

# Factors Influencing the Service Quality for Customer Satisfaction on Parcel Service Safety in the Postal and Courier Industry: Analysis Using Structural Equation Modelling

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## ABSTRACT

In the courier sector, the effectiveness and dependability of the last-mile delivery phase are crucial factors in determining the total quality of service provided to customers. Courier services are also expected to provide valuable service quality to their customers. Even though the growth trend is encouraging, many courier companies find it difficult to capitalise on the rising demand for their services because of intense competition and industry pressure to reduce service rates. As customer expectations continue to rise, companies are exploring innovative solutions to improve last-mile delivery. Therefore, the study aims to determine how specific dimensions of service quality affect customer satisfaction in the courier industry. A convenient sampling approach was employed to gather data from 245 respondents who completed a survey questionnaire for this study. Further, hypotheses were tested through a quantitative method using partial least square

structural equation modelling (PLS-SEM). This research revealed an insignificant effect of reliability, responsiveness and tangibility on customer satisfaction. In contrast, empathy and assurance were found to have a significant and positive effect on customer satisfaction. These findings establish a foundation for more in-depth research on how last-mile delivery contributes to customer satisfaction.

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## INTRODUCTION

Within the quickly changing courier sector, the last mile delivery stage is a crucial point that greatly influences the total level of service that clients receive. The rapid expansion of global e-commerce underscores the crucial importance of a smooth and efficient last-mile delivery process. This aspect of logistics plays a pivotal role in ensuring customer satisfaction, as timely and accurate deliveries directly influence customer perceptions and brand loyalty. Efficient last-mile delivery enhances the overall parcel delivery experience and contributes to the operational efficiency of e-commerce businesses by reducing costs and improving resource allocation. The last mile is the final portion of a parcel's trip from distribution hubs to the end user, and it presents some special obstacles. The success or failure of the delivery process is frequently decided at this phase. Given the current customer expectations about timely delivery and improved experiences, it is critical for industry stakeholders to comprehend the subtleties of the aspects influencing service quality at the last mile.

The courier sector is still navigating digital difficulties, the e-commerce package market's rapid growth, which has increased industry competitiveness, and the old core business of letter delivery's inevitable decline as communications shift online. This is partially because Malaysia offers a large amount of untapped potential for the growth of the e-commerce industry, in addition to having a stronger internet connection, a high mobile penetration rate, and improved

security. The booming e-commerce market has significant prospects for supply chain businesses, such as courier companies that offer parcel delivery services (Siali et al., 2018). In recent years, the proliferation of courier services has been largely fuelled by the rising demand for online shopping (Ejdys & Gulc, 2020). There is fierce competition among Malaysia's courier service providers since the sector is headed towards becoming a competitive market. Malaysia is home to many domestic and foreign businesses, all of which strive to increase their market share in this sector. The growing popularity of online shopping and the sporadic massive e-marketplace discount days, driven by digitally connected customers who are always looking for lower prices, including product and delivery charges, greater convenience, and a seamless experience, coincided with the courier service providers improving their services and handling.

Service providers are fortifying their positions and pursuing expansion by investing in e-commerce logistics, such as the use of cutting-edge logistic technologies and revitalising the supply delivery system, to match this demand and stay competitive in the difficult market. Courier services have evolved from door-to-door to self-service using information technology and sophisticated logistical solutions as a result of technological advancements (PwC, 2019). Alongside the country's e-commerce industry, the courier business is growing rapidly, generating significant earnings for the industry. The country's e-commerce business is growing at an exponential

rate, which presents both possibilities and problems for online merchants and logistics companies. The growth of e-commerce is the main factor driving the courier industry.

The modern customer is becoming more conscious of their rights. Customers today expect courier services to provide high-quality service. The amount of shipping faults and complaints, punctuality, efficacy of delivery (number of shippers' returns and refusals to accept products), and delivery (delayed delivery) are all factors that affect expected quality. Courier services strive to reduce per-mile transportation costs, cut transit times, and adjust to the unique demands of their clients in order to provide superior customer service (Marcysiak, 2021). The ongoing process of contact between customers and the courier service should flow easily across a variety of channels, including both functional and emotional ones, to produce a positive experience for the customer. The courier service industry must strike a balance between operational limitations and customer satisfaction as e-commerce demand increases (Siali et al., 2018).

Traditional service quality assessment frameworks, such as SERVQUAL, have been widely adopted in various industries (Karim, 2020; Owusu-Kyei et al., 2023; Rane et al., 2023; Zygiaris et al., 2022). However, their application to the postal and courier service sector often overlooks critical variables unique to the industry. For instance, customers in this sector place heightened importance on factors like real-time tracking, delivery reliability, and

sustainable practices, which are not explicitly addressed in the original SERVQUAL model. Therefore, the study refines and extends the SERVQUAL model to address this industry-specific, incorporating the measurement for each dimension that reflects the unique operational demands and customer expectations of the postal and courier service industry. By modifying a widely used framework to better align with sector-specific challenges, the research advances the theoretical understanding of service quality, especially in industries where traditional models may fall short. These added measurements offer a refined approach to measuring customer satisfaction on parcel service safety in contexts that require high logistical precision, real-time information, and eco-conscious practices.

Service quality remains a critical determinant of customer satisfaction and loyalty in the postal and courier industry. Traditional frameworks, such as SERVQUAL, provide a structured method for evaluating service quality; however, their generalised nature may not fully capture the sector's distinct challenges. This study explores the adaptation of SERVQUAL to better align with the unique characteristics of this industry, addressing a gap in theoretical and practical applications. The SERVQUAL model, developed by Parasuraman et al. (1988), evaluates service quality across five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. While extensively applied across various industries, studies reveal limitations in its direct applicability to sectors with complex

operational dynamics, such as postal and courier services. Recent research highlights the growing importance of incorporating industry-specific variables, especially in the context of technological advancements and shifting consumer demands.

As such, the present study aims to conduct a thorough investigation to ascertain, evaluate, and comprehend the principal factors that influence service quality in the setting of last-mile delivery. This investigation focuses on empathy, reliability, assurance, responsiveness and tangible service rendered by the courier providers. This study intends to address existing issues and present a forward-looking plan for improving last-mile delivery procedures by clarifying the elements that affect service quality in the last mile.

## LITERATURE REVIEW

### Research Framework

Customer perception of service quality is a crucial indicator of company performance and competitive position. In the courier sector, it is acknowledged as a major factor that influences competitive advantage. The last-mile delivery phase in the courier industry has garnered significant attention due to its pivotal role in determining overall service quality. As customer expectations evolve, understanding the multifaceted factors that influence service quality in the last mile becomes imperative for industry stakeholders. The ability to provide higher-quality services can help service industries make rapid progress. In essence, there is a difference between the quality of a service

and the expectations of its customers regarding its performance. Since it provides insightful information about how customers perceive services, the concept of service quality continues to be an important field of research in marketing (Uzir et al., 2021).

This study incorporates SERVQUAL into our theoretical framework, in line with Parasuraman et al. (1991a). According to Parasuraman et al. (1988), SERVQUAL is a useful instrument for assisting organisations in their quest for quality improvement by emphasising areas that have a major impact on improvement. Many industries have embraced the SERVQUAL paradigm as a means of measuring the quality of their services. SERVQUAL is the most widely used model in the service industry to assess customer satisfaction and service quality (Karim, 2020). According to Parasuraman et al. (1985), SERVQUAL is a useful instrument for assisting organisations in their quest for quality improvement by emphasising areas that have a major impact on improvement. In this study, the following five dimensions stemming from SERVQUAL are adopted in the model: empathy, reliability, assurance, responsiveness, and tangible. Empathy is the capacity to genuinely understand and address the needs, desires, and challenges of customers. It involves more than acknowledging their concerns; it requires actively relating to their issues, showing care, and delivering meaningful solutions (Hossain & Rahman, 2022). As Zhang et al. (2023) highlight, empathy plays a crucial role in improving service performance by encouraging customer-focused actions. This

entails providing personalised attention and a deep understanding of consumer needs, which is vital to a successful service strategy. In the context of last-mile delivery, empathy translates into creating customised delivery experiences that align with individual customer preferences.

For instance, AI-driven personalisation enables consumers to tailor their delivery experiences by offering options such as selecting specific delivery time windows or choosing preferred drop-off locations. These features enhance convenience and convey a sense of understanding and care, which customers often perceive as highly empathetic. Research indicates that such personalised options significantly foster customer loyalty and satisfaction (Chen et al., 2024; Muthukalyani, 2023). Beyond personalisation, companies also integrate value-added services to demonstrate empathy in more tangible ways. Services such as assembling furniture at the delivery location or collecting returns directly from customers' doorsteps go beyond the basic act of delivering a package. These thoughtful gestures reflect a deeper understanding of consumer needs, creating a more meaningful and supportive relationship. By integrating empathy into their operations, businesses are better positioned to enhance customer experiences, build trust, and establish long-term loyalty.

Reliability refers to a service provider's capacity to consistently and honestly deliver agreed goods and services (Marcysiak, 2021). Reliability is the capacity to consistently provide promised services

precisely and timely (Parasuraman et al., 1988). When reliable services are offered, customers will be satisfied. Reliability in last-mile delivery is a critical factor that emphasises the timely and accurate delivery of parcels to end customers. Achieving this goal requires addressing a range of challenges, from meeting delivery schedules to minimising errors. Advanced technological solutions, such as AI-driven route optimisation, real-time traffic prediction, and dynamic fleet management systems, have proven instrumental in maintaining on-time performance, even during peak demand periods (Al-Daradkah, 2024). These innovations enable logistics providers to navigate unpredictable conditions efficiently and fulfil customer expectations. Beyond timeliness, reliability also hinges on minimising delivery errors, including misrouted packages or damaged goods, which can erode customer trust. Automation in warehouse operations, powered by robotics and machine learning, has played a transformative role in reducing sorting and handling errors. By streamlining these processes, automation ensures higher accuracy and consistency (Sodiya et al., 2024). Emerging technologies like drone deliveries and autonomous vehicles further enhance the potential for reliable last-mile solutions. These innovations are particularly valuable for addressing logistical challenges in remote or densely populated urban areas, where traditional delivery methods may falter. While still in their early stages, pilot implementations of these technologies demonstrate significant promise in achieving

near-perfect reliability, paving the way for a more efficient and dependable future in last-mile logistics.

Assurance refers to the sense of safety, trust, and confidence that service providers instil in their customers. This encompasses guarantees and key attributes such as professionalism, capability, kindness, security, and authenticity. The expertise and demeanour of staff play a critical role in delivering assurance, as customers rely on their professionalism and knowledge to feel confident about the services they receive. Building trust and fostering confidence are fundamental aspects of this process, as Crossley et al. (2023) highlighted. Assurance involves meeting customer needs promptly and effectively. Timeliness is a key factor, but responsiveness also includes attentiveness to customer preferences, proper scheduling, resolving issues efficiently, and ensuring secure and convenient transactions (Parasuraman et al., 1991a). For example, AI-driven systems now play a pivotal role in enhancing assurance by providing accurate delivery estimates and transparent tracking. Platforms leveraging machine learning to generate reliable Estimated Time of Arrivals (ETAs) significantly reduce uncertainty and enhance customer confidence (Solanki & Jadiga, 2024).

As digital platforms increasingly dominate last-mile delivery operations, ensuring the security of transactions and protecting personal data has become essential to maintaining customer trust. Secure payment gateways, encryption protocols, and other robust data protection measures

are now industry standards, underscoring the commitment to safety and reliability. Moreover, the courtesy and competence of delivery personnel are vital contributors to assurance. Well-trained delivery agents who exhibit professionalism and empathy reinforce customer trust. Companies are investing in training programs focused on soft skills, empowering staff with real-time support tools to address customer concerns effectively and efficiently (Sobaih & Alsaif, 2023). Together, these measures create a comprehensive framework for assurance, ensuring customers feel confident and valued throughout the service experience.

Responsiveness reflects the eagerness and ability of service providers to assist customers promptly and effectively. It encompasses management efficiency, attentiveness to customer demands and preferences, practical business hours, and a genuine focus on customer well-being (Setiono & Hidayat, 2022). Responsiveness is not merely about reacting to requests but demonstrating a proactive willingness to address customer needs with speed and precision (Yang et al., 2024). Flexibility in delivery options, such as same-day or one-hour delivery, is a hallmark of responsiveness. These services cater to modern consumers' expectations for convenience and immediacy. Advanced AI tools play a pivotal role in enabling such flexibility, allowing logistics companies to allocate resources dynamically and reroute deliveries in response to real-time changes in demand (Vrhovac et al., 2024). This adaptability ensures that customer

needs are met promptly, even in the face of fluctuating circumstances. AI-driven solutions also enhance responsiveness in customer interactions. Automated systems like chatbots manage a significant portion of consumer inquiries, delivering instant answers to questions about delivery status, delays, or other concerns. By handling routine issues, these tools allow human agents to focus on resolving more complex problems, creating a seamless service experience. Proactive measures, powered by predictive analytics, further amplify responsiveness. For instance, companies can anticipate potential disruptions, such as delays caused by weather or traffic and take pre-emptive actions to mitigate their impact. This foresight reduces the likelihood of customer complaints and fosters trust and loyalty by demonstrating a commitment to delivering reliable service (Rane et al., 2024). By combining speed, flexibility, and proactive problem-solving, responsiveness emerges as a key driver of customer satisfaction and loyalty in modern service environments.

Tangible in-service delivery refers to the physical and visual aspects that customers interact with, shaping their perception of professionalism and quality. In the context of courier and last-mile delivery services, tangibility encompasses factors such as the professionalism of the delivery staff, their attire, the condition of the delivery vehicle, and the physical state of the packaging. Whether staff are dressed appropriately and maintain a polished demeanour and whether deliveries arrive in pristine condition significantly influence

customer impressions (Parasuraman et al., 1988). Historically, tangible elements included clean and well-maintained delivery vehicles, professional uniforms, and branded packaging. These continue to play a vital role as they reflect the reliability and quality of the service. However, in the era of e-commerce, tangibility has expanded to include digital touchpoints such as mobile apps and websites. High-quality, user-friendly platforms with real-time tracking capabilities and comprehensive order management tools now serve as critical tangible elements. Research shows that seamless navigation and advanced tracking features enhance customer convenience and build trust and satisfaction (Wu & Rojniruttikul, 2024). Moreover, packaging has evolved to meet modern consumer expectations. Beyond aesthetics, it increasingly incorporates functional attributes such as eco-friendly materials and tamper-proof designs. These features resonate with environmentally conscious customers and those concerned with the security of their parcels. As sustainability becomes a priority, companies adopting innovative packaging solutions are perceived more positively, further strengthening their brand image. Overall, the tangible in last-mile delivery extends beyond physical appearances to include digital and functional elements, collectively shaping the customer experience and influencing their perception of service quality. Based on the literature review, we develop a research framework, namely, the customer satisfaction on parcel service safety research framework, which is illustrated in Figure 1.

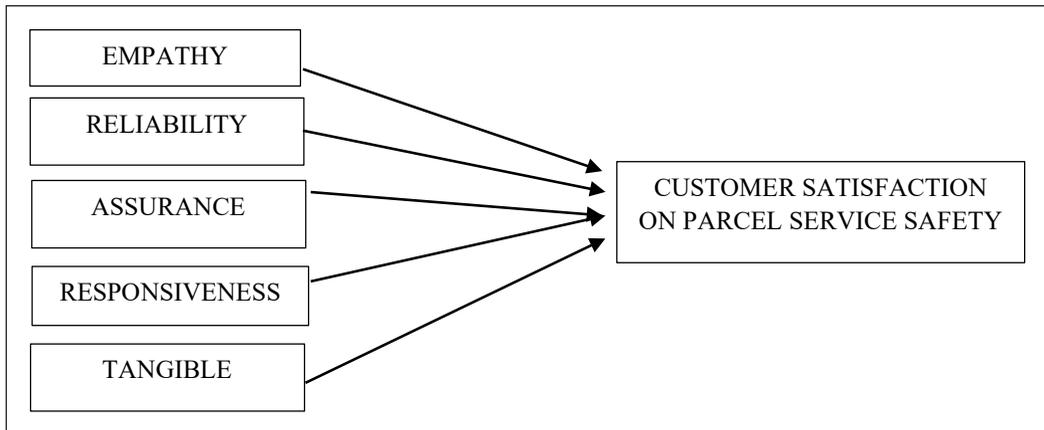


Figure 1. Customer satisfaction on parcel service safety research framework

### Hypotheses Development

There is no agreement on the link between customer satisfaction and service quality (Dam & Dam, 2021; Nguyen et al., 2020). Customer satisfaction has become a primary goal for many enterprises. Companies can enhance and refine their service quality by analysing customer satisfaction, leading to better overall customer experiences. This focus on satisfaction allows businesses to understand customer needs and expectations more clearly, which is critical for improving service delivery and maintaining a competitive edge (Sun & Pan, 2023). According to Parasuraman et al. (1985), the level of service quality is determined by the gap between the customer's expectations prior to receiving the service and their perceptions of the service performance during the service process. Lai et al. (2022) utilised the SERVQUAL model to demonstrate the significance of service quality to businesses by confirming an apparent relationship between customer satisfaction and service quality of express delivery companies. They also showed

that tangibility, reliability, responsiveness, assurance and other dimensions have different influences on customer satisfaction and customer loyalty.

Empathy is the ability to provide caring and individualised attention to customers. In last-mile delivery, empathy can be demonstrated by understanding and accommodating specific customer needs or preferences, such as delivery time windows or special handling instructions. Personalised service enhances customer satisfaction by making customers feel valued and understood (Hossain & Rahman, 2022). According to Zygiaris et al. (2022), there is a notable relationship between empathy and customer satisfaction. This relationship is crucial as it underscores the importance of personalised interactions and attentive service in building and maintaining customer satisfaction. In the context of last-mile delivery, Hossain and Rahman (2022) highlighted that empathy reflects a service provider's capability to relate to customer concerns, respond to preferences, and deliver tailored solutions. Modern consumer

expectations, driven by the rapid growth of e-commerce, have elevated the demand for highly personalised and responsive delivery experiences. Technological innovations, such as AI-driven personalisation and drone deliveries, further amplify the role of empathy by enabling service providers to anticipate and address customer needs effectively. AI tools enhance the customer experience by offering features like real-time tracking, predictive delivery times, and automated assistance, which convey attentiveness and care (Chen et al., 2024). Drone deliveries and autonomous vehicles also expand the scope of empathetic service by ensuring timely and efficient delivery, particularly in remote or high-demand areas, meeting consumer expectations for speed and reliability (Muthukalyani, 2023). Thus, we proposed the following hypothesis:

H1: Empathy has a positive impact on customer satisfaction.

Reliability in last-mile delivery is crucial as it involves the ability to perform promised services dependably and accurately. This includes on-time delivery, accurate order fulfilment, and consistent service quality, all building customer trust and ensuring expectations are met or exceeded. A reliable delivery service is essential for maintaining customer satisfaction, which directly impacts the overall customer experience (Klein & Popp, 2022). The relationship between reliability and customer satisfaction in last-mile delivery is crucial for maintaining customer loyalty and enhancing overall customer experience. Reliability in this context

involves consistently delivering packages on time, accurately fulfilling orders, and maintaining high-quality service standards. Studies have shown that reliability is a key determinant of customer satisfaction in last-mile delivery services. For instance, research highlights that timeliness and reliability are significant factors influencing customer satisfaction in e-retail experiences. Reliable last-mile delivery builds customer trust by ensuring that deliveries are made as promised, which directly impacts customer perceptions and satisfaction levels (Olsson et al., 2023).

Technological advancements, such as AI-driven route optimisation and real-time traffic prediction, have significantly improved the reliability of last-mile delivery. These innovations ensure timely and efficient deliveries by dynamically adjusting routes and schedules to adapt to changing conditions (Islam et al., 2024). Moreover, automation in warehouse operations, enabled by robotics and machine learning, has reduced errors in sorting and handling, further enhancing the reliability of service delivery. Emerging technologies like drone deliveries and autonomous vehicles add another layer of reliability by addressing logistical challenges in remote or congested areas. These innovations provide consistent and predictable delivery performance, aligning with modern consumer expectations for speed and accuracy (Muthukalyani, 2023). Accordingly, the following hypotheses are asserted:

H2: Reliability has a positive impact on customer satisfaction.

Assurance relates to the knowledge and courtesy of employees and their ability to convey trust and confidence. In last-mile delivery, assurance can be reflected in the professionalism of delivery staff, secure handling of packages, and clear communication regarding delivery status. Customers who feel confident in the service are more likely to be satisfied (Olsson et al., 2023). Assurance, which involves the knowledge and courtesy of employees and their ability to convey trust and confidence, is critical to customer satisfaction in last-mile delivery. In the context of delivery services, assurance can include factors such as the professionalism of delivery personnel, clear communication regarding delivery status, and the perceived security of the delivery process. Several studies have highlighted the importance of assurance in enhancing customer satisfaction in last-mile delivery. For instance, research by Fernandes et al. (2018) emphasises that logistic service quality, including assurance, significantly mediates the relationship between logistics capabilities and customer satisfaction. Similarly, Balinado et al. (2021) found that key service quality dimensions, such as assurance, positively impact customer satisfaction.

Additionally, a study by Park and Yi (2021) using the SERVPERF model revealed that assurance and other service quality dimensions play a crucial role in shaping customer perceptions and satisfaction levels. These findings collectively suggest that ensuring high levels of assurance in last-mile delivery operations can

lead to higher customer satisfaction by instilling confidence and trust in the service provided. As e-commerce continues to grow, consumer expectations for reliable and secure services have become more pronounced. Therefore, AI technologies enhance assurance by providing accurate delivery estimates, real-time tracking, and proactive communication about delays or disruptions, which reduce uncertainty and enhance trust (Islam et al., 2024). Similarly, machine learning algorithms enable secure transaction processing, ensuring consumer data privacy and safeguarding against fraud. In the competitive courier industry, assurance differentiates service providers by addressing consumers' emotional and functional concerns. Features like well-trained delivery personnel, courteous communication, and advanced technological support for the secure handling of goods reflect high levels of assurance. Studies highlight that trust in technology-enhanced services correlates strongly with customer satisfaction, particularly in fast-paced last-mile delivery scenarios (Shatat & Shatat, 2024). Thus, it is proposed that:

H3: Assurance has a positive impact on customer satisfaction.

Responsiveness is the willingness to help customers and provide prompt service. In the context of last-mile delivery, this includes quickly addressing delivery issues, responding to customer inquiries, and handling complaints efficiently. High responsiveness demonstrates to customers that the company values their time and

concerns, leading to increased satisfaction (Asdecker, 2021). Responsiveness in last-mile delivery significantly impacts customer satisfaction by addressing delivery issues promptly, responding swiftly to customer inquiries, and handling complaints efficiently. This quick and effective communication demonstrates to customers that the company values their time and concerns, which leads to increased satisfaction. Studies show that high responsiveness in last-mile delivery services enhances customer experience and fosters customer loyalty (Lai et al., 2022; Rajendran & Wahab, 2022).

For example, efficient problem resolution and real-time updates are crucial for maintaining trust and ensuring customers feel valued. This responsiveness is particularly critical in the e-commerce sector, where timely and accurate delivery is a key competitive differentiator. By consistently meeting customer expectations through responsive service, companies can build stronger customer relationships and achieve higher satisfaction rates (Parasuraman et al., 1991b; Rane et al., 2023). This focus on responsiveness enhances immediate satisfaction, repeat purchases, and long-term loyalty, making it a vital component of successful last-mile delivery strategies. In the context of last-mile delivery, responsiveness reflects a company's capability to adapt to customer preferences, provide real-time updates, and quickly resolve issues. Modern consumer expectations, shaped by the rapid growth of e-commerce, demand exceptional responsiveness, including flexible delivery

schedules, proactive communication, and swift resolution of complaints (Jing et al., 2023). Responsiveness also encompasses proactive measures, such as offering same-day or one-hour delivery options, which align with modern consumer expectations for speed and flexibility. Studies highlight that consumers associate responsiveness with a higher degree of customer care, fostering trust and loyalty. Companies that leverage advanced technologies to enhance responsiveness can achieve a competitive edge by exceeding consumer expectations in the fast-evolving logistics landscape (Setiono & Hidayat, 2022). Thus, it is hypothesised that:

H4: Responsiveness has a positive impact on customer satisfaction.

Tangible refers to the physical aspects of the service, such as the appearance of delivery personnel and vehicles and the condition of the packaging. These physical elements create first impressions and can significantly influence customers' perceptions of service quality. Maintaining a professional appearance in the workplace is crucial for enhancing customer satisfaction. A well-maintained and professional appearance signals reliability and attention to detail, which are essential traits for fostering customer trust and confidence. Research highlights that a professional appearance impacts customer perceptions of trustworthiness, legitimacy, and professionalism. This impression can significantly influence customer decisions and satisfaction with the service received

(Pakurár et al., 2019; Zygiaris et al., 2022). Tangibility in last-mile delivery services, which includes the physical aspects such as the appearance of delivery personnel and vehicles and the condition of packaging, plays a crucial role in influencing customer satisfaction (Sobaih & Alsaif, 2023).

These tangible elements are often the first point of contact between the delivery service and the customer, forming the initial impressions that significantly affect perceptions of service quality (An et al., 2023; Zia, 2020). The professional and well-maintained appearance of delivery personnel and vehicles signals reliability and attention to detail, which fosters customer trust and satisfaction. The condition of packaging is also vital, as it directly impacts the perceived value and care taken in handling deliveries. Ensuring packages arrive in excellent condition enhances the overall delivery experience and customer satisfaction. Research indicates that various dimensions of service quality, including tangibility, influence customer satisfaction and loyalty differently. For example, studies have shown that the physical condition of shipments is a critical determinant of customer satisfaction, which highlights the importance of maintaining high standards in all tangible aspects of delivery services (Muala, 2016).

This focus on tangible elements helps create a positive customer experience, which is essential for fostering repeat business and long-term loyalty. In the courier industry, tangibles play a crucial role in shaping the customer experience

and satisfaction by conveying reliability, professionalism, and attention to detail. Modern consumer expectations, driven by the growth of e-commerce, emphasise clean, branded vehicles, tamper-proof and eco-friendly packaging, and clear, professional interactions. The rise of technology has redefined tangibles in the last-mile delivery segment. High-quality mobile apps and web interfaces that offer seamless navigation, real-time tracking, and detailed order management have become key tangible components of the customer experience (Wu & Rojnruttikul, 2024). These digital tools enhance customer satisfaction by providing transparency and control, aligning with modern consumer preferences for convenience and immediacy. Innovations such as AI and drone deliveries further enhance tangibles by improving operational efficiency and customer perceptions of service quality. Research indicates that packaging innovations like reusable or biodegradable materials also play a significant role in meeting customer expectations and boosting satisfaction (Muthukalyani, 2023). Based on the preceding review of the literature, this study hypothesises that:

H5: Tangible has a positive impact on customer satisfaction.

## **METHODS**

The study hypotheses were tested by utilising a quantitative research method in conjunction with an explanatory research design and a deductive methodology (Rashid

et al., 2021). A total of 245 questionnaires were gathered from the respondents using the convenient sampling technique. In the context of customer satisfaction in the courier industry, convenience sampling is appropriate because it enables the inclusion of a diverse set of participants who have interacted with courier services, providing immediate insights into consumer experiences. This method is also valuable in industries where customers are geographically dispersed, and accessing a randomised sample may be challenging or cost-prohibitive (Ahmed, 2024; Taherdoost, 2016). Furthermore, when the primary goal is to identify trends, patterns, or preliminary findings rather than generalising to the entire population, convenience sampling serves as an effective and resource-efficient approach (Farrokhi & Mahmoudi-Hamidabad, 2012; Gani et al., 2024).

The research instruments employed in this study, namely the questionnaire with a 5-point Likert scale (1= Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree), are designed to assess various dimensions of customer satisfaction in courier services, with a particular focus on service quality elements in the context of last-mile delivery. Each of these dimensions, such as **Assurance, Empathy, Responsiveness, Reliability, Tangible elements, and Customer Satisfaction on Parcel Service Safety (CSPSS), is evaluated based on customer perceptions and experiences.** The assurance section focuses on how secure and reliable the customer perceives the courier service to

be in handling parcels. The Likert scale items measure the courier's ability to deliver parcels securely, provide accurate information, ensure parcel safety during delivery, and protect personal data. The empathy dimension measures how well courier employees understand and respond to the specific needs of the customer, particularly with regard to parcel safety. The items here focus on communication, preparedness, and willingness to go beyond basic service expectations. Responsiveness assesses how quickly and effectively the courier service can address customer issues, provide updates, and handle unexpected situations.

The Likert scale items assess timely notifications, handling delays, and addressing lost or damaged parcels. The reliability dimension measures the consistency, accuracy, and dependability of the courier service in meeting delivery commitments. Items in this section gauge the service's ability to meet delivery timelines, ensure the correct delivery of parcels, and handle reverse logistics or returned items. The tangible section addresses the physical aspects of the courier service, such as the condition of delivery vehicles, the professionalism of staff, and the use of updated technologies. Items are designed to evaluate how well the physical aspects of the service contribute to the overall customer experience. Finally, the CSPSS scale measures the customer's overall satisfaction with the safety of the parcel delivery process. This includes their experience with parcel integrity, timely delivery, and the absence of

damage or theft. Respondents were selected based on their experience and perception of using courier services. Those who have used such services are chosen as they can provide insights into their experiences.

Further, the Partial Least Squares Structural Equation Modelling (PLS-SEM) method was used to test the research model. The use of PLS-SEM is justified when the primary goal of the study is predictive accuracy and the exploration of complex relationships between variables. Compared to Covariance-Based SEM (CB-SEM), PLS-SEM offers several advantages, including its suitability for small sample sizes, its ability to handle non-normal data distributions, and its focus on maximising explained variance rather than model fit indices (Hair et al., 2016). This makes PLS-SEM particularly appropriate for studies in emerging research areas or those involving complex models with numerous constructs and indicators. Additionally, PLS-SEM is well-suited for scenarios where the research seeks to identify key predictors and explain variance in dependent variables, as opposed to strictly confirming theoretical models (Sarstedt et al., 2014). Its flexibility and predictive orientation have led to widespread adoption in fields such as marketing, management, and information systems (Ringle et al., 2020). We employed a two-step strategy for PLS-SEM, evaluating both the measurement model and the structural model in accordance with the guidelines set forth by Anderson and Gerbing (1988). Smart PLS v. 3.2.7 software has been used to estimate the theoretical model (Ringle et al., 2015). Following the recommendations by Hair

et al. (2017), we performed an evaluation of multivariate skewness and kurtosis. The findings revealed that the collected data deviated from a multivariate normal distribution, as demonstrated by significant values for Mardia's multivariate skewness ( $\beta = 5.115, p < 0.01$ ) and Mardia's multivariate kurtosis ( $\beta = 62.566, p < 0.01$ ).

## RESULTS AND DISCUSSIONS

### Demographic Analysis

The description of the demographic profile for respondents is demonstrated in Table 1.

The analysis of respondents' demographics reveals a diverse cross-section of respondents across various categories. The gender distribution within the sample population indicates a slightly higher representation of females (59.2%) compared to males (40.8%). Age-wise, most respondents fall within the 18–29 years bracket, constituting 43.7% of the sample, followed by descending percentages in subsequent age groups. It shows that younger customers are frequent users of parcel services for buying transactions. Therefore, the courier provider should enhance its services, as younger customers often prioritise technological convenience and speed in service delivery. They are more likely to value features like real-time tracking, mobile app interfaces, and same-day delivery options. On the other hand, older customers may prioritise reliability, personal interaction, and clear communication over speed or digital sophistication. For younger users, delays in service or poor app interfaces may lead to dissatisfaction.

Table 1  
*Profile of the respondents*

<b>Items</b>	<b>Percentage (%)</b>	<b>Frequency</b>
<b>Gender</b>		
Male	40.8	100
Female	59.2	145
<b>Age</b>		
18–29 years	43.7	107
30–39 years	24.1	59
40–49 years	20	49
50–60 years	7.3	18
61 years above	4.9	12
<b>Race</b>		
Malay	71.4	175
Chinese	14.7	36
Indian	11.8	29
Others	2	5
<b>Education level</b>		
SPM/MCE/O-Level	3.7	9
Diploma/STPM/STP/HSC/A-Level	17.1	42
Bachelor's degree	50.6	124
Master's degree	22.4	55
Doctoral Degree	6.1	15
<b>Occupation</b>		
Student	29.4	72
Government Sector	20	49
Private Sector	27.8	68
Self Employed	13.9	34
Unemployed	0.8	2
Retiree	4.9	12
Housewife	3.3	8
<b>Income</b>		
Less RM2500	44.5	109
RM 2501–RM 3170	9	22
RM 3171–RM 3970	6.9	17
RM 3971–RM 4850	3.7	9
RM 4851–RM 5880	8.6	21
RM 5881–RM 7100	6.5	16
RM 7101–RM 8700	5.7	14
RM 8701–RM 10,970	8.2	20
RM 10971–RM 15,040	4.1	10
More than RM 15,040	2.9	7

At the same time, older consumers might be more forgiving of technological glitches but expect high levels of courtesy and clarity in communication. The racial composition highlights a predominant representation of individuals from the Malay ethnic group (71.4%), with notable percentages from Chinese (14.7%), Indian (11.8%), and "Others" (2%) ethnicities.

In terms of educational attainment, a significant proportion holds bachelor's degrees (50.6%), followed by master's degrees (22.4%), while smaller percentages possess Diploma/STPM/A-Level qualifications (17.1%), Doctoral degrees (6.1%), or SPM/MCE/O-Level certificates (3.7%). Professionally, this research covers a diverse range. Of the respondents, 29.4% were students, followed by people from the private sector (27.8%) and people from the public sector (20%). There is also a proportion of self-employed people (13.9%), pensioners (4.9%), housewives (3.3%), and a minimal proportion of unemployed people (0.8%). The income distribution shows a diverse range, with the majority earning less than RM2,500 (44.5%) and the proportion varying within different income brackets up to RM15,040 and above. Based on the respondents' income distribution, many with lower incomes participated in this study. It means that lower-income customers may prioritise affordability and basic reliability over luxury features to measure customer satisfaction with parcel delivery services. For them, perceived value is linked to cost-effectiveness and consistent performance at reasonable prices. It can be concluded that demographic factors like age and income

significantly influence how customers perceive and evaluate service quality. Understanding and addressing these nuances enables businesses to tailor their services effectively and enhance satisfaction across a diverse customer base, particularly in the courier industry.

Collectively, these results represent a diverse and multifaceted participant pool and provide comprehensive insight into the demographics of our survey respondents. The questionnaire was collected from several types of residential areas. The report for the residential properties is reported in Table 2.

The assessment of residential types conducted in the study shows a diverse distribution among the participants. According to the data, most people live in terraced houses (25.3%), followed closely by those living in bungalows (19.0%). Regarding institutional residential, a significant proportion of respondents (20.4%) lived in public universities, suggesting a significant presence of students and people associated with these institutions. However, minimal proportions were observed at private universities (0.8%), graduate universities (2%), technical colleges (4.9%), and community colleges (1.2%), which indicates relatively low participation in the country.

A significant proportion of those surveyed live in various apartments or housing complexes. This includes residents of apartments/apartments/condos with doorstep delivery (12.2%), serviced apartments (1.2%), studio apartments (1.2%), and SOHO residents. (Small offices/

Table 2  
*Type of residential*

Type of residential	Percentage (%)	Frequency
Public University	20.4	50
Private University	0.8	2
College University	2	5
Polytechnic	4.9	12
College Community	1.2	3
Flat/Apartment/Condominium with doorstep delivery	12.2	30
Service apartment	1.2	7
Studio apartment	1.2	3
SOHO (Small office home office)	1.2	3
Terrace house	25.3	62
Semi-detached house	3.3	8
Cluster home	2.0	5
Townhouse	2.2	5
Villa	1.2	3
Bungalow	19.0	46
Others	0.2	1

home offices) (1.2%), semi-detached houses (3.3%), cluster houses (2.0%), townhouses (2.2%), villas (1.2%). Additionally, a small proportion of the population lives in other housing types classified as 'other' (0.2%).

The distribution of residential types within the study population shows a wide range of housing preferences and housing types. The prevalence of single-family houses, such as terraced houses and bungalows, indicates that a significant proportion of people live in traditional housing structures. On the contrary, various types of residences, such as apartments, housing complexes, and institutional housing complexes, show the diversity of living styles and ways of living. This diverse housing representation in survey data can potentially impact various aspects, such as accessibility to amenities, community dynamics, and lifestyle preferences.

### Measurement Model

Convergent validity is the first test, and it determines if an item measures the latent variable that it is claimed to measure (Urbach & Ahlemann, 2010). Hair et al. (2017) suggested that to ensure that convergent validity is achieved in the model, the loading and average variance explain (AVE) must exceed 0.5, and the composite reliability (CR) must reach 0.7. With loading, AVE, and CR values adequate for the suggested ranges (0.714 to 0.856 for loading, 0.631 to 0.861 for AVE, and 0.759 to 0.959 for CR), the study verified that convergent validity was sufficient. Therefore, the measurement model's evidence of convergent validity may be confirmed. The study's measuring model's results are illustrated in Table 3.

Table 3  
Measurement model

Construct	Loading	CR	AVE
<b>Assurance</b>			
Courier service is helpful in guiding customers to ensure the parcel is delivered safely	0.782	0.959	0.698
The parcel is delivered securely	0.878		
Provide accurate parcel information	0.825		
Integrity of courier employees when handling postal articles	0.799		
Courier employees are familiar with the locality	0.796		
Able to ensure the protection of the personal information of the sender/ recipient when the parcel is delivered	0.787		
Able to ensure that parcels are placed in a safe place for contactless delivery	0.862		
Courier service provider assures declaration of liability should the parcel be lost or damaged	0.866		
Courier service providers should oblige the existence of safety guidelines in the delivery of parcel	0.889		
Courier service providers should accommodate parcel packaging guidelines	0.863		
<b>Empathy</b>			
Understand the customer's need to ensure that the parcel is delivered in a secure manner	0.795	0.929	0.725
Always be prepared with the necessary information if the customer wishes to know or faces issues related to the safety of the parcel	0.839		
The courteous communication from courier employees with respect to the safety of parcel delivery.	0.883		
The willingness to consider service delivery beyond scope to ensure the parcel is safely delivered	0.886		
Courier service providers should take note of customer complaints regarding the safety of parcel delivery	0.851		
<b>Responsiveness</b>			
Able to provide timely notification to customers on delivery updates	0.761	0.950	0.730
Be ready to help if the customer faces any problem	0.866		
Capable of offering timely remedy for any issues that occurred during delivery	0.884		
Promptly respond to customer requests	0.856		
Knowledgeable and skilled in handling parcel delivery	0.773		
Ability to handle lost and damaged parcels	0.869		
Ability to communicate during parcel delivery delays.	0.864		
Ability to provide incident reporting	0.900		
<b>Reliability</b>			
Consistency in meeting timeline	0.778	0.953	0.719
Accuracy in retrieving customer delivery information	0.809		
Controlled damage in service delivery	0.893		

Table 3 (continue)

Construct	Loading	CR	AVE
Ability to notify accurate customer delivery information	0.890		
Willingness to handle the reversed parcel	0.878		
Able to ensure the parcel is delivered in good condition	0.876		
Courier service providers should consistently meet Service Level Agreements (SLA) when delivering the parcel.	0.852		
Tangible			
Facilities and transportation tools are in order	0.756	0.923	0.631
Staff are properly presented in uniform and dress code	0.778		
Adequate secure packaging services offered to customers	0.832		
Adequate parcel handling safety	0.798		
Updated courier technology (i.e., QR code)	0.764		
The courier service provider provides adequate tracking and monitoring system	0.844		
Drop off security (i.e. proof of delivery)	0.785		
Customer Satisfaction on Parcel Service Safety (CSPSS)			
My parcel is delivered correctly to my address	0.726	0.759	0.861
My parcels are usually damage-free when I receive them from the courier service provider	0.793		
I have no experience in receiving delayed parcel	0.714		
I have no experience in losing parcel	0.763		
I have no experience in receiving a tempered parcel	0.819		

In order to verify that each construct is distinct and captures phenomena that other constructs in the model have not mapped, the second test is a discriminant validity test (Hair et al., 2017). Henseler et al. (2015) proposed the use of the HTMT ratio at this stage. An HTMT value higher

than 0.90 indicates there is a severe issue of discriminant validity (Henseler et al., 2015). Table 4 shows that discriminant validity is established because all the HTMT values were lower than the most conservative value set out by Henseler et al. (2015).

Table 4  
Discriminant validity (HTMT)

	Assurance	Empathy	Parcel Service Safety	Reliable	Responsive	Tangible
Assurance						
Empathy	0.862					
Parcel Service Safety	0.156	0.137				
Reliability	0.791	0.823	0.247			
Responsiveness	0.778	0.701	0.215	0.721		
Tangible	0.794	0.775	0.238	0.724	0.761	

Before moving on to the structural model, the lateral collinearity test (VIF) was conducted once a measurement model was verified to make sure there was no collinearity problem in the model. Diamantopoulos and Siguaw (2006) noted that there may be a collinearity problem if the VIF value is greater than 3.3. Table 5 shows that all VIF values are lower than 3.3, confirming that lateral multicollinearity is not a concern for this study.

Table 5  
Multicollinearity

Construct	VIF
Assurance	3.244
Empathy	3.316
Reliability	2.839
Responsiveness	2.573
Tangible	2.621

### Structural Model

Hair et al. (2017) suggested looking at the standard beta, t-values using a bootstrapping process using a resample with more respondents, confidence intervals, Q<sup>2</sup>, which looks at predictive relevance, and

f<sup>2</sup>, which looks at effect sizes, to evaluate the structural model. The findings indicate that two hypotheses (H2 and H3) were supported, whereas three hypotheses (H1, H4, and H5) were not supported. Reliable ( $\beta = -0.301, t = 2.127: LL = -0.514, UL = 0.006, p < 0.05$ ) and assurance ( $\beta = 0.106, t = 0.615: LL = -0.309, UL 0.393, p < 0.05$ ). Regarding empathy ( $\beta = 0.170, t = 1.072: LL = -0.161, UL = 0.512, p > 0.05$ ), responsive ( $\beta = -0.079, t = 0.599: LL = -0.331, UL = 0.185, p > 0.05$ ) and tangible ( $\beta = -0.149, t = 1.256: LL = -0.405, UL = 0.073, p > 0.05$ ), they were also unsupported.

Based on the results shown in Table 6, the courier service's overall customer satisfaction is positively impacted by reliability and assurance taken together. Customer satisfaction is greatly increased by the service's reliability, which includes constant service quality and on-time deliveries. The speed of exchange has the biggest impact on customer satisfaction. In the context of courier services, the speed of exchange refers to the timeliness and swiftness with which parcels are picked up, transported, and delivered to

Table 6  
Path coefficient assessment

Hypothesis	Relationship	Beta	SE	T value	P value	LL	UL	Decisions
H1	Empathy -> CSPSS	0.170	0.159	1.072	0.284	-0.161	0.512	Unsupported
H2	Reliability -> CSPSS	-0.301	0.141	2.127	0.034	-0.514	0.006	Supported
H3	Assurance -> PCSSS	0.106	0.172	0.615	0.039	-0.309	0.393	Supported
H4	Responsiveness -> CSPSS	-0.079	0.132	0.599	0.549	-0.331	0.185	Unsupported
H5	Tangible -> CSPSS	-0.149	0.119	1.256	0.210	-0.405	0.073	Unsupported

the intended recipients. In today's fast-paced world, customers expect rapid delivery services, especially with the rise of e-commerce platforms offering next-day or even same-day delivery options. Meeting these expectations is crucial for maintaining high levels of customer satisfaction. Providing customers with clear and accurate information fosters trust and has a good effect on their satisfaction. Positive customer experiences are mostly dependent on concrete factors like the state of the vehicles and facilities as well as the responsiveness to the demands and concerns of the customers.

In this context, reliability and assurance, that is, knowing and relating to the capability of the service provider, are highly favourable factors in boosting total satisfaction among customers. The findings show that reliability, which is typically thought of as the basis of customer satisfaction, can occasionally have an adverse impact. Customers' satisfaction with the courier service appears to be negatively impacted by elements like delays and uneven service quality. This shows that reliability in the context of safety needs to be closely examined, with a focus on ongoing improvement to achieve customer expectations. Giving customers clear and precise information has been shown to have a beneficial effect on their level of satisfaction overall. When they obtain trustworthy information, customers appreciate the confidence and faith courier service providers engender in them.

On the other side, our analysis shows that empathy, responsiveness and tangibility

might occasionally have a negative effect on customer satisfaction. Several critical elements influence the complex character of customer satisfaction in the courier service sector. When forced or untrue, empathy, which is frequently seen as a crucial component of customer service, can occasionally have a detrimental effect on total customer satisfaction. Inauthentic empathy may be interpreted by customers as dishonest, which would make them feel even less satisfied. Therefore, the courier service should stress how important it is to act with true empathy while interacting with customers. The findings also imply that although concrete elements like the state of vehicles and facilities and responsiveness are important, they occasionally fail to live up to customer expectations. Customers may become confused and dissatisfied due to inconsistent tangible aspects (e.g., some branches are well-maintained while others are not). Consequently, customers may become dissatisfied with tangibles if they do not match the brand image or their expectations. In terms of responsiveness, courier service providers may answer quickly, but poor responses might irritate customers. Being prompt does not fulfil the expectations of the customer if the problem is not satisfactorily resolved. This suggests that to guarantee that these factors continuously contribute favourably to satisfaction, more focus must be placed on optimising them. There is a complex relationship between these variables and general customer satisfaction in the courier service safety sector.

Table 7  
Coefficient of determination ( $R^2$ ), effect size ( $f^2$ ) and predictive relevance ( $Q^2$ )

Construct	$R^2$	$Q^2$	$f^2$	Decision
Parcel Service Safety	0.084	0.017		
Empathy			0.010	Small
Reliability			0.035	Small
Assurance			0.003	Small
Responsiveness			0.003	Small
Tangible			0.009	Small

Table 7 presents the report of the coefficient of determination ( $R^2$ ), the effect size ( $f^2$ ), and the predictive relevance ( $Q^2$ ) of exogenous variables on the endogenous variable. The  $R^2$  value is 0.084, suggesting that empathy, reliability, assurance, responsiveness, and tangibility made up 8.4% of the variance in the intention to adopt courier service safety. The  $Q^2$  for parcel service safety is 0.017, which is higher than 0 (Hair et al., 2017), indicating that all exogenous variables have a predictive ability on the intention to adopt postal service safety. The effect size analysis values are assessed following a pattern of 0.35, indicating a substantial 0.15 medium and 0.02 small, consistent with prior studies (Cohen, 1988; Hair et al., 2016). All the endogenous variables have a small effect on parcel service safety.

## CONCLUSION

The results of this study underscore the critical importance of **reliability and assurance** in shaping overall customer satisfaction within the courier service industry. Reliability, defined by consistent service quality and the punctual delivery of parcels, is an essential element in meeting

the evolving expectations of customers, particularly within the context of the rapidly growing e-commerce sector. As customer demands for fast and dependable services continue to rise, courier service providers must place significant emphasis on ensuring timely delivery, accurate information, and effective communication with consumers. Notably, the speed of exchange, which pertains to the swiftness and efficiency with which parcels are collected, processed, and delivered to recipients, emerged as one of the most influential factors in enhancing customer satisfaction. In today's competitive environment, where next-day or even same-day delivery is becoming the norm, providing reliable and quick delivery services is not only an expectation but also a key driver of positive customer experiences. Moreover, the ability of service providers to deliver accurate and transparent information to customers fosters a sense of trust and confidence, which further contributes to a more satisfying overall experience.

Equally important are the tangible elements of service quality, which encompass the physical infrastructure, such as the state of delivery vehicles and facilities, as well as the responsiveness

of staff in addressing customer concerns. The findings highlight that these tangible aspects, though vital, must be consistent and align with customer expectations to positively influence customer perceptions. For example, while well-maintained vehicles and up-to-date technology systems can significantly enhance the customer experience, inconsistency in these tangible elements, such as poor maintenance in some branches or inadequate tracking systems, can lead to customer dissatisfaction. This suggests that service providers must ensure uniformity across all service touchpoints to maintain a strong brand image and positive customer perceptions.

However, this study also points to more nuanced and complex relationships between other key factors, particularly empathy, responsiveness and tangible elements, which were found to occasionally exert a negative impact on customer satisfaction. While generally considered a crucial component of customer service, empathy can have detrimental effects when perceived as insincere or forced. When customers perceive empathy as a mere formality rather than a genuine effort to address their concerns, it can undermine their trust and reduce overall satisfaction. This finding suggests that authentic empathy, where service providers demonstrate a true understanding of customer needs and concerns, should be emphasised as a key service quality attribute. Similarly, responsiveness, though vital for customer satisfaction, must go beyond merely offering quick replies. The study found that customers

are dissatisfied when their issues are not adequately resolved, even if responses are timely. This emphasises the importance of not just quick response but also effective solutions. Customers value the quality of the response in addition to its speed, which means that courier services must equip their staff with the tools, knowledge, and authority to resolve issues comprehensively.

The findings regarding tangible elements further indicate that the condition of the physical infrastructure, including vehicles, facilities, and technology, plays a pivotal role in shaping customer satisfaction. However, inconsistencies in maintaining these elements across different locations or services can lead to customer confusion and dissatisfaction. The study suggests that courier service providers should ensure that all physical aspects of service delivery meet or exceed customer expectations to uphold service quality and brand integrity.

In conclusion, the study reveals a complex and multifaceted relationship between various service quality dimensions, such as reliability, assurance, empathy, responsiveness, and tangible elements and overall customer satisfaction in the courier industry. While factors like reliability and assurance are positively associated with satisfaction, other elements like empathy, responsiveness, and tangible aspects require careful attention to avoid potential negative impacts. The results emphasise the importance of continuously refining these factors to meet the dynamic needs of customers. Service providers should focus on authentic communication, consistent

quality across touchpoints, and effective problem-solving strategies to enhance customer satisfaction and build long-term loyalty. By addressing these areas, courier service providers can create more satisfying customer experiences, thereby fostering stronger customer relationships and sustaining a competitive advantage in the rapidly evolving courier industry.

### **Managerial Implication**

This study serves as a basis for the parcel service providers in terms of the managerial implications. This study provides insight into the methods that should be prioritised for parcel distribution by identifying the aspects that influence customer satisfaction. This goal's integration of empathy, reliability, assurance, responsiveness, and tangibility is extremely relevant and provides a thorough framework for understanding the specifics of customer satisfaction in the context of the delivery of packages. The customer experience can be improved by looking at how these service quality factors connect with customer perceptions and expectations. First, empathy is a cornerstone of delivering exceptional customer satisfaction in the courier industry. Businesses must actively invest in understanding how customers perceive empathy throughout the delivery process to foster a truly customer-centric experience. This includes focusing on key aspects such as the level of personalisation provided and the attention to detail and care demonstrated, particularly in situations where customers are not available to receive their packages directly. By prioritising

these actions, businesses can transform the delivery process into more than just a transactional service—it becomes a relationship-building opportunity. This infusion of genuine care and personalisation reassures customers, builds trust, and strengthens loyalty. Ultimately, this approach ensures operational efficiency and creates a lasting positive impression, driving customer satisfaction to new heights in the highly competitive courier industry.

Second, reliability is a fundamental pillar of customer satisfaction in package delivery, particularly when customers are unavailable to receive their parcels. Businesses must thoroughly evaluate how reliability influences customers' perceptions of satisfaction and safety, identifying specific factors that contribute to a seamless experience. For instance, ensuring timely deliveries, safeguarding packages from damage or theft, and providing clear communication about delivery status can significantly enhance customer confidence. To address gaps in reliability, companies should leverage advanced tracking technologies, such as real-time GPS updates, to keep customers informed about the progress of their delivery. Automated alerts for potential delays and flexible delivery options, like rescheduling or redirecting to alternative locations, can further ensure that services align with customer expectations, even in their absence. Equally important is the implementation of efficient and customer-friendly parcel return services. Often overlooked, these services are critical to a positive post-

purchase experience. Businesses must provide clear and straightforward processes for customers to return damaged, incorrect, or unsatisfactory items in size or quality. Options like scheduled pick-ups, drop-off locations, or pre-paid return labels simplify the process and demonstrate a commitment to customer convenience. By embedding reliability into every step of the delivery and post-purchase process, companies can build trust, improve satisfaction, and position themselves as dependable partners in the competitive courier industry.

Third, assurance, defined as providing clear and accurate information about parcel safety measures, is crucial to building customer trust and satisfaction in the delivery process. Businesses must focus on understanding how the quality and transparency of safety information influence customer expectations and their willingness to pay a premium for added security. For example, clearly communicated safety protocols, such as secure packaging, tracking systems, and insurance options, can significantly increase customer confidence in the delivery process, making them more likely to choose premium services. Service providers should proactively communicate the security measures for each package, ensuring customers are fully informed at every delivery stage. This not only meets customer expectations but also reassures them about the safety of their goods. Clear information on parcel protection builds a sense of reliability and reduces anxiety, including details on how items are handled, stored, and insured.

Moreover, service providers must ensure they can respond swiftly and efficiently to customer inquiries, particularly regarding delivery status, pricing concerns, and insurance claims. This means setting up responsive customer support channels, such as live chat, dedicated helplines, or AI-powered assistants that can quickly address issues or provide updates. Implementing a streamlined process for handling claims and inquiries enhances the customer experience, demonstrating a service provider's commitment to resolving concerns and maintaining customer satisfaction. By focusing on providing transparent, accessible information about safety and responding promptly to customer queries, courier companies can improve customer loyalty and satisfaction while also creating opportunities for premium service offerings.

Fourth, this study emphasises the need for parcel service providers to prioritise enhancing response times and improving parcel returnability services as key factors in increasing customer satisfaction. Responsiveness is critical in addressing customer complaints and ensuring parcel safety, making it essential for businesses to focus on developing solutions that expedite responses to customer concerns. To achieve this, parcel service providers should implement strategies that enable faster response times, such as investing in automated customer service tools like chatbots or AI-powered assistants. These tools can provide immediate answers to common queries, while more complex issues can swiftly escalate to human agents.

Additionally, streamlining communication channels, such as offering real-time tracking, automated status updates, and easy-to-access customer support, ensures that customers are always informed about the progress of their deliveries, even in the event of delays. Moreover, when issues like delayed deliveries or safety concerns arise, it is crucial for service providers to act promptly. Even if a delay or problem occurs, the key is to provide customers with timely and accurate updates, as well as clear next steps. By being transparent and communicative, businesses can manage customer expectations and reduce frustration, which directly impacts satisfaction. In addition, parcel returnability services should be made as convenient and hassle-free as possible. Offering easy-to-navigate return processes, including clear instructions and multiple return options (such as drop-off locations or at-home pick-up services), would go a long way in enhancing customer satisfaction. Return services should be integrated into the customer experience seamlessly, ensuring that customers are not left with the burden of dealing with complicated or slow return procedures.

Finally, the external factors that influence delivery, such as the condition of delivery trucks and facilities, play a crucial role in shaping customers' perceptions of service safety and quality. These tangible elements, ranging from the cleanliness and maintenance of delivery vehicles to the security and organisation of distribution centres, directly impact how safe and reliable customers believe

the services to be. To enhance customer satisfaction, parcel service providers must regularly evaluate and maintain the physical infrastructure required for safe and efficient delivery. An in-depth analysis of how these tangible aspects contribute to customer satisfaction is essential. By understanding the correlation between well-maintained vehicles, secure facilities, and customer perceptions, businesses can identify key areas for improvement. For example, implementing routine vehicle inspections, upgrading security measures at warehouses, and ensuring that trucks are equipped with real-time tracking devices can increase the perceived safety and professionalism of the delivery service. Therefore, this study aims to produce useful guidelines that any parcel service provider can use as a starting point to enhance their present and future services.

### **Limitation and Future Studies**

This study acknowledges several key limitations that offer valuable opportunities for future research. First, the sample of 285 respondents from the Selangor and Kuala Lumpur regions does not fully capture the diversity of Malaysia's broader customer base in the courier service sector. Future studies could broaden the sample size and expand the geographic scope, including urban and rural areas across different states of Malaysia, to generate more robust and generalisable insights. This would allow a more comprehensive understanding of customer satisfaction and service quality factors across varying demographics and regional characteristics. Second, future

research could delve deeper into formulating and testing hypotheses on the relationships between key variables in different regions of Malaysia. This would help to uncover regional differences in customer expectations and service perceptions, which could further inform targeted strategies for courier service providers in specific locales.

Additionally, future studies could explore emerging trends in the last-mile delivery sector, such as the role of sustainable logistics practices and their influence on customer satisfaction. As environmental concerns continue to grow, examining how eco-friendly delivery methods (e.g., electric vehicles, carbon offsetting) impact consumer perceptions and loyalty could provide valuable insights. Similarly, the increasing automation of logistics, including the use of drones and autonomous vehicles for last-mile delivery, offers a promising area for research. Investigating how these technological advancements affect service quality, efficiency, and customer satisfaction could offer a forward-looking perspective. Expanding the scope of research beyond Malaysia to include international comparisons could also enrich the study. By analysing different geographical contexts, researchers could identify global customer expectations and service quality trends, providing a more nuanced understanding of the global courier service landscape. Integrating these innovative trends and expanding the geographical reach of future studies would enhance the depth and relevance of research in the evolving field of last-mile delivery.

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