THAMMASAT REVIEW
ONLINE ISSN: 2630-0303

Volume 28 No 1 (January-June) 2025 [Page 128-151]

The Influence of Service Innovation on Logistics Capability and Cost Advantage of Logistics Service Providers

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Received 26 July 2024; Received in revised form 16 March 2025
Accepted 8 April 2025; Available online 25 May 2025

Abstract

Logistics service providers in Thailand have an essential role in boosting the country's economy, serving as a supportive industry for a range of domestic and foreign businesses. Hence, the financial expenses associated with logistics service providers play a crucial role in business operations. Elevated operating expenses incurred by logistics companies might result in escalated costs for their clients, ultimately leading to increased expenses for end consumers. The aim of this study is to develop a causal model that links service innovation, logistics capability, and cost advantage. The purpose is to find the specific aspects that can assist logistics service providers in attaining more efficient cost advantages. The study employed questionnaires to collect data from a sample of 200 transportation and warehousing logistics service providers. Purposive sampling was applied for this research, and the data were analyzed using structural equation modeling.

The findings suggest that service innovation has a direct impact on both logistics capability and cost advantage, as well as an indirect impact on cost advantage through logistics capability. Hence, it is essential for service providers to cultivate their own unique service innovations and enhance their efficient logistics capabilities, as both elements can help to attain a cost advantage, ultimately resulting in enhanced business performance.

Keywords

Service Innovation, Logistics Capability, Cost Advantage, Logistics Service Providers

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Introduction

The operating costs of businesses have been continuously rising, impacting various sectors. Logistics service providers are among those significantly affected by this cost increase, as they require substantial resources to manage various logistics activities such as shipping, warehousing, cross-docking, packaging, inspection, and tracking. An analysis of financial statements from transportation and warehousing businesses reported to the Department of Business Development revealed that service providers' total expenses increased by an average of 2 – 6 % annually (Department of Business Development, 2022). Considering logistics costs relative to gross domestic product, Thailand's logistics costs account for 14.1% of GDP, which is considered high compared to the global average and Asia-Pacific region average of 12.8% and 11.6%, respectively (Office of the National Economic and Social Development Board, 2020). Consequently, finding ways to improve cost management has become crucial. Logistics service providers play a vital role in driving the country's economy, leveraging Thailand's advantageous geographical location as a transportation hub. These businesses also benefit from government support in developing infrastructure such as roads, distribution centers, railways, ports, and warehouses, thereby creating a comprehensive transportation network that facilitates their operations. Reducing operational costs for logistics service providers would yield benefits in terms of increased profits, market competitiveness, customer satisfaction, service user growth, and management efficiency, all of which are essential for logistics service providers.

Wang et al. (2019) state that in the service industry, service innovation (SI) can enhance competitiveness and increase the number of service users. Similarly, Manohar et al. (2020) found that service innovation contributes to improved business reputation and positive word-of-mouth among service users, benefiting the business. In the logistics context, service innovation from providers is considered crucial for the advancement of the logistics industry, as these providers play a significant role in driving both micro and macroeconomics (Sumantri, 2020). Wang (2016) highlighted the importance of innovation capability in the parcel delivery industry, finding that innovation capability is related to work outcomes and business logistics efficiency, reflecting the role of innovation in business outcomes. Therefore, service innovation may be a factor that can improve a business's logistics capability (LC), and one of the key aspects of competitive advantage is cost advantage (CA).

From the resource-based view perspective, logistics capability is considered the foundation of competitive advantage (Dai et al., 2012). Thus, if service providers develop their logistics capabilities efficiently, it can be a crucial factor in helping businesses gain a

competitive advantage, including cost leadership. The ability to manage costs lower than competitors increases the likelihood of attracting customers and improving financial performance. Wen (2012) supported the concept that logistics capability contributes to a business's competitive advantage, stating that good logistics capability should include reliable delivery, excellent pre- and post-sales customer service, responsiveness to target customers, appropriate delivery times, and minimal distribution costs. All of these factors jointly contribute to improving the logistical capabilities of service providers. Perceiving the value they obtain can enhance consumers' propensity to use the service (Meathawiroon & Kliangsa-Art, 2023).

This research intends to examine the causal linkages between service innovation, logistical capability, and cost advantage, based on the importance highlighted earlier. The results are designed to offer logistics service providers, particularly those in transportation and warehousing, guidance on how to improve their operational strategies and decision-making processes, thereby contributing to the Thai economic growth and achieving better business outcomes. This study fills the gap in the existing literature by investigating the relationships between service innovation, logistical capability, and cost advantage, which have been under-researched. Numerous previous studies have primarily focused on firm performance, which essentially examines operational outcomes from a holistic perspective. This research aims to fill a research gap and differentiate itself from prior work by specifically investigating cost advantage, which constitutes a critical factor in the logistics operations of service providers. This focused approach addresses a significant dimension of logistics performance that has been relatively underexplored in the existing literature. This research seeks to analyze these linkages in order to provide theoretical contributions to the academic field and practical consequences for corporate applications.

Literature Review

Resource Based View (RBV)

According to Wernerfelt (1984), a key figure in the development of the Resource-Based View (RBV) paradigm, firms should consider themselves in terms of their resources rather than their products and evaluate their market position based on the resources they have at their disposal. The RBV is a fundamental idea in strategic management that aims to elucidate an organization's competitive edge by analyzing its internal resources and capabilities. According to this concept, firms can gain and sustain a competitive advantage by producing and utilizing resources that are valuable, scarce, difficult to replicate, and non-substitutable (Barney, 1991). These resources have the

potential to result in a long-term competitive advantage that can be maintained over time. In the field of logistics and supply chain management, the RBV has been utilized to elucidate the correlation between logistics capabilities and organizational success. Olavarrieta and Ellinger (1997) proposed that logistical capabilities can serve as a foundation for achieving a lasting competitive advantage, provided that enterprises are able to offer services that are valuable, scarce, difficult to replicate, and non-substitutable. The RBVis a crucial idea that elucidates an organization's competitive edge by focusing on its internal resources and skills. This theory has undergone continual development and expansion, and has found application in diverse contexts, such as logistics and supply chain management. It helps to comprehend the significance of cultivating logistical capabilities in order to establish a lasting competitive edge. The RBV is essential for understanding an organization's ability to innovate in the field of services within the framework of innovation. The RBV theory highlights the need of cultivating and overseeing internal organizational resources, while also establishing dynamic capabilities essential for innovation in swiftly evolving company environments. For instance, Fischer et al. (2010) employed the RBV as a foundation for examining the correlation between intangible resources and service innovation. The researchers discovered that intangible resources, such as knowledge and organizational culture, had a beneficial effect on an organization's capacity to create service innovations. The development of service innovation that is both capable and well-suited to customer service is considered a valuable resource for businesses. According to the RBV, such innovation serves as a strategic resource that contributes to competitive advantage, with cost advantage being one of its key dimensions. Furthermore, in the logistics context, an organization's effective service innovation can also drive the enhancement of logistics capabilities, leading to greater operational efficiency and competitiveness.

Service Innovation (SI)

Service innovation (SI) focuses on expanding new service concepts, encompassing the creation of novel ideas that align with customer needs and benefit service delivery (Kindström & Kowalkowski, 2014). Alternatively, Hsieh et al. (2013) define SI as creating value for customers, employees, business owners, partners, and communities through the creation or development of service offerings, service processes, and service business models. SI is considered crucial for service businesses and is recognized as a factor that brings economic balance and growth (Gallouj, 2002). It can generate higher profits for businesses (Yen et al., 2012) and even elevate the service industry, which is a key sector in many countries. Several studies have

demonstrated the benefits of SI. For instance, Manohar et al. (2020) examined innovation in the banking sector, a significant service industry, and found that service innovation can significantly enhance business reputation and generate positive word-of-mouth among consumers. In the logistics sector, strong innovation capabilities have been shown to improve business outcomes (Zawawi et al., 2017), such as logistics service quality in areas like order fulfillment, personal contact, information quality, and social responsibility engagement (Akoglu et al., 2022). Furthermore, Geng (2017) highlighted that SI is a component that can improve a business's financial performance.

Logistics Capability (LC)

In today's intricate business climate, logistics capabilities have become a crucial determinant of organizational performance and competitive advantage. According to Morash et al. (1996), logistics capabilities refer to the capacity to accomplish exceptional performance in distribution, overall logistics activities, and materials management. These qualities are essential for generating value and improving customer satisfaction by delivering products and services efficiently and effectively. Logistics capability is a multifaceted concept that encompasses a variety of dimensions. In accordance with Mentzer et al. (2004), critical logistics capabilities consist of integration, information transfer, supply management, and customer focus. These competencies empower firms to swiftly adapt to market fluctuations, maximize the use of resources, and improve the overall effectiveness of their supply chain. Academics have thoroughly investigated the correlation between the abilities of managing logistics and the success of a company. For example, Zhao et al. (2001) discovered that logistical capabilities make a major contribution to achieving better financial performance and customer satisfaction. Cho et al. (2008) found that strong logistics capabilities can help businesses achieve improved operational outcomes. From these various points, it can be concluded that logistics capability can help businesses enhance their operational performance and competitive advantage. Regarding logistics service providers, Richey et al. (2007) suggest that logistics capability affects service capability. A case study of service providers in China confirmed that logistics capability influences the quality of their logistics services (Lu & Yang, 2009).

Cost Advantage (CA)

Competitive advantage refers to the implementation of a business strategy that enables a company to outperform its competitors through reduced costs, identification of market opportunities, and management of competitive threats (Newbert, 2008). Cost advantage, a crucial aspect of competitive advantage, is a priority for many businesses.

Consequently, entrepreneurs must assess, improve, or find ways to reduce business costs (Chuang et al., 2013). Furthermore, Besanko et al. (2013) explain that cost advantage is a situation where a company can produce the same output with fewer resources than its competitors. Cost advantage is particularly significant in the logistics industry as it allows organizations to offer competitive prices in the market, increase profits, and provide flexibility in marketing strategy formulation. Moreover, having a cost advantage enables businesses to invest in innovation and service development, fostering long-term competitive advantage. Karia (2018) suggests that logistics service providers can achieve a cost advantage through investments in information technology that supports logistics operations, thereby gaining an edge over competitors. The concept of cost advantage can be evaluated through efficiency and effectiveness. Businesses can achieve appropriate transportation costs by optimizing the utilization of existing resources and reducing incorrect shipments. Additionally, they can improve warehouse costs and inventory management by eliminating unnecessary process costs and reducing cycle times (Karia, 2011; Karia & Wong, 2013). Several studies have examined cost management in logistics service providers. For instance, Ye et al. (2016) analyzed the impact of warehouse management systems on the operational efficiency of logistics companies in China. They found that implementing such systems significantly reduced storage and inventory management costs, potentially leading to cost advantages for logistics service providers.

Research Hypotheses Development

Service innovation and logistics capability are two crucial variables that have garnered considerable focus in both scholarly study and commercial operations, especially in the swiftly changing logistics and supply chain management industry. Service innovation encompasses the creation and execution of novel or greatly enhanced service ideas, procedures, or business frameworks that generate value for both clients and companies (Witell et al., 2016). Service innovation refers to the introduction of new technical solutions, enhanced operational methods, or creative service offerings that increase the efficiency and effectiveness of operations. The proposed link between service innovation and logistics capability is based on the idea that implementing innovative service practices can improve and broaden an organization's logistics capabilities. Several recent studies provide evidence for this postulated relationship. Evangelista et al. (2013) discovered that implementing service innovation in logistics organizations resulted in enhanced operational efficiency and decreased costs. Their research uncovered that the implementation of cutting-edge

information technologies and process reengineering had a crucial role in attaining cost benefits. Busse & Wallenburg (2011) showed that innovation in logistics services had a beneficial effect on enterprises' ability to attain cost leadership. Their study demonstrated that organizations that actively pursue service innovation are more effectively able to optimize their resources and processes, leading to reduced operational expenses and enhanced competitiveness. This investigation resulted in the development of research hypotheses 1 – 2:

H1: Service innovation has a positive impact on logistics capability.

H2: Service innovation has a positive impact on cost advantage.

The logistics capability of a firm is vital in defining its operational efficiency and effectiveness, which can potentially result in cost benefits in the competitive business environment. Logistical capability pertains to a company's capacity to carry out logistical operations with efficiency and effectiveness. This includes activities such as transportation, warehousing, inventory management, and information flow (Gligor & Holcomb, 2012). Cost advantage refers to a company's capacity to operate at a lower cost compared to its rivals, which allows it to generate better financial results or provide more competitive prices (Porter, 1985). Recent research provides evidence in support of this proposed link. Yang et al. (2013) discovered that green supply chain management played a key role in enhancing cost efficiency in a container shipping service firm. Their research unveiled that organizations with exceptional green supply chain capabilities were more proficient in optimizing their supply chain operations, leading to reduced total expenses. This investigation resulted in the development of research hypotheses 3:

H3: Logistics capability has a positive impact on cost advantage.

This study seeks to create a structural equation model that examines the relationship between service innovation, logistics capabilities, and cost advantage, based on the theoretical principles and relevant research discussed earlier. Figure 1 illustrates the research framework.

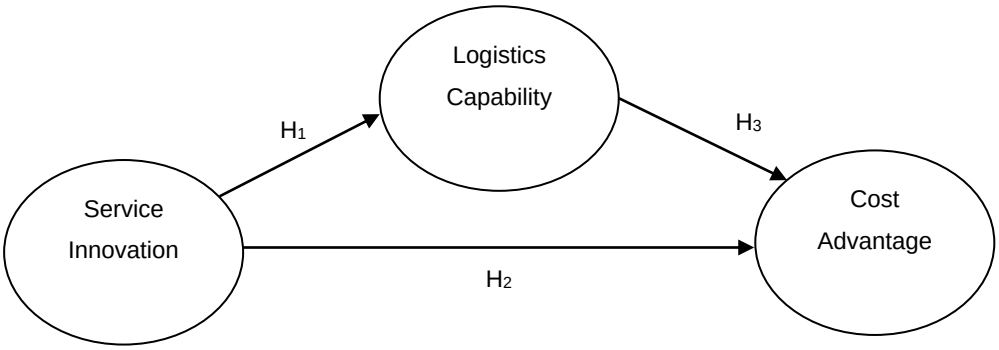


Figure 1 Research Framework

Source: Author's analysis

Methodology

Sample and Data Collection

The unit of analysis in this study is the organization itself. The study's population comprises logistics service providers with a specialization in transportation and warehousing. The sample size was 200 firms, which was estimated as 20 times the number of observed variables, which is consistent with the requirements for conducting structural equation modeling analysis (Hair et al., 2010). This study employs purposive sampling, targeting logistics service providers specializing in transportation and warehousing services. The sample encompasses small, medium, and large enterprises operating both domestically within Thailand and internationally. All sampled businesses are formally registered with the Department of Business Development (DBD) and have provided their electronic contact information. The data collection process involved the utilization of a google form questionnaire, which was sent to the email addresses of logistics service providers specializing in transportation and warehousing services. The data collection period extended over approximately four months to ensure adequate response rates from the target companies.

Measurement

This study employed a questionnaire as the research instrument, which consisted of two primary portions. The initial component comprised demographic inquiries, encompassing firm classification, the position of the respondent, the personnel count, and the mean yearly income. The second portion comprised of inquiries pertaining to service innovation (3 items; Anning-Dorson, 2018), logistics capabilities (4 items; Yang et al., 2009), and cost advantage (3 items; Molina-Azorín et al., 2015). The

measurements of these questions were obtained using a 7-point Likert scale, with a range from 1 (indicating strong disagreement) to 7 (indicating strong agreement).

The questionnaire underwent comprehensive testing to ensure its validity and reliability. Convergent validity was evaluated by calculating the Average Variance Extracted (AVE), which needed to exceed a threshold of 0.50 (Fornell & Larcker, 1981). The discriminant validity was assessed by calculating the Heterotrait-Monotrait (HTMT) ratio, which should not exceed 0.90 for each variable (Henseler et al., 2015). Cronbach's Alpha was utilized to test internal consistency reliability, with a minimum acceptable threshold of 0.60 (Nunnally & Bernstein 1994). Composite Reliability (CR) was used to evaluate the build reliability. The CR value should be more than 0.60 (Bagozzi & Yi 1988). Details are shown in Table 1.

Table 1 The result of validity and reliability

Variable	Cronbach's Alpha	AVE	CR	SI	LC
SI	0.914	0.762	0.906	-	-
LC	0.818	0.624	0.868	0.839	-
CA	0.908	0.769	0.909	0.892	0.799

Source: Author's analysis

Data Analysis

The key statistical technique used for data analysis in this study was Covariance-Based Structural Equation Modeling (CB-SEM). The use of CB-SEM was highly appropriate for this research given its capacity to examine intricate connections across numerous constructs concurrently, which was consistent with our theoretical framework rooted in the Resource-Based View (RBV) (Barney, 1991). The selection of CB-SEM was also supported by other factors. According to Hair et al. (2017), CB-SEM is suitable for research that is founded on strong theoretical foundations, such as our RBV-based model. Furthermore, our research seeks to validate and establish the theorized connections between service innovation, logistical capability, and cost advantage, for which CB-SEM is highly appropriate (Byrne, 2016). CB-SEM is especially advantageous when the aim of the research is to evaluate and enhance current theory. This matched with our objective of investigating the RBV within the logistics services setting. The method's capacity to consider measurement error therefore significantly improved the precision of our findings.

Results

Following the collection of data from the targeted 200 firms, an examination of the data distribution was conducted. The range of skewness values was from -0.899 to 0.178, while the range of kurtosis values was from -1.431 to -0.087. These results indicate a normal distribution (Tabachnick & Fidell 2013). The presence of multicollinearity among the three variables was evaluated using the Variance Inflation Factor (VIF), which indicated that there were no issues of multicollinearity as the values did not surpass 5 (service innovation = 2.223, logistics capability = 2.323) (Hair et al., 2010). The homogeneity of variance test indicated that the p-value for each variable was more than 0.05, suggesting that there was no significant variation in variance among the variables. To evaluate the linear correlation between the independent and dependent variables (linearity), it was found that both variables had a P-value below 0.05, indicating a linear relationship. Subsequently, the data was examined in order to address the research objectives. The findings are organized into three sections: descriptive statistics, model fit testing, and causal model analysis.

Descriptive Statistics

The majority of the sample consisted of private limited companies, with 124 respondents representing 62.00%. The majority of participants were in middle management positions (77 respondents, 38.50%), worked in companies with 30-100 employees (90 respondents, 45.00%), had average annual revenues not exceeding 50 million baht (95 respondents, 47.50%), had been in business for more than 5 years (137 respondents, 68.50%), and operated in a business-to-business (B2B) context (170 respondents, 85.00%). Detailed results are presented in Table 2.

Table 2 Demographic details

Demographics		Frequency	Percentage
Company type			
	Sole proprietorship	9	4.5
	Limited partnership	66	33.0
	Private limited company	124	62.0
	Others	1	0.5
Management position			
	Top management	47	23.5
	Middle management	77	38.5
	First-line management	63	31.5
	Operational level	12	6.0
	Others	1	0.5
Number of employees			
	Less than 30 workers	85	42.5
	30 – 100 workers	90	45.0
	More than 100 workers	25	12.5
Average Annual Revenue (Past 3 Years)			
	Not exceeding 50 million baht	95	47.5
	50 million - 300 million baht	83	41.5
	More than 300 million baht	22	11.0
Years in Business			
	5 years or less	63	31.5
	More than 5 years	137	68.5
Main Service Model			
	Business-to-Business (B2B)	170	85.0
	Business-to-Consumer (B2C)	30	15.0
Total		**200**	**100**

Source: Author's analysis

The analysis of service innovation indicated a high degree of quality, with an average score of 4.863. The most outstanding aspect was the capacity to bring new services to the market at a faster pace than rivals (mean 4.940), closely followed by the launch of groundbreaking services during the last 5 years (mean 4.895), and the ability to provide services that are distinct from those offered by competitors (mean 4.755). The

factor loadings range from 0.850 to 0.893, indicating strong construct validity and a high level of reliability for the measurement model.

The analysis of logistics capability indicated a high degree of proficiency, with an average score of 4.861. The feature that received the highest rating was the capacity to establish service reliability, with a mean score of 5.390. This was followed by flexibility and information integration, which received a mean score of 5.00. Good contact with stakeholders received a mean score of 4.900, while the ability to add value to services received a mean score of 4.155. The factor loadings fall within the range of 0.667 to 0.862, demonstrating robust construct validity and a high degree of reliability in the measurement model.

The cost advantage study revealed a favorable level overall, with a mean value of 4.842. The area that received the highest rating was the efforts made to enhance productivity by achieving cost efficiency, with an average score of 4.895. This was closely followed by the total decrease in costs, which had an average score of 4.835. Lastly, the attempts to take advantage of economies of scale had an average score of 4.795. The factor loadings range from 0.874 to 0.881, indicating strong construct validity and a high level of reliability in the measurement model. In Table 3, the results are presented in detail.

Table 3 Descriptive statistics and factor loading

Latent Variables	Observed Variables	Mean	Max	Min	Factor Loading
Service Innovation	SI1: Our company is always able to distinguish itself from its competitors	4.755	7.000	1.000	0.850
	SI2: Our organization is the first to provide new service options to the market	4.940	7.000	2.000	0.893
	SI3: Over the last five years, our organization has offered more new services than any other	4.895	7.000	2.000	0.875
	Average service innovation	**4.863**	**1.670**	**7.000**	
Logistics Capability	LC1: Value-added service	4.155	7.000	1.000	0.775
	LC2: Service reliability	5.390	7.000	1.000	0.667
	LC3: Relationship building	4.900	7.000	1.000	0.862
	LC4: Information integration and flexibility	5.000	7.000	2.000	0.842

Table 3 Descriptive statistics and factor loading (continued)

Latent Variables	Observed Variables	Mean	Max	Min	Factor Loading
	Average logistics capability	**4.861**	**7.000**	**1.75**	
Cost Advantage	CA1: General costs are minimized	4.835	7.000	2.000	0.876
	CA2: An attempt is made to improve productivity	4.895	7.000	2.000	0.874
	CA3: Efforts are made to reach economies of scale	4.795	7.000	1.000	0.881
	Average cost advantage	**4.842**	**7.000**	**1.670**	

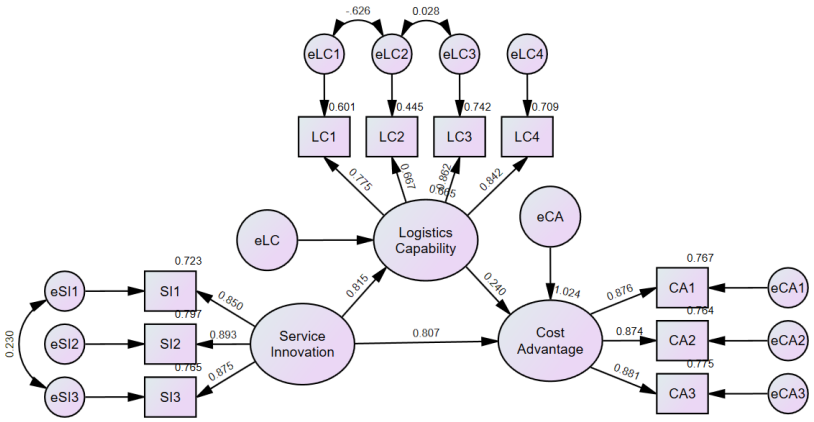
Source: Author's analysis

Model Fit Testing

The generated model has a strong alignment with the empirical data, as indicated by multiple fit indices. The CMIN/df ratio is 1.287, which falls below the acceptable threshold of 2 as suggested by Dion (2008). The Goodness of Fit Index (GFI) is 0.966, and the Comparative Fit Index (CFI) is 0.995, both beyond the recommended threshold of 0.95 (Hooper et al., 2008). The Normed Fit Index (NFI) is 0.980, exceeding the recommended threshold of 0.90 (Hair et al., 2009). The Tucker-Lewis Index (TLI) has a value of 0.993, surpassing the recommended threshold of 0.95. Furthermore, the Root Mean Square Error of Approximation (RMSEA) is 0.038, which is lower than the recommended threshold of 0.06 (Hu & Bentler, 2009). The combined indices suggest that the suggested model is well-suited to the empirical data.

Causal Model Analysis

This study examined three hypotheses. The results indicate that service innovation has a significant and beneficial direct impact on logistical capability ($p < 0.001$), with a path coefficient of 0.815. Service innovation has a strong and beneficial impact on cost advantage, as proven by a significant direct effect ($p < 0.001$) and a path coefficient of 0.807. In addition, the logistics capability has a strong positive impact on cost advantage ($p < 0.001$), with a path coefficient of 0.240. Path analysis reveals that service innovation exerts an indirect influence on cost advantage, with an indirect effect coefficient of 0.195. The findings are illustrated in Figure 2.



(CMIN/df = 1.287 GFI = 0.966 NFI = 0.980 TLI = 0.993 CFI = 0.995 RMSEA = 0.038)

Figure 2 Structure model and hypothesis testing

Source: Author's analysis

Discussion

The findings of this study are derived from the three hypotheses and can be discussed as follows:

Service innovation directly enhances logistics capability effectively. This finding indicates that logistics service providers can improve their logistics capabilities by developing service innovations that focus on differentiating service delivery, accelerating the introduction of services to clients, and designing unique services. Domestic logistics service providers should develop innovations or service models that align specifically with the context of logistics services for businesses in Thailand. These innovations may possess unique, tailored characteristics that enable service providers to become integral components in optimizing logistics activities across various business sectors in Thailand. Such context-specific development would allow logistics firms to maximize their effectiveness in supporting the distinctive needs of the Thai business ecosystem. This discovery is consistent with the findings of Wang (2016), which demonstrated a positive correlation between the innovation competency of delivery organizations and their logistics performance. For example, using service design or utilizing innovation and technology to solve problems can enhance customer service procedures, leading to improved precision and timeliness in transportation and better meeting client requirements. In a study conducted by Deng and Noorliza (2023), it was discovered that the ability to innovate had a beneficial influence on different outcomes among 273 logistics service providers in China. These factors encompassed punctual delivery, heightened customer satisfaction, effective handling of issues for clients, and decreased

rates of complaints. Their study illustrates that possessing innovative skills in logistics services can result in measurable enhancements in operational efficiency and client happiness. These findings highlight the crucial role of service innovation in improving logistics capabilities, indicating that investments in creative practices might result in substantial advantages in the logistics sector.

Service innovation has a positive and direct effect on cost advantage. This suggests that when service providers give priority to the advancement of their service innovations, it not only improves their ability to manage and coordinate their operations but also gives them a competitive edge by reducing costs. This advantage can be observed through cost reduction, increased productivity, and optimized economies of scale. Reduced expenses can result in higher profitability and enhanced business stability for service providers. Logistics service providers in Thailand should conceptualize and develop innovative service models that introduce novel approaches and offer these services ahead of competitors in the same industry. Such innovation can enhance their operational productivity and efficiency. This strategic initiative can serve as a crucial factor in improving the operational cost structure of logistics service providers, ultimately contributing to their cost advantage in a competitive marketplace. This discovery is consistent with Lin and Chen (2016), who investigated service innovation in relation to environmental awareness in Taiwan's electronics sector. Their research demonstrated that the implementation of green service innovation has a substantial impact on the attainment of a competitive advantage in terms of both cost and distinctiveness. In a study conducted by Liu and Huang (2018), it was discovered that a significant correlation exists between service innovation and competitive advantage, both within the organization and in relation to external factors. The research concluded that a higher degree of service innovation leads to greater internal competitive advantages. More precisely, it promotes the cultivation of innovative learning among employees, amplifies knowledge, and heightens happiness. Furthermore, it has the capability to provide external competitive advantages, allowing enterprises to surpass competitors operating in the same industry. These studies highlight the various advantages of service innovation, which go beyond just improving operations and include cost savings and gaining a competitive edge. The results indicate that allocating resources to service innovation can result in substantial benefits in terms of both internal capacities and market competitiveness, especially in cost-conscious industries such as logistics.

Logistics capability has a positive and direct effect on gaining a cost advantage. This indicates that when service providers have robust logistics capabilities, which include reliability, flexibility, information integration, and value-added services, it leads to

a competitive advantage in terms of cost for the business. It can be posited that reliable logistics capabilities of logistics service providers enhance productivity, subsequently leading to reduced operational costs. Relationship building with key stakeholders, such as suppliers, represents another critical factor that improves business cost efficiency. Information integration and flexibility facilitate necessary data exchange among various organizational departments, resulting in efficient operations and decision-making processes that remain adaptable to diverse situations. Furthermore, value-added service constitutes an additional factor that contributes to service optimization and more judicious utilization of operational resources, ultimately enabling more appropriate cost management. This benefit is seen in the total cost effectiveness and enhanced productivity. These results are consistent with Wen (2012) study on 625 transportation service providers. The study found that logistical capabilities, which included internal operations, cost and service quality, customer service, and productivity, had a beneficial impact on competitive advantage, namely in terms of cost leadership. In a study conducted by Dai et al. (2012), it was discovered that logistical capabilities, such as business infrastructure, operations, and speed, gave China's container port industry a competitive edge. The study assessed competitive advantage based on cost, service quality, and market share. These studies emphasize the crucial importance of logistical capabilities in attaining cost benefits. They propose that allocating resources towards the development and improvement of logistical capabilities can result in substantial cost savings and increased overall competitiveness. The diverse and complex nature of logistical capabilities, ranging from operational efficiency to customer service quality, seems to play a role in creating a significant cost advantage that goes beyond simply reducing costs. This advantage includes generating value and establishing a strong position in the market. This research emphasizes the strategic significance of logistical capabilities in the highly competitive and cost-conscious logistics industry, underscoring their potential as a sustainable source of competitive advantage.

Conclusion

This study investigated three variables: service innovation, logistics capability, and cost advantage. The sample included 200 logistics service providers with expertise in transportation and warehousing. three research hypotheses were formulated based on pertinent theories and prior research, in accordance with three objectives: (1) The objective was to evaluate the level of service innovation, logistics capability, and cost advantage among logistics service providers. The results indicated that each of the three factors was at an adequate level among the providers included in the sample. (2) The

objective was to develop a causal model that explains the relationship between service innovation, logistics capability, and cost advantage. The findings revealed that service innovation has a positive and direct impact on both logistics capability and cost advantage. Additionally, it exerts an indirect effect on cost advantage by enhancing logistics capability. The cost advantage of logistics service providers was also found to be positively influenced by logistics capability. (3) To assess the suitability of the developed model, which revealed that the model's fitting was satisfactory, as indicated by the CMIN/df, GFI, NFI, TLI, CFI, and RMSEA indices. These findings enhance our comprehension of the interactions between service innovation, logistics capability, and cost advantage in the logistics industry, emphasizing the strategic significance of innovation and capability enhancement in attaining competitive cost advantages.

Theoretical Contributions

The model developed in this study has a strong correspondence with empirical data. All three factors' measuring items demonstrate both validity and reliability, with factor loadings that are suitable. This serves as a great resource for academics and researchers who are working on research projects that involve these three variables. It contributes to the advancement of knowledge and brings benefits to the academic community.

This study utilizes the Resource-Based View (RBV) as its primary theoretical framework, emphasizing the significance of service innovation as a vital resource that logistics service providers should focus and develop in order to gain a competitive edge. The study primarily examines the cost advantage as a competitive advantage, which is a crucial aspect in logistics operations. As a result, the research findings contribute to expanding the range of information obtained from the RBV and provide a framework for academics to use in future scholarly pursuits.

Practical Implications

Service innovation is essential for improving logistics capability and gaining a competitive edge in terms of cost. Hence, it is imperative for logistics service providers to give the highest priority to the advancement of efficient service innovations, specifically in differentiating their services from rivals. This can be accomplished by utilizing innovation to optimize the efficiency of customer service, for example, by establishing value-added transportation models or integrating adaptable information systems for transportation and warehouse management. Furthermore, it is imperative for providers to prioritize the

prompt implementation of novel and cutting-edge services in order to outperform industry rivals, ensuring exceptional service and retaining their customer base.

Having superior logistical capability plays a crucial role in gaining a cost advantage over competitors. Therefore, it is essential for logistics service providers to consistently improve their logistics capabilities. This encompasses the provision of value-added services, such as efficient and accurate cargo transportation facilitated by customer-centric information systems. Moreover, cultivating favorable engagements with stakeholders, ranging from suppliers to customers, is of utmost importance. Providers should leverage customer feedback to initiate collaborative discussions with suppliers, with the goal of discovering the most effective operational strategies. Moreover, crucial logistical capability lies in the implementation of an integrated information system that includes vital data and enhances adaptability. Ensuring and enhancing service reliability is also of utmost importance. These logistical capabilities all contribute to creating a long-term cost advantage.

Suggestions for Future Research

This study utilized service innovation as the causal factor. Subsequent studies could investigate additional causal factors that might impact logistics capabilities and cost advantage, such as knowledge sharing, information sharing, or dynamic capability. In addition, although this study used logistics competence as a mediating variable, future studies could explore other potential mediators such as information technology capability or operational capability. Moreover, this study specifically examined cost advantage as a constituent of competitive advantage. Further research should investigate additional factors such as differentiation or time to market in order to have a more thorough picture of the competitive advantages in logistics services.

The present work employed a quantitative methodology, constructing a causal model derived from a comprehensive evaluation of existing literature. Further research could utilize qualitative approaches, such as focus groups, participant observation, or in-depth interviews, to get more profound understandings and create more sophisticated applications.

Although this model was specifically used for logistics service providers, future research could broaden its use to many service industries, including restaurants, and spa services. This would optimize the model's usefulness and offer strategic operational instructions across diverse service sectors.

This research analyzed the study results and tested the research hypotheses holistically, without segmentation by business size. Future research could enhance

analytical depth by categorizing businesses into small, medium, and large enterprises, which would necessitate collecting a larger sample size. Such segmentation would facilitate more in-depth analysis and generate greater theoretical and practical benefits for logistics service providers in Thailand. This approach would address an important research gap by examining how relationships between variables might differ across various organizational scales within the logistics sector.

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