The Impact of Logistics Capabilities on 3PL Provider Firm Performance

Tanyanart Yanpiboon[1]

Abstract

This research investigates the impact of logistics capabilities on firm performance in third-party logistics (3PL) providers. Drawing on the resource-based view, the researchers examine how three key capability dimensions—service capability, innovation capability, and flexible capability—influence both service and financial performance outcomes. Using SMART PLS 4.0 with data collected from 205 3PL firms in Thailand, the research reveals that all three capability dimensions significantly enhance service performance, with flexible capability demonstrating the strongest effect. Innovation capability uniquely contributes directly to both service and financial performance, while service and flexible capabilities influence financial outcomes primarily through service performance. The findings validate the service-profit chain framework in logistics contexts and highlight innovation capability as a valuable strategic resource generating dual benefits. This research advances the theoretical understanding of capability-performance linkages in logistics outsourcing while providing practical insights for 3PL providers seeking to prioritize capability investments for competitive advantage. By distinguishing between direct and indirect performance effects across capability dimensions, the study offers a more nuanced perspective on how logistics capabilities translate into measurable performance outcomes in increasingly complex supply chain environments.

Keywords: Third-party logistics providers, Logistics capability, Service performance, Financial performance

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[1] Faculty of Railway Systems and Transportation, Rajamangala University of Technology Isan, Thailand.

Corresponding author, e-mail: tanyanart.ya@rmuti.ac.th

Introduction

Third-party logistics (3PL) providers have experienced growing global demand as more businesses choose to outsource their logistics operations. These specialized partners offer end-to-end logistics solutions that cover the entire supply chain spectrum, including procurement services, warehousing facilities, comprehensive inventory management, packaging operations, materials handling systems, and advanced logistics information technologies (Centobelli, Cerchione, & Esposito, 2017; Jager, Hilletofth, & Ujvari, 2009). Furthermore, 3PL providers have emerged as crucial players in this evolving landscape, offering specialized capabilities that help client firms navigate complex supply chain environments.

The capabilities of 3PL providers—their resources, skills, and competencies—are critical factors determining their performance and competitive position in the marketplace (Hasan, Lei, & Bian, 2024). Based on existing literature, logistics capabilities influence firm performance (Ho & Chang, 2015; Kumar & Prashar, 2024; Lyu, Chen, & Huo, 2019). Despite extensive research on 3PL capabilities and performance, major significant gaps remain. First, most studies focus on specific contexts rather than taking a comprehensive approach that captures potential competence interactions and synergies (Saukko, Aaltonen, & Haapasalo, 2022; Zhang & Okoroafo, 2015), providing an integrated competence assessment framework but acknowledging the need for empirical investigations across diverse 3PL contexts. Second, the relative contribution of different capabilities to service versus financial performance and performance in the setting of 3PL businesses remains unclear (Kumar & Prashar, 2024; Zhou, Wang, Wang, Zhao, & Feng, 2023). Finally, Huang and Huang (2012) state that previous research had proposed that logistics capabilities are complex constructs. Therefore, it should clarify the constructs. Also, Hasan et al. (2024) identify that understanding logistics capability factors is crucial for organizations seeking to attain exceptional operational effectiveness, particularly since the systematic analysis of these factors remains underdeveloped in existing research.

From the above, this research addresses significant gaps in the 3PL literature by implementing a comprehensive capability framework that distinguishes between service and financial performance outcomes. The study captures their strategic perspectives on capability development and performance implications by examining capability interactions and synergies while collecting data directly from 3PL providers. This research investigates explicitly the relative

contribution of different capabilities to service versus financial performance— an underexplored area—while shifting focus from the commonly studied client perspective to the 3PL provider's viewpoint. Through quantitative performance insights, this study contributes to the theoretical understanding of capability-performance linkages in logistics outsourcing. . It also provides practical insights for 3PL providers seeking to enhance their market position through strategic capability development.

Beyond the research gaps mentioned above, this study is particularly significant in the Thai context, which differs considerably from the developed countries where most previous research has been conducted. The structure of third-party logistics (3PL) providers in Thailand has distinct characteristics that differentiate it from developed nations. The Thai 3PL market predominantly consists of small and medium-sized enterprises (SMEs), with over 80% of 3PL providers in Thailand having fewer than 200 employees, in contrast to developed markets, which are typically led by large-scale service providers (Rattanopat, Thitiphanphak, & Pimpanit, 2021). Furthermore, 3PL providers in Thailand face resource constraints and limited capacity for technological and innovation investments, which may affect the development of the three logistics capability dimensions examined in this research. Studying the Thai context fills a gap in the literature by offering perspectives from an emerging market with different economic, social, and cultural contexts from developed countries. This contributes to a more comprehensive and diverse understanding of the relationship between logistics capabilities and performance outcomes across different business environments. Therefore, this study investigates the impacts of three-dimensional logistics capabilities (Service, Innovation, and Flexibility capability) on service and financial performance

Literature Review

Resource-Based View (RBV) in Logistics

The resource-based view (RBV) provides a theoretical foundation for understanding how firms' unique resources and capabilities contribute to competitive advantage (Barney, 1991; Wernerfelt, 1984). In the logistics context, RBV has been applied to explain how 3PL providers develop distinctive capabilities that are valuable, rare, inimitable, and non-substitutable (Lai, Li, Wang, & Zhao, 2008; Yeung, Zhou, Yeung, & Cheng, 2012). The creation of capabilities necessary

for effective supply chain management, as well as discussing how these capabilities align with the RBV framework to achieve sustainable competitive advantage (Clifford Defee & Fugate, 2010).

Recent extensions of RBV in logistics research by Yang, Pan, Song, Ma, and Yang (2023) demonstrate that capability configurations, rather than isolated capabilities, determine competitive positioning. Their empirical study showed that complementary capability bundles produced higher performance outcomes than the sum of individual capabilities. Similarly, Wang, Agyemang, and Jia (2021) integrate RBV and resource orchestration theory to analyze how logistics service providers can effectively manage resources to enhance service performance and achieve a competitive edge.

Logistics Capabilities of 3PL Providers

Third-party logistics (3PL) providers offer services that enable businesses to outsource various elements of their supply chain management. These providers typically provide a comprehensive range of services encompassing transportation, warehousing, inventory control, order processing, distribution, returns management, systems integration, and analytics solutions. 3PL providers bring a comprehensive set of logistics capabilities that enable businesses to optimize their supply chains, reduce operational costs, and focus on core competencies (Zhang & Okoroafo, 2015).

Logistics service capability refers to transportation and logistics services that fundamentally depend on this capability to serve customers effectively (Wang, Jie, & Abareshi, 2017). RBV suggests that firms utilize capabilities and resources to establish competitive advantages (Wernerfelt, 1984; Wang et al., 2021; Yusuf, Gunasekaran, Adeleye, & Sivayoganathan, 2004). Capability represents a firm's ability to deploy its resources, both tangible and intangible, to complete tasks or activities that improve organizational performance (Rengkung, 2022). Following Hasan et al. (2024), who identify the logistics capability factors that contribute to firm performance, and Huang and Huang (2012), who explore and develop a measure of logistics capability for LSPs, this research examines logistics capability from an LSP perspective, focusing specifically on service capability, innovation capability, and flexibility capability.

Service capability represents a firm's capacity to respond to and serve its customers effectively. Within LSPs, customer service is an essential business mechanism that facilitates customer communication while delivering value and enhancing response times. This critical role

of customer service as a fundamental logistics capability has been extensively documented in the literature (Hasan et al., 2024; Zhao, 2019).

Innovation capability represents an organization's capacity to convert knowledge and ideas into novel products, processes, and systems that deliver tangible benefits to the firm (Wang, 2016; Yang, 2012). Within the logistics domain, innovation capability has emerged as a fundamental component of effective logistics management (Wang, Asian, Wood, & Wang, 2020).

Flexibility capability represents an organization's capacity to adapt and respond to changing circumstances or unexpected events (Aziz, Razak, Hussin, Yaacob, & Merican, 2017). Flexibility serves as a critical mechanism for managing uncertainty in logistics operations. Volume flexibility allows organizations to accommodate fluctuating demand levels, while operations flexibility enables adaptation to changing process requirements or disruptions (Hasan et al., 2024; Wang, Wood, & Wang, 2022).

Performance Outcomes in 3PL Providers

Logistics providers fulfill an essential function within supply chain systems by facilitating the movement of goods and information between diverse business partners (Wang, Jie, & Abareshi, 2015 Their logistics performance emerges as a critical success determinant for the service providers and their customer organizations (Vlachos & Polichronidou, 2022). In this research, firm outcomes in 3PL Providers include service and financial performance.

Service performance encompasses various dimensions of service quality and customer satisfaction. Reliability, responsiveness, and service recovery are key performance metrics (Hasan et al., 2024). Yang (2012) established empirical linkages between operational capabilities and service performance outcomes. More recently, Wang et al. (2022) expanded service performance measurement to include responsiveness, innovation, and flexibility, reflecting evolving customer expectations.

Financial performance outcomes typically include profitability, revenue growth, and return on investment. Kumar and Prashar (2024) demonstrated empirical relationships between logistics service capability and financial performance. Superior service performance often translates into premium pricing and improved margins, and capability investments may show delayed financial returns, highlighting the importance of assessment approaches (Zhou et al., 2023).

Hypotheses Development

Effects of Logistics Capability's Dimension on Firm Performance

Previous research in the logistics domain has established a positive correlation between logistics capability and organizational performance outcomes (Aziz et al., 2017; Ho & Chang, 2015; Lyu et al., 2019; Yang, 2012). For LSPs, these capabilities manifest their impact across operational metrics and financial results (Liu & Lyons, 2011). The multidimensional nature of logistics capability encompasses several critical elements: innovation capacity, service response capabilities, and operational flexibility. Among these, logistics innovation capability serves as a cornerstone in mitigating supply chain uncertainties and risks while simultaneously enhancing overall logistics performance (Wang et al., 2020).

The dimension of logistics capability represents the organization's ability to deliver customer-focused solutions. LSPs with superior service capabilities are better positioned to address diverse customer requirements across logistics services, achieving enhanced service performance outcomes (Hasan et al., 2024). Flexibility is particularly crucial in transportation, enabling organizations to develop alternative options that effectively address capacity constraints and shortages (Pellegrino, Costantino, & Tauro, 2021).

This connection underscores how logistics capabilities are foundational elements that enable rapid adjustments to market changes and disruptions throughout the extended supply network. Consequently, well-developed logistics capabilities represent a pathway through which organizations can achieve distinguished performance outcomes and establish sustainable competitive advantages in their respective markets. Thus, the hypotheses proposed that:

H1a-b: Service Capability is positively related to service (a) and financial (b) performance.

H2a-b: Innovation Capability is positively related to service (a) and financial (b) performance.

H3a-b: Flexible Capability is positively related to service (a) and financial (b) performance.

Service Performance and Financial Performance

Firm performance is a subset of organizational effectiveness that includes both operational and financial outcomes (Santos & Brito, 2012). The financial dimension manifests

through customer retention rates, sales growth trajectories, profit margin expansion, and enhanced returns on invested capital. Concurrently, market performance is reflected in successful market penetration initiatives and sustained market share growth.

Service performance metrics serve as leading indicators that often precede financial outcomes, providing management with early signals about potential challenges or opportunities in the market (Liu & Lyons, 2011). Such decisions require careful deliberation to prevent financial losses and preserve customer satisfaction levels. The financial impact of service performance intensifies in competitive markets where product differentiation proves challenging. When product features and specifications converge across competitors, service quality emerges as a decisive factor in purchase decisions (Ho & Chang, 2015; Zhou et al., 2023). This phenomenon explains why logistics service providers and manufacturers increasingly emphasize service-level guarantees as core propositions. The hypothesis proposed that:

H4: Service Performance is positively related to Financial Performance.
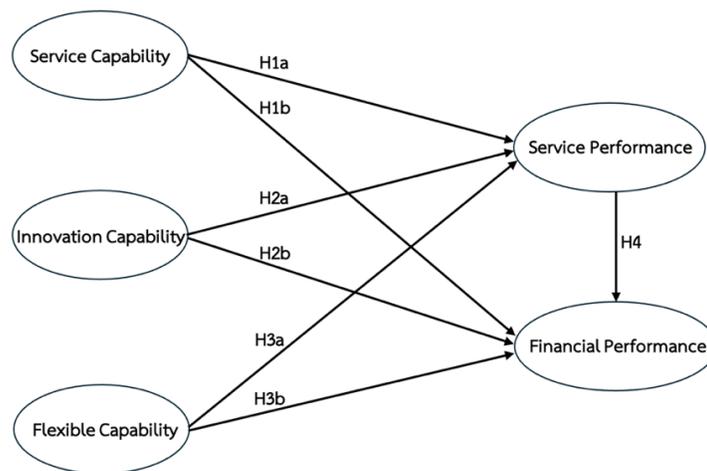

Figure 1 Conceptual Framework

Research Methodology

Sample and Data Collection

This research used a quantitative approach. The survey was administered through both digital and paper-based channels. Participants represented various organizational levels, including office executives, supervisors, managers, and senior leadership. To assess potential non-response bias, the researchers contacted a subset of companies that did not initially respond and

compared their demographic characteristics (including company age, firm size, and primary business operations) with those who participated in the study.

This research employed a purposive sampling approach, a non-probabilistic technique appropriate for investigating the relationship between capabilities and firm performance in the 3PL sector. A single response was collected from each participating company to ensure data independence. The researcher compiled a comprehensive list of 3PL businesses to develop the sampling frame by consulting multiple sources, including the Department of Business Development at Thailand's Ministry of Commerce, the freight industry Yellow Pages, and supplementary Google searches to verify contact information. The selection criteria focused on small and medium-sized, domestically-owned 3PL companies operating in Thailand, ensuring the sample represented local industry characteristics rather than multinational operations. After that, the researcher selected 3PL providers based on the following criteria: they were small and medium-sized companies, were not foreign-owned, and were locally established firms. The questionnaire was emailed to 400 different companies across Thailand, with a request to complete it and an explanation of the study project's goal.

Data collection 205 responses from distinct 3PL firms, representing a response rate of 52.5%. Regarding sample size adequacy, this meets established guidelines for PLS-SEM analysis. According to Hair, Hult, Ringle, and Sarstedt (2020), a minimum sample size of 100 to 200 is generally adequate for PLS-SEM, depending on the complexity of the model (e.g., the number of paths pointing at a construct and the expected effect sizes). Therefore, the obtained sample size of 205 responses is sufficient to ensure robust statistical analysis and generalizability within the 3PL sector. The demographic profile of the respondents is shown in Table 1.

Table 1 Demographic Profile of the Respondents

Characteristics		Frequency	Percent
	Warehousing	66	32.20
	Transportation	87	42.44
Type of Company	Packaging and Materials handling	34	16.59
	Other	18	8.78
	Total	205	100.00

Table 1 Demographic Profile of the Respondents (Continued)

Characteristics			Frequency	Percent
The firm's employee size	Less than 30		37	18.05
	31- 100		108	52.68
	More than 100		60	29.27
		Total	205	100.00
The Period of Operation	Less than three years		64	31.22
	3 to 6 years		88	42.93
	7 to 10 years		32	15.61
	10 years or more		21	10.24
		Total	205	100.00

Table 1 presents the demographic characteristics of the 205 3PL firms participating in the study. The table is organized into three main categories: Type of Company, Firm's Employee Size, and Period of Operation. This demographic distribution demonstrates a diverse sample across different types of 3PL providers, organizational sizes, and operational experience levels, enhancing the findings' representativeness and generalizability.

Measurement

The measurement of logistics capability dimensions—service capability, innovation capability, and flexible capability—was based on Huang and Huang (2012) and Wang et al. (2022). The dependent variable was the firm performance based on Zhou et al. (2023). All variables were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The item objective congruence (IOC) index for each question was assessed, with all questions meeting the criterion of an IOC greater than 0.5, indicating good validity (Turner & Carlson, 2003). The reliability of the study instrument was evaluated through a pilot test involving 30 participants from the logistics industry. Internal consistency of the scales was assessed using Cronbach's alpha, with all constructs exceeding the threshold of 0.70, indicating acceptable to high reliability (Nunnally & Bernstein, 1994).

Research Findings

Structural Equation Modeling

Based on several methodological considerations, the research utilized PLS-SEM 4.0 rather than traditional covariance-based SEM. PLS-SEM was selected primarily for its suitability for exploratory research contexts, its robust performance with smaller sample sizes, and its ability to handle non-normal data distributions while simultaneously effectively modeling complex multivariate relationships (Duarte & Amaro, 2018). The increasing adoption of PLS-SEM in contemporary research underscores its effectiveness in addressing these analytical challenges.

Measurement Model

Outer loadings and composite reliability (CR) tests were employed to evaluate item and inter-item consistency reliability. For validity, outer loadings must exceed the established 0.50 threshold. In this research, CR values surpassed the recommended minimum of 0.7, indicating strong relationships between construct indicators and their corresponding latent constructs. Additionally, the average variance extracted (AVE), which quantifies the proportion of variance in indicators explained by the latent construct, exceeded the recommended 0.5 thresholds (Hair, 2020). The analysis results satisfied all these criteria, with outer loadings ranging from 0.738 to 0.974, CR values between 0.876 and 0.945, and AVE values spanning from 0.640 to 0.852. As displayed in Table 2.

Table 2 Factor Loading, CR, AVE, and Cronbach's Alpha

Dimension		Items	Factor Loading	Cronbach's Alpha	AVE	CR
Logistics Capability						
Service Capability (SC)	SC1	On-time delivery of goods	0.858	0.834	0.750	0.900
	SC2	Good protection for goods' safety and risk	0.858			
	SC3	Prompt response to customers' requirements	0.882			
Innovation Capability (IC)	IC1	Exploring the best methods to achieve corporate goals	0.926	0.854	0.775	0.912

Table 2 Factor Loading, CR, AVE, and Cronbach's Alpha (Continued)

Dimension		Items	Factor Loading	Cronbach's Alpha	AVE	CR
Innovation Capability (IC) (Continued)	IC2	Using new technology and innovation	0.894	0.854	0.775	0.912
	IC3	Entering into newer service routes	0.818			
Flexible Capability (FC)	IQ1	Accommodating non-routine requests	0.918	0.912	0.852	0.945
	FC2	Handling unexpected events	0.974			
	FC3	Constructing flexible operational procedures and systems	0.876			
Firm Performance						
Service Performance (SP)	SP1	The delivery is faster	0.861	0.863	0.710	0.907
	SP2	The delivery is more punctual	0.797			
	SP3	The service is more convenient	0.894			
	SP4	Flexibility in handling customers' specific requirements.	0.814			
Financial Performance (FP)	FP1	Turnover	0.863	0.811	0.640	0.876
	FP2	Market share	0.774			
	FP3	Return on sales	0.819			
	FP4	Return on investment growth	0.738			

The subsequent step involved assessing the discriminant validity of the measures, which evaluates whether each construct is truly distinct from other constructs in the model. Discriminant validity is demonstrated when correlations between the focal measure and measures of different concepts remain sufficiently low. Essentially, discriminant validity confirms that each construct captures unique phenomena rather than merely reflecting aspects already measured by other variables in the framework. Table 3 demonstrates that the square root of each construct's AVE (diagonal values) is greater than its associated correlation coefficient, indicating appropriate

discriminant validity (Fornell & Larcker, 1981). Recent critique of the Fornell and Larcker (1981) criteria shows that The Fornell and Larcker (1981) criteria have been criticized for their ineffectiveness in detecting discriminant validity issues under common research conditions (Henseler, Ringle, & Sarstedt, 2015). As an alternative, Henseler et al. (2015) proposed the heterotrait-monotrait (HTMT) ratio of correlations based on the multitrait-multimethod matrix approach. The model was evaluated using this more robust technique, with results presented in Table 4.

Table 3 Fornell-Larcker Criterion for Discriminant Validity

Constructs	FC	FP	IC	SC	SP
FC	0.923				
FP	0.689	0.800			
IC	0.797	0.750	0.880		
SC	0.578	0.652	0.693	0.866	
SP	0.795	0.821	0.786	0.666	0.842

The results in Table 3 demonstrate strong discriminant validity across all constructs. For each construct, the square root of the AVE (diagonal values) is higher than its correlation with any other construct in the model. For instance, Flexible Capability (FC) has a square root AVE of 0.923, which exceeds its highest correlation of 0.797 with Innovation Capability (IC). Similarly, Service Performance (SP) has a square root AVE of 0.842, exceeding its highest correlation of 0.821 with Financial Performance (FP). These findings confirm that each construct in the model captures a unique phenomenon that is empirically distinct from other constructs, supporting the discriminant validity of the measurement model.

Table 4 Heterotrait-Monotrait (HTMT) Ratio Analysis

Constructs	FC	FP	IC	SC	SP
FC					
FP	0.791				
IC	0.895	0.897			
SC	0.658	0.792	0.822		
SP	0.892	0.977	0.902	0.780	

The HTMT results in Table 4 further validate the discriminant validity of the measurement model. All HTMT values are below the conservative threshold of 0.90, with most values well below this cutoff. The highest HTMT value is 0.977 between SP and FP, which is marginally above the threshold but can be considered acceptable given the theoretical relationship between these constructs in the service-profit chain framework. The next highest value is 0.902 between IC and SP at 0.902, which is very close to the threshold. All other HTMT values are comfortably below 0.90, providing additional confidence in the discriminant validity of the constructs. Combined with the Fornell-Larcker results in Table 3, these findings strongly support the discriminant validity of the measurement model, indicating that each construct represents a distinct concept even when using this more rigorous assessment method.

Structural Model and Hypothesis Testing

To complete the PLS-SEM analysis, the researcher evaluated the structural model using several key metrics: path coefficients (beta values), coefficient of determination (R-square), and effect size (f-square). The significance of the path coefficients was determined through a bootstrapping procedure with 5,000 resamples. Bootstrapping is a non-parametric resampling technique that enables robust estimation of standard errors, confidence intervals, and significance levels without relying on the assumption of normal data distribution. This method is particularly advantageous in PLS-SEM, where the primary focus is prediction rather than model fit. Hair et al. (2020) noted that bootstrapping ensures higher statistical reliability and prediction accuracy, especially when sample sizes reach or exceed 200 participants, by providing stable and empirically derived significance values for the relationships between constructs.

For Hypotheses 1(a), 2(a), and 3(a), the results show that service, innovation, and flexible capability have a significant positive effect on service performance ($\beta = 0.212$, $p < 0.004$, supporting H1(a); $\beta = 0.283$, $p < 0.000$, supporting H2(a); $\beta = 0.447$, $p < 0.000$, supporting H3(a)).

Hypothesis 2(b) argues that innovation capability is positively related to financial performance, and it has a significant effect ($\beta = 0.234$, $p < 0.007$, supporting H2(b)). However, service and flexible capabilities do not have a significant effect on financial performance ($\beta = 0.120$, $p < 0.103$, not supporting H1(b); $\beta = -0.027$, $p < 0.782$, not supporting H3(b)). Finally, service performance significantly affects financial performance ($\beta = 0.579$, $p < 0.000$, supporting H4).
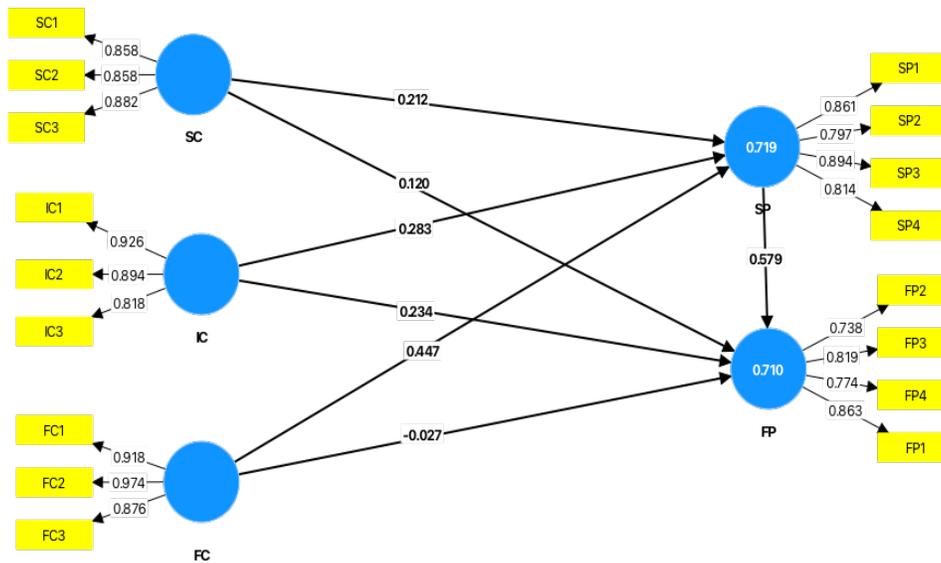
Figure 2 Hypothesis testing

Table 5 Results from Structural Equation Modeling

Relationship Paths	Path	Standard deviation	t- values	p- values	Results	f-square
H1(a): SC -> SP	0.212	0.074	2.858	0.004**	Supported	0.183 (medium)
H1(b): SC -> FP	0.120	0.074	1.629	0.103	Not Supported	0.024 (small)
H2(a): IC -> SP	0.283	0.076	3.723	0.000***	Supported	0.180 (medium)
H2(b): IC -> FP	0.234	0.087	2.676	0.007**	Supported	0.150 (medium)
H3(a): FC -> SP	0.447	0.071	6.336	0.000***	Supported	0.357 (large)
H3(b): FC -> FP	-0.027	0.098	0.277	0.782	Not Supported	0.001 (small)
H4: SP -> FP	0.579	0.092	6.262	0.000***	Supported	0.355 (large)

Note: ** is a significant level at 0.01, *** is a significant level at 0.001.

The results are shown in Table 5 and Figure 2. The coefficient of determination (R-square) was calculated to assess how well the independent variables explain variation in the dependent variables. The R-square values of 0.719 for service performance and 0.710 for financial performance substantially exceed the 0.26 threshold, indicating a robust and meaningful model. While p-values demonstrate the statistical significance of relationships, they do not reveal the magnitude of effects. Therefore, The researcher also reports effect sizes (f-square) to provide a

complete statistical and practical significance assessment. Following Cohen's (2008) guidelines, f-square values of 0.024, 0.150, and 0.35 represent small, medium, and large effect sizes, respectively, providing a benchmark for interpreting the practical significance of the model's relationships. This dual reporting approach addresses potential evaluation challenges by providing both the statistical significance (p-values) and the practical importance (effect sizes) of the relationships identified in the model (Cohen, 2008).

Research Conclusion and Discussion

The findings directly address the three primary research questions that guided this study. First, regarding which logistics capabilities most strongly influence service performance, the results reveal that all three capability dimensions significantly enhance service performance, with flexible capability demonstrating the strongest effect ($\beta = 0.447$, $p < 0.000$), followed by innovation capability ($\beta = 0.283$, $p < 0.000$), and service capability ($\beta = 0.212$, $p < 0.004$). Second, concerning the direct impact of logistics capabilities on financial performance, The researcher found that only innovation capability directly contributes to financial outcomes ($\beta = 0.234$, $p < 0.007$). In contrast, service and flexible capabilities do not show significant direct effects. Third, regarding the mediation role of service performance, the findings confirm that service performance strongly mediates the relationship between logistics capabilities and financial performance ($\beta = 0.579$, $p < 0.000$), validating the service-profit chain framework in the 3PL context.

The research findings demonstrate the impact of logistics capability on firm performance from a provider perspective. The empirical evidence supports that service capability directly translates into enhanced service performance outcomes. This relationship can be understood through Hasan et al. (2024), who articulate that LSPs with service capability are better positioned to satisfy customers' needs for various logistics services and achieve shorter customer response times and higher customer satisfaction. The empirical findings validate this theoretical position, showing that 3PLs with well-developed service capabilities demonstrate superior service performance. Interestingly, service capability showed no statistically significant direct relationship with financial performance, with a small effect size ($f^2 = 0.024$). This contradicts theoretical expectations but reveals a more nuanced relationship where service capability influences financial outcomes indirectly through service performance as a mediator. This finding aligns with Andria, Hartini, Rahmi, and Rusmanah (2020), who suggest that operational capabilities primarily affect

financial results through intermediate service improvements. For 3PL providers, this indicates that while service capability remains essential, its financial benefits materialize mainly when it successfully enhances service delivery and customer experiences.

Innovation capability significantly enhances both service and financial performance in 3PL providers. It serves as a fundamental driver of service excellence in logistics operations, mitigating supply chain uncertainty and risk (Wang et al., 2020). The findings empirically confirm that 3PL providers with stronger innovation capabilities achieve superior service outcomes. Moreover, innovation capability directly improves financial performance, independent of its effect through service enhancement. This dual impact aligns with Al‑Kalouti et al. (2020), who found that innovation positively affects financial and non-financial metrics. Among the three logistics capabilities studied, innovation was the only dimension directly affecting both performance domains.

Notably, innovation capability was the only dimension among the three logistics capabilities studied (service, innovation, and flexibility) that directly affected service and financial performance. This distinguishes innovation as a valuable strategic capability that generates operational excellence and financial returns through multiple pathways. The financial impact operates directly and indirectly through service performance enhancement, creating a dual benefit that maximizes return on innovation investments.

Flexible capability strongly impacts service performance (f^2 = 0.357), confirming it as the most influential service determinant. This supports Wang et al.'s (2022) view that flexibility expands delivery options and manages uncertainty. Interestingly, the finding that flexible capability does not directly impact financial performance contradicts Ho and Chang's (2015) study. A study by Rattanopat et al. (2021) found that Thai firms often lack professional services and effective cost management. This likely reflects Thai 3PL providers' unique context, where most SMEs have limited resources. The high costs of maintaining flexibility—including temporary labor, overtime, and adaptable equipment—may offset financial gains in the short term. Additionally, customer price sensitivity in the Thai market limits providers' ability to charge premiums for flexible services. This highlights how capability-performance relationships vary by context and suggests that Western-developed models may need adaptation for emerging markets like Thailand.

This research offers key insights for 3PL providers. First, developing a balanced capability portfolio is essential, with innovation capability deserving of priority investment as it uniquely directly improves service and financial performance. Second, while flexible capability most strongly enhances service performance, it requires complementary capabilities to generate financial returns. Managers should view flexibility investments as enhancing service quality first, with financial benefits following indirectly. Third, the research validates the service-profit chain in logistics, showing that service capabilities primarily affect financial outcomes through service improvements. This highlights the value of tracking service metrics as leading indicators for financial performance.

Limitations and Future Research

This research has limitations that suggest directions for future research. The cross-sectional design limits causal inferences; longitudinal studies would better track how capabilities affect performance over time (Wallenburg & Weber, 2005). This research focus on Thai 3PL providers restricts generalizability; comparative regional studies would clarify contextual influences on capability-performance relationships (Yang et al., 2023). This research also did not examine contingency factors like environmental dynamism and competitive intensity as potential moderators (Wilhelm, Schlömer, & Maurer, 2015). Future research should investigate these factors to better understand when and how logistics capabilities enhance performance across different operational contexts.

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