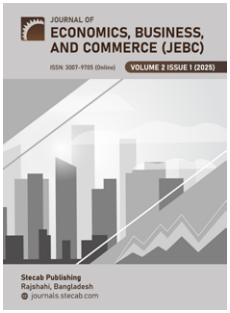

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Research Article

Logistic Service Quality Innovation: Unlocking Competitive Advantage in Supply Chain Management

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About Article

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ABSTRACT

As a way to facilitate the export and import of commodities in both developed and developing nations, logistics and transportation are playing a bigger role in international trade relations. In order to provide comprehensive information regarding logistics performance, services, and capacity, this study uses a logistic case study of Cambodia. Additionally, using structural equation model (SEM) analysis (β = 0.219, p-value = 0.005), this study employs the strategy structure performance framework to examine the elements influencing a firm's resource based approach, logistics service innovation capabilities, and customer satisfaction. In order to investigate the proposed links, 396 wholesalers in SMEs with relevant experience utilizing logistic services in Cambodia participated in a self-administered survey using a standardized questionnaire between October 2024 and February 2025. While the other three research variables customer orientation, physical supply flexibility, demand management flexibility, logistic service quality, and process competence have a significant impact on logistic service innovation, the results showed that the key factors of demanded-oriented service, process capability, information process, and logistic service quality positively impacted a firm's logistic service, its innovation capability, and customer satisfaction (β=0.118, p-value = 0.042) and by customer orientation (coefficient = 0.219). This indicates that in order to satisfy clients and promote growth in Cambodia, logistic services and innovation are crucial.

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1. INTRODUCTION

The global economy has changed dramatically as a result of economic globalization, bringing with it both new opportunities and problems. However, some businesses are able to promote sustainability and development in a variety of ways (Izzo *et al.*, 2020). As a result, the business strategy has continuously emphasized the need for firms to understand customer demands and be innovative in order to stay competitive and boost their company value. These firms may be more intelligent, segmented, and demanding, with higher expectations for service customization, innovativeness, and quality (Kotler & Keller, 2016).

Additionally, creating and executing a new product, procedure, or service to boost productivity, effectiveness, or competitive advantage is known as service innovation. Innovation in services must be able to start small, with minimal initial investment, personnel, and a small, restricted mark. client satisfaction is the state in which a product or service meets or exceeds the expectations of the client (Natalina & Wahyuni, 2022). Any innovation pertaining to logistics is referred to as logistics innovation. In the increasingly competitive business world which businesses operate in, service innovation is essential. This result is consistent with those of (Wong *et al.*, 2016; Gong *et al.*, 2019).

Additionally, the development of any nation's service sector, including Cambodia's, depends heavily on logistic innovation capability. In order to improve the performance and competitiveness of its service industry, Cambodia must solve critical logistic innovation capabilities concerns as it continues to undergo rapid economic growth and global integration. The requirement for cutting-edge technology and infrastructure is a major obstacle to Cambodia's capacity for logistic innovation (Ear *et al.*, 2019; Ear, 2007; Rose, 2017). The nation still needs to upgrade its logistics and transportation infrastructure, which includes ineffective customs processes, small port facilities, and poor road networks. More experts in fields like supply chain management, transportation planning, and warehouse management are nevertheless required. Cambodia must make investments in educational institutions that offer specialized logistics and supply chain management courses as well as vocational training programs in order to address this issue (Ear *et al.*, 2019; Ear, 2007; Rose, 2017).

More cooperation and coordination between the many logistics industry stakeholders is also required. To promote innovation and knowledge exchange in the logistics sector, strong collaborations between the public and private sectors as well as academics, are necessary. Investing in talent development, regulatory reforms, infrastructure development, and stakeholder collaboration will help Cambodia unleash its logistics innovation potential and promote sustainable economic growth. The following sections discuss research hypotheses after evaluating pertinent literature and offering a theoretical framework.

This study's objective is to use econometric tools, such as the structural equation model (SEM) and other important models, to investigate the logistic services' capacity, factors, and customer satisfaction assessment in Cambodia. Additionally, a detailed explanation of the research methodologies and analysis is provided, followed by further implications, study limitations, and research opportunities.

1.1. Research problem

To improve operational efficiency and customer satisfaction in the ever-changing world of logistics and supply chain management, it is essential to comprehend the complex relationships between many components. In the context of logistics in Cambodia, this study examines the relationships between demand management, physical supply flexibility, customer orientation, process competency, logistic service quality, customer satisfaction, and service innovation. Due to rising trade activity and the demand for effective supply chain solutions, Cambodia's logistics industry has been expanding significantly. But issues like poor infrastructure, slow adoption of new technologies, and inconsistent service quality still exist, calling for a thorough analysis of the variables affecting logistics performance.

In order to match supply with consumer demands and maintain responsive and effective logistics operations, demand management is essential (Chopra, 2018). Maintaining service levels and reducing interruptions need physical supply flexibility, which is the capacity to adjust to shifts in demand and supply conditions (Swafford *et al.*, 2006). In order to cultivate loyalty and satisfaction, customer orientation highlights the need of comprehending and fulfilling client expectations (Narver & Slater, 1990). Service delivery and operational performance are directly impacted by process competency, which includes the efficacy and efficiency of logistics procedures (Mentzer *et al.*, 2001).

Logistic service quality is a key determinant of customer satisfaction, influencing perceptions of value and reliability (Coyle, 2018). In addition to increasing customer happiness, high service quality spurs service innovation, helping businesses stand out in a crowded market (Feng *et al.*, 2009). The intricate web of relationships created by these components' interaction can have a big impact on Cambodia's logistics performance.

Structural Equation Modeling (SEM) is used in this study to examine these linkages, offering a solid framework for comprehending how these factors work together to affect logistical results. In order to provide useful insights for logistics practitioners and policymakers in Cambodia and ultimately aid in the creation of a more effective and customer-centric logistics sector, this research will examine the relationships among demand management, physical supply flexibility, customer orientation, process competency, logistic service quality, customer satisfaction, and service innovation.

1.2. Rationale of study

Economic development depends heavily on the logistics industry, especially in developing nations like Cambodia where it is essential for boosting competitiveness and enabling commerce. It is becoming more and more crucial to comprehend the dynamics of logistics performance as the nation continues to integrate into the global economy. In the context of Cambodian logistics, this study intends to examine the connections between demand management, physical supply flexibility, customer orientation, process competency, logistic

service quality, customer satisfaction, and service innovation. This study's justification is based on a number of important factors.

First and foremost, controlling inventory levels and making sure that logistics operations meet customer expectations depend on efficient demand management (Coyle, 2017). According to research, companies that are highly effective in managing demand can greatly improve their operational responsiveness and efficiency (Chopra, 2018). Knowing how demand management interacts with other logistics aspects is essential for enhancing service delivery in Cambodia, where market volatility and shifting demand patterns are common.

Second, it is becoming more widely acknowledged that physical supply flexibility is an essential skill for logistics companies. It helps businesses to adjust to shifting supply and demand, reducing interruptions and preserving service quality (Swafford *et al.*, 2006). Examining how physical supply flexibility might improve logistics performance is especially pertinent in Cambodia, where there are supply chain risks and infrastructure problems.

Another important element that affects the efficiency of logistics is customer focus. Building client loyalty and satisfaction requires a culture of responsiveness and service excellence, which is fostered by a strong customer orientation (Narver & Slater, 1990). Knowing how customer orientation interacts with other factors can help you develop strategies for improving customer experiences in a competitive logistics environment.

Furthermore, attaining operational excellence in logistics requires process knowledge. Effective procedures enhance overall organizational performance in addition to service delivery (Mentzer *et al.*, 2001). This research can determine best practices that logistics companies in Cambodia can implement to improve their operational skills by looking at the relationship between process competency and other characteristics.

Customer satisfaction is significantly influenced by the quality of logistic services, which also affects how reliable and valuable people perceive them to be (Coyle, 2018). Long-term partnerships and client retention depend on providing high-quality services. For logistics companies looking to stand out in the market, examining the relationships between customer satisfaction, service innovation, and logistic service quality can yield insightful information.

Lastly, service innovation is essential to the logistics industry's ability to remain competitive. Logistics companies must constantly innovate to satisfy changing client expectations (Feng *et al.*, 2010). Organizations can create strategies that improve customer happiness and their service offerings by comprehending how service innovation interacts with other logistics elements.

2. LITERATURE REVIEW

2.1. Customer orientation

A core business theory known as "customer orientation" highlights how crucial it is to comprehend and cater to the requirements and preferences of customers. It is well known to be a key factor in determining client loyalty, satisfaction, and overall company performance. The idea has been thoroughly examined, exposing a number of facets and organizational consequences.

Customer orientation, according to research by (Narver & Slater, 1990), is a culture that puts the needs of consumers first, which increases customer happiness and loyalty. (Kohli & Jaworski, 1990), who contend that a strong market orientation which includes customer orientation is necessary for businesses to adjust to shifting market conditions and customer demands, lend support to this viewpoint.

Understanding client needs, engagement, and service quality are some of the important aspects of customer orientation that have been identified by the literature. In order to properly customize offerings, (Phan & Harth, 2025; Rundle-Thiele *et al.*, 2005) emphasize the importance of obtaining consumer insights through market research. Additionally, (Brodie *et al.*, 2013) highlight how customer engagement promotes loyalty and contend that tailored interactions greatly improve the customer experience.

It is often known that business performance and client orientation are related. Businesses with a strong customer orientation typically have better financial results and competitive advantages, according to (Homburg *et al.*, 2009). Reichheld and Schefter (2000) concur, stating that a customer-oriented strategy fosters customer loyalty, which in turn generates favorable word-of-mouth recommendations and repeat business.

Customer orientation implementation is not without its difficulties, though. Organizational silos and resistance to change can impede the implementation of customer-centric approaches, according to (Gummesson, 2002). Grönroos (2006) goes on to address the challenge of striking a balance between operational effectiveness and client needs, suggesting that businesses must successfully negotiate these difficulties.

To sum up, client orientation is an essential component of modern company strategy that has a big impact on both organizational performance and customer happiness. Given how these aspects are progressively influencing customer interactions and expectations, future study should continue to examine how digital transformation and data analytics affect consumer orientation (Kumar *et al.*, 2013; Lemon & Verhoef, 2016).

2.2. Customer orientation

A key idea in management and marketing literature, customer orientation highlights how crucial it is to comprehend and cater to the wants and preferences of customers. According to Narver and Slater (1990), it is a business strategy that puts the needs of the consumer first while developing new goods and services. A stronger dedication to adding value for consumers is part of this approach, which goes beyond simple customer satisfaction and can result in increased customer loyalty and a competitive edge (Kohli & Jaworski, 1990).

According to research, companies that prioritize their customers tend to succeed better than their rivals because they build closer bonds with them and are better able to adjust to changes in the market (Day, 2000). For example, a 2009 study by Homburg *et al.* discovered that customer orientation has a favorable impact on innovation performance because companies that actively interact with their customers are better able to spot new trends and unmet needs.

Furthermore, a lot of research has been done on how corporate culture promotes customer orientation. Improved service delivery and customer experiences result from a customer-centric culture that motivates staff to give priority to client interactions and feedback (Baker & Sinkula, 2005). Because it guarantees that client orientation is ingrained in corporate procedures and decision-making, this cultural alignment is essential.

In conclusion, client orientation is a complex concept that is essential to the success of businesses. The dynamic interaction between organizational culture, customer orientation, and performance outcomes should be further investigated in future studies, especially in light of quickly shifting market conditions

2.3. Physical supply flexibility

A key component of supply chain management is physical supply flexibility, which is the capacity of a supply chain to modify its physical activities, including production, transportation, and inventory control, in reaction to shifts in supply and demand (Sethi & Sethi, 1990). The significance of physical supply flexibility has received a lot of attention in academic literature as global markets get more unpredictable, emphasizing its role in improving organizational resilience and responsiveness (Sarkar *et al.*, 2019).

The ability of a supply chain to modify its physical operations in reaction to shifts in supply or demand is known as physical supply flexibility. According to (Swafford *et al.*, 2006), this idea is becoming more widely acknowledged as a crucial part of supply chain management that helps businesses adapt to changing consumer demands and market instability.

Numerous aspects of physical supply flexibility are identified in the literature, such as production process flexibility, inventory management flexibility, and transportation flexibility. For example, a company's ability to respond to shifts in demand can be greatly improved by having the flexibility to switch between multiple forms of transportation (Kumar *et al.*, 2015). In a similar vein, flexible inventory management techniques enable businesses to instantly modify stock levels, reducing excess inventory and stockouts (Harrison *et al.*, 2006).

High degrees of physical supply flexibility have been linked to improved customer satisfaction and operational effectiveness, according to research. For instance, (Zhang *et al.*, 2011) discovered that supply chain flexibility had a beneficial effect on total supply chain performance, especially in highly risky industries. This adaptability reduces the danger of supply disruptions in addition to helping to satisfy client needs.

Furthermore, technology integration plays a major role in increasing the flexibility of the physical supply. Modern technologies like IoT and AI provide real-time monitoring and data analysis, which expedites decision-making and enhances supply chain agility (Wang *et al.*, 2016). The possibility of expanding physical supply operations' flexibility grows as more businesses use these technologies.

To sum up, physical supply flexibility is an essential component of contemporary supply chain management that boosts competitive advantage and responsiveness. Future studies should examine how physical supply flexibility interacts with other aspects of supply chain flexibility and how new technologies affect these connections.

2.4. Demand management

Demand forecasting, inventory control, and order fulfillment are just a few of the many tasks that fall under the umbrella of demand management. By precisely forecasting consumer demands and modifying production and inventory levels appropriately, it seeks to strike a balance between supply and demand (Mentzer *et al.*, 2004). Reduced stockouts, cheaper inventory costs, and higher service levels are all results of effective demand management, which eventually improves organizational performance (Fisher, 2010).

Demand management, an essential part of supply chain management that optimizes supply chain efficiency, aims to forecast, plan, and regulate consumer demand. It consists of a range of activities designed to align supply and demand in order to increase productivity and customer satisfaction (Chopra, 2018). Growing market volatility and consumer demands for quick delivery and personalization have increased the significance of efficient demand management (Mentzer *et al.*, 2001). Demand forecasting, inventory control, and cooperative planning are some of the essential elements of demand management that have been identified in the literature. In order to make well-informed judgments about production and inventory levels, demand forecasting entails estimating future consumer demand based on historical data and market trends (Fildes *et al.*, 2009). According to Syntetos and Boylan (2005), precise forecasting can greatly lower the risks of stockouts and surplus inventory, improving operational efficiency.

As firms look to improve coordination across various functions and stakeholders, collaborative demand management techniques like Sales and Operations Planning (S&OP) have become more popular (Grimson & Pyke, 2007). Businesses can develop more precise demand plans that take into account current market conditions and consumer preferences by combining input from sales, marketing, and production.

Furthermore, the role that technology plays in demand management cannot be overstated. Advanced analytics, machine learning, and artificial intelligence are increasingly being employed to increase forecasting accuracy and enable more responsive demand management strategies (Wang *et al.*, 2016). Businesses can swiftly adapt to changing demand trends thanks to these technologies, which improve decision-making and facilitate real-time data analysis. In conclusion, demand management is a critical function that significantly impacts supply chain performance and customer happiness. Future research should look at how shifting consumer behaviors impact demand planning and forecasting, as well as how new technology may be integrated into demand management processes.

2.5. Logistic service quality

The capacity of logistics providers to fulfill or surpass client expectations with regard to the delivery of products and services is referred to as logistic service quality. According to (Parasuraman *et al.*, 1988), it encompasses a number of qualities, including tangibles, assurance, responsiveness, empathy, and dependability. A key element of effective supply chain strategies, high levels of LSQ are linked to improved customer loyalty, repeat business, and positive word-of-mouth (Coyle *et al.*, 2016).

Logistic service quality (LSQ) is a critical determinant of customer satisfaction and competitive advantage in supply chain management. It encompasses the various dimensions of service delivery that logistics providers offer to their customers, including reliability, responsiveness, flexibility, and communication (Mentzer *et al.*, 2001). As global competition intensifies and customer expectations evolve, understanding and improving logistic service quality has become essential for firms seeking to enhance their operational performance and customer loyalty (Rueger *et al.*, 2016).

Numerous important aspects of logistic service quality are identified in the literature. The capacity to deliver the appropriate goods in the right condition at the right time is known as reliability, and it is essential to customer satisfaction (Parasuraman *et al.*, 1988). Responsiveness involves the willingness to assist customers and provide prompt service, which can significantly influence customer perceptions of service quality (Bienstock *et al.*, 1997). Additionally, flexibility in logistics operations allows firms to adapt to changing customer needs and market conditions, further enhancing service quality (Kumar *et al.*, 2015).

Research has shown that high levels of logistic service quality are positively correlated with customer satisfaction and loyalty. For instance, a study by (Lai *et al.*, 2009) found that improvements in logistic service quality led to increased customer retention and positive word-of-mouth, which are critical for long-term business success. Furthermore, the integration of technology in logistics operations, such as real-time tracking and automated customer service, has been shown to enhance service quality by providing customers with timely information and greater control over their orders (Wang *et al.*, 2016).

Moreover, the role of employee training and organizational culture in delivering high-quality logistics services cannot be overlooked. A customer-centric culture that empowers employees to prioritize service excellence is essential for achieving high levels of logistic service quality (Heskett, 1994). In conclusion, logistic service quality is a multifaceted construct that significantly impacts customer satisfaction and business performance. Future research should explore the evolving dimensions of LSQ in the context of digital transformation and the implications of emerging technologies on service delivery in logistics.

2.6. Process capability

Process capability is the innate capacity of a process to reliably provide outputs that satisfy predetermined criteria. Because it directly affects an organization's capacity to provide goods and services that meet consumer expectations, it is a crucial topic in quality management and operations management. Understanding and enhancing process capability has become crucial for firms looking to improve operational efficiency and quality as industries grow more competitive (Montgomery, 2009).

Process capability refers to the inherent ability of a process to produce outputs that meet specified requirements consistently. It is a critical concept in quality management and operations management, as it directly influences product quality, operational efficiency, and customer satisfaction (Montgomery *et al.*, 2013). Understanding and improving process capability is essential for organizations aiming to enhance their competitive advantage in increasingly complex and dynamic markets.

Stability, capability indices, and variability management are some of the important aspects of process capability that have been identified in the literature. The consistency of a process over time is referred to as stability, and it is essential for guaranteeing that outputs stay within predetermined bounds (Besterfield-Sacre *et al.*, 2014). Statistical methods for evaluating a process's capacity to generate goods within predetermined bounds capability indices, such as evaluates a process's potential capability, presuming that it falls within the parameters of the specification. When a process is functioning in its optimal state, it shows how well it can perform (CP), takes into account the actual process means and calculates the process's proximity to its specification boundaries in relation to its inherent variability. It explains why the process isn't entirely centered (CPK), evaluates a process's real performance by taking into account the process's actual data. It displays the real mean and variation of the process's performance in its current state (PP), and takes into consideration the process means and its departure from the specification limitations to provide a more accurate assessment of process performance. It's helpful for assessing a process's real performance and capacity to satisfy client needs (PPK) are statistical measures used to assess how well a process can produce outputs that meet specifications (Montgomery, 2013). These indices provide valuable insights into process performance and help organizations identify areas for improvement.

Variability management is another crucial aspect of process capability. High levels of variability can lead to defects and customer dissatisfaction, making it essential for organizations to implement strategies to reduce variability (Breyfogle, 2003). Techniques such as Six Sigma and Total Quality Management (TQM) have been widely adopted to enhance process capability by systematically identifying and eliminating sources of variability (Schroeder & Immunology, 2000).

Research has shown that organizations with high process capability tend to achieve better operational performance and customer satisfaction. For instance, a study by (Flynn *et al.*, 1994) found that process capability is positively correlated with overall business performance, highlighting the importance of investing in process improvement initiatives. Furthermore, the integration of advanced technologies, such as automation and data analytics, has been shown to enhance process capability by enabling real-time monitoring and continuous improvement (Wang *et al.*, 2016).

In conclusion, process capability is a vital construct that significantly impacts quality management and operational performance. Future research should explore the interplay between process capability and emerging technologies, as well as the implications of evolving customer expectations on process design and improvement.

2.7. Service innovation

Service innovation refers to the development and implementation of new or significantly improved services that enhance value for customers and improve organizational

performance. As the service sector continues to grow and evolve, understanding the dynamics of service innovation has become increasingly important for businesses seeking to maintain a competitive edge in a rapidly changing market environment (Gallouj & Weinstein, 1997).

The literature identifies several key dimensions of service innovation, including the introduction of new service concepts, improvements in service delivery processes, and the adoption of new technologies. New service concepts often involve the creation of entirely new offerings that meet emerging customer needs or preferences, while improvements in service delivery processes focus on enhancing efficiency and customer experience (Lepak *et al.*, 2007). The integration of technology, such as digital platforms and automation, has also been shown to play a crucial role in facilitating service innovation by enabling more efficient service delivery and enhancing customer engagement (Vargo & Lusch, 2004).

Research indicates that service innovation is positively correlated with organizational performance and customer satisfaction. For instance, a study by de Jong and Vermeulen (2006) found that firms that actively engage in service innovation are more likely to achieve higher levels of customer loyalty and market share. Furthermore, the role of organizational culture and leadership in fostering an environment conducive to service innovation cannot be overlooked. A culture that encourages creativity, risk-taking, and collaboration is essential for driving successful service innovation initiatives (Kelley & Littman, 2005).

Moreover, the concept of service-dominant logic has emerged as a significant framework for understanding service innovation. This perspective emphasizes the co-creation of value between service providers and customers, highlighting the importance of customer involvement in the innovation process (Vargo & Lusch, 2004). Engaging customers in the development of new services can lead to more relevant and successful innovations.

In conclusion, service innovation is a multifaceted construct that significantly impacts organizational performance and customer satisfaction. Future research should explore the interplay between service innovation and emerging trends, such as digital transformation and changing consumer behaviors, to better understand the evolving landscape of service delivery.

2.8. Customer satisfaction

Customer satisfaction is a critical construct in marketing and service management, reflecting the degree to which a product or service meets or exceeds customer expectations. It is widely recognized as a key driver of customer loyalty, repeat business, and overall organizational performance (Oliver, 1980). As markets become increasingly competitive and customer expectations evolve, understanding the factors that influence customer satisfaction has become essential for businesses seeking to enhance their competitive advantage (Kotler & Lane Keller, 2016).

The literature identifies several key determinants of customer satisfaction, including product quality, service quality, price, and customer expectations. Product quality encompasses the features, reliability, and performance of a product, while service quality refers to the overall experience customers have with a service provider, including aspects such as responsiveness, assurance, and empathy (Parasuraman *et al.*, 1988). Research has shown that both product and service quality are positively correlated with customer satisfaction, highlighting the importance of delivering high-quality offerings (Anderson, 1994).

Price also plays a significant role in shaping customer satisfaction. Perceived value, which is the customer's assessment of the benefits received relative to the costs incurred, is a critical factor in this relationship (Zeithaml, 1988). When customers perceive that they are receiving good value for their money, their satisfaction levels tend to increase.

Furthermore, customer expectations are a vital component of the satisfaction process. The disconfirmation theory posits that customer satisfaction is determined by the gap between expected and perceived performance (Oliver, 1980). If a product or service meets or exceeds expectations, customers are likely to be satisfied; conversely, if it falls short, dissatisfaction may result.

The impact of customer satisfaction on business outcomes has been extensively studied. Research indicates that higher levels of customer satisfaction led to increased customer loyalty, positive word-of-mouth, and improved financial performance (Heskett, 1994). Additionally, the role of customer feedback and engagement in enhancing satisfaction has gained attention, as organizations increasingly leverage customer insights to inform product development and service improvements (Frow *et al.*, 2011).

In conclusion, customer satisfaction is a multifaceted construct that significantly influences customer loyalty and organizational success. Future research should explore the evolving nature of customer satisfaction in the context of digital transformation and changing consumer behaviors, as well as the implications of emerging technologies on customer engagement and satisfaction measurement.

2.9. Present study and research questions

In the context of Cambodia, the study intends to investigate the connections between customer orientation, physical supply flexibility, demand management, logistic service quality, process capability, service innovation, and customer satisfaction. Businesses looking to improve customer satisfaction and operational efficiency must comprehend these relationships as the Cambodian economy expands and becomes more integrated into international markets.

i. .How do the customer orientation, physical supply flexibility, demand management, logistic service quality, process capability, service innovation, and customer satisfaction relate to each other?

2.10. Research framework

Structural Equation Modeling (SEM) will be used in the proposed study framework to examine the correlations between the variables. The following theories form the foundation of the framework:

H1: The ability to innovate services is positively correlated with customer orientation.

H2: The ability to innovate services is favorably connected with the flexibility of the physical supply.

H3: The ability to innovate services is positively correlated with the quality of logistic services.

H4: The ability to innovate services is favorably correlated with demand management.

H5: The ability to innovate services is strongly correlated with process competency.

H6: The ability of logistics companies to innovate their services enhances customer happiness.

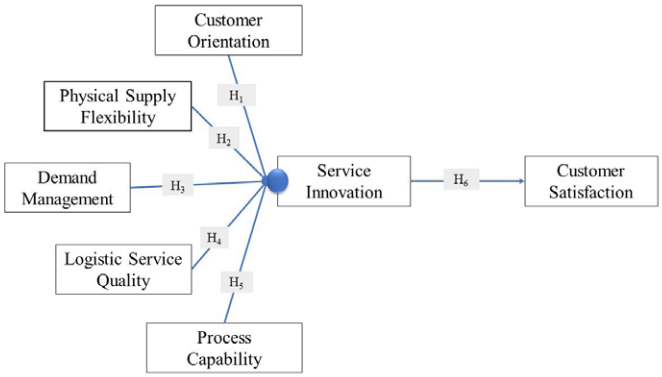

Figure 1. This conceptual framework encompasses demand management, physical supply flexibility, logistic service quality, customer orientation, process capabilities, and customer satisfaction.

3. METHODOLOGY

3.1. Participants

A sample of 396 customers who have utilized logistic services in the provinces of Sihanoukville and Phnom Penh City was included in the study. In order to guarantee a varied representation of clients who have utilized logistic services, participants were chosen using a stratified random sample technique based on age (25–57), gender, and other factors. A process questionnaire was used to collect data. It was created to evaluate a variety of factors, including demand management, physical supply flexibility, logistic service quality, customer orientation, process capability, and customer satisfaction.

3.2. Measurements

• *Customer Satisfaction:* A variety of quantitative and qualitative techniques, like as surveys, Net Promoter Scores (NPS), and Customer Satisfaction Scores (CSS), are used to gauge customer satisfaction. These indicators are essential for comprehending client loyalty and retention since they evaluate how well goods and services live up to customer expectations.

• *Process Capability:* Statistical metrics like PCI (process capability index) and PCPI (process capability performance index) are used to assess process capacity. These indices assist businesses pinpoint areas where their manufacturing or service processes need to be improved by showing how reliably a process can generate outputs within predetermined bounds

• *Logistic Service Quality:* Key performance indicators (KPIs) like order correctness, on-time delivery rates, and customer feedback on logistics performance are used to evaluate the quality of logistic services. By assessing the efficacy and efficiency of their logistics operations, these metrics assist businesses in making sure they live up to client expectations.

• *Demand Management:* Forecast accuracy, inventory turnover rates, and fill rates are all used to gauge demand management. Better inventory control and resource allocation are made possible by these measures, which reveal how well a company can forecast and satisfy client demand.

• *Physical Supply Flexibility:* Metrics including capacity utilization, lead time variability, and the capacity to adjust to shifting supply or demand situations are used to quantify physical supply flexibility. These metrics assist businesses in evaluating their capacity to sustain service levels and their responsiveness to changes in the market.

• *Customer Orientation:* Customer feedback systems, customer service-focused employee training programs, and corporate strategy alignment with customer needs are all ways to assess customer orientation. Metrics like satisfaction surveys and customer retention rates give information on how well a company prioritizes and accommodates customer preferences. Organizations can make well-informed decisions that improve overall effectiveness and customer happiness by methodically assessing these aspects. This allows them to obtain important insights into their operational performance and customer relationships.

3.3. Measurement tools

A questionnaire survey of customers who have utilized logistic services in the cities of Phnom Penh and Sihanoukville was used to gather data for this study. Additionally, the poll asks participants to rank their company's performance against competitors on a 5-point Likert scale in terms of customer satisfaction, service innovation capabilities, and logistical service competence. A rating system of 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for highly agree was used. 105 items were chosen in consideration of the measures of service innovation capability: logistic service quality, customer satisfaction, demand management flexibility, physical supply flexibility, process capabilities, customer orientation, and customer satisfaction.

In order to provide responders with a paper copy of the questionnaire, a self-administered a method of purposive sampling (Cooper & Schindler, 2014) was gathered from clients who had previously used logistics services in Sihanoukville, and Phnom Penh. The Cochran (1977) technique was used to estimate the sample size for the unknown population with an alpha level of 0.05 in order to determine the sample sizes for this investigation. The acceptable error level in this study is set at 5% using a proportional variable, and the standard deviation of the scale is estimated to be 0.5.

In contrast, the Z-value, which incorporates the variance estimates ($p * q$) and the alpha level of 0.05 with the marginal errors, is 0.25. For formal data analysis, this study gathers sample sizes of at least 384 people in accordance with this recommendation. For formal data analysis, the ultimate sample size was 396 respondents.

3.4. Factor analysis: EFA

As illustrated in Figure 1, the exploratory factor technique employed the principal component method with VARIMAX

rotation to perform reliability tests and factor analysis in order to validate the study's dimensionality and dependability. Factor analysis, internal consistency analysis, and reliability testing (Cronbach's Alpha: α) are among the data analysis procedures that are evaluated in this study.

First, each study item's dimensionality is ascertained using factor analysis. According to this section, the factor loading score requirements for each item must be higher than 0.60. The primary research construct's reliability and internal consistency are evaluated using the coefficient of variables. The guidelines from the prior study that assessed the factor analysis and reliability test findings are displayed in Tables 1 and 2. Crucially, the study items satisfied the formal reliability test's rule of thumb (Table 2), which was used to evaluate the hypotheses using JAMOVI software and double-confirm with Confirmatory Factor Analysis (CFA).

Table 1. The findings of the reliability test and factor analysis

Indicators/ Code*	Factor Analysis				Reliability test	
	Factor loading	KMO	Eigenvalue	Cumulative %	Item total correlation	Cronbach's Alpha (α)
Customer Orientation (CUO)						
CUO1	0.870				0.601	
CUO7	0.861				0.678	
CUO3	0.838	0.858	2.690	63.601	0.760	0.820
CUO8	0.845				0.657	
CUO2	0.825					
Physical Supply Flexibility (PSF)						
PSF4	0.781				0.704	
PSF2	0.752				0.638	
PSF5	0.813	0.726	2.438	60.788	0.764	0.792
PSF6	0.721				0.619	
PSF1	0.697				0.670	
Demand Management (DM)						
DM 2	0.880				0.698	
DM5	0.840				0.740	
DM3	0.835	0.875	3.495	69.903	0.735	0.795
DM4	0.825				0.720	
DM1	0.798				0.686	
Logistic Service Quality (LSQ)						
LSQ2	0.887				0.730	
LSQ6	0.877				0.618	
LSQ3	0.871	0.720	2.475	34.471	0.510	0.734
LSQ5	0.868				0.506	
LSQ1	0.865				0.601	
LSQ4	0.810				0.741	
Process capability (PRC)						
PRC4	0.701				0.675	
PRC5	0.621				0.754	
PRC1	0.658	0.762	3.376	26.382	0.814	0.826
PRC3	0.758				0.674	
PRC6	0.752				0.713	
PRC2	0.627				0.679	

Service Innovation Capability (SIC)						
SIC3	0.670	0.697	3.658	56.438	0.641	0.730
SIC5	0.725				0.871	
SIC2	0.614				0.649	
SIC4	0.646				0.672	
Customer Satisfaction (CUS)						
CUS2	0.936	0.751	2.562	75.307	0.752	0.714
CUS6	0.741				0.674	
CUS5	0.673				0.762	
CUS3	0.630				0.641	
CUS1	0.706				0.794	

Table 2. The reliability test and factor analysis rule of thumbs

Indicators	**Factor Analysis**				**Reliability test**	
	Factor loading	**KMO**	**Eigenvalue**	**Cumulative %**	**Item correlation**	**Cronbach's Alpha (α)**
Threshold values	≥0.60	≥0.50	>1	≥60%	≥0.50	≥0.60

3.5. Confirmatory factor analyses (CFA)

The research design is in compliance with Low and Tan (2017) recommendations. First, all items in factor solutions had Cronbach coefficients better than 0.60, which was theoretically expected based on the results of the exploratory factor analysis. Second, in order to ascertain the measures' convergent validity, we conducted confirmatory factor analyses (CFA). The primary components of this manuscript are the CFA findings, which are first related to the "First Order-Factor Model" and then to the "Second Order-Factor Model". Each research item was evaluated separately in this study using the first-order factor model, as shown in Table 2, and second-ordered, as shown in Figure 2. According to Hair Jr *et al.* (2019), certain indicators were disregarded if they had low factor loading or a strong correlation with other indicator variables. A threshold for the second order was set by Hair *et al.* (2014), and the results largely met it. The CFA and SEM threshold values, which were assessed based on the CFA and SEM results, are displayed in Table 2. The CFA criteria are satisfied when each indicator's t-value is greater than 1.96 ($p < 0.05$) and all factor loadings are greater than 0.60.

An overall goodness-of-fit evaluation of $\chi^2/df = 1.241$, GFI = 0.933, AGFI = 0.901, NFI = 0.960, CFI = 0.992, and RMSEA = 0.025 is shown in Table 2 and Figure 2. With a sufficient degree of convergent validity, we can say that the model and data fit each other well. In fact, as shown in Table 5, the study's results were analyzed using the CFA and SEM Threshold (Table 3).

Chi-square = χ^2 and D.F = Degree of Freedom, GFI = Goodness of Fit and AGFI = Adjusted Goodness of Fit NFI = Normalized Fit Index. CFI = Comparative Fit Index. RMSEA = Root Mean Square Error of Approximation. The Average Variance Extracted (AVE) and Composite Reliability coefficients (CR) were used to assess the quality of a measure. In addition, we discuss how the quantity of items and the homogeneity problem with factor loadings may impact the AVE and CR results.

Table 3. The CFA and SEM model threshold

Model Fitness	**Rule of Thumbs**
χ^2/D.F	< 2.50
GFI	≥ 0.90
AGFI	≥ 0.90
NFI	≥ 0.90
CFI	≥ 0.90
RMSE	< 0.05

The standardized factor loading is denoted by λ, the number of items is i, and the error variance terms are denoted by δ (Delta), where $\delta = 1\lambda_{i2}$. The CR and AVE ought to be greater than 0.70 and 0.50, respectively. According to Hair *et al.* (2014), a p-value of less than 0.05 and a t-value more than 1.96 are recommended. These research variables have good reliability and validity, as evidenced by the fact that all CFA and CR results met the criterion (Table 4). As a result, this study advances the investigation of significant coefficients among hypotheses.

Table 4. The First CFA Outcome

Item codes	Indicators	Standardized loading	t-value	p-value	AVE	CR
SIC3 ←	Service innovation capability	0.726***		0.000	0.621	0.816
SIC5 ←		0.762***	14.965	0.000		
SIC4 ←		0.664***	13.330	0.000		
CUS1 ←	Customer satisfaction	0.834***		0.000	0.765	0.812
CUS2 ←		0.804***	21.000	0.000		
CUS3 ←		0.801***	22.846	0.000		
LSQ4 ←	Logistic service quality	0.767***		0.000	0.658	0.735
LSQ2 ←		0.667***	16.798	0.000		
LSQ6 ←		0.720***	20.423	0.000		
LSQ3 ←		0.762***	22.414	0.000		
LSQ5 ←		0.739***	22.365	0.000		
LSQ1 ←		0.753***	22.766	0.000		
CUO1 ←	Customer orientation	0.714***		0.000	0.655	0.905
CUO7 ←		0.613***	15.634	0.000		
CUO3 ←		0.685***	13.616	0.000		
CUO8 ←		0.709***	12.357	0.000		
CUO2 ←		0.623***	14.837	0.000		
PSF4 ←	Physical supply flexibility	0.671***		0.000	0.608	0.870
PSF2 ←		0.741***	15.664	0.000		
PSF5 ←		0.680***	16.716	0.000		
PSF6 ←		0.731***	15.453	0.000		
PSF1 ←		0.657***	13.262	0.000		
DM2 ←	Demand management	0.719***		0.000	0.648	0.802
DM5 ←		0.735***	15.665	0.000		
DM3 ←		0.707***	14.364	0.000		
DM4 ←		0.638***	16.617	0.000		
DM1 ←		0.725***	14.060	0.000		
PRC2 ←	Process capability	0.743***		0.000	0.676	0.830
PRC4 ←		0.673***	21.790	0.000		
PRC5 ←		0.717***	18.281	0.000		
PRC1 ←		0.678***	14.637	0.000		
PRC3 ←		0.768***	17.565	0.000		
PRC6 ←		0.639***	17.506	0.000		
Evaluation of the goodness-of-fit index		**Threshold values**		**Results**		
X^2/D.F		<2.60		1.251		
		≥0.80		0.833		
		≥0.70		0.701		
		≥0.80		0.860		
		≥0.70		0.792		
		<0.08		0.026		

3.6. Structural equation model analysis

Using the same variables following CFA, Table 4 displays the SEM model used to test a hypothesis with the livelihood estimation approach. Additionally, the entire variables were analyzed using the second-order factor, also known as the overall model (Figure 2). According to Table 4 and Figure 2, the results show that goodness-of-fit measures were sufficiently acceptable (GFI = 0.933, AGFI = 0.901, NFI = 0.960, CFI = 0.992, RMSEA = 0.025), suggesting that the suggested model met the requirements of the goodness of-fit assessment (Hair *et al.*, 2014). To assess the correctness of the likelihood estimation method, the CFA which used the identical variables as in Table 3 was conducted prior to the SEM route. The goodness-of-fit measures (GFI = 0.933, AGFI = 0.902, NFI = 0.959, CFI = 0.991, and RMSEA = 0.026) were found to be sufficient in Table 5 and Figure 3. This demonstrates that the model satisfies the requirements for a high goodness-of-fit score.

Customer orientation and service innovation capacities are significantly positively correlated, according to the SEM model (β = 0.219, p-value = 0.005). Hypothesis 1 is thus approved. The correlation between service innovation capability and physical supply flexibility is significantly positive, with a p-value of 0.000 and a coefficient of β = 0.298. Hypothesis 2 was so approved. Flexibility in demand management and the ability to innovate services are significantly positively correlated (β=0.118, p-value = 0.042).

Hypothesis 3 is so approved. Coefficient β=0.074 and p-value = 0.289 (>0.05) indicate no significant positive link between logistic service quality and service innovation capability. Hypothesis 4 is thus disproved. With coefficient β=0.197 and p-value = 0.000, there is a strong positive correlation between "demand management flexibility" and "process capability." Hypothesis 5 is so approved. With a p-value of 0.000 and a coefficient of β=0.964, the link between process capability and service innovation capability is significantly favorable. Hypothesis 6 is so approved.

The study discovered a strong positive association (β=0.964, p-value =0.000) between customer happiness and service innovation capabilities. In the context of logistic services, service innovation capabilities are crucial for raising customer satisfaction. However, service innovation skills were not substantially impacted by logistic service quality (β = 0.074, t-value = 1.04, p-value < 1.96). This study makes the assumption that logistic companies have not offered clients in Cambodia high-quality or innovative services.

Table 5. The path results of SEM model

Item codes		Indicators	Standardized loading	tvalue	p-value
SIC5	←	Service innovation capability	0.703***	A	0.000
SIC4	←		0.873***	15.537	0.000
SIC2	←		0.752***	13.974	0.000
CUS1	←	Customer satisfaction	0.836***	A	0.000
CUS2	←		0.903***	23.064	0.000
CUS3	←		0.900***	22.856	0.000
LSQ5	←	Logistic service quality	0.863***	A	0.000
LSQ4	←		0.768***	17.95	0.000
LSQ3	←		0.815***	20.863	0.000
LSQ2	←		0.862***	23.282	0.000
LSQ1	←		0.844***	22.323	0.000
LSQ6	←		0.857***	22.849	0.000
CUO1	←	Customer orientation	0.810***	A	0.000
CUO2	←		0.812***	18.442	0.000
CUO3	←		0.788***	17.554	0.000
CUO4	←		0.806***	18.075	0.000
CUO5	←		0.822***	18.711	0.000
PSF5	←	Physical supply flexibility	0.766***	A	0.000
PSF4	←		0.840***	17.429	0.000
PSF3	←		0.785***	18.567	0.000
PSF2	←		0.831***	17.252	0.000
PSF1	←		0.657***	13.139	0.000

DMF5	←	Demand management	0.811***	A	0.000
DMF4	←		0.799***	18.097	0.000
DMF3	←		0.800***	18.063	0.000
DMF2	←		0.844***	19.714	0.000
DMF1	←		0.748***	15.753	0.000
PRC5	←	Process capability	0.845***	A	0.000
PRC4	←		0.821***	22.982	0.000
PRC3	←		0.799***	20.502	0.000
PRC2	←		0.796***	19.744	0.000
PRC1	←		0.784***	19.578	0.000
PRC6	←		0.841***	21.682	0.000

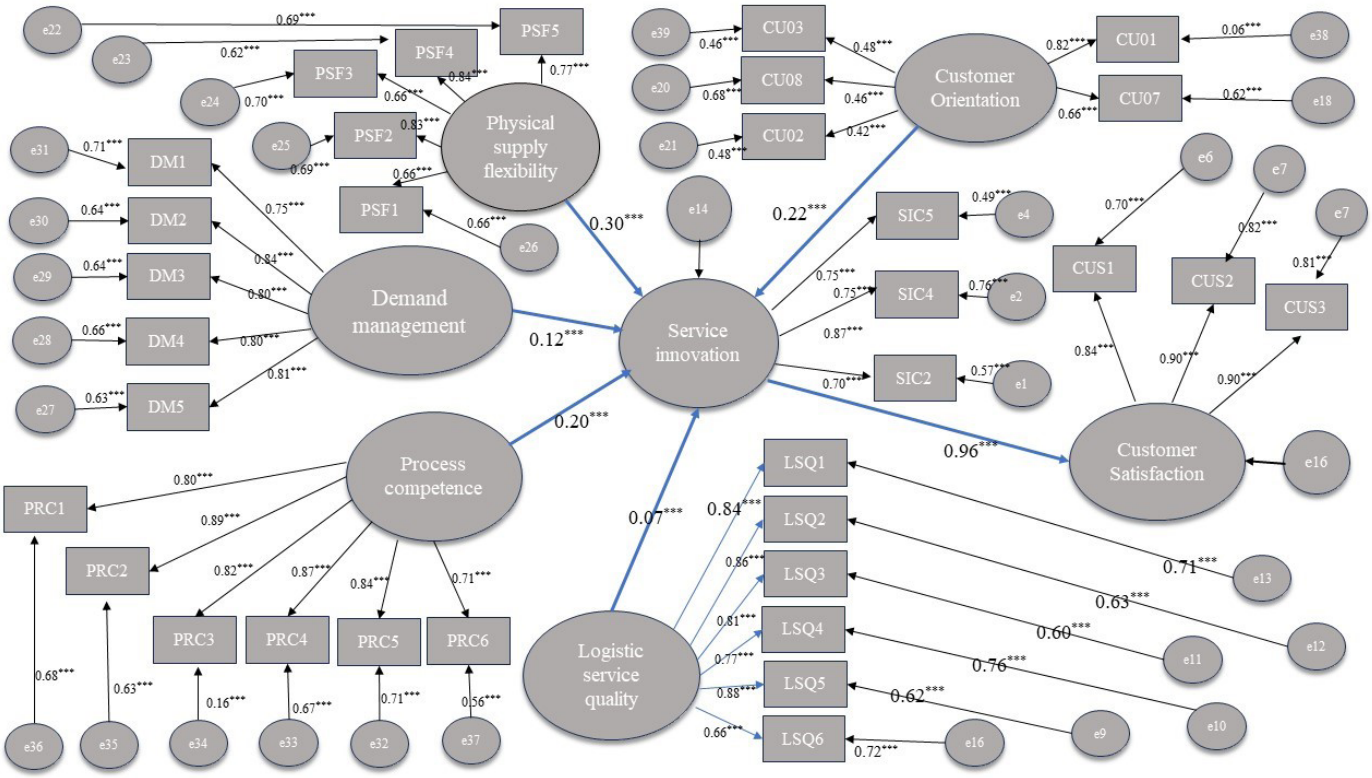

Figure 3. PSF is for Physical Supply Flexible, where PSF1, PSF2, PSF3,PSF4 and DM stand for Demand Management, where DM1, DM2, DM3, DM4, DM5 and PC stand for Process Competence where PRC2, PRC2, PRC3, PRC4, PRC5, PRC6 and LSQ stand for Logistic Service Quality, where LSQ1, LSQ2, LSQ3, LSQ4, LSQ5, LSQ6 and SI stand for Service Innovation, where SIC2, SIC4, SIC5 and CS stand for Customer Satisfaction, where CUS2, CUS2, CUS3 and CO stand for Customer Orientation, where CO01, CO02,CO03, CO06 and CO07. All variables are related each other's.

4. RESULTS AND DISCUSSION

To ascertain how client orientation affects the performance and capability of service innovation. According to this study, service innovation capability is strongly positively impacted by customer orientation (coefficient = 0.219). These results are comparable to those of (Thoumrungroje & Racela, 2020; Huang & Siao, 2023). This illustrates how customer orientation fosters service innovation and business expansion in those companies. Additionally, our results provide fresh insight into the crucial role that these resources play as a source of competitive advantage, as evidenced by their sustained strategic success in satisfying the demands of their target clients more effectively than competing businesses that seek a customer orientation to develop service innovation capabilities across the organization. Therefore, this also showed that the supply chain's capacity for service innovation and the quality of the logistics service do not match the conclusions of the study by (Akoglu, 2022). According to his research, service innovation capability and

logistic service quality are correlated. However, the current study shown that service innovation potential is not positively impacted by the relationship between logistic service quality. Accordingly, this study makes the assumption that logistic companies in Cambodia provide low-quality services to their customers by using subpar data management systems or tracking their services with technical systems in order to satisfy their demands. In the context of logistic services in Cambodia, the service innovation capabilities could increase customer satisfaction with Coefficient = 0.964. This result bolsters the claim made by Adams *et al.* (2019) that a company's innovativeness is enhanced when its customer and competitive orientations are combined. The findings of (Huhtala *et al.*, 2014) are also in line with this relationship between customer strategic approach and service innovation capability. Additionally, in logistic service markets with good business conditions and resources, the customer-oriented strategy enables businesses to outperform.

The firm's financial performance shows that managers must take contextual factors into account when allocating resources to customer orientation activities and intending to improve service innovation capabilities. These findings currently support the general importance of customer orientation for enhancing creativity within organizations and service innovation.

Investments in customer orientation, on the other hand, are more concentrated on impacting the capabilities of service innovation. In highly dynamic marketplaces, managers should invest in sustaining and enhancing customer orientation competencies, which are essential for retaining the company's competitive edge, securing a favorable market position, and boosting financial performance. Differentiating services is more difficult than differentiating things. Therefore, firms may be able to obtain a competitive edge by repositioning items through enhanced service innovation capability.

4.1. Discussion

Examining the relationship between customer satisfaction, process competence, logistic service quality, demand management, physical supply flexibility, customer orientation, and service innovation in Cambodia is crucial for understanding how these factors interact to enhance business performance in a rapidly developing economy. Cambodia's logistics industry is at a turning point, marked by quick expansion and growing complexity. Through the use of structural equation modeling (SEM), this study seeks to investigate the connections between demand management, physical supply flexibility, customer orientation, process competency, logistic service quality, customer satisfaction, and service innovation. For practitioners and policymakers, the research's conclusions will offer important insights into the ways in which these variables interact and affect logistics performance in Cambodia.

Logistics operations must be in line with consumer needs, which requires effective demand management. According to the study, companies that use strong demand management techniques are better able to predict the needs of their clients, which enhances customer happiness and service delivery (Chopra, 2018). Additionally, logistics companies can improve their service offerings and adjust to shifting market conditions by cultivating a responsive culture with a strong customer orientation (Narver & Slater, 1990). Because it influences the whole customer experience and satisfaction levels, the interaction between demand management and customer orientation is crucial.

Physical supply flexibility is becoming more widely acknowledged as an essential skill for logistics companies, enabling them to react quickly to changes in supply and demand (Swafford *et al.*, 2006). According to this study, process competency and physical supply flexibility are closely related because effective procedures allow businesses to effectively utilize their flexibility. Businesses can improve customer satisfaction and service quality by increasing their capacity to adjust to changes through the optimization of logistical procedures (Mentzer *et al.*, 2001). The connection between these two elements emphasizes how crucial operational agility is to the logistics industry.

Customer satisfaction is significantly influenced by the quality of logistic services, which also affects how reliable and valuable people perceive them to be (Cait Coyle *et al.*, 2016). According to the research, providing excellent customer service not only increases client pleasure but also fosters client retention and loyalty. In Cambodia, where service quality can differ greatly between logistics companies, this link is especially pertinent. Logistics companies can stand out in a crowded market and cultivate enduring client relationships by concentrating on enhancing service quality.

In the logistics industry, service innovation is crucial to staying competitive, especially in a market that is changing like Cambodia. According to the study, companies that put their customers' requirements first are more likely to innovate their service offerings, which suggests that service innovation is impacted by logistic service quality and customer happiness (Feng *et al.*, 2009). This connection emphasizes the value of a customer-centric approach to service innovation, which can result in improved customer loyalty and operational performance.

The study concludes by offering a thorough examination of the connections between demand management, customer orientation, process competency, physical supply flexibility, logistic service quality, customer satisfaction, and service innovation in the context of logistics in Cambodia. Through the use of SEM, the study provides practitioners looking to improve their operations with important insights into the intricate dynamics that underlie logistics performance. The results highlight the necessity of a comprehensive strategy for logistics management, in which businesses put the interests of their clients first, streamline operations, and welcome innovation in order to gain a long-term competitive edge.

The study's conclusions offer important new information about how, in the context of logistics in Cambodia, demand management, physical supply flexibility, customer orientation, process competency, logistic service quality, customer satisfaction, and service innovation interact. By using Structural Equation Modeling (SEM), this study adds to the body of literature by identifying particular dynamics pertinent to the Cambodian market, in addition to validating preexisting ideas. According to Chopra and Meindl (2016), who stress that efficient

demand management is essential for satisfying customer needs, the data show a high positive correlation between demand management and client orientation. This study builds on their work by showing that companies with strong demand management capabilities are better able to comprehend and meet consumer expectations in the logistics industry in Cambodia. Narver and Slater (1990), who contend that a customer-oriented approach increases the efficacy of demand management strategies, provide more support for this link. The results indicate that in order to enhance service delivery and customer satisfaction, logistics companies in Cambodia had to give top priority to combining demand management techniques with customer orientation.

According to the analysis, process competency has a considerable impact on physical supply flexibility, supporting Swafford *et al.* (2006)'s claims about the significance of operational agility. Effective systems must be in place in order to adjust to shifting supply and demand conditions. This conclusion is especially pertinent to Cambodia, where flexibility may be hampered by logistical issues like inadequate infrastructure. Logistics companies can increase their physical supply flexibility and better manage interruptions while preserving service quality by improving process competency. This link emphasizes how logistics companies can improve their overall operating capabilities by investing in process optimization.

In line with the literature that emphasizes service quality as a crucial factor in determining consumer perceptions, the study validates the established relationship between logistic service quality and customer satisfaction (Coyle *et al.*, 2016). According to the data, customer happiness rises with improved logistic service quality, which is crucial in a cutthroat market like Cambodia. This relationship highlights the need for logistics companies to concentrate on enhancing service quality in order to promote client retention and loyalty. The findings, which are corroborated by Feng *et al.* (2009), also imply that logistics providers should routinely evaluate and improve the quality of their services in order to satisfy changing client expectations.

The results support the claims made by Feng *et al.* (2009) that customer-centric firms are more likely to innovate by showing that service innovation is positively impacted by both customer satisfaction and logistic service quality. By showing that companies who put a high priority on customer satisfaction are better positioned to create cutting-edge service offerings in the logistics setting of Cambodia, this study adds to the body of literature. This partnership emphasizes the value of a proactive approach to service innovation, in which logistics companies consistently look to improve their offerings in response to consumer input and industry developments. According to the results, logistics companies in Cambodia may be able to gain a competitive edge by cultivating an innovative culture.

In conclusion, the study's findings support previous research while offering fresh perspectives on how important logistics elements interact in Cambodia. The significance of a comprehensive approach to logistics management is highlighted by the favorable correlations found between demand management, physical supply flexibility, customer orientation, process competency, logistic service quality, customer satisfaction, and service innovation. By combining these elements, logistics companies may improve customer satisfaction and operational performance, which will ultimately help the logistics industry in Cambodia expand and become more competitive.

5. CONCLUSION

Using Structural Equation Modeling (SEM) as a methodological framework, this study has offered a thorough analysis of the relationships among demand management, physical supply flexibility, customer orientation, process competency, logistic service quality, customer satisfaction, and service innovation within the Cambodian logistics context. The results show how intricate and interrelated these elements are, and how they all work together to affect customer happiness and logistics performance.

The findings highlight the significance of a customer-oriented strategy by showing that efficient demand management is essential for matching logistical operations with consumer needs. According to existing research, this alignment not only improves service delivery but also cultivates client loyalty (Chopra & Meindl, 2001; Narver & Slater, 1990). Additionally, the study shows that process competency has a major impact on physical supply flexibility, highlighting the necessity for logistics companies to optimize their processes in order to improve operational agility (Hardy *et al.*, 2006; Swafford *et al.*, 2006). In the context of Cambodia, where infrastructure issues might obstruct flexibility, this conclusion is especially pertinent. Furthermore, the study supports the established relationship between customer satisfaction and logistic service quality, showing that increases in service quality have a direct impact on greater customer satisfaction levels (Coyle *et al.*, 2016). This link emphasizes how logistics companies must give improving service quality top priority in order to be competitive in a market that is changing quickly. Furthermore, the favorable impact of service innovation on logistic service quality and customer satisfaction implies that a proactive approach to innovation is necessary to keep a competitive edge (Feng *et al.*, 2009).

In conclusion, by clarifying the complex interactions among important logistical issues in Cambodia, this study adds to the body of knowledge already in existence. The results highlight the significance of a comprehensive approach to logistics management and offer insightful information to policymakers and logistics practitioners. Logistics companies may improve their operational performance and better serve their clients by combining demand management, physical supply flexibility, customer orientation, process competency, logistic service quality, customer satisfaction, and service innovation. These findings will be crucial in creating a more effective and customer-focused logistics environment as Cambodia's logistics industry develops further.

LIMITATIONS

• *Sample size and generalizability: One of the primary* limitations of studies utilizing structural equation modeling (SEM) is the reliance on sample size. A small or non-representative sample may limit the generalizability of the findings to the broader population in Cambodia. This can affect the robustness of the conclusions drawn regarding the relationships between the

variables (Hair *et al*., 2012).

• *Cultural context:* The unique cultural and economic context of Cambodia may influence customer behavior and perceptions differently than in other regions. Factors such as local customs, economic conditions, and consumer maturity can affect the applicability of findings from other contexts (Hofstede, 2006).

• *Dynamic market conditions:* The Cambodian market is rapidly evolving, which may lead to changes in customer preferences and behaviors over time. This dynamism can make it challenging to capture stable relationships between the studied variables, as they may shift with market trends (Kotler & Lane Keller, 2016).

• *Measurement validity:* The constructs used in SEM must be accurately measured to ensure valid results. If the instruments used to measure customer satisfaction, service quality, or other variables are not culturally adapted or validated for the Cambodian context, the findings may be compromised (Bagozzi & Yi, 1988).

• *Cross-sectional nature:* Many studies, including those using SEM, often rely on cross-sectional data, which captures a single point in time. This approach limits the ability to infer causal relationships and understand how the dynamics between variables evolve over time (Goodboy & Kline, 2017).

RECOMMENDATIONS

• *Enhance sample diversity:* Future research should aim to include a more diverse and representative sample of customers across different demographics and regions in Cambodia. This will improve the generalizability of the findings and provide a more comprehensive understanding of customer satisfaction drivers (Hair *et al*., 2012).

• *Cultural adaptation of instruments:* Researchers should ensure that measurement instruments are culturally adapted and validated for the Cambodian context. This may involve conducting preliminary studies to test the reliability and validity of the constructs in the local market (Hofstede, 2006).

• *Longitudinal studies:* To better understand the evolving relationships between customer satisfaction and other variables, longitudinal studies should be conducted. This approach will allow researchers to track changes over time and provide insights into causal relationships (Goodboy & Kline, 2017).

• *Focus on Training and Development:* Businesses in Cambodia should invest in training programs that enhance process competence and customer orientation among employees. This can lead to improved service quality and customer satisfaction, ultimately driving business success (Kotler & Keller, 2016).

• *Leverage Technology for Demand Management:* Companies should adopt advanced technologies and data analytics to improve demand management and logistics service quality. This can enhance physical supply flexibility and responsiveness to customer needs, thereby increasing overall satisfaction (Chopra, 2018; Meindl *et al*., 2021).

• *Encourage service innovation:* Organizations should foster a culture of innovation by encouraging employees to develop new service offerings and improve existing ones. This can help businesses differentiate themselves in a competitive market and better meet customer expectations (Oke & management, 2007).

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