Exploring factors influencing actual usage of freight forwarding services in Indonesia: A study on desire, outcome expectations, perceived self-efficacy and moderating roles of delivery risk and perceived trust

Miah Said[a*], Lukman Setiawan[b], Darmono[b], Andi Yusran Paris[c], Sultan[c] and Mochammad Fahlevi[d,e]

[a]Universitas Bosowa Makassar, Makassar, Indonesia
[b]Universitas Muhammadiyah Berau, Indonesia
[c]STIE Makassar Maju, Makassar, Indonesia
[d]Management Department, BINUS Online, Bina Nusantara University, Jakarta 11480, Indonesia
[e]Operation Research & Management Sciences, Faculty of Business and Management, Universiti Sultan Zainal Abidin (UniSZA), Malaysia

A B S T R A C T

This study investigates the factors influencing the actual usage of freight forwarding services in Indonesia, focusing on the roles of desire, outcome expectancy, and perceived self-efficacy, with delivery risk and perceived trust acting as moderating factors. Grounded in Social Cognitive Theory (SCT), this study examines how personal cognitive factors and external risks influence users' attitudes and behaviors toward freight forwarding services. Data were collected from 616 respondents across Jakarta, Surabaya, and Makassar utilizing a structured questionnaire. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to test the hypothesized relationships. The findings reveal that desire significantly influences both attitude and delivery risk, while attitude has a strong direct effect on actual usage. Outcome expectancy and perceived self-efficacy demonstrated weaker effects, particularly on attitudes, suggesting that other factors, such as trust and risk perceptions, play a more significant role in this context. Additionally, delivery risk was found to moderate the relationship between desire and attitude, while perceived trust did not moderate the link between attitude and actual usage. The research underscores the importance of trust-building and risk mitigation strategies for freight forwarding service providers in Indonesia. The study also provides theoretical contributions by applying SCT to the logistics sector and offers practical implications for enhancing service adoption in emerging markets.

1. Introduction

The freight forwarding market constitutes a critical component of the global logistics industry, facilitating the efficient movement of goods across international borders (Koh et al., 2020; Luttermann et al., 2020). By functioning as intermediaries between shippers and various transportation services air, sea, and road freight forwarders enable the complex logistics processes that underpin global trade (Verschuur et al., 2022). Their services are particularly advantageous for small and medium-sized enterprises (SMEs), as they consolidate shipments from multiple clients to optimize cargo space and reduce shipping costs, thereby rendering international trade more accessible and cost-effective (Rajesh et al., 2023; Subhashini & Preetha, 2018). Moreover, freight forwarders provide customized logistics solutions that align with the specific requirements of businesses, offering flexibility in transportation modes and routes. They assist companies in selecting the optimal combination of air, sea, and road transport based on factors such as cost, delivery time, and geographical constraints. This multimodal approach not only ensures cost efficiency but also enhances supply chain reliability by mitigating the risk of delays associated with reliance on a single mode of transport (Zhou & Wan, 2022).

In addition to cost reduction, freight forwarders provide businesses with enhanced control over their supply chains, as they manage various logistical tasks such as cargo tracking, customs clearance, and inventory management, while ensuring compliance with international trade regulations (Luttermann et al., 2020). Furthermore, in an era of increasing digitalization, freight forwarders have incorporated new technologies to enhance their service offerings. The implementation of digital platforms, real-time tracking systems, and automated documentation processes has improved transparency, enabling businesses to monitor shipments more effectively and make informed decisions based on real-time data (Verschuur et al., 2022). This technological advancement not only improves operational efficiency but also strengthens the relationship between shippers and freight forwarders by providing increased visibility into the entire logistics process.
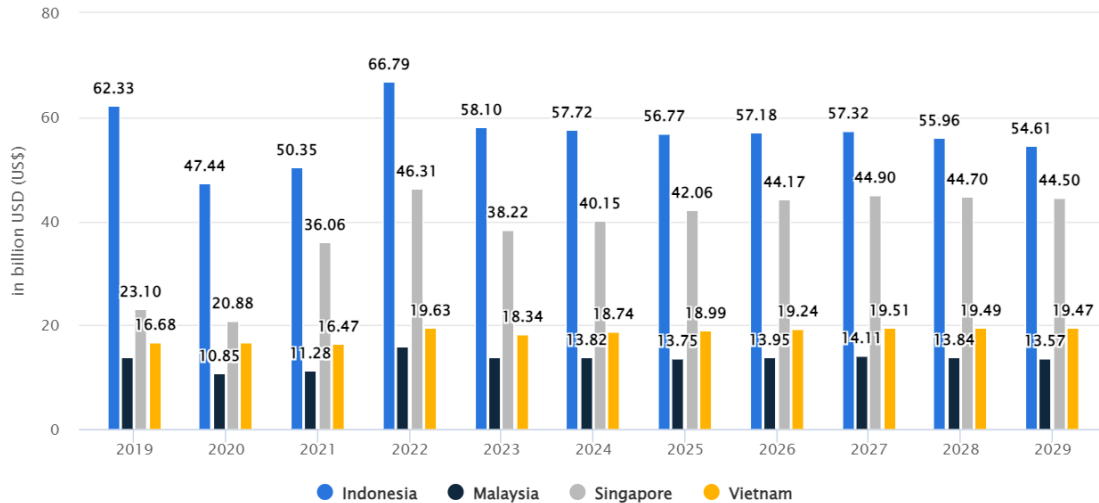

Fig. 1. Freight Forwarding Value Added (Indonesia, Malaysia, Singapore, Vietnam), 2019-2029 (in billion USD)

Notes: Data was converted from local currencies using average exchange rates of the respective year.

Source: (Statista Market Insights, 2024)

In Southeast Asia, the significance of the logistics and freight forwarding industry is evident in the market sizes of countries such as Indonesia, Malaysia, Singapore, and Vietnam. Figure 1 depicts the total value of the transportation and logistics market in these four countries from 2019 to 2029, demonstrating Indonesia's predominant position. By 2022, Indonesia's logistics market is projected to reach 66.79 billion USD, a substantial increase from 62.33 billion USD in 2019 (Statista Market Insights, 2024). This growth is primarily attributed to Indonesia's extensive domestic market, vast geography, and the rapid expansion of its e-commerce sector. However, post-2022, the market is anticipated to stabilize, reflecting both saturation and the challenges associated with sustaining high growth (Blanquart & Burmeister, 2009; Pinyanitikorn et al., 2024). While Malaysia and Singapore exhibit steady growth in logistics market size, their figures consistently remain smaller than Indonesia's. Singapore, despite its status as a major global logistics hub, possesses a relatively modest market size due to its limited geographical area, focusing more on high-value, efficient logistics rather than large-scale volume (Ganapati & Wong, 2023; Sahu et al., 2022; Wei & Li, 2024). Vietnam, conversely, demonstrates consistent growth, indicative of its emerging role in global supply chains and increasing industrialization (Phung et al., 2023).
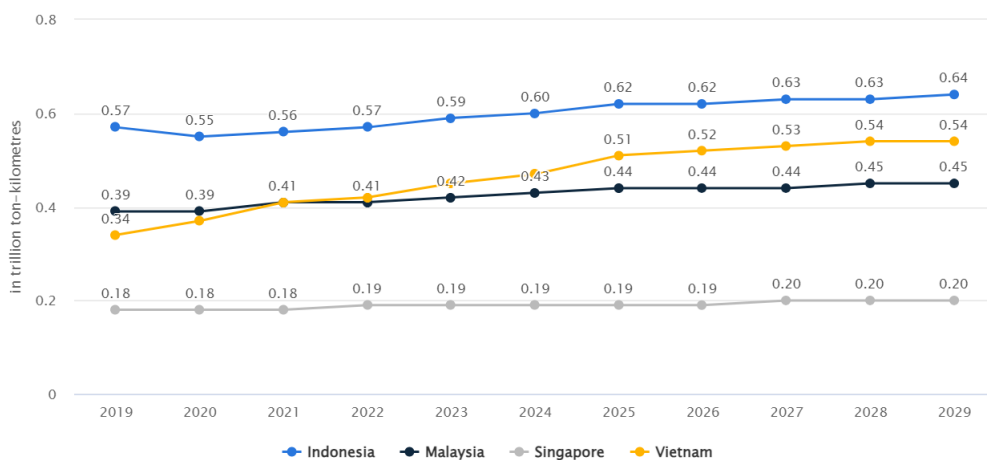
Fig. 2. Freight Transported (Indonesia, Malaysia, Singapore, Vietnam), 2019-2029 (in trillion ton-kilometers)

Source: (Statista Market Insights, 2024)

Fig. 2 illustrates freight transport performance in ton-kilometers for these four countries over the same period (Statista Market Insights, 2024). Indonesia maintains the highest total freight volume, projected to reach 0.64 trillion ton-kilometers by 2029, followed by Vietnam, which exhibits substantial growth attributed to its expanding role in global trade (Phung et al., 2023; Pinyanitikorn et al., 2024). The disparities in freight volumes among these countries underscore the varying scales of their logistics industries, with Vietnam and Indonesia emerging as the most dynamic entities in the region, driven by increasing e-commerce activities and industrial output. In Indonesia, the freight forwarding market is undergoing rapid evolution, particularly in response to the burgeoning e-commerce sector (Sidjabat et al., 2024).

Freight forwarders play a crucial role in navigating the country's complex logistics landscape, characterized by the utilization of multimodal transport solutions that incorporate sea, air, and road transportation (Blanquart & Burmeister, 2009; Sahu et al., 2022). This adaptability is essential for optimizing delivery times and minimizing costs across Indonesia's extensive archipelagic geography. Furthermore, the integration of digital technologies is transforming the logistics sector. Digital platforms, real-time tracking systems, and automated documentation processes are enhancing transparency and operational efficiency, providing businesses with improved visibility into their supply chains (Angelelli et al., 2020). This adoption of digital solutions is imperative for improving service quality, particularly as customer expectations for expeditious and reliable delivery continue to increase in response to growing e-commerce demand (Van Asch et al., 2020).

Concurrently, sustainability has emerged as a significant consideration in the freight forwarding market, both globally and within Indonesia. As logistics providers implement environmentally conscious practices such as optimizing routes to minimize fuel consumption and utilizing energy-efficient transport modes they are aligning their operations with broader sustainability objectives. These initiatives are not solely driven by corporate responsibility but also by increasing regulatory pressures to reduce environmental impacts (Luttermann et al., 2020). This transition reflects the growing importance of balancing operational efficiency and environmental sustainability in logistics operations (Huang et al., 2019).

In parallel, the behavioral factors that influence the adoption of freight forwarding services are equally significant. The relationship between desire(Lau et al., 2023; Leyva-Hernández et al., 2021), outcome expectancy(Glock & Krolak-Schwerdt, 2013; Maddux et al., 1986), perceived self-efficacy(Yousaf et al., 2021), and attitude plays a crucial role in determining the actual usage of these services(Ahmad et al., 2020; McLean et al., 2020). While sustainability initiatives can attract businesses, it is ultimately the desire for convenience, cost-effectiveness, and operational necessity that drives initial engagement. However, this desire must be supported by positive outcome expectancies, the belief that utilizing these services will lead to tangible benefits such as timely deliveries, reduced costs, and improved logistics operations. These positive expectations, combined with an individual's or business's belief in their capability to manage the logistics processes (i.e., perceived self-efficacy), contribute to a favorable attitude towards the adoption and continued use of freight forwarding services. Thus, sustainability and user attitudes toward service usage are increasingly intertwined as logistics evolve to meet contemporary demands. Perceived self-efficacy is another critical factor that influences attitude. In the logistics context, if users believe they possess the capability to effectively utilize freight forwarding services, whether through digital platforms or by managing various shipment processes, this enhances their attitude toward using these services. Higher levels of self-efficacy result in increased confidence in managing these logistics processes and interacting with service providers. When businesses or individuals perceive themselves as competent in their ability to manage these tasks, their attitude towards using freight forwarding services becomes more positive.

The previous research on freight forwarding has predominantly focused on operational aspects such as service quality, cost reduction, and digitalization strategies, including the integration of IoT and tracking systems to enhance logistics efficiency (Koh et al., 2020; Zhou & Wan, 2022). This study adopts a novel approach by examining the behavioral factors that influence the adoption and continued use of these services. This research extends beyond the conventional frameworks that investigate logistics efficiency or technological advancements by concentrating on psychological and perceptual variables, which are less explored in the context of freight forwarding. Specifically, it investigates how users' inclination to engage with freight services is influenced by their expectations of positive outcomes, their self-efficacy in managing logistics processes, and their trust in service providers to mitigate risks such as delays and damages. These aspects have been insufficiently explored in previous studies, particularly in the Indonesian context. The significance of this research is further enhanced by its incorporation of delivery risk (Osakwe et al., 2022) and perceived trust (Lavuri et al., 2022; Tian et al., 2023) as moderating factors, offering a comprehensive perspective on the barriers and enablers to service utilization.

1.1. Research Gap

This dual focus provides insight into how positive attitudes can be undermined by delivery risks and how trust-building measures can alleviate those concerns, strengthening the connection between attitude and actual service usage. This nuanced perspective on the intersection of psychological factors and risk perceptions is particularly relevant in the Indonesian market, where logistical challenges and infrastructure limitations can elevate perceptions of risk. Previous research on freight forwarding has typically concentrated on operational aspects such as service quality, cost reduction, and digitalization strategies, e.g., the integration of IoT and tracking systems to enhance logistics efficiency (Koh et al., 2020; Zhou & Wan, 2022). This study adopts a novel approach by examining the behavioral factors that influence the adoption and continued use of these services. This research extends beyond conventional frameworks that examine logistics efficiency or technological advancements by focusing on psychological and perceptual variables, which are less explored in the context of freight

forwarding. Specifically, it investigates how users' inclination to engage with freight services is shaped by their expectations of positive outcomes, their confidence in managing logistics processes, and their trust in service providers to mitigate risks such as delays and damages. These aspects have been underexplored in previous studies, particularly in the Indonesian context. The value of this research is further enhanced by its integration of delivery risk (Osakwe et al., 2022)and perceived trust (Lavuri et al., 2022; Tian et al., 2023)as moderating factors, offering a comprehensive view of the barriers and enablers to service usage. This dual focus provides insight into how positive attitudes can be undermined by delivery risks and how trust-building measures can alleviate those concerns, strengthening the connection between attitude and actual service usage. This nuanced perspective on the intersection of psychological factors and risk perceptions is particularly relevant in the Indonesian market, where logistical challenges and infrastructure limitations can elevate perceptions of risk.

1.2. Novelty

Social Cognitive Theory (SCT) (Bandura, 1986)serves as the grand theory to elucidate the relationships among the variables, providing a comprehensive framework for understanding how individual behaviors are influenced by cognitive, environmental, and personal factors. SCT is particularly pertinent to this study as it emphasizes the interaction between personal cognition (desire, outcome expectancy, perceived self-efficacy) and external environmental factors (delivery risk and perceived trust). This research endeavors to address these challenges by examining the factors that influence the actual usage of freight forwarding services in Indonesia. Specifically, it focuses on variables such as desire, outcome expectations, and perceived self-efficacy, while investigating the moderating roles of delivery risk and perceived trust. As the Indonesian logistics industry continues to adapt to global trends in digitalization and sustainability, comprehending these drivers is crucial for businesses seeking to enhance service adoption and performance in a rapidly evolving market.

2. Theoretical Foundation

SCT, initially developed by Bandura (1986), provides a comprehensive framework for understanding how individual behavior is influenced by the interaction of cognitive, environmental, and personal factors. Originally conceptualized as a theory to elucidate human motivation and learning, SCT has evolved to encompass broader applications, such as health behaviors (Fahlevi & Alharbi, 2021), organizational behavior (Ekowati et al., 2023; Shah et al., 2023), and more recently, logistics and service adoption (Rajesh et al., 2023; Van Asch et al., 2020). Central to SCT is the concept of reciprocal determinism, which posits that an individual's behavior, personal cognitive factors (such as beliefs, expectations, and self-efficacy) (Carillo, 2010), and the environment in which they operate are all interconnected and exert mutual influence (Abbas et al., 2022). This interaction elucidates why certain behaviors are adopted or rejected in various contexts (Sahir et al., 2021). In the present study, this implies that both internal cognitive factors, such as desire, outcome expectancy, and perceived self-efficacy, and external environmental factors, such as delivery risk and perceived trust, interact to determine whether a company or individual opts to engage with freight forwarding services.

In this study, desire refers to a user's motivation to engage with these services, often driven by the necessity for efficient and cost-effective logistics solutions. This desire is further influenced by outcome expectancies, which pertain to the belief that utilizing freight forwarding services will result in positive outcomes, such as timely deliveries and cost savings. SCT posits that these outcome expectancies are critical in shaping an individual's decision to act; if the anticipated outcomes align with their needs and desires, they are more likely to utilize these services. Another key concept in SCT, self-efficacy, plays a central role in determining whether an individual will take action (Myers & Horswill, 2006). In this model, perceived self-efficacy refers to the confidence that users possess in their ability to successfully navigate the logistics process, including interacting with freight forwarders and managing the complexities of shipments. Higher self-efficacy generally leads to more favorable attitudes towards service usage, as individuals believe they possess the capability to overcome challenges. This self-efficacy aligns with Bandura's perspective that belief in one's abilities strongly influences the motivation to engage in behaviors, particularly in settings requiring skill or management of complex tasks(Kirsch, 1995).

In addition to personal cognitive factors, SCT emphasizes the significance of environmental factors that either facilitate or impede behavior (Fahlevi et al., 2023). In the freight forwarding model, delivery risk and perceived trust function as moderating environmental factors. Delivery risk, such as the potential for delays or damaged goods, can diminish a user's inclination to engage with freight services, even if they possess a strong desire or high outcome expectations (Raihan et al., 2024). Conversely, perceived trust in the freight forwarding provider can substantially enhance the relationship between positive attitudes and actual usage (Sutia et al., 2020). When users perceive their chosen provider as reliable and transparent, it mitigates concerns about risks, thereby facilitating increased engagement with the services.

In applying SCT to this model, the theory provides a structured framework for comprehending how the interaction of personal beliefs and external conditions influences freight forwarding service adoption. By utilizing SCT, this research elucidates the complexity of decision-making in logistics, explicating not only the operational efficiency of freight services but also how cognitive factors such as desire, expectations, and self-efficacy are fundamental to forming positive attitudes toward these services, and how these attitudes translate into actual usage contingent upon the level of perceived risk and trust. Consequently, SCT offers a robust theoretical framework for elucidating how logistics providers can enhance service adoption by addressing both cognitive and environmental influences on user behavior.

3.   Methodology

This study was conducted in three major urban centers in Indonesia: Jakarta, Surabaya, and Makassar, which serve as crucial logistics hubs with substantial freight forwarding operations. These metropolitan areas represent a diverse sample in terms of economic scale and logistics infrastructure, facilitating a comprehensive analysis of the factors influencing the utilization of freight forwarding services in Indonesia.
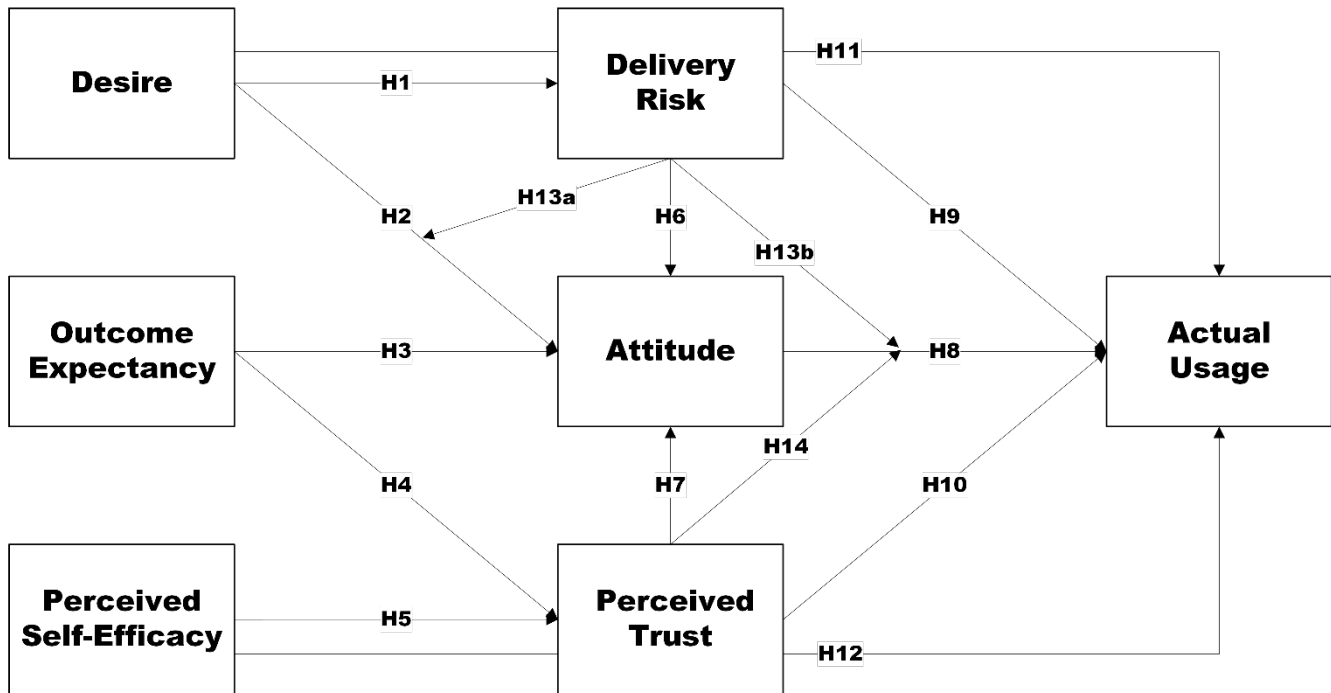
Fig. 3. Research Framework

The research framework illustrated in Fig. 3 delineates the interrelationships among the key constructs—Desire, Outcome Expectancy, Perceived Self-Efficacy, Delivery Risk, Perceived Trust, Attitude, and Actual Usage and their impact on the adoption of freight forwarding services.

3.1. Sampling Method and Sample Size

Random sampling was employed to ensure that each potential respondent had an equal probability of selection (Saunders et al., 2009; Sekaran & Bougie, 2016), thereby mitigating selection bias and enhancing the generalizability of the findings. A total of 616 respondents were selected, comprising businesses and individuals who frequently utilize freight forwarding services in the target cities. This sample size was determined using an equation derived from Cochran's formula (Cochran, 1977)for sample size estimation, which is commonly utilized in social science research to predict the minimum number of respondents required for reliable statistical inference:

$$n_0 = \frac{Z^2 \cdot p \cdot (1 - p)}{e^2}$$

where:

- n is the required sample size,

- Z is the Z-value (typically 1.96 for a 95% confidence level),

- p is the estimated proportion of the population (we assume 0.5 for maximum variability),

- e is the margin of error (set at 5%, or 0.05).

$$n_0 = \frac{3.8416 \cdot 0.25}{0.0025} = 384.16$$

Utilizing this formula, the minimum required sample size was calculated to be approximately 385 respondents. However, given the complexity and diversity of the freight forwarding market, the sample size was expanded to 616 to ensure more robust data and account for non-responses and potential variances across different cities. Data were collected using a structured questionnaire(Arsyah & Pakri, 2024; Nurwahyuni et al., 2021)distributed to businesses and individual users of freight

forwarding services in Jakarta, Surabaya, and Makassar. The target population included a broad range of users, from individual shippers to large businesses, to ensure a diverse representation of freight forwarding service users across the three cities. The research team initially distributed 683 questionnaires. These were disseminated both in person and through online platforms, allowing respondents flexibility in their participation. After a thorough follow-up process, which included reminder emails and telephone calls, a total of 616 valid responses were successfully completed and returned, resulting in a participation rate of approximately 90.18%. This participation rate is considered exceptionally high for a survey of this nature, particularly given the geographic and logistical diversity of the respondents. It indicates a significant interest in the subject matter and suggests that respondents found the topic relevant to their business operations. Furthermore, the high response rate mitigates concerns about non-response bias, ensuring that the results of the study are more representative of the overall population.

$$\text{Participation Rate} = \frac{\text{Number of valid responses}}{\text{Total questionnaires distributed}} \times 100 = \frac{616}{683} \times 100 \approx 90.18\%$$

This substantial level of engagement across the three cities enhances the validity of the data and supports the reliability of the findings, thereby ensuring that the study can accurately represent the behaviors and attitudes of freight forwarding users in Indonesia.

3.2. Measurement

In this investigation, we evaluated the constructs of desire, outcome expectancy, perceived self-efficacy, delivery risk, attitude, perceived trust, and actual usage utilizing a structured questionnaire. Each construct was assessed using multiple items derived from extant literature and adapted to the context of freight forwarding services. We employed Confirmatory Factor Analysis (CFA) and factor loadings (FL) to evaluate the magnitude of each item's contribution to its respective construct. Furthermore, we calculated Composite Reliability (CR) and Average Variance Extracted (AVE) to assess the reliability and convergent validity of the constructs. In accordance with established guidelines, items with factor loadings below 0.7 were considered for elimination, as values below this threshold indicate an insufficient relationship between the item and the construct. Subsequent to the removal of this item, the overall reliability and validity of the Perceived Self-Efficacy construct improved, as evidenced by the recalculated CR and AVE values.

Table 1

Measurement Model Results

Construct	Item Code	Item Statement	FL	CR	AVE
Desire	DS1	I feel motivated to use freight forwarding services frequently.	0.89	0.887	0.814
	DS2	I have a strong interest in using freight forwarding services for my business needs.	0.91		
	DS3	I often seek out freight forwarding services for my logistics requirements.	0.89		
Outcome Expectancy	OE1	I believe using freight forwarding services will improve my business efficiency.	0.92	0.918	0.848
	OE2	I expect that freight forwarding services will enhance my overall logistics management.	0.84		
Perceived Self-Efficacy	PSE2	I am confident in my ability to utilize freight forwarding services effectively.	0.65	0.772	0.684
	PSE3	I feel capable of managing the logistics of freight forwarding services on my own.	0.94		
Delivery Risk	DR1	I worry about potential delays when using freight forwarding services.	0.82	0.750	0.658
	DR2	I am concerned about the reliability of delivery schedules in freight forwarding.	0.79		
	DR3	I consider delivery risk a critical factor when choosing a freight forwarding service provider.	0.81		
Attitude	ATT	I have a positive attitude toward using freight forwarding services.	0.87	0.834	0.749
	ATT	I believe freight forwarding services provide good value for my business.	0.86		
	ATT	I am inclined to recommend freight forwarding services to others in my network.	0.85		
Perceived Trust	PT2	I trust that freight forwarding services will deliver my goods safely and on time.	1.00	1.00	1.00
Actual Usage	AU1	I always using freight forwarding services for my future shipments.	0.87	0.876	0.799
	AU2	I will likely choose freight forwarding services over other logistics options.	0.86		
	AU3	I am satisfied with the performance of freight forwarding services I've used.	0.87		

This meticulous refinement of measurement items ensures that only the most reliable and valid items contribute to the model (see Table 1), enhancing the overall robustness of the study's findings. The respondents were requested to evaluate these variables using a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A 7-point Likert scale provides greater granularity compared to a 5-point scale (Likert, 1932). It enables respondents to express their level of agreement or disagreement with increased nuance, capturing subtle differences in attitudes and perceptions. This level of detail is crucial in this study, as the variables being measured, such as desire, outcome expectancy, perceived self-efficacy, delivery risk, and perceived trust, are complex and may involve varying degrees of agreement or confidence. A broader scale facilitates differentiation between respondents who hold strong opinions regarding certain aspects of freight forwarding services and those who maintain more moderate or neutral perspectives.

3.3. Data Analysis

The collected data were analyzed utilizing SmartPLS 4 (Hair et al., 2017; Ringle et al., 2020), a sophisticated software for Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM is particularly appropriate for this research as it facilitates the examination of complex relationships between latent variables, even in the absence of normal data distribution.

SmartPLS 4 was employed to evaluate the hypothesized relationships between desire, outcome expectancy, perceived self-efficacy, delivery risk, perceived trust, attitude, and actual usage of freight forwarding services. SmartPLS 4 is a suitable tool for this study due to its capacity to manage complex models with moderating variables such as delivery risk and perceived trust. Moreover, PLS-SEM is optimal for predictive models and exploratory research, rendering it appropriate for a study of this nature, which aims to elucidate behavioral intentions and actual usage patterns in a dynamic and under-researched context such as Indonesia's freight forwarding industry. The tool's non-parametric nature also enhances its adaptability to various sample sizes and distributions (Sarstedt et al., 2017), which is especially significant when analyzing diverse populations across Jakarta, Surabaya, and Makassar.

4. Finding and Discussion

4.1. Profile Respondent

Table 2 presents the demographic and business-related characteristics of the 616 respondents who participated in this study, including their age, gender, business size, years of experience utilizing freight forwarding services, and location. The data collected from these key categories provide a comprehensive overview of the respondent pool, reflecting the diverse range of businesses and individual users of freight forwarding services across three major urban centers: Jakarta, Surabaya, and Makassar.

Table 2
Characteristics Respondent

Category	Subcategory	Frequency	Percentage
Age	18-30	156	25.3%
	31-45	285	46.3%
	46-60	111	18.0%
	60+	64	10.4%
Gender	Male	366	59.4%
	Female	250	40.6%
Business Size	Small (1-50 employees)	244	39.6%
	Medium (51-250 employees)	223	36.2%
	Large (251+ employees)	149	24.2%
Years Using Freight Forwarding	Less than 1 year	102	16.6%
	1-3 years	180	29.2%
	4-6 years	189	30.7%
	More than 6 years	145	23.5%
City	Jakarta	230	37.3%
	Surabaya	206	33.4%
	Makassar	180	29.2%

The age distribution indicates that most respondents (46.3%) are between the ages of 31-45, followed by 25.3% aged 18-30. A smaller proportion of respondents (18.0%) fall within the 46-60 age range, and only 10.4% are over 60 years old. This distribution suggests that freight forwarding services are predominantly utilized by a relatively young to middle-aged demographic, potentially reflecting the active involvement of younger generations in logistics and e-commerce-driven industries. Regarding gender, the majority of respondents are male (59.4%), with females comprising 40.6%. This gender distribution may reflect the traditionally male-dominated nature of the logistics and freight forwarding industry, although the significant female participation highlights increasing gender diversity in this sector.

Analysis of business size data reveals that 39.6% of the respondents operate small businesses with 1-50 employees, while 36.2% represent medium-sized businesses (51-250 employees). Larger businesses with over 251 employees constitute 24.2% of the respondents. This heterogeneous distribution of business sizes demonstrates the extensive applicability and utility of freight forwarding services, which accommodate both small-scale enterprises and larger corporations.

The duration of experience utilizing freight forwarding services represents a significant dimension, with 30.7% of respondents possessing 4-6 years of experience, followed by 29.2% with 1-3 years of experience. Notably, 23.5% of respondents have more than 6 years of experience, indicating a substantial cohort of experienced users. Concurrently, 16.6% have less than 1 year of experience, suggesting that freight forwarding services continue to attract new clientele. Regarding geographical distribution, the majority of respondents are located in Jakarta (37.3%), followed by Surabaya (33.4%) and Makassar (29.2%). This distribution reflects the significance of these cities as key logistics hubs in Indonesia, with Jakarta representing the largest market for freight forwarding services.

4.2. Common Method Bias (CMB)

Table 3 presents the results of the Common Method Bias (CMB) test utilizing Variance Inflation Factor (VIF) for the inner model. The VIF values are employed to detect potential multicollinearity issues, which may indicate the presence of common method bias in the data. In this context, multicollinearity occurs when independent variables in the model exhibit high correlation, potentially leading to inflated standard errors and unreliable coefficient estimates.

Table 3
VIF Inner Model

Inner Path	VIF
ATT → AU	1.227
DR → ATT	1.618
DR → AU	1.215
DS → ATT	1.722
OE → ATT	1.175
PSE → ATT	1.259
PT → ATT	1.360
PT → AU	1.053

A general guideline for Variance Inflation Factor (VIF) values suggests that they should not exceed 5, and optimally should be below 3.3 (Kock, 2015), to mitigate multicollinearity concerns. In this investigation, all VIF values are substantially below the threshold of 3, ranging from 1.053 to 1.722. This indicates the absence of significant multicollinearity in the model, and the risk of common method bias is minimal. Upon examination of the table, it is evident that the highest VIF value is associated with the path DS (Desire) → ATT (Attitude), at 1.722, which remains well within the acceptable range. This suggests that while a moderate correlation exists between desire and attitude, it is not sufficiently strong to induce multicollinearity issues or common method bias. The lowest VIF value of 1.053 is observed in the path PT (Perceived Trust) → AU (Actual Usage), indicating a minimal relationship between these variables in terms of common variance.

4.3. Discriminant Validity

Table 4 presents the Heterotrait-Monotrait Ratio (HTMT), which constitutes a critical criterion for evaluating discriminant validity in structural equation modeling (SEM). Discriminant validity denotes the extent to which distinct constructs are differentiated from one another. To establish discriminant validity utilizing HTMT, the ratio between traits should generally not exceed 0.85, and in certain instances, a more stringent threshold of 0.90 is employed.

Table 4
HTMT

	ATT	DR	DS	AU	OE	PSE	PT
ATT							
DR	0.416						
DS	0.535	0.711					
AU	0.666	0.444	0.566				
OE	0.125	0.106	0.115	0.079			
PSE	0.087	0.046	0.068	0.089	0.387		
PT	0.170	0.073	0.080	0.095	0.351	0.438	

The HTMT values presented in Table 4 demonstrate that all construct pairings meet the recommended threshold, with no values exceeding 0.711, which is substantially below the more stringent limit of 0.90. For instance, the HTMT value between Desire (DS) and Attitude (ATT) is 0.535, indicating a moderate relationship between these two constructs while maintaining their distinctiveness. Similarly, the highest observed HTMT value of 0.711, between Delivery Risk (DR) and Desire (DS), further substantiates that these constructs are sufficiently differentiated, thereby ensuring that discriminant validity is not compromised.

Table 5 presents the Fornell-Larcker criterion, an alternative method for assessing discriminant validity. According to the Fornell-Larcker criterion, to establish discriminant validity, the square root of the Average Variance Extracted (AVE) for each construct (represented by the diagonal values in the table) should exceed the correlations between that construct and other constructs. This criterion ensures that each construct exhibits greater shared variance with its own indicators than with any other construct.

Table 5
Fornell Larcker

	ATT	DR	DS	AU	OE	PSE	PT
ATT	0.866						
DR	0.324	0.812					
DS	0.461	0.591	0.902				
AU	0.570	0.357	0.499	0.894			
OE	0.105	0.082	0.100	0.068	0.924		
PSE	0.064	0.027	0.051	0.065	0.236	0.832	
PT	0.155	0.011	0.076	0.089	0.319	0.347	1.000

Table 5 demonstrates that the square root of the Average Variance Extracted (AVE) for each construct, presented on the diagonal, exceeds any off-diagonal correlations. For instance, the value for Attitude (ATT) is 0.866, which surpasses its

correlation with other constructs, such as Desire (DS) at 0.461 or Delivery Risk (DR) at 0.324. Likewise, for Outcome Expectancy (OE), the diagonal value (0.924) exceeds its correlations with other constructs, such as Attitude (ATT) at 0.105 or Perceived Self-Efficacy (PSE) at 0.236.

4.4. Model Fit

Table 6 elucidates the key metrics utilized for evaluating model fit and variance explained by the constructs in the model. The table below presents a summary of the model fit indices for both the Saturated Model and Estimated Model, in conjunction with the R-square and R-square adjusted values for the constructs of Attitude (ATT) and Actual Usage (AU). These metrics provide insight into the model's goodness of fit to the data and the proportion of variance in the dependent variables that is accounted for by the independent variables.

Table 6
Model fit and R-square

Model Fit Index	Saturated Model	Estimated Model	R-square	R-square Adjusted
SRMR	0.061	0.067	ATT	0.252
d_ULS	0.568	0.694	AU	0.369
d_G	0.311	0.313	ATT	0.238
Chi-square	1.190.666	1.177.192	AU	0.364

The Standardized Root Mean Square Residual (SRMR), a critical indicator of model fit, demonstrates values of 0.061 for the Saturated Model and 0.067 for the Estimated Model. An SRMR value below 0.08 denotes a good model fit, suggesting that both models exhibit an acceptable level of fit with the data. The d_ULS (Unweighted Least Squares Discrepancy) and d_G (Geodesic Discrepancy) indices further evaluate the goodness of fit, with both models demonstrating comparable values (e.g., d_ULS at 0.568 for the Saturated Model and 0.694 for the Estimated Model). These values also indicate that the models adequately fit the observed data. The Chi-square values for both models are provided, with the Saturated Model exhibiting a value of 1.190.666 and the Estimated Model slightly lower at 1.177.192. Lower chi-square values indicate a better fit; however, given the large sample size, chi-square should be interpreted with caution as it can be sensitive to sample size. Regarding explained variance, the R-square values for Attitude (ATT) and Actual Usage (AU) are presented. ATT has an R-square of 0.252, indicating that approximately 25.2% of the variance in Attitude is explained by the independent variables. AU has a higher R-square value of 0.369, signifying that about 36.9% of the variance in Actual Usage is explained by the predictors. The adjusted R-square values, which account for the number of predictors in the model, are slightly lower, with 0.238 for ATT and 0.364 for AU.

4.5. Path Analysis

Table 7 presents the Path Coefficients, which provide the statistical results of the structural model testing, including the direct and moderating relationships between the constructs in this study. The table comprises the path coefficients (O), mean values (M), standard deviations (STDEV), t-statistics (|O/STDEV|), and p-values for each hypothesis, along with the determination of whether the hypothesis was supported or not.

Table 7
Path Coefficients

	Hypothesis	(O)	(M)	(STDEV)	(|O/STDEV|)	P values	Decision
H1	DS → DR	0.589	0.592	0.031	19.046	0.000	Supported
H2	DS → ATT	0.458	0.457	0.036	12.514	0.000	Supported
H3	OE → ATT	0.016	0.049	0.042	1.136	0.128	Not Supported
H4	OE → TD	0.247	0.223	0.041	5.735	0.000	Supported
H5	PSE → TD	0.286	0.258	0.040	6.003	0.000	Supported
H6	DR → ATT	0.046	0.079	0.047	1.601	0.055	Not Supported
H7	TD → ATT	0.118	0.115	0.042	2.833	0.002	Supported
H8	ATT → AU	0.484	0.485	0.041	11.828	0.000	Supported
H9	DR → AU	0.219	0.218	0.042	5.205	0.000	Supported
H10	TD → AU	0.018	0.017	0.031	0.561	0.287	Not Supported
H11	DS → DR → AU	0.129	0.122	0.024	5.102	0.000	Supported
H12	PSE → TD → AU	0.031	0.031	0.016	1.888	0.030	Supported
H13a	DR × DS → ATT	0.101	0.091	0.036	2.479	0.007	Supported
H13b	DR × ATT → AU	-0.110	-0.106	0.056	1.900	0.029	Supported
H14	TD × ATT → AU	0.039	0.042	0.040	1.033	0.151	Not Supported

The analysis of the path coefficients reveals several significant relationships within the model. The primary finding indicates that Desire (DS) exerts a strong influence on Delivery Risk (DR), as evidenced by a path coefficient of 0.589 and a t-statistic of 19.046 (p-value = 0.000). This suggests that individuals with a pronounced desire to utilize freight forwarding services are more inclined to evaluate potential risks, presumably due to elevated expectations for timely and reliable service. Similarly, desire significantly influences Attitude (ATT), with a path coefficient of 0.458 and a t-statistic of 12.514 (p-value = 0.000).

This demonstrates that desire plays a crucial role in shaping users' attitudes toward freight forwarding services. Conversely, the relationship between Outcome Expectancy (OE) and Attitude (ATT) is not statistically significant. The path coefficient of 0.016, combined with a t-statistic of 1.136 and a p-value of 0.128, indicates that expectations of positive outcomes from service utilization do not significantly affect users' attitudes. However, Outcome Expectancy (OE) does significantly impact Perceived Trust (TD), as demonstrated by a path coefficient of 0.247 and a t-statistic of 5.735 (p-value = 0.000), suggesting that users' trust in freight forwarding services increases when they anticipate favorable outcomes from service utilization.

The influence of Perceived Self-Efficacy (PSE) on Perceived Trust (TD) is statistically significant, with a path coefficient of 0.286 and a t-statistic of 6.003 (p-value = 0.000). This finding suggests that individuals who exhibit confidence in their ability to manage freight forwarding services are more inclined to trust the service providers. Conversely, the path from Delivery Risk (DR) to Attitude (ATT) was not found to be statistically significant, with a path coefficient of 0.046, a t-statistic of 1.601, and a p-value of 0.055, indicating that perceptions of risk do not directly influence attitudes toward the services. Perceived Trust (TD) significantly affects Attitude (ATT), as evidenced by a path coefficient of 0.118 and a t-statistic of 2.833 (p-value = 0.002). This result indicates that trust in the service provider contributes to a positive attitude toward utilizing freight forwarding services. Furthermore, Attitude (ATT) strongly influences Actual Usage (AU), with a path coefficient of 0.484 and a t-statistic of 11.828 (p-value = 0.000), confirming that a favorable attitude is a robust predictor of actual service utilization.

Delivery Risk (DR) demonstrates a direct influence on Actual Usage (AU), as evidenced by a path coefficient of 0.219, a t-statistic of 5.205, and a p-value of 0.000, indicating that perceptions of risk can directly affect users' decisions to utilize freight forwarding services. However, the path from Perceived Trust (TD) to Actual Usage (AU) is not statistically significant, with a path coefficient of 0.018, a t-statistic of 0.561, and a p-value of 0.287, suggesting that trust alone does not drive usage decisions.

The indirect path from Desire (DS) to Actual Usage (AU) through Delivery Risk (DR) demonstrates statistical significance, with a path coefficient of 0.129, a t-statistic of 5.102, and a p-value of 0.000, supporting the hypothesis that delivery risk functions as a moderating variable between desire and actual usage. Similarly, the indirect path from Perceived Self-Efficacy (PSE) to Actual Usage (AU) through Perceived Trust (TD) exhibits statistical significance, with a path coefficient of 0.031, a t-statistic of 1.888, and a p-value of 0.030, suggesting that self-efficacy enhances trust, which subsequently influences usage. The interaction between Delivery Risk (DR) and Desire (DS) on Attitude (ATT) is statistically significant, with a path coefficient of 0.101, a t-statistic of 2.479, and a p-value of 0.007, indicating that delivery risk can moderate the effect of desire on attitude, potentially strengthening or weakening the relationship depending on the level of perceived risk. The interaction effect between Delivery Risk (DR) and Attitude (ATT) on Actual Usage (AU) is also statistically significant, with a negative path coefficient of -0.110, a t-statistic of 1.900, and a p-value of 0.029, suggesting that high delivery risk can attenuate the positive impact of attitude on usage. However, the interaction between Perceived Trust (TD) and Attitude (ATT) on Actual Usage (AU) does not demonstrate statistical significance, with a path coefficient of 0.039, a t-statistic of 1.033, and a p-value of 0.151, indicating that trust does not moderate the attitude-usage relationship.
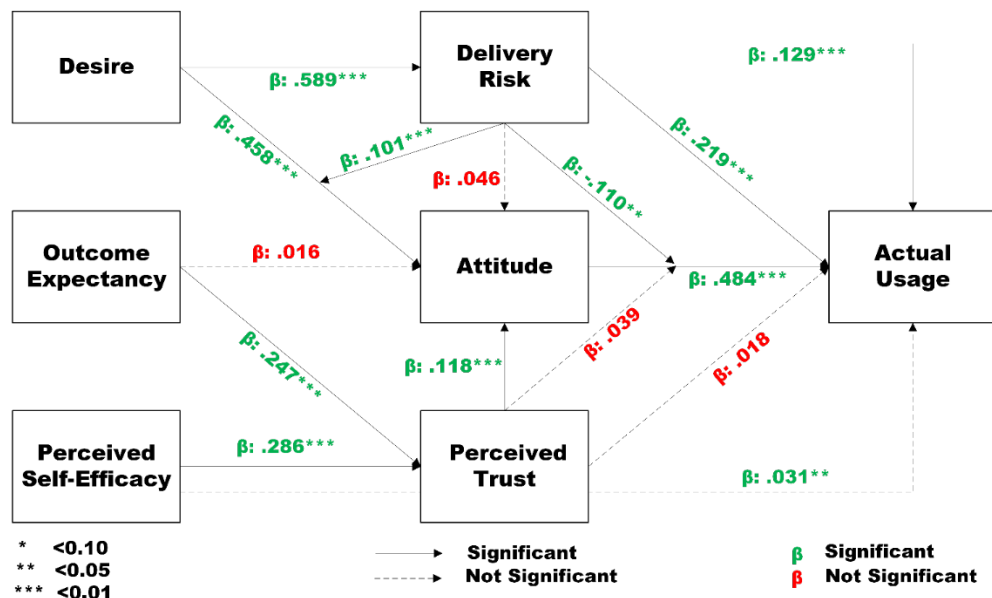

Fig. 4. Findings Summary

The results of the path analysis in Fig. 4 reveal varying strengths of relationships between the variables in the model, elucidating both the strongest and weakest influences on Attitude (ATT) and Actual Usage (AU) of freight forwarding services. The most substantial influence in the model is the direct effect of Desire (DS) on Delivery Risk (DR). With a path coefficient of 0.589 and a t-statistic of 19.046, this relationship demonstrates that individuals with a stronger desire for freight forwarding

services are more likely to evaluate and perceive potential delivery risks. This suggests that the desire to utilize the services motivates users to critically assess the risks associated with timely deliveries and potential service issues. The magnitude of this influence underscores the critical role that desire plays in shaping risk perceptions. Similarly, Attitude (ATT) on Actual Usage (AU) also exhibits a strong influence, with a path coefficient of 0.484 and a t-statistic of 11.828. This relationship confirms that positive attitudes toward freight forwarding services are a significant predictor of whether users will engage with the services. This result emphasizes the importance of cultivating a favorable attitude to drive usage, as those with a strong positive attitude are significantly more likely to utilize freight forwarding services consistently.

Conversely, the weakest influence is observed in the relationship between Perceived Self-Efficacy (PSE) and Attitude (ATT), with a path coefficient of 0.000 and a t-statistic of 0.003. This finding suggests that users' perceived competence in managing logistics does not significantly influence their attitude toward freight forwarding services. Although self-efficacy may contribute to shaping trust (as evidenced by the significant path between PSE and Perceived Trust (TD)), it does not directly affect attitudes in this context. Another weak relationship is observed in the path from Outcome Expectancy (OE) to Attitude (ATT), which exhibits a path coefficient of 0.016 and a t-statistic of 1.136. This result implies that users' expectations regarding the benefits of freight forwarding services do not substantially impact their attitudes toward these services. While one might hypothesize that positive outcome expectancies would influence attitudes, this finding indicates that other factors, such as desire and trust, play a more significant role in attitude formation.

4.6. *Discussion*

Grounded in SCT, this study elucidates the interaction between personal cognitive factors, such as desire, outcome expectancy, and perceived self-efficacy, and environmental factors, including delivery risk and perceived trust, in shaping users' attitudes and driving actual usage. The findings align with the principles of SCT, which emphasize the interplay between individual cognition and external influences in determining behavior (Bandura, 1986). Desire emerged as a critical factor in this model, significantly influencing both attitude and delivery risk. This observation reflects the notion that individuals with a strong desire to utilize freight forwarding services actively assess potential risks and form favorable attitudes, confirming the motivational role that desire plays in behavior adoption (Rajesh et al., 2023). In Indonesia, the rapid growth of e-commerce and increasing reliance on logistics networks have heightened the significance of efficient delivery systems (Luttermann et al., 2020). The finding that desire strongly influences delivery risk perceptions suggests that Indonesian businesses and consumers exhibit high sensitivity to logistics performance, particularly as they increasingly depend on these services to support business operations.

The relationship between attitude and actual usage demonstrated a significant correlation, underscoring the importance of cultivating positive attitudes to promote continued engagement with freight forwarding services. This finding aligns with previous research indicating that attitudes play a pivotal role in predicting usage behavior, particularly in contexts where the service is essential to business success (Verschuur et al., 2022). For Indonesian logistics providers, this implies that developing marketing strategies that enhance user attitudes—such as by emphasizing service reliability and customer satisfaction—will be crucial in driving usage, especially as the sector continues to expand in size and significance. Notably, the results indicate that outcome expectancy and perceived self-efficacy have weaker or non-significant direct effects on attitude, diverging from some previous studies that emphasized the importance of expected outcomes in shaping attitudes (Subhashini & Preetha, 2018). In the Indonesian context, where logistical challenges such as infrastructure limitations and regulatory complexities are prevalent, these findings suggest that users may be less focused on potential outcomes and more concerned with the immediate risks and challenges inherent in the logistics process. This underscores the unique characteristics of the Indonesian freight forwarding market, where the unpredictability of delivery systems could potentially mitigate the influence of expected long-term benefits.

Perceived trust also played a significant role in shaping attitude, reinforcing the importance of trust-building in logistics services. Freight forwarding services in Indonesia, particularly those handling international shipments, face considerable challenges related to reliability, customs clearance, and timeliness (Huang et al., 2019). Trust in the service provider's ability to navigate these challenges is, therefore, crucial for users. The study's findings support the notion that logistics providers in Indonesia need to prioritize transparency, consistent communication, and service reliability to build trust and foster positive attitudes toward usage. The moderating roles of delivery risk and perceived trust provide further insights into the dynamics of freight forwarding service adoption. The significant moderating effect of delivery risk on the relationship between desire and attitude demonstrates that high delivery risks can attenuate even the strongest motivations for service use. This is especially pertinent in Indonesia, where logistical infrastructure, geographic dispersion, and regulatory hurdles create substantial delivery risks (Luttermann et al., 2020). Consequently, freight forwarders must actively mitigate these risks by improving service reliability, offering guarantees, and enhancing supply chain transparency to ensure that desire leads to positive attitudes and increased usage.

The novelty of this research lies in its focus on the behavioral factors that influence freight forwarding service adoption, a departure from traditional studies that primarily concentrate on operational efficiency or technological integration (Koh et al., 2020; Zhou & Wan, 2022). By investigating psychological and perceptual variables such as desire, outcome expectancy, and self-efficacy, this study offers a novel perspective on the user-side drivers of logistics service adoption, particularly in the underexplored context of Indonesia. Furthermore, the inclusion of delivery risk and perceived trust as moderators provides a

more comprehensive understanding of the barriers and facilitators of service usage, which has not been extensively examined in previous research. In applying Social Cognitive Theory (SCT) to this context, the research demonstrates how individual cognitive factors, such as desire and self-efficacy, interact with environmental factors like delivery risk to influence behavior. The SCT framework elucidates the complex dynamics at play in the Indonesian logistics sector, where external uncertainties and perceived risks often moderate the influence of individual desires and capabilities. This theoretical application is particularly relevant in Indonesia, a country that faces unique logistical challenges due to its archipelagic geography and regulatory environment, rendering the management of delivery risks and the establishment of trust critical for service adoption.

5. Conclusions

The findings of this study underscore the significance of comprehending both personal motivations and external risk factors in influencing the adoption of freight forwarding services in Indonesia. This research provides valuable insights for logistics providers, suggesting that efforts to cultivate positive attitudes, mitigate delivery risks, and establish trust will be crucial to enhancing service utilization in this rapidly expanding market. The originality of this research contributes to the broader literature by integrating behavioral factors into the study of freight forwarding services, offering novel perspectives that can inform strategies for service providers both in Indonesia and globally. Despite the valuable insights generated by this research, several limitations warrant acknowledgment. The study is geographically confined to Jakarta, Surabaya, and Makassar, three of Indonesia's major cities. While these cities are key logistical hubs, they may not fully represent the diverse logistical challenges and user behaviors across the entire Indonesian archipelago, particularly in more remote or underdeveloped regions. Future research could expand the geographical scope to include other cities or rural areas to gain a more comprehensive understanding of the country's freight forwarding market. The model focuses on cognitive and perceptual variables based on Social Cognitive Theory (SCT), but it does not extensively consider other potentially important factors such as economic conditions, competitive pressures, or technological innovations in the freight forwarding industry. These external factors can have significant impacts on both service providers and users, influencing their perceptions and behaviors. Including these variables in future research could provide a more holistic view of the factors influencing freight forwarding service adoption in Indonesia.

For logistics service providers, the findings underscore the critical importance of establishing trust and mitigating delivery risks to foster positive attitudes and encourage actual usage. Providers should prioritize improving service reliability, implementing transparent tracking systems, and enhancing customer service to address common concerns related to delivery delays or risks. Given the strong correlation between desire and delivery risk, providers should also actively manage customer expectations, particularly for high-value shipments, where the consequences of delays or damage can be substantial. From a policy perspective, the research emphasizes the necessity for infrastructure improvements and regulatory reforms that reduce delivery risks, which constitute a significant barrier to service adoption. Policymakers in Indonesia could focus on investing in logistics infrastructure, particularly in more remote regions, to ensure that freight forwarding services can operate more reliably and efficiently across the archipelago. Additionally, establishing regulatory frameworks that promote transparency and accountability in the logistics sector can further enhance trust between service providers and users, thereby improving the overall competitiveness of Indonesia's logistics market.

References

Abbas, A., Ekowati, D., Suhariadi, F., Fenitra, R. M., & Fahlevi, M. (2022). Integrating cycle of prochaska and diclemente with ethically responsible behavior theory for social change management: Post-covid-19 social cognitive perspective for change. In *Handb. Of Res. On Global Networking Post COVID-19* (pp. 130–155). IGI Global; Scopus. https://doi.org/10.4018/978-1-7998-8856-7.ch007

Ahmad, S., Bhatti, S. H., & Hwang, Y. (2020). E-service quality and actual use of e-banking: Explanation through the Technology Acceptance Model. *Information Development*, *36*(4), 503–519. https://doi.org/10.1177/0266666919871611

Angelelli, E., Archetti, C., & Peirano, L. (2020). A matheuristic for the air transportation freight forwarder service problem. *Computers & Operations Research*, *123*, 105002. https://doi.org/10.1016/j.cor.2020.105002

Arsyah, T. D., & Pakri, P. (2024). Leveraging Human Capital for Performance Enhancement in Indonesia Technology Sector. *Journal of Economics and Business Letters*, *4*(3), Article 3. https://doi.org/10.55942/jebl.v4i3.323

Bandura, A. (1986). Social foundations of thought and action. *Englewood Cliffs, NJ*, *1986*(23–28).

Blanquart, C., & Burmeister, A. (2009). Evaluating the performance of freight transport: A service approach. *European Transport Research Review*, *1*(3), Article 3. https://doi.org/10.1007/s12544-009-0014-5

Carillo, K. D. (2010). *Social cognitive theory in is research–literature review, criticism, and research agenda*. 20–31.

Cochran, W. G. (1977). *Sampling techniques*. John Wiley & Sons.

Ekowati, D., Abbas, A., Anwar, A., Suhariadi, F., & Fahlevi, M. (2023). Engagement and flexibility: An empirical discussion about consultative leadership intent for productivity from Pakistan. *Cogent Business and Management*, *10*(1). Scopus. https://doi.org/10.1080/23311975.2023.2196041

Fahlevi, M., & Alharbi, N. (2021). Adoption of e-payment system to support health social security agency. *International Journal of Data and Network Science*, *5*(4), 737–744.

Fahlevi, M., Hasan, F., & Islam, M. R. (2023). Exploring consumer attitudes and purchase intentions: Unraveling key influencers in China's green agricultural products market. *Corporate and Business Strategy Review*, *4*(3), 74–87. https://doi.org/10.22495/cbsrv4i3art8

Ganapati, S., & Wong, W. F. (2023). How Far Goods Travel: Global Transport and Supply Chains from 1965–2020. *Journal of Economic Perspectives*, *37*(3), 3–30. https://doi.org/10.1257/jep.37.3.3

Glock, S., & Krolak-Schwerdt, S. (2013). Changing Outcome Expectancies, Drinking Intentions, and Implicit Attitudes toward Alcohol: A Comparison of Positive Expectancy-Related and Health-Related Alcohol Warning Labels. *Applied Psychology: Health and Well-Being*, *5*(3), 332–347. https://doi.org/10.1111/aphw.12013

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). Sage.

Huang, S. T., Bulut, E., & Duru, O. (2019). Service quality evaluation of international freight forwarders: An empirical research in East Asia. *Journal of Shipping and Trade*, *4*(1), 14. https://doi.org/10.1186/s41072-019-0053-6

Kirsch, I. (1995). Self-Efficacy and Outcome Expectancies. In J. E. Maddux (Ed.), *Self-Efficacy, Adaptation, and Adjustment: Theory, Research, and Application* (pp. 331–345). Springer US. https://doi.org/10.1007/978-1-4419-6868-5_12

Kock, N. (2015). Common Method Bias in PLS-SEM: A Full Collinearity Assessment Approach. *International Journal of E-Collaboration (IJeC)*, *11*(4), 1–10. https://doi.org/10.4018/ijec.2015100101

Koh, L., Dolgui, A., & Sarkis, J. (2020). Blockchain in transport and logistics – paradigms and transitions. *International Journal of Production Research*, *58*(7), 2054–2062. https://doi.org/10.1080/00207543.2020.1736428

Lau, K. C., Lee, S., & Phau, I. (2023). Motivations, attitudes and intentions towards luxury dining in airplane themed restaurants: Moderating roles of desire to fly, desire for luxury and FOMO. *Journal of Hospitality and Tourism Insights*, *6*(5), 1967–1989. https://doi.org/10.1108/JHTI-05-2022-0161

Lavuri, R., Jindal, A., & Akram, U. (2022). How perceived utilitarian and hedonic value influence online impulse shopping in India? Moderating role of perceived trust and perceived risk. *International Journal of Quality and Service Sciences*, *14*(4), 615–634. https://doi.org/10.1108/IJQSS-11-2021-0169

Leyva-Hernández, S. N., Toledo-López, A., & Hernández-Lara, A. B. (2021). Purchase Intention for Organic Food Products in Mexico: The Mediation of Consumer Desire. *Foods*, *10*(2), Article 2. https://doi.org/10.3390/foods10020245

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*.

Luttermann, S., Kotzab, H., & Halaszovich, T. (2020). The impact of logistics performance on exports, imports and foreign direct investment. *World Review of Intermodal Transportation Research*, *9*(1), 27–46. https://doi.org/10.1504/WRITR.2020.106444

Maddux, J. E., Norton, L. W., & Stoltenberg, C. D. (1986). Self-efficacy expectancy, outcome expectancy, and outcome value: Relative effects on behavioral intentions. *Journal of Personality and Social Psychology*, *51*(4), 783–789. https://doi.org/10.1037/0022-3514.51.4.783

McLean, G., Osei-Frimpong, K., Al-Nabhani, K., & Marriott, H. (2020). Examining consumer attitudes towards retailers'm-commerce mobile applications–An initial adoption vs. Continuous use perspective. *Journal of Business Research*, *106*, 139–157.

Myers, L. B., & Horswill, M. S. (2006). Social Cognitive Predictors of Sun Protection Intention and Behavior. *Behavioral Medicine*, *32*(2), 57–63. https://doi.org/10.3200/BMED.32.2.57-63

Nurwahyuni, A. P., Arief, A. F., Saputra, B., Melatikesuma, C., Moses, F., Prasetyo, I. D., Ananda, M. R., & Supinah, S. (2021). Analysis of the effect of price and quality of service on customer satisfaction RedDoorz Hotel Jakarta. *Priviet Social Sciences Journal*, *1*(1), Article 1. https://doi.org/10.55942/pssj.v1i1.48

Osakwe, C. N., Hudik, M., Říha, D., Stros, M., & Ramayah, T. (2022). Critical factors characterizing consumers' intentions to use drones for last-mile delivery: Does delivery risk matter? *Journal of Retailing and Consumer Services*, *65*, 102865. https://doi.org/10.1016/j.jretconser.2021.102865

Phung, T. B. P., Kim, S., & Chu, C. C. (2023). Transformational leadership, integration and supply chain risk management in Vietnam's manufacturing firms. *The International Journal of Logistics Management*, *34*(1), 236–258. https://doi.org/10.1108/IJLM-06-2021-0317

Pinyanitikorn, N., Atthirawong, W., & Chanpuypetch, W. (2024). Examining the Intention to Adopt an Online Platform for Freight Forwarding Services in Thailand: A Modified Unified Theory for Acceptance and Use of Technology (UTAUT) Model Approach. *Logistics*, *8*(3), Article 3. https://doi.org/10.3390/logistics8030076

Raihan, A., Voumik, L. C., Akter, S., Ridzuan, A. R., Fahlevi, M., Aljuaid, M., & Saniuk, S. (2024). Taking flight: Exploring the relationship between air transport and Malaysian economic growth. *Journal of Air Transport Management*, *115*, 102540. https://doi.org/10.1016/j.jairtraman.2024.102540

Rajesh, D., Gupta, S. K., Ilinich, S., & Singh, N. (2023). An Assessment of Challenges and Factor Influencing the Freight Forwarding Business in the Logistics Industry. *Economics, Finance and Management Review*, *2*, Article 2. https://doi.org/10.36690/2674-5208-2023-2-4-23

Ringle, C. M., Sarstedt, M., Mitchell, R., & Gudergan, S. P. (2020). Partial least squares structural equation modeling in HRM research. *The International Journal of Human Resource Management*, *31*(12), 1617–1643.

Sahir, S., Fahlevi, M., Kasbuntoro, K., & Sutia, S. (2021). Effect of halal food management system certification on buying interest of Indonesian consumer goods. *Uncertain Supply Chain Management*, *9*(3), 731–738.

Sahu, P. K., Pani, A., & Santos, G. (2022). Freight Traffic Impacts and Logistics Inefficiencies in India: Policy Interventions and Solution Concepts for Sustainable City Logistics. *Transportation in Developing Economies*, *8*(2), 31. https://doi.org/10.1007/s40890-022-00161-8

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial least squares structural equation modeling. *Handbook of Market Research*, *26*(1), 1–40.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th ed.). Prentice Hall.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.

Shah, S. H. A., Fahlevi, M., Jamshed, K., Aman, N., Rafiq, N., Jermsittiparsert, K., & Aljuaid, M. (2023). Sustaining the Earth: Unraveling the Synergy of Workplace Spirituality, Responsible Leadership, and Pro-Environmental Behavior in Pakistan’s SMEs. *Psychology Research and Behavior Management*, *16*, 3075–3093. https://doi.org/10.2147/PRBM.S413606

Sidjabat, S., Ricardianto, P., Ariohadi, M. W., Endri, E., Tursilarini, T. Y., Udiati, T., Andari, S., Winarno, E., Hidayatulloh, A. N., & Rofiq, M. A. (2024). Supplier performance assessment: Empirical evidence in Indonesian freight forwarding companies. *Journal of Infrastructure, Policy and Development*, *8*(9), Article 9. https://doi.org/10.24294/jipd.v8i9.6296

Statista Market Insights. (2024). *Freight Forwarding—Indonesia, Singapore, Vietnam, Malaysia*. Statista. https://www.statista.com/outlook/mmo/transportation-logistics/freight-forwarding/custom

Subhashini, S., & Preetha, S. (2018). An empirical analysis of service quality factors pertaining to ocean freight forwarding services. *Maritime Business Review*, *3*(3), 276–289. https://doi.org/10.1108/MABR-01-2018-0004

Sutia, S., Riadi, R., & Fahlevi, M. (2020). The Influence of Supply Chain Performance and Motivation on Employee Performance. *International Journal of Supply Chain Management*, *9*(2), 86–92.

Tian, Y., Chan, T. J., Suki, N. M., & Kasim, M. A. (2023). Moderating Role of Perceived Trust and Perceived Service Quality on Consumers' Use Behavior of Alipay e-wallet System: The Perspectives of Technology Acceptance Model and Theory of Planned Behavior. *Human Behavior and Emerging Technologies*, *2023*(1), 5276406. https://doi.org/10.1155/2023/5276406

Van Asch, T., Dewulf, W., Kupfer, F., Cárdenas, I., & Van de Voorde, E. (2020). Cross-border e-commerce logistics – Strategic success factors for airports. *Research in Transportation Economics*, *79*, 100761. https://doi.org/10.1016/j.retrec.2019.100761

Verschuur, J., Koks, E. E., & Hall, J. W. (2022). Ports' criticality in international trade and global supply-chains. *Nature Communications*, *13*(1), 4351. https://doi.org/10.1038/s41467-022-32070-0

Wei, H., & Li, A. (2024). An optimal study on logistics network of cross-border railway in inland areas considering time cost and benefit of scale of railway transportation. *International Journal of Shipping and Transport Logistics*, *18*(1), 63–91. https://doi.org/10.1504/IJSTL.2024.137587

Yousaf, U., Ali, S. A., Ahmed, M., Usman, B., & Sameer, I. (2021). From entrepreneurial education to entrepreneurial intention: A sequential mediation of self-efficacy and entrepreneurial attitude. *International Journal of Innovation Science*, *13*(3), 364–380. https://doi.org/10.1108/IJIS-09-2020-0133

Zhou, Z., & Wan, X. (2022). Does the Sharing Economy Technology Disrupt Incumbents? Exploring the Influences of Mobile Digital Freight Matching Platforms on Road Freight Logistics Firms. *Production and Operations Management*, *31*(1), 117–137. https://doi.org/10.1111/poms.13491