

FACTORS AFFECTING SHIPPER'S DECISIONS ON CHOOSING SEA LOGISTICS SERVICE PROVIDER

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ABSTRACT

This study investigates and identifies the variables that influence customers' decisions while selecting logistics service providers. 249 managers and workers from import-export companies and logistics service providers participated in a survey that generated the data.

The theoretical model was tested in this study using both qualitative and quantitative approaches. The findings showed that, in addition to cost, flexibility, and information sharing, on-time delivery had the greatest beneficial influence on customers' decisions. This study also discovered that customers' decisions were unaffected by trust. Lastly, the management implications of this study were put forth in an effort to improve the performance of marine logistics service providers.

Keywords: sharing information, flexibility, logistics, on-time delivery, cost.

1. INTRODUCTION

From 2022 to 2027, the worldwide logistics delivery sector is projected to increase at a compound annual growth rate of almost 8.5% (Melton, 2022). The logistics service provider company's primary driver is the expansion of delivery globally, as expected to generate \$622.69 billion in revenue by 2029 (Research, 2023). There will be a greater need for logistics delivery services as more manufacturers enter the market. Because of this, a large number of new logistics companies have emerged as a result of the growth in demand. This has given shippers more options and made them more likely to choose a company that can satisfy their needs, offer superior service, and charge a competitive price. The logistics delivery industry is expected to witness intense rivalry, with leading businesses continuously pursuing innovation to maintain a competitive edge (Kulkarni et al, 2022)

Supply chain management and shipper-logistics company collaborations are growing in popularity these days due to market needs. The logistics company seeks to support the shipper by offering services like cost minimization for logistics-related operations including transportation, warehousing, and customs clearing. The shipper wants to please their customers. Numerous logistics companies are operating, each claiming to be able to offer shippers the greatest potential outcome and level of service. Still, some companies deliver on their promises, gain the trust of their clients, and profit from a high customer retention rate. Many companies are doing well in providing their services, but they are not fulfilling the demands of their customers. Consequently, it is clear that other factors must be taken into account even if service quality is crucial. Logistics firms stand to benefit much from knowing what influences them and how those influences affect the choice to select suppliers.

The study's goal is to show the factors that shippers evaluate when selecting providers. Based on these criteria, the study proposes various ways to help managers from logistics service provider firms create and implement effective strategies that meet consumer desires.

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During the process of research, the research had been through two main steps. Step 1: Relevant articles were identified via database platforms such as Google Scholar, and Science Direct..., using the main phrases "Assessing the impact of sustainable logistics service quality, factor affect to shipper's decision on choosing logistics provider, factor affect to shipper's decision in supply chain, Supply Chain Management, Partnership, and the Shipper - Third Party Relationship... Step 2: From available articles, factors were investigated and built up as an analytical framework.

This research delves into the factors that influence customer's decisions when selecting sea logistics service providers. With a focus on key factors such as cost, flexibility, information sharing, and on-time delivery, the findings reveal that on-time delivery has the most significant positive impact on customer choice. Furthermore, trust was found to have no effect on these decisions.

2. LITERATURE REVIEW AND HYPOTHESES

2.1. Customer's decision in supply chain

There are many definitions of a customer's decision, however, the definition of (Oliver Richard, 1997) states that a customer's decision is a kind of psychological state of customers after their needs are satisfied. It is a kind of value judgment of customers on the extent to which products or services can meet their own needs. The customer's decision also includes satisfaction, happiness, curiosity, and surprise.

The customer's decision is affected by some criteria such as customer experiences, warehouse performance, inventory management, and customer relationship (Indrawati et al, 2018; Harcourt, 2020; Kumar et al, 2022).

According to (Po-Lin Lai et al, 2022), a customer's decision significantly impacts a company's customer relationship maintenance and market share of its products/services. As what had been mentioned in Po-Lin Lai et al, 2022's research proved that customer decision plays a vital role in a company's marketing function it affects customer retention and loyalty, prompts customers to repeat purchases, and improves an enterprise's market share and profit level,

thus forming a competitive advantage. Therefore, more and more enterprises attach importance to customer's decisions and consider it a significant performance index.

2.2. Service quality in supply chain

Service quality has a vital impact on business performance through reduced costs and increased customer decisions, customer loyalty, and profitability (Parasuraman, 1988; Garau, 2003; Ahmed Hussein Ali, 2022).

Yuen and Thai, 2015 mentioned in their report that in the logistics sector, service quality factors play an essential role; consequently, weaknesses in service quality factors will affect the company's performance and customer decision

Service quality is generated by comparing consumers' expectations of the service quality with their actual feelings after receiving the service. Service function quality and technical quality collectively constitute service quality. Among them, functional quality is a relatively subjective category, comprising personal judgment of consumers about the service personnel's behaviour, attitude, and many other factors. The technical quality of a service is like the traditional product quality; it exists objectively and can be objectively evaluated by customers (Gronroos, 1982).

Besides that, service quality is considered the customer perception of the actual service with its before service rather than between the expectations of the results. At the same time, the service quality level is determined by the difference between the service level expected by customers before receiving the service and the service effect perceived by customers during the service process (Parasuraman et al, 1985; Po-Lin Lai et al, 2022).

Logistics service quality is often evidenced as the most crucial factor in differentiating customer experience, greater perceived value experienced by logistics service quality increases customer decision over the higher customer decision improves repurchase intention (Jain et al., 2021; Quynh Huong Do et al, 2023).

Overall, service quality is an important consideration in all areas, including marine logistics activities. To attain a high customer return rate, a company should always care about its consumers and adapt its services to fulfill their needs.

2.3. Sharing information in supply chain

The idea of information sharing offers insight into the variables that both facilitate and impede the flow of information between people. It is predicated on the idea that "people's attitudes about information sharing can be influenced by organizational culture and policies as well as personal factors." Happier people are more likely to share knowledge, and pro-social attitudes shaped by things like experience and job satisfaction also influence people's propensity to share information (Constant et al, 1997)

A significant amount of study has been done on logistics outsourcing, which aims to assign all or part of the implementation and occasionally even the design of a customer's logistics activities, which may include the actual physical transfer of persons or materials to a third-party logistics provider. The customer is able to concentrate on its main business thanks to this strategic and difficult decision. The increased interest in logistics outsourcing is driven by several considerations, despite the fact that it is linked to a loss of control over outsourced services, a decrease in direct customer interaction, and the possibility of a third-party logistics provider opportunism (Razzaque and Sheng, 1998; Selviaridis and Spring, 2007). Therefore, information sharing is a key mechanism in a third-party logistics provider that illustrates the relationship between a third-party logistics provider service users and their major provider (Lambert et al., 1999), which guarantees end-to-end information (Qianwen Wang, Xu Liu, Baofeng Huo, Xiande Zhao, 2023). Providing precise and timely logistics information is the first of numerous obstacles in the information exchange process (Lui et al, 2009; Suh and Kwon, 2006; Williamson, 1985; Wu et al, 2016). The second barrier, however, is the difficulty of matching the motivations and advantages of both parties in an alliance, as most third-party logistics provider information exchange concentrates on operational difficulties while ignoring strategic issues (Huang et al., 2018). Information sharing fails because it necessitates inputs from user and supplier firms, which causes both to become mired in non-cooperative games and "haggling." The sensitivity of commercial

information is the third obstacle in logistical operations. Without putting confidentiality agreements in place, providers may divulge internal information to other users to get competitive prices (Klein and Rai, 2009). Furthermore, consumers may be concerned about provider opportunism, such as information leaking to rivals, if two customers in the same market utilize the same third-party logistics provider service provider (Cheng et al, 2021). Finally, a third-party logistics provider information exchange is process-based and flexible as conditions change, necessitating the creation of strategic agendas to maximize corporate value and encourage cooperation in logistics (Wei et al, 2012).

Information sharing is critical in establishing coordinated and effective decision-making processes for a humanitarian logistical response. Better coordination and decision-making will lead to a better response for beneficiaries because of timely and high-quality information (Haliza Zahari, 2023). Information sharing plays a crucial role in determining the effectiveness of the humanitarian logistical response, coordination, and decision-making. The dissemination of timely and accurate information to more humanitarian agencies will improve coordination and decision-making, enhancing the response to beneficiaries' and donors' accountability (Ray-Bennett, 2020; Haliza Zahari, 2023). Tatham et al, 2017 and Haliza Zahari, 2023) supported the idea that: the effective coordination and sharing of information during an inter-agency response increases the effectiveness of the response.

According to (Zaheer and Trkman, 2016), a higher willingness to share information between stakeholders within an organization has been proven to increase the quality of information shared with supply chain partners. The factors that could affect the willingness include trust, reciprocity, commitment, and IT infrastructure.

(Nicolaou, 2012) emphasized that to achieve the effectiveness of sharing information, firms should not only focus only on acquiring information but also need to consider its timely, reliable, characteristics, accuracy, and adequacy. This will support the decision-making procedure.

In conclusion, the sharing of information between stockholders is very important in marine logistics. The information needs to be precise and timely to have effective collaboration. So it is highly recommended that all parties have some corresponding action and practice that can be implemented practically to overcome the existing problems to enhance the information-sharing practices in the marine logistics sectors.

2.4. On-time delivery in supply chain

The most significant factor influencing customer choice related to logistics service is delivery time (Boyaci and Ray, 2003; Pekgün et al, 2017).

The business order is required to be on-time shipped to the customer with minimum cost and high quality which is the source of competitive abilities. For that reason, shippers tend to choose third parties who perform well in on-time delivery (Hong Chen, 2022)

There are several factors that affect delivery lead time such as a large number of orders during peak periods, batch delivery by delivery workers, bad weather, and traffic congestion may lead to delivery delays. Obviously, this delay phenomenon first negatively affects consumers' willingness to pay (Ulmer et al., 2021; Zhong Du et al, 2023).

Customers demand short and reliable delivery times (Lai et al., 2022; Wang et al., 2022). Customers can request a delivery window from the logistics service provider, and if the actual delivery time is later than the promised delivery time, customers can apply to reimburse shipping costs. Ultimately, beyond the attractiveness of faster and certain delivery times, late deliveries can also cause monetary and reputational loss (Li et al., 2014; Shang and Liu, 2011) mentioned by (Canran Gong et al, 2024)

The effects of delivery service quality as part of both pre-and post-sale services on customer's decision and future purchase decisions were investigated by (Posselt and Gerstner, 2023; Hossein Fotouhi et al, 2023). They found that the impact of post-sale variables, such as product expectation and on-time delivery, on overall satisfaction and repurchase intention is stronger than that of pre-sales variables, such as price and shipping options.

(Adenso-Díaz et al, 2018) stated in his research that one of the goals of supply chain networks is to ensure that items are delivered on time, therefore they must react to operational disturbances with efficiency. Above statement supported by (Tarafdar and Qrunfleh, 2017) report which stated that "the supply chain is able to meet end-customer requirements of product availability and on-time delivery" above 2 statements were mentioned by (Helena Carvalho et al, 2022)

Global supply chains are vulnerable to disruptions that have a detrimental impact on performance. Supply chain disruptions can result in failure modes, affecting the delivery of products and services on schedule. Companies in various supply chains strive to be robust to disruptions and failure modes, ensuring timely delivery and competitiveness.

2.5. Cost in supply chain

Pohit et al, 2019 and Ruth Banomyong et al, 2022 stated that there are 40 cost components and indicated the five most common logistics cost components are transportation cost, warehousing cost, inventory carried cost, logistics administration cost, and packaging cost.

(Chen, 2023) also explained the above idea by listing out some component sources of logistics such as fuel, labour, and other links of costs, and endpoints, mainly concentrated in logistics and transportation inventory costs, transportation costs and management costs, warehousing costs, maintenance... These factors can produce variable dynamic changes that directly affect to quality of service and profit of a firm's logistics activities.

(Xu, W., 2020) stated in the report that the analysis of cost components in logistics is not easy and some logistics service providers are not comprehensive enough, for that reason they tend to omit or double calculations on some items.

The logistics delivery business is a complex and challenging industry. Firms in this industry face several issues and problems, including lost or damaged logistics, late deliveries, high costs, competition, regulations, and technology (Ouyang et al, 2022; Zhang et al, 2022; Chairote Yaiprasert et al, 2022). These challenges can make it difficult for businesses to operate and stay competitive. However,

by understanding these challenges, companies can make informed decisions about managing their businesses and succeeding (Leyerer et al, 2022; Tavakoli et al, 2022; Chairote Yaiprasert et al, 2022). Any logistics service company that can manage this cost will have more customers.

As per (Li et al, 2019) firms can improve their financial situation and turnover rate by minimizing transportation costs and timely delivery. If a third party can provide solutions that help the customer reduce the logistics operation cost, it could increase the customer's decision and strengthen relationships.

Cost control is the process of ensuring that the cost of a company remains within the budget estimate. Actual costs are compared to estimations, actual or possible deviations are identified, projections are created, and interventions are implemented to keep costs in line with targets. When controlling an enterprise's costs, it must also consider its scope, timetable, quality, and so on. One of the most important variables influencing cost control is logistics selection.

2.6. Flexibility in supply chain

The flexibility of companies in their logistics activities shows how they can react to sudden disruptions and cope with the situation (Azaron et al, 2020). Unexpected situations can be mentioned such as delivery delays (Golroudbary et al, 2019) and problems in import and export processes (Chakraborty and Maity, 2020) this will have a negative effect on logistics activities.

Flexibility in the supply chain makes it easy to find new solutions to preserve resilience and sustainability (Sriyanto et al, 2021). The logistics service company faced with more unexpected situations or sudden disruptions can keep these situations at the minimum level (Anser et al, 2020).

(Bernadette Best et al, 2021) (Chatterjee et al, 2022) support the above theory stating that flexibility is defined as the external and internal capabilities to deal with the rapidly changing of the company, this provides a competitive advantage for a company (Weaven et al, 2021; Bhupendra and Shirish Sangle, 2022). Besides, flexibility allows decisions to be made more quickly in unexpected situations mentioned (Brandon, 2014).

As (Ramos et al, 2023) mentioned in their papers supply chain processes and organizations have uncertainty. When supply chain operations or company processes need to change suddenly in the face of disruptions, learning and developing new processes increases the flexibility of operations in the supply chain.

(Raut et al, 2021) concluded in his report that effective management of the logistics service provider is rapid decision-making and rapid response toward unexpected situations will increase customer trustworthiness and satisfaction.

Flexibility is even more difficult to attain in the context of logistics services, as they are typically provided through contracts between various logistics activities such as loading/ unloading firms, bonded warehouses, bonded transporters, container terminals, customs brokers... They are acting on behalf of shippers. To overcome this challenge, logistics firms can develop flexible service processes by cultivating long-term relationships with shippers, fostering trust and effective communication, and adapting their service processes to accommodate the needs of shippers. This, in turn, enables logistics firms to enhance collaboration with shippers, primarily built upon the foundation of long-term relationships

2.7. Trust in supply chain

Trust is defined as the extent to which all partners believe each other (Mayer, Davis, and Shoorman, 1995; Donney and Cannon, 1997; Tong and Chan, 2022). To foster value sharing between firms, it is essential for them to have a sense of empathy towards the value, and mutual trust should be established (Cho, 2013).

(Hee-Sung Bae, 2024) mentioned in his research there is a lack of empathy for value between logistics firms and shippers within the supply chain, the understanding of shared goals within the supply chain is diminished, resulting in a lack of mutual trust. This lack of trust makes it challenging to achieve the desired goals. To prevent this, logistics firms and shippers need to cultivate empathy for value through proactive communication, which, in turn, enhances the level of trust. The high-quality relationships formed through trust with shippers are applied to internal service processes, laying the groundwork for the provision of excellent services such as flexibility. Trust

between logistics firms and shippers cannot be established in a short period of time; instead, it is cultivated through long-term cooperation and communication, forming the basis for standardizing processes between firms. Consequently, shippers have become increasingly reliant on the logistics services provided by port logistics firms due to the strong and trustworthy relationship established between them.

Trust is considered a crucial factor in inter-firm relationships, especially viewed as a relationship-specific element. It is recognized as an intangible asset that emerges from the interplay of firms within the resource-based theory framework. Inter-firm trust is explained through the lens of mutual benefits between port logistics firms and shippers, with both parties expected to act in the utmost good faith. With a focus on mutual benefits, they engage in profit-sharing behaviour during information exchange, and the shared information is subsequently integrated into the internal processes of the respective firms. This shared information becomes the foundation for developing competitive advantage as intangible assets for the firms. Prior studies have consistently demonstrated a positive relationship between inter-firm trust and performance (Rajaguru et al, 2009; Stuart et al, 2012; Ali and Khalid, 2017; Ahlf et al, 2019; Agarwal and Narayana, 2020; Leonardo et al, 2022).

2.8. Empirical literature

As (Dan et al, 2023) stated the reduced total cost, carbon emission reduction, and service quality will increase customer's decisions.

In China, (Po-Lin Lai et al, 2022) conducted their survey's outcomes using structural equation modeling. The results of this survey indicated that timeliness is the strongest predictor that positively impacts customer's decisions followed by trust, flexibility, and cost.

(Hossein Fotouhi et al, 2023) states in their research that delivery time guarantees (on-time delivery) offer customers as they consider making purchases to increase purchase decisions.

Also, in China, (Daeheon Choi et al, 2019) findings created the empirical analysis indicating that logistics service quality, and primarily the quality of delivery, has a statistically significant impact on customer's decisions as below

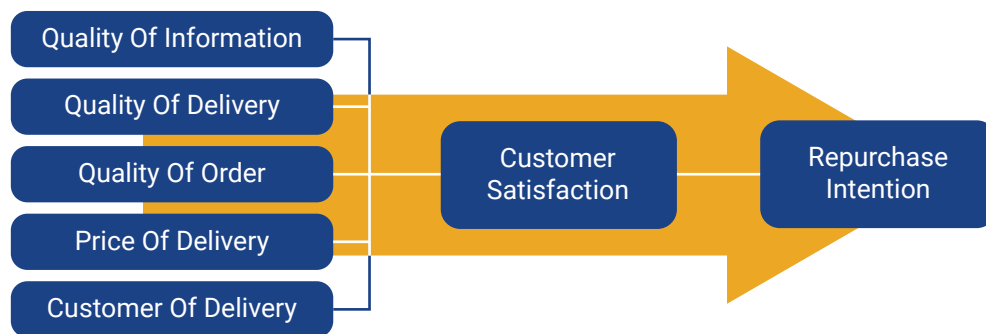


Figure 1: Empirical Model of Daeheon Choi and partner

Source: (Daeheon Choi et al, 2019)

In Vietnam, (Hiep Cong Pham et al, 2018) conducted an investigation among Vietnamese Logistics Firms and recognized that the sharing of information among partners is a key factor in enhancing supply chain performance. Their study stated that information sharing in developing countries and Vietnam is not effective because of a lack of understanding of sharing practice. There are 5 factors that affect sharing practice: technical capacity, Security risk, organization rule, policy, and mutual trust.

Another survey conducted in Pakistan by (Nadia Zaheer and Peter Trkman, 2016) supported the above idea that there are 5 factors affecting the willingness to share information and the quality of information such as trust, reciprocity, commitment, power, overall job satisfaction, life satisfaction, IT infrastructure capability.

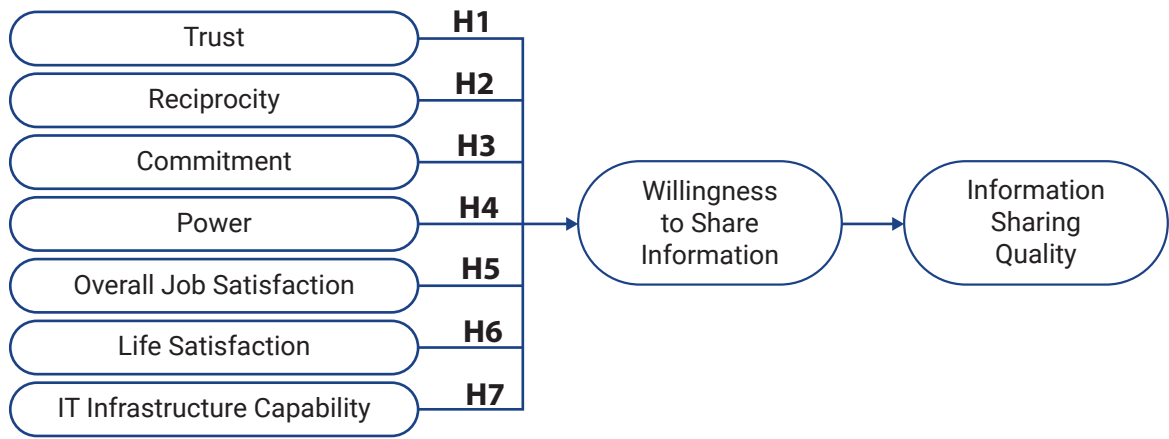


Figure 2: The conceptual research model of information sharing

Source: (Nadia Zaheer and Peter Trkman, 2016)

(Ipek and Kazancoglu, 2022) after analyzing the research, revealing that the supply chain is affected directly by flexibility, agility, and responsiveness.

Supported by the above idea (Hadi Balouei Jamkhaneh et al, 2022) concluded in their exploration after identifying the criteria that can affect the quality of logistics service that flexibility and agility allow logistics firms to respond more quickly to customer and market needs.

The effective collaboration and quality of the supply chain are decided by logistics cost, customer service, and improved market access (Reeju Guha et al, 2022).

In Egypt, (Ahmed Hussein Ali et al, 2022) recommended plenty of factors to increase the performance of logistics in emerging countries we should focus on customer service activities, trust, quality of a relationship, and commitment between all parties

Based on the above interpretation, the following hypotheses are proposed:

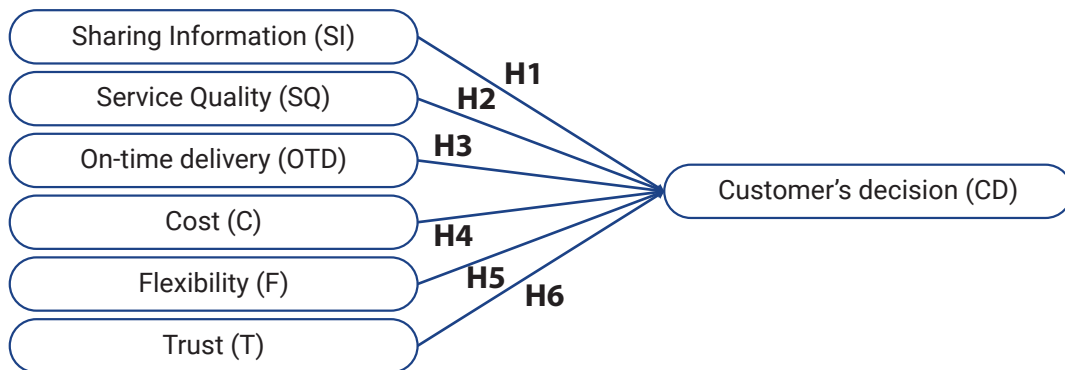


Figure 3: Empirical model

Sharing information (SI) variable: Information sharing plays a crucial role in determining the effectiveness of the humanitarian logistical response, coordination, and decision-making. The dissemination of timely and accurate information to more humanitarian agencies will improve coordination and decision-making, enhancing the response to beneficiaries' and donors' accountability (Ray-Bennett, 2020). That is why SI became the first variable of the empirical model.

- H1: Sharing information impacts positively on customer's decision

Service quality (SQ) variable is the second variable because service quality has a vital impact on business performance, increased shipper's decisions, customer loyalty, and profitability (Parasuraman, 1988) (Garau, 2003) (Ahmed Hussein Ali, 2022). Besides that (Yuen and Thai, 2015) supported the idea service quality factors play an essential role; consequently, weaknesses in service quality factors will affect the company's performance and customer's decisions.

- H2: Service quality impacts positively on customer's decision

On-time delivery (OTD) variable: Customers demand short and reliable delivery times and the most significant factor influencing the customer choice related to logistics service is delivery time (Boyaci and Ray, 2003) (Pekgün et al., 2017). (Lai et al., 2022) (Wang et al., 2022) said the same in their report on 2022 for that reason this is an important variable in the model.

- H3: On-time delivery impacts positively on customer's decision

Cost (C) variable: As per (Li et al, 2019) firms can improve the financial situation and turnover rate by minimizing transportation costs and timely delivery. If a third party can provide solutions that help the customer reduce the logistics operation cost, it could increase the customer's decision and strengthen the relationship.

- H4: Cost impacts positively on customer's decision

Flexibility (F) variable: (Raut et al, 2021) concluded in his analysis that effective management of the logistics service provider is rapid decision-making and rapid response toward unexpected situations will increase customer trustworthiness and satisfaction. This provides a competitive advantage for a company agreed by (Weaven et al, 2021) (Bhupendra and Shirish Sangle, 2022).

- H5: Flexibility impacts positively on customer's decision

Trust (T) variable: shippers become increasingly reliant on the logistics services provided by logistics firms due to the strong and trustworthy relationship established between them said by (Hee-Sung Bae, 2024).

- H6: Trust impacts positively on customer's decision

3. RESEARCH METHOD

In this study, a quantitative and qualitative survey technique was used for data collection and measurement. The qualitative research method is carried out based on theoretical foundations and an overview of previous research to propose research hypotheses, a preliminary research model and synthesize scales belonging to the factors in the model, and research form. The quantitative research method is a traditional method in scientific research, conducted by surveying employees working at manufacturing companies and sea logistics service providers in Vietnam about factors impacting the decision of shippers. Survey questions were built based on general theory and adjusted scale to suit the current business context. The sampling method used for this study is a non-probability convenience method. The data collection tool is a Google Form survey questionnaire, including questions measured on a 5-scale Likert. Next, information will be entered into SPSS 29 to conduct a reliability analysis: Analyse the scale's reliability using Cronbach's Alpha, exploratory factor analysis (EFA), Pearson correlation, SEM model analysis, and ANOVA analysis to test for variations in demographic characteristics.

According to (Hair et al.,2006), the number of samples suitable for conducting multivariable regression analysis is also 5 times the number of observed variables. The needed minimum sample size for multiple regression analysis is $n \geq 50 + 8p$, where p is the number of independent variables in the model and n is the minimum sample size (Nguyen Dinh Tho, 2013). Thus, the proposed research model has 6 independent variables, 1 dependent variable, and a total of 35 observed measurement variables: If calculated according to the rule $n \geq 50 + 8p$, the minimum sample size will be $50 + 8 \times 7 = 106$ observations. Based on the above formulas, we choose a sample size of 150 which is enough to ensure the entire analysis, and at the same time, the sample size is taken more than the minimum to deduct the loss that occurs when surveyed. The next step is quantitative data analysis methods and necessary tests. During the course of performing the survey and gathering results from the original survey data,

it was discovered that out of 264 survey samples, 15 were deleted for the following reasons: The survey respondents only chose one answer for the survey, survey participants left blank responses or did not complete enough surveys because when running draft data, these factors conflict with the model's analysis results; thus, there are 246 survey samples. Initially, just 249 survey samples remained for inclusion in the official study.

Details of the scales after reliability testing and exploratory factor analysis are as follows:

- Sharing information (SI): 5 observed variables
- Service quality (SQ): 5 observed variables
- Trust (T): 5 observed variables
- On-time delivery (OTD): 5 observed variables
- Flexibility (F): 5 observed variables
- Cost (C): 5 observed variables
- Customer's decision (CD): 5 observed variables
- Survey data were cleaned before analysis using SPSS 29 software.

A statistical technique known as regression analysis examines the relationship between one variable, referred to as the dependent variable or explained variable, and one or more other factors, referred to as the independent or explanatory variables.

The regression model:

$$Y = \beta_0 + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 + \dots + \beta_i * X + \alpha$$

Y: Dependent variables

X1, X2, X3..., X: Independent variables

β_0 : Constant

β_i : Regression coefficients

α : Standard error

To determine the degree to which independent variables influence the dependent variable, we used linear regression analysis. Next, evaluate whether the model is appropriate, create a multiple regression model, and test the hypotheses. The research hypotheses and the acceptance and interpretation of regression results are inextricably linked.

4. RESULTS AND DISCUSSIONS

4.1. Result

4.1.1. Testing the reliability of the scale (Cronbach's alpha)

Table 1 shows that all measurement scales for the independent and dependent variables have Cronbach's Alpha coefficients greater than 0.5. At the same time, the variable-sum correlation coefficients for all 6 scales' measurement variables exceed 0.3. Hence, variables evaluating customer's decision components are used in exploratory factor analysis.

Table 1: Cronbach's Alpha of variables

Variable	Cronbach's Alpha
Sharing information	0.886
On-time delivery	0.875
Flexibility	0.873
Service quality	0.883
Cost	0.847
Trust	0.835
Customer's decision	0.860

Source: Results of SPSS 29

4.1.2. Exploratory Factor Analysis

In factor analysis, the following standards apply: The KMO coefficient must meet the required value of ($0.5 \leq KMO \leq 1$), indicating that factor analysis is suitable. The Bartlett test's significance level (Sig. < 0.05) indicates that there is a factor-level correlation between the observed variables. Third, the research model keeps the elements whose Eigenvalue is greater than 1. Fourth, the percentage variation of the observed variables is represented by the total variance retrieved.

Table 2: EFA results for independent variable

Component						
	1	2	3	4	5	6
SI1	0.75					
SI2	0.82					
SI3	0.79					
SI4	0.78					
SI5	0.80					
SQ1				0.72		
SQ2				0.77		
SQ3				0.66		
SQ4				0.70		
SQ5				0.68		
OTD1			0.74			
OTD2			0.75			
OTD3			0.72			
OTD4			0.59			
OTD5			0.63			
C1						0.82
C2						0.65
C5						0.82
T2					0.69	
T3					0.72	
T4					0.85	
T5					0.76	
F1		0.63				
F2		0.78				
F3		0.75				
F4		0.71				
F5		0.67				
KMO: 0.900; Sig. <0.001 Eigenvalue: 1.197 Total variance extracted: 70.189%						

Source: Results of SPSS 29

According to the results of the factor rotation matrix of independent variables, there are no observed variables with loading coefficients less than 0.5 or observed variables loading on both factors at the same time with loading coefficients less than or equal to 0.3. Thus, these 27 observed variables are suitable to be maintained in the model

Table 3: EFA results of dependent variable

	Component 1
CD1	0.839
CD2	0.865
CD3	0.825
CD4	0.710
CD5	0.773
KMO: 0.848; Sig. <0.001	
Eigenvalue: 3.235	
Total variance extracted: 64.702%	

Source: Results of SPSS 29

It is not possible to rotate the matrix because there is only one factor. On the other hand, this implies that the measured variables converge rather well and that the scale is assumed to be unidirectional

4.1.3. Pearson correlation

After executing EFA exploratory factor analysis, only 27 of the initial 30 observed variables that satisfied the conditions were maintained in the model to perform Pearson correlation and multiple linear regression analysis using the new encoding as follows.

- Factor observed variables sharing information: F-SI
- Factor observed variables service quality: F-SQ
- Factor observed variables on-time delivery: F-OTD
- Factor observed variables flexibility: F-F
- Factor observed variables trust: F-T
- Factor observed variables cost: F-C
- Factor observed variables customer’s decision: F-CD

Table 4: Pearson correlation of variables

Correlations						
F-CD	F-SI	F-SQ	F-OTD	F-C	F-T	F-F
R	0.511	0.733	0.868	0.676	0.496	0.712
Sig.	<.001	<.001	<.001	<.001	<.001	<.001
N	249	249	249	249	249	249

Source: Results of SPSS 29

The impact of variables F_SI, F_SQ, F_OTD, F_C, F_F on variables F_CD is statistically significant because Sig. < 0.01 and Pearson correlation > 0.5. The variable F_T has sig < 0.5. Not qualified and be eliminated (see Table 4)

4.1.4. Regression analyses

We carried out regression analysis using the equation Enter method. Test the average R coefficient. The calibration approach assesses model fit and uses the F test (test of model fit) to evaluate the outcomes of the multiple linear regression model (see Table 5)

Table 5: Summary of regression model

R	R Square	Adjusted R Square	Durbin-Watson
0.924a	0.853	0.850	1.732

Source: Results of SPSS 29

- R square is 0.853
- The adjusted R square is 0.850, which shows that the independent variables F_SI, F_SQ, F_OTD, F_C, and F_F of the factors influence 85.0% of the change in the dependent variable, the remaining 15% is due to variables outside the model, and random errors.
- The Durbin - Watson value of 1.732, which is between 1 and 3, shows the residuals are not correlated with each other, meaning the model does not have autocorrelation, proving that the data is well collected (Hair et al., 2009).

Table 6: Regression Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	B			Tolerance	VIF
Constant	-0.050	0.116		-0.431	0.667		
F-SI	0.052	0.025	0.060	2.080	0.039	0.736	1.358
F-SQ	0.181	0.034	0.189	5.373	<0.001	0.491	2.038
F-OTD	0.479	0.034	0.521	14.241	<0.001	0.451	2.216
F-C	0.139	0.027	0.163	5.104	<0.001	0.596	1.677
F-F	0.163	0.032	0.172	5.042	<0.001	0.522	1.916

Source: Results of SPSS 29

Sharing information (sig.=0.39, β =0.060), service quality (sig. <0.001, β =0.189), on-time delivery (sig.<0.001, β =0.521), cost (sig.<0.001, β =0.163) and flexibility (sig.<0.001, β =0.172) fulfill the requirements to take part in the multiple regression model with $\beta > 0$ and Sig. < 0.05.

The VIF coefficients of the independent variables are all less than 10, indicating that there is no multicollinearity between them. Generally, a VIF above 4 or tolerance below 0.25 indicates that multicollinearity might exist, and further investigation is required. When VIF is higher than 10 or tolerance is lower than 0.1, there is significant multicollinearity that needs to be corrected (CFI, 2024).

The independent variables F_SI, F_SQ, F_OTD, F_C, and F_F included in the regression analysis all impact the dependent variable in a positive way.

To achieve the initial goal, this study applied a standardized regression model to this topic to determine the importance of each component influencing the customer's decision.

- Not standardized regression equation

$$F_{CD} = -0.050 + 0.052 F_{SI} + 0.181 F_{SQ} + 0.479 F_{OTD} + 0.139 F_C + 0.163 F_F$$

- Standardized regression equation

$$F_{CD} = 0.052 F_{SI} + 0.181 F_{SQ} + 0.479 F_{OTD} + 0.139 F_C + 0.163 F_F$$

The findings of the level of influence on the dependent variable are organized in descending order in the regression coefficient analysis based on the standardized Beta (β) value of the independent variables. (see Table 7)

Table 7: Statistics about the effect of dependent variables on independent variables

Variable	β	Status
On-time delivery	0.521	Impact
Service quality	0.189	Impact
Flexibility	0.172	Impact
Cost	0.163	Impact
Sharing information	0.060	Impact
Trust		Not impact

Source: Results of SPSS 29

Out of the six initial assumptions, five have been found to be accepted: information sharing, service quality, flexibility, cost, and on-time delivery. In other words, the variable does not depend on the trust factor when it comes to the customer's decision. In the regression model, trust is not significant on its own. Besides, all variables affect in the same direction and we have the model of research result as below:

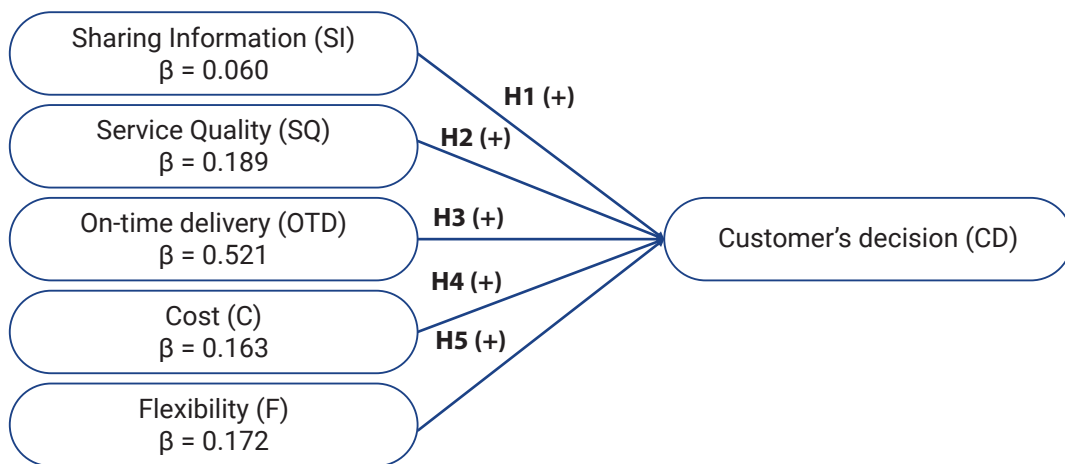


Figure 4: Model of research result

4.2. Discussion

The results indicates that on-time delivery (F_OTD) ($\beta=0.521$) has the most impact on shipper's decision, with $\beta=0.189$ the service quality (F_SQ) has the second-highest influence on customer's decision and the third rank in term of shipper's decision is flexibility (F_F) ($\beta=0.172$). Customers' satisfaction is impacted by two factors: cost (F_C) with $\beta=0.163$ and sharing information (F_SI) with $\beta=0.060$ have the lowest impact on customer's decision among the five criteria studied.

Based on these results the logistics firms would like to increase the return rate of their customers should look into these factors and improve them in the future. Besides, they should also prioritize improving the factors that have the most impact on customers according to research results to achieve the best results.

5. CONCLUSIONS AND MANAGEMENT IMPLICATION

5.1. Conclusions

This study used qualitative and quantitative methods to test the theoretical model with 6 initial hypotheses (H1) the impact of sharing information on customers' decisions, (H2) the effect of third-party service on customers' decisions, (H3) the impact of on-time delivery on customer's decision, (H4) the influence of cost on customer's decision, (H5) the impact of flexibility on customer's decision, (H6) the effect of trust on customer's decision.

The results obtained from regression analysis do not exhibit autocorrelation or multicollinearity phenomena. Furthermore, the residual distribution is normal, and the regression assumption of a normal residual distribution and the homoscedasticity assumption is not broken.

5.2. Management implications

5.2.1. Sharing information impact shipper's decision

As (Haliza Zahari, 2023), information sharing is critical in establishing coordinated and effective decision-making processes for a humanitarian logistical response. Better coordination and decision-making will lead to a better response for beneficiaries because of timely and high-quality information).

Our research has shown that information sharing has a significant impact on a shipper's decision, which influences the shipper's decision to use an ocean logistics service provider. To improve the quality of information exchange between maritime logistics service providers and shippers (Fawcett et al., 2007) found that a company that wants/needs to improve information sharing should focus on building trust in the relationship, improving commitment to their customer, and establishing a reciprocal relationship. Furthermore, to prevent information leaks, strong restrictions on information-sharing protection should be addressed by both maritime logistics service providers and shippers. Once it is legal and allowed, the participating partner will be more likely to share information with the business partners.

5.2.2. Cost impact on shipper's decision

(Chen, 2023) also explained the above idea by listing out some component sources of logistics such as fuel, labor, and other links of costs, and endpoints, mainly concentrated in logistics and transportation inventory costs, transportation costs and management costs, warehousing costs, maintenance... These factors can produce variable dynamic changes that directly affect to quality of service and profit of a firm's logistics activities.

As a result of this research, transportation improves logistical services and competitiveness for manufacturing and import-export enterprises by delivering goods and supplies on schedule and at a cheap cost. Logistics service companies aim to deliver excellent service at the lowest possible cost to their consumers. Logistics service providers play a crucial role in decreasing transportation costs by selecting the most appropriate delivery methods. In general, regional carriers have more affordable rates and transit times that are comparable to or quicker than those of national carriers. For regional exports, using a national carrier usually results in financial losses. It would have been beneficial for you to capitalize on the reality that carriers often have more competitive geographic areas than others. Because many shippers lack access to this technology, they must rely on routing guides, which identify the best carrier for their shipment depending on its origin and destination. It is necessary to compare the prices of various carriers, accounting for tariff discounts, minimum fees, fuel surcharges, and transit times, in order to create that route guide. To ensure a reliable comparison, a thorough analysis of past data regarding the number of practice importers, their port and inventory handling experience, and the goal of lowering freight costs is necessary. The fact that the best-priced carrier frequently does not have the best discount is something that many shippers' routing recommendations fail to consider, instead simply accounting for tariff discounts. It is only after you have a firm grasp on your delivery patterns that you can determine whether an alternative is truly low-cost. In order to satisfy customers, marine logistics service providers should assist shippers in handling these tasks and locating the most affordable sea shipping rate.

5.2.3. Flexibility impact to shipper's decision

Flexibility in the supply chain makes it easy to find new solutions to preserve resilience and sustainability (Sriyanto et al, 2021). The logistics service company faced with more unexpected situations or sudden disruptions can keep these situations at the minimum level (Anser et al, 2020).

Concerning the management consequences, improved continuous systems are the only way to provide flexibility in the face of transportation disruptions. Businesses can be sensitive, adaptable, and flexible in this way. As a result, businesses must offer these features across the board for their logistics, which will cause them to go digital. Developing technologies (such as Industry 4.0, Blockchain, AI, IoT, etc.) are necessary to deal with disruptions in transportation. Transport is integrated with AI, IoT, and other technologies at every step, thanks to Industry 4.0. These cutting-edge solutions increase traceability, automation, and visibility, making logistics operations more robust and sustainable against interruptions. This will have a direct impact on transportation's adaptability, agility, and reactivity as well as make it more resilient to unforeseen interruptions.

To be adaptable and long-lasting in the face of changes in the logistics industry, one must take developing technology into consideration. Thus, managers may better manage their transportation and come up with ways to deal with interruptions by utilizing evolving technologies. Managers can also choose novel solutions and conduct speedy assessments. These assessments offer more organized and efficient risk management techniques. (Ipek Kazancoglu et al, 2022)

5.2.4. On-time delivery impact on shipper's decision

Customers demand short and reliable delivery times (Lai et al., 2022; Wang et al., 2022). Customers can request a delivery window from the logistics service provider, and if the actual delivery time is later than the promised delivery time, customers can apply to reimburse shipping costs.

In order to transport goods within compromised time the sea logistics service providers should build

a connection with a ship owner company that should be predicated on long-term agreements based on cooperative systems that facilitate information sharing and problem-solving between the parties. The literature suggests that exchanging information is essential to maintaining positive relationships, preventing disputes, and enabling businesses to make the right strategies in case their OTD performance has to be improved. Since a ship owner could gather information in their own information system and plan according to the needs of the customers, information visibility would be beneficial. As a result, both parties in the relationship could understand real-time issues through an advanced distributed control network and share the same understanding of how to perform the OTD (Kamali, 2020)

5.2.5. Service quality impact on shipper's decision

Logistics service quality is often evidenced as the most crucial factor in differentiating customer experience, greater perceived value experienced by logistics service quality increases the customer's decision over the higher customer's decision improves repurchase intention (Jain et al., 2021; Quynh Huong Do et al, 2023).

Sea logistics service providers should train their staff in logistics to improve the quality of their services. This will ensure that a combination of technical knowledge about the services rendered is achieved, with the goal of providing their customers with the best solution and minimizing errors during the operation phase. In addition, they should work with their clients to resolve any issues that arise so that they can use the experience to inform future projects.

It is necessary to create a customer care program. When a consumer utilizes their services, an account should be created for them. Client information ought to be kept in a Customer Relationship Management (CRM) database by the LSP. From there, the logistics service providers can monitor client data to comprehend their requirements and provide the best course of action for transportation.

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