize opportunities, and maintain a strong focus on the future allows for more adaptable resource allocation.

b. Adaptive Design. This includes flexibility in organizational structure, transparent information sharing, distribution of power, and a focus on development, all of which facilitate the movement of resources and workforce.

c. Leadership and Identity. Effective leadership and a servant leadership approach, accompanied by core values and a company image that align with agility strategy, encourage employees to be more proactive and adaptable.

d. Value Creation Capability. The organization's core competencies that directly generate value and differentiation, such as the ability to reorganize swiftly and possess diverse skills.

Evidence indicates a strong and diverse connection between digital transformation and logistics agility [10]. A study discovered that digital transformation can moderately enhance the performance of logistics companies through adaptability, resource management, and innovative capacities, specifically indicates that elements such as core competencies, technology, and innovation play a crucial role in digital transformation within logistics, reflecting a positive impact of 95. 70% [11]. Further research underscores that organizational agility is a vital mechanism for fully engaging the workforce, operations, and networks during digital transformation [12]. Nonetheless, this research primarily focuses on case studies in Indonesia, indicating a need for broader international validation.

H1: Digital transformation has a major impact on Digital Logistic Agility (DLA)

Logistics companies are using digital technology to spot opportunities, allocate resources, and modify processes for innovative business models, providing qualitative evidence related to the dynamic capabilities theory from 20 firms [13]. The logistics sector is transforming into a service-oriented industry, leveraging new resources such as technology and knowledge networks to drive innovation and secure a leading market position, while aligning with innovative business models and digital logistics agility [14]. Smart technologies play a vital role in the efficient management of digital supply chains, acting as important facilitators that convert digital abilities into better organizational outcomes. The data is strong and

varied. Digital transformation by itself does not boost relationship performance and needs to be integrated with smart technologies [15].

H2: The Innovation of Business Models Significantly Affects Digital Logistic Agility (DLA)

How to enhance logistics capabilities by improving digital supply chain agility through the selection of the best logistics companies using an intuitive fuzzy TOPSIS method [16]. New skills required for logistics professionals in the digital age include crucial digital abilities that are essential for boosting digital logistics agility [17]. Innovation plays an essential role in determining how well a business performs, with various elements impacting its success and influence. Research from several investigations shows that the key factors that promote innovation consist of market focus, a proactive entrepreneurial spirit, regulatory influences, and the expectations of customers [18].

H3: Logistics competencies greatly impact Digital Logistic Agility (DLA)

There is a positive relationship between digital technology, transformational leadership, and agility in boosting organizational performance, linked to the concept of digital logistics agility and its impact on business performance [19]. Digital capabilities enhance ambidextrous leadership, which increases business agility, especially via supply chain agility, leading to a positive effect on company performance [20]. The ability to effectively handle these operational elements on a consistent basis serves as evidence that the company has successfully leveraged its logistical skills strategically to impact performance. This is the essence of the argument made about the effect of logistic competency on performance [21].

H4: Digital Logistics Agility significantly affects Business Performance.

Digital transformation and sustainable business performance are strongly and positively correlated. The economic performance sees the most significant effects, followed by environmental and social aspects [22]. There is an improvement in performance related to efficiency, productivity, and the competitiveness of organizations. Key technologies that support this include smart factories, big data analytics, and the Internet of Things (IoT) [23].

H5: Digital Transformation significantly impacts Business Performance.

Innovation has a beneficial and significant effect on business performance. This statement was found where there is a study with the sample includes 346 SMEs. It is a quantitative study featuring SEM analysis [24]. According to research, innovation has a positive and substantial influence on enhancing business logistics performance [25]. This indicates that strategic initiatives aimed at revising or altering the company's operational model and service offerings (Business Innovation) directly lead to noticeable improvements in performance outcomes.

Information Technology offers an economical option compared to earlier communication methods by providing reliable information. The aim of Information Technology is to enhance the satisfaction of customers. This satisfaction can be achieved by ensuring prompt and precise deliveries, having products in stock, and by the responsiveness and adaptability of service providers. Therefore, leveraging Information Technology directly contributes to competitive advantage by optimizing operational efficiency and improving customer perception of service quality [26].

H6: Business Innovation significantly impacts Business Performance.

Assert that logistics competency has a direct effect on logistics performance. When a company possesses higher levels of expertise, capability, and resources in managing essential logistics functions, it leads to a measurable boost in business performance. This boost can be observed in terms of cost efficiency, enhanced service quality, and competitive advantage [27]. Overall Supply Chain Management (SCM) strategies, which include elements of capability and competency, exert a significant and positive influence on both Operational Performance and Financial Performance of a company [28]. A study verified a favorable connection between Business Model Innovation and Sustainable Performance among small and medium-sized enterprises in the Thai processed seafood sector. Business Model Innovation is regarded as a tactical method for these businesses to stay competitive and enhance sustainability [29].

H7: Logistics competency has a significant impact on Business Performance.

The connection between Digital Transformation and Business Performance is anticipated to be indirect, significantly influenced by the crucial role of Digital Logistic Agility (DLA). Digital transformation, which includes implementing systems such as Vehicle Tracking Systems (GPS) or real-time data analysis, equips logistics companies with impressive sensing capabilities. However, the mere presence of technology and data does not guarantee improved performance on its own [30].

Certain study emphasizes that digital transformation positively affects business performance, with organizational agility serving as a mediating link that enhances responsiveness, adaptability, and innovation, as derived from an extensive literature review. Specifically, within the logistics framework, research conducted by certain researchers indicates that digital transformation has a moderate positive effect on Business Performance, where adaptability and business

innovation are key factors [10]. Consistent findings from various studies, involving 207-330 participants, reveal a strong and repeatable relationship among digital transformation, agility, and business performance.

H8: Digital Transformation significantly affects Business Performance through Digital Logistic Agility.

A study conducted offers strong proof drawn from 432 electronics companies in Germany [31]. Their findings indicated a positive connection between strategic agility and business model innovation, with this link becoming stronger in times of environmental instability. Importantly, the innovations in value proposition and value creation enhance performance, whereas innovations in value capture showed a negative effect. A study validates the direct impact of digital technology and agility on company performance [32]. As a result, Business Model Innovation acts as a strategic requirement compelling company to enhance their logistics systems and implement Digital Logistics Architecture, which ensures that investments in strategic digital capabilities translate effectively into operational speed and reliability, thereby leading to sustainable improvements in Business Performance.

H9: Innovative Business Models significantly influence Business Performance through Digital Logistics Agility.

A comprehensive framework is crucial because it highlights that future success relies not just on traditional logistics skills, but also on the ability to harness digital technology. This is essential for achieving Digital Logistic Agility, which ultimately enhances a company's Business Performance [33]. Digital Logistic Agility (DLA) acts as a tool that transforms human resource capabilities (Logistics Competence) into outstanding business outcomes (Business Performance). DLA integrates both digital and agile aspects within the D. L. A. R. C. S model, enabling firms to streamline operations, boost real-time visibility, and adapt swiftly to changing customer demands. When proficient logistics professionals utilize advanced technology (Digital) for quick and adaptable responses (Agility), logistics companies (especially 3PLs) can significantly enhance their performance [34].

H10: Logistics Competence has a significant impact on Business Performance through Digital Logistic Agility.

Research conducted before revealed that lean production methods can clarify how well operations perform [35]. Business Performance is the ability to gain profit together with targeted sales and customer satisfaction, product quality, competitive prices, and responsiveness.

Certain study serves as a vital primary source for defining and confirming the indicators of your key mediating variable, Digital Logistic Agility (DLA) [36]. This research specifically concentrates on the creation and validation of the DLA construct within the framework of developing nations, making it particularly pertinent to the Indonesian market. Indicators of DLA, such as the speed of adjusting delivery schedules, the ability to change container routes in real-time, and the quick reallocation of transportation resources, are directly derived from the dimensions validated by this study. The journal ensures that DLA is accurately assessed as an adaptive response capability enabled by technology in challenging operational environments.

Theoretical gap exists in logistics literature regarding the explicit causal mechanism linking strategic inputs (DT, BMI, LC) to performance. Many studies analyze direct impact but omit the mediating process. This research proposes and empirically tests Digital Logistics Agility (DLA) as a critical dynamic mediator to fill this gap. The study validates whether DT, BMI, and LC systematically translate into adaptive capability (DLA) before impacting Business Performance (BP). By using empirical data from the Indonesian 3PL sector, the study provides context-specific insights into the necessary digital micro-foundations for sustainable scale-up.

The objectives are four-fold:

a. Identify LPL's main operational challenges and the market gap;

b. Determine the direct influence of DT, BMI, and LC on Business Performance (BP);

c. Analyze the full causal relationships, including the direct paths (H1-H7) and the mediation of Digital Logistics Agility (DLA) (H8-H10); and

d. Formulate effective strategic recommendations for LPL to enhance service efficiency and innovation for FMCG customers.

2. Research Method

The method used in this research is quantitative, based on hypothesis testing. This study employs a quantitative approach to illustrate the connection between the various variables under investigation. The research relies on numerical data, which will be gathered through questionnaires. Data collection involves creating a questionnaire based on the indicators of each variable, then distributing it to the study sample.

The analysis of the data is carried out using the Smart PLS software. The processing technique utilized incorporates Structural Equation Modeling (SEM), a statistical method that examines hypotheses regarding the relationships between latent variables (not directly observable) and manifest variables (directly observable). The Partial Least Squares (PLS) method is

applied as a specific technique within SEM for analyzing the relationships among variables. The gathered data consists of both primary and secondary data. Primary data is collected by distributing questionnaires to participants who are part of the study sample. On the other hand, secondary data is sourced from literature reviews that support the research, along with internet resources and other relevant materials.

The study was conducted at the main operational centers of PT Laju Prima Logistik, specifically in Jakarta, Semarang, Surabaya, Medan, and Makassar. The research data was gathered through a questionnaire filled out by employees of PT Laju Prima Logistik who hold positions from supervisor to manager and serve as respondents.

From Figure 1, this model is founded on the Dynamic Capabilities Theory, positioning Digital Transformation, Business Model Innovation, and Logistics Competence as crucial elements that need to be restructured in order to achieve success in the digital marketplace. The primary exogenous variables of interest are Digital Transformation (DT), which reflects a company's strategic vision and intentions towards digitalization (H1, H5); Business Model Innovation (BMI), which signifies the organization's efforts to change the components of value creation and capture (H2, H6); and Logistics Competence (LC), which serves as the operational foundation and traditional core capabilities (H3, H7). The model investigates the direct impacts of these three factors on Business Performance, as well as their roles in triggering the key mediating mechanisms.

At the heart of this conceptual framework is the central mediating variable, known as Digital Logistics Agility (DLA). DLA is hypothesized to be the dynamic capability needed to translate strategic initiatives (DT and BMI) and the operational foundation (LC) into quick and adaptable responses in a tech-driven environment. The model hypothesizes that DT (H1), BMI (H2), and LC (H3) will have a significant positive effect on DLA, making it an essential prerequisite. DLA is then positioned as the primary predictor (H4) that directly influences the company's outcomes, aligning with the seizing capability concept from Dynamic Capabilities Theory—specifically, the ability to capitalize on market opportunities arising from digitalization.

As the main endogenous variable, Business Performance (BP) is assessed through financial and customer dimensions (profitability, sales, and customer satisfaction). This research model is designed to examine a total of ten hypotheses (H1–H10), with a critical focus on the mediating role of DLA. The mediation hypotheses (H8, H9, H10) explore whether the effects of Digital Transformation (H8), Business Model Innovation (H9), and Logistics Competence (H10) on Business Performance must be fully channeled through the enhancement of Digital Logistics Agility. This complex mediation structure provides management with valuable insights into which investment pathways are most effective for improving profitability and competitiveness amid the rapid pace of digital disruption

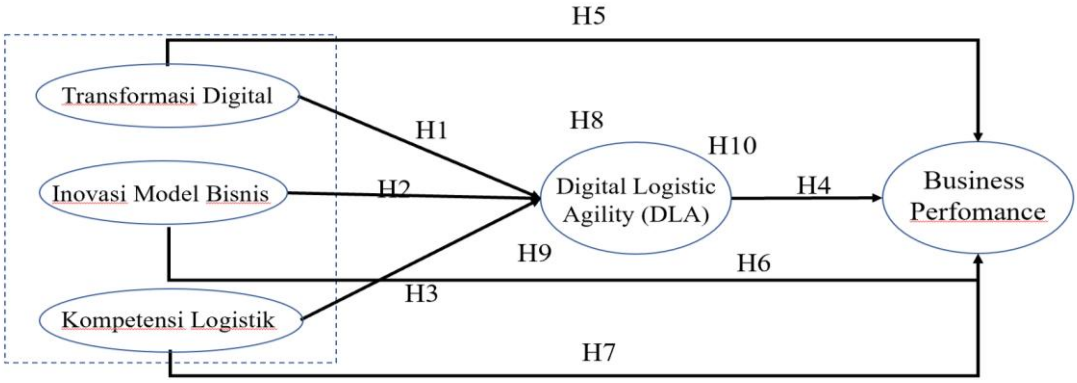

Figure 1. Research Model

3. Result and Discussion

3.1. Demographic profile of the respondents

From Table 1, the sample comprising 34 managerial and supervisory personnel, was predominantly male (73.53%) and highly educated, with 73.53% of the respondents holding an undergraduate degree (S1). This composition suggests the data reflects perspectives from highly qualified staff. Furthermore, the workforce sampled demonstrated significant operational experience, as more than half (52.94%) of the respondents were aged over 40 years, indicating maturity in the assessment of logistics operations.

Table 1. Characteristics of the Respondents

Demographic	Categories	No of Respondents	Percentage of Respondents (%)
Gender	Male	25	73.53
	Female	9	26.47
Education	High Scholl	8	23.53
	Diploma	1	2.94
	Undergraduate	25	73.53
Age of respondents	22-30	2	5.88
	31-35	7	20.59
	35-40	7	20.59
	>40	18	52.94

3.2. Outer Model

By employing the PLS Algorithm with the Smart PLS 4.0 software, which utilizes the Partial Least Squares (PLS) approach and variance-based Structural Equation Modeling (SEM). The findings for each item in the questionnaire can be seen in Figure 1. The steps taken in testing the research model include the Outer Model, which concentrates on the validity and reliability of the indicators employed to assess latent variables. This phase starts with the construct validity test (both convergent and discriminant) and proceeds to the reliability evaluation (Composite Reliability/CR and Cronbach's alpha/CA). Based on the information in Table 2, it can be noted that the outer loading values for all indicators are greater than 0.7. This indicates that these indicators meet the criteria for convergent validity.

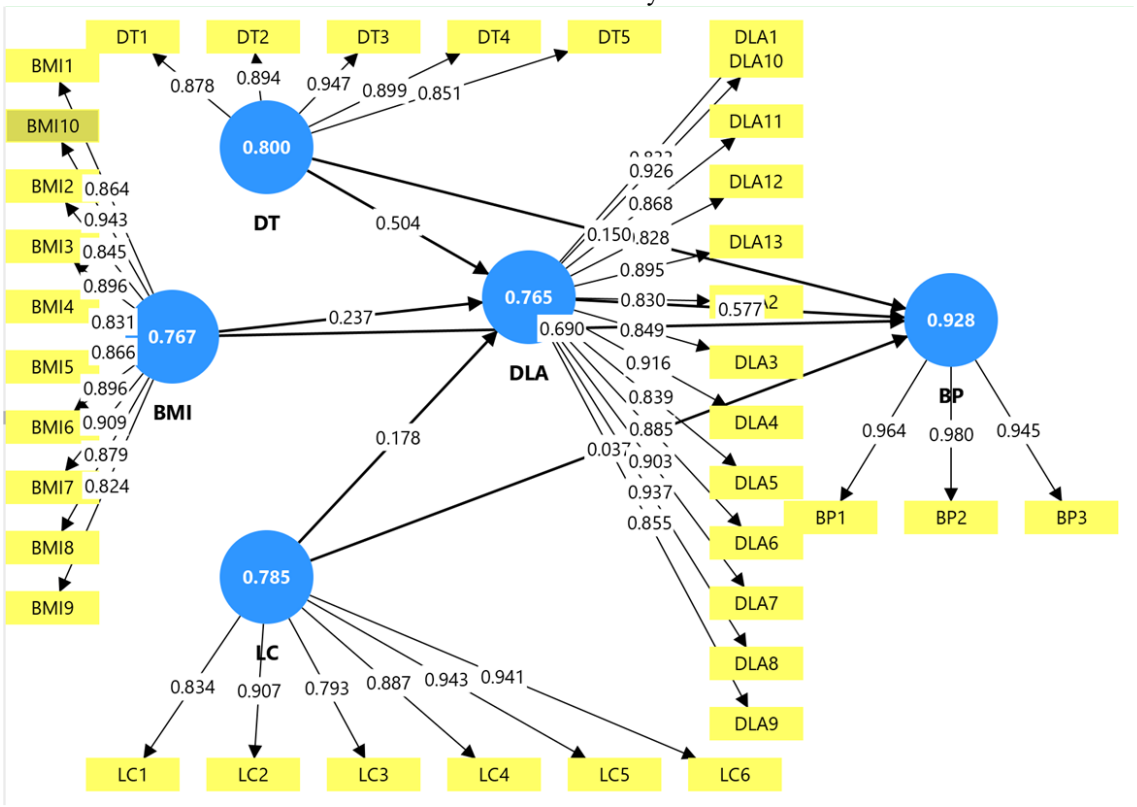

Figure 2. Outer model result

3.3. R Square Determinant Coefficient Test

Based on the information in Table 3, it can be stated that the R-Square value for the Variable Digital Logistic Agility is 0.806. This figure indicates that the impact from Digital Transformation, Business Model Innovation, and Logistic Competency accounts for 80. 6%. Additionally, the data in table 5.8 indicates that the R-Square value for the Variable Business Performance stands at 0.808, signifying that the influence from Business Performance, Business Model Innovation, and Logistic Competency is 80.8%. Furthermore, the adjusted R-Square value for the Variable Digital Logistic Agility is 0.786, or 78.6%, which suggests there remains an impact of 12.4% influenced by other variables not covered in this study. Similarly, the adjusted R-Square value for the Variable Business Performance is 0.781, or 78.1%, indicating a residual influence of 12.9% from variables outside the scope of this research.

Table 2. Convergent validity and reliability test results

No	Variable	Variable	Outer Loading	Average	CA	CR
1	The company I work for is working to digitize every process that is possible to digitize.	DT1	0.878			
2	The company I work for collects a large amount of data from various sources.	DT2	0.894			
3	My company strives to improve customer service interfaces through digital solutions.	DT3	0.947	5.888	0.937	0.946
4	The company I work for is striving to improve its customer service interface through digital solutions.	DT4	0.899			
5	My company strives to achieve information exchange through digital technology.	DT5	0.851			
6	My company offers new combinations of products and services through its business model.	BMI1	0.860			
7	My company has expanded its product and service offerings to new markets.	BMI2	0.844			
8	My company has brought on new suppliers or distribution channel partners through its business model.	BMI3	0.887			
9	The value offered through my company's products/services is not the same as it was two years ago.	BMI4	0.849			
10	My company has created new arrangements for information exchange along the supply chain in the past two years.	BMI5	0.869	5.782	0.966	0.968
11	My company regularly reviews its business model and introduces new ideas or innovations to meet current market demands.	BMI6	0.899			
12	My company regularly considers innovative opportunities to transform its existing pricing model.	BMI7	0.908			
13	My company regularly considers innovative opportunities to transform its existing pricing model.	BMI8	0.877			
14	Logistics costs at my company are continuously reviewed and improved, if necessary, to align with market prices.	BMI9	0.828			
15	My company emphasizes innovative/modern measures to increase customer retention (e.g., CRM).	BMI10	0.943			
16	My company maintains efficient transportation costs.	LC1	0.834			
17	My company has geographic proximity that supports smooth distribution.	LC2	0.907			
18	My company efficiently manages information processing costs (such as order entry, invoicing, and tracking).	LC3	0.793	5.853	0.944	0.955
19	My company responds quickly to sudden changes in demand.	LC4	0.887			
20	My company processes orders through to delivery quickly.	LC5	0.943			
21	My company consistently meets delivery deadlines. Technology Adoption & Capacity	LC6	0.941			
22	My company adopts IoT technology in its logistics processes.	DLA1	0.833			
23	My company uses AI/ML in its logistics decision-making.	DLA2	0.830			
24	My company explores or uses blockchain in logistics tracking.	DLA3	0.849			
25	My company uses an integrated digital logistics management system (LMS).	DLA4	0.839			
26	My company utilizes cloud-based computing in its logistics operations.	DLA5	0.839			
27	My company is quick to integrate new digital systems into its logistics processes.	DLA6	0.885	5.432	0.974	0.976
28	The company I work for has cybersecurity protection in place within its digital logistics system.	DLA7	0.903			
29	It is able to respond quickly to digital disruptions.	DLA8	0.937			
30	It automates its inventory management processes.	DLA9	0.855			
31	It is able to respond quickly to changes in demand digitally.	DLA10	0.926			
32	It builds digital partnerships with external logistics providers.	DLA11	0.868			
33	It utilizes big data in logistics decision-making.	DLA12	0.828			
34	It utilizes big data in logistics decision-making.	DLA13	0.895			
35	It demonstrates increased profitability.	BP1	0.964			
36	It demonstrates increased sales.	BP2	0.980	5.598	0.961	0.962
37	Its customers demonstrate increased satisfaction.	BP3	0.945			

Table 3. R Square

Variable		R-Square	R-Square Adjusted
DLA	Digital Logistic Agility	0.806	0.786
BP	Business Performance	0.808	0.781

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3.4. Hypothesis Testing (Path Coefficients)

Bootstrapping on Table 4 indicates that the pathways DLA to BP (P = 0.004) and BMI to BP (P = 0.012) are significant. This suggests that the relationships you proposed are strongly supported by the data with a high level of confidence. On the other hand, bootstrapping reveals that the pathways DT to DLA (P = 0.121) and BMI to DLA (P = 0.356) are not statistically significant. This implies that even though the path coefficients are relatively high (for instance, DT to DLA = 0.504), the empirical evidence (data) is not robust enough to confirm a definitive causal relationship at the 95% confidence level.

Table 4. Path Coefficient

	Original Sample (O)	Single Mean (M)	Std Dev (STDDEV)	P Values	Significant
DT→ BP	-0.141	-0.149	0.308	0.648	No
DT→ DLA	0.504	0.489	0.322	0.121	No
BMI → BP	0.553	0.541	0.216	0.012	Yes
BMI → DLA	0.237	0.269	0.256	0.356	No
LC → BP	-0.066	-0.041	0.311	0.833	No
LC → DLA	0.178	0.176	0.309	0.566	No
DLA → BP	0.577	0.570	0.197	0.004	Yes

4. Conclusion

The research framework demonstrates a remarkably strong and significant capacity for prediction, with the R^2 value for Business Performance (BP) at 0.808. This indicates that 80.8% of the fluctuations in BP can be attributed to external and mediating factors. In practical terms, Digital Logistics Agility (DLA) (Path Coefficient = 0.577, P = 0.004) and Business Model Innovation (BMI) (Path Coefficient = 0.553, P = 0.012) emerge as the key direct influences on improving profits, sales, and customer happiness. These results support the Dynamic Capability Theory, emphasizing the importance of logistics firms being able to quickly adapt through technology to achieve better performance results. Nonetheless, the study uncovers a significant gap in implementation, where the connections between Digital Transformation (DT) and Logistics Competency (LC) leading to DLA yield statistically insignificant outcomes (P-values > 0.05), suggesting a shortfall in transforming a strong strategic vision and solid operational base into flexible and agile technological capabilities. As a result, the ineffective development of DLA causes the dismissal of all mediation hypotheses (H8, H9, H10), indicating that the impacts of DT, BMI, and LC on BP are not mediated by DLA. This issue is largely supported by the low scores in descriptive analysis regarding the application of advanced technologies such as AI/ML (DLA2: 4.85) and Blockchain (DLA3: 5.06), implying that strategic recommendations should concentrate on specific investments in advanced digital micro-foundations and addressing foundational process challenges (LC3) for sustainable growth.

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