

Service Experience to Sustained Use: What Drives Re-Use Intention in the Courier, Express and Parcel Industry in Malaysia

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Abstract

The rapid growth of e-commerce has increased the strategic importance of courier, express, and parcel (CEP) services in Malaysia, particularly in a B2C-dominated logistics environment. This study aims to explore how multidimensional service attributes shape customer satisfaction and re-use intention among CEP end users in Malaysia. Extending the SERVQUAL framework, the study incorporates convenience, price, green logistics, service flexibility, and complaint management into an integrated research model. Data were collected from 482 end users and analysed using partial least squares structural equation modelling (PLS-SEM). The results show that reliability, assurance, convenience, price, and green logistics have significant positive effects on customer satisfaction, whereas responsiveness, empathy, tangibility, service flexibility, and complaint management do not. Customer satisfaction exerts a strong positive effect on re-use intention. These findings suggest that in an increasingly digitalised and competitive CEP market, users' continued usage decisions are driven primarily by service stability, perceived value, and environmentally responsible practices. This study contributes to the literature by contextualising and extending SERVQUAL in the Malaysian CEP sector and offers practical implications for service providers seeking to improve customer retention and long-term competitiveness.

Keywords: The SERVQUAL model, Service Quality, Satisfaction, CEP, Re-use Intention

Introduction

With the implementation of national development strategies such as MyDIGITAL, the Rancangan Malaysia Ke-12 (RMK-12), and Jalanan Digital Negara (JENDELA), Malaysia has demonstrated a sustained commitment to advancing an inclusive digital economy. These initiatives have supported the development of a comprehensive digital infrastructure, providing a foundation for continued digital economic growth. In the post-pandemic era, e-commerce has expanded rapidly and has become a core component of both the global and Malaysian digital economies.

The rapid expansion of e-commerce has created significant opportunities for the courier, express, and parcel (CEP) industry while introducing new structural challenges. Prior research identifies growing e-commerce demand as a primary driver of CEP market expansion, contributing to industry scale growth and service innovation (Gulc, 2021; Ponnusamy & Ramasamy, 2024). Over time, the CEP industry has evolved into a critical infrastructural sector supporting e-commerce operations and is increasingly recognised as a key pillar of the digital economy ecosystem (Muhthar et al., 2022). At a macro level, CEP development has further reinforced the integration of e-commerce into Malaysia's economic structure (Yusof et al., 2024).

According to Mordor Intelligence, Malaysia's e-commerce market is expected to expand to USD 12.18 billion by 2026 and further reach USD 23.11 billion by 2031, reflecting a compound annual growth rate of 13.67%. Notably, the business-to-consumer (B2C) segment accounted for 80.89% of market share in 2025 (Mordor Intelligence, 2026). This dominance of B2C transactions indicates that Malaysia's CEP industry primarily serves individual end users and has increasingly been shaped by demand for small-volume, high-frequency, and high-speed deliveries (Muhthar et al., 2022).

As e-commerce and the CEP industry continue to co-evolve, the strategic importance of CEP services has intensified. Owing to their dual role in facilitating social connectivity and supporting economic activity and public service provision, CEP services have become central to national development systems (Otsetova & Dudin, 2018). However, sustained e-commerce growth has also heightened demand for CEP services that are not only efficient and reliable but also environmentally sustainable (Ibrahim et al., 2025). Consequently, service evaluation has expanded beyond delivery speed and coverage to include environmental impact, resource efficiency, and service quality assurance.

In response, the Malaysian government introduced PAKEJ in 2021 through the Malaysian Communications and Multimedia Commission (MCMC) and upgraded it to PAKEJ+ in 2024. As a five-year national roadmap, PAKEJ+ seeks to balance efficiency, inclusiveness, and sustainability in alignment with the National Postal and Courier Industry Lab (NPCIL) vision of delivering Quality of Service (QoS). From an industry perspective, PAKEJ+ has contributed to structural upgrading, including the establishment of more than 26,000 pick-up and drop-off points nationwide and an increase in per capita parcel deliveries to 25.8 items, reflecting continued growth in courier demand (BERNAMA, 2021).

Despite these developments, the transition towards intelligent and sustainable logistics has revealed persistent operational challenges, including insufficient professionalisation, rising delivery costs, and inadequate after-sales support. These issues have adversely affected customer satisfaction and loyalty, constraining the industry's long-term sustainability (Lei et al., 2022). Nevertheless, existing research on CEP sustainability has primarily relied on macro-level indicators, with limited attention to end users' service experiences and behavioural responses. Given the dominance of the B2C model, customer satisfaction and re-use intention should be regarded as critical indicators for evaluating both service quality improvement and policy effectiveness, yet systematic empirical evidence remains scarce.

Moreover, while the SERVQUAL model has been extensively employed in logistics and service-related studies, its application within the CEP sector has often been partial. Existing research tends to prioritise conventional dimensions such as reliability and responsiveness, with comparatively limited attention paid to factors including convenience, price perception, service flexibility, complaint handling, and green logistics. As digital logistics platforms and sustainability requirements continue to evolve, these dimensions have become increasingly salient but remain under-integrated within existing analytical frameworks.

From a policy research perspective, evaluations of PAKEJ and PAKEJ+ have concentrated mainly on policy design and industry-level outcomes, with limited empirical examination of how policy objectives are translated into customer experiences and behavioural outcomes through specific service attributes. Consequently, core policy goals such as green logistics, service efficiency, and customer experience enhancement have yet to be adequately validated in terms of customer satisfaction and re-use intention.

Against this backdrop, this study focuses on end users of the Malaysian CEP industry. Building on the SERVQUAL model, this study incorporates convenience, price, green logistics, service flexibility, and complaint management to develop an integrated framework for examining how multidimensional service attributes influence customer satisfaction and re-use intention. Accordingly, this study seeks to address the following research questions:

- (1) How do service quality dimensions influence customer satisfaction among Malaysian CEP end users?
- (2) Under the PAKEJ+ initiative, how do extended service attributes affect customer satisfaction?
- (3) How does customer satisfaction influence re-use intention?

This study contributes to the logistics and service literature by proposing a comprehensive model tailored to the Malaysian e-commerce context. Using a large sample from a developing economy and structural equation modelling, it strengthens the empirical basis for understanding CEP service evaluation. It provides actionable insights for service providers and policymakers seeking to enhance customer satisfaction and re-use intention.

Literature Review

Review of Courier Service Research

In the context of rapid e-commerce expansion, courier services have evolved into a core infrastructural element, and the association between service quality and customer satisfaction has gained sustained scholarly attention in operations management, marketing, and logistics. During the COVID-19 pandemic in particular, the sharp increase in demand for courier services led to a noticeable expansion of research focusing on service quality and customer experience (Tang et al., 2022). Drawing on recent empirical studies, this section systematically reviews key dimensions of courier service quality, the mechanisms underlying customer satisfaction, and emerging green and digital factors. The objective is to identify theoretical developments, methodological characteristics, and research gaps, thereby providing a foundation for future academic inquiry and industry practice.

Earlier studies commonly employ the SERVQUAL model, which conceptualises service quality across five dimensions: tangibility, reliability, responsiveness, assurance, and empathy.

Across empirical contexts, reliability, responsiveness, and empathy are consistently identified as significant predictors of customer satisfaction (Jamal et al., 2018; Yaacob & Yaacob, 2022). However, the relative importance of these dimensions varies across contexts and cultural settings. For example, research conducted in Malaysia identifies empathy as the most critical determinant of customer satisfaction (Tang et al., 2022). In contrast, studies conducted in Poland propose ease of technology use and trust as additional dimensions of courier service quality (EJDYS & Gulc, 2020). Moreover, logistics service quality frameworks have been employed to capture more specialised structural dimensions, such as operational quality, information quality, and personnel contact quality (Lin et al., 2023).

Customer satisfaction is frequently modelled as a key mediating variable between service quality and behavioural intentions. For instance, research conducted in Bulgaria demonstrates that customer satisfaction fully mediates the relationship between courier service quality and customer loyalty (Sivadas & Baker-Prewitt, 2000). Similarly, studies on instant courier services in Indonesia show that customer satisfaction and trust jointly mediate the effects of perceived service quality on repurchase intention (Kusumawardani & Hastayanti, 2020). Regarding moderating variables, findings on demographic and cultural influences remain mixed. Valaei et al. (2016) report that ethnicity moderates overall service quality perceptions, whereas age and gender do not. In contrast, a cross-cultural study reveals that the effects of corporate ability and social responsibility on customer satisfaction differ between Germany and the United States (Walsh & Bartikowski, 2013).

As sustainable development has become a global priority, scholarly attention has increasingly focused on the effects of green logistics practices and environmental, social, and governance (ESG) performance on customer satisfaction and brand loyalty. Existing research indicates that green delivery options, such as parcel lockers and environmentally friendly packaging, can enhance customer satisfaction and repurchase intention (Kawa & Pierański, 2021). In the context of digital transformation, firms' ESG performance has been shown to influence customer behaviour indirectly through brand trust and perceived value (Fan et al., 2025; Koh et al., 2022). In addition, digital maturity and dynamic delivery capabilities have been found to strengthen service innovation performance and customer satisfaction (Sitorus et al., 2022).

Development of Hypothesis

Service Quality Under the SERVQUAL Model

The SERVQUAL model, introduced by Parasuraman et al. (1988), has become one of the most influential frameworks for assessing service quality. Its analytical focus centres on the discrepancy between customers' expectations and their perceived service performance. As logistics activities are fundamentally service-oriented, SERVQUAL has been widely adopted in logistics research. The model conceptualises service quality through five dimensions, including tangibility, reliability, responsiveness, assurance, and empathy, which are commonly used to systematically evaluate service performance and elucidate its relationship with customer satisfaction.

Within the SERVQUAL model, reliability refers to the extent to which service providers consistently fulfil service commitments with accuracy and punctuality, ensuring stable performance and error-free operations (Parasuraman et al., 1991; Parasuraman et al., 1985). Beyond accurate task execution and correct billing, reliability also encompasses providing a

safe, convenient, and efficient transaction experience throughout the service process (El Saghier & Nathan, 2013; Jamal et al., 2018). In the express and parcel delivery industry, reliability is reflected in accurate delivery, effective problem resolution, reasonable pricing, and service consistency. Empirical studies consistently show that reliability is often ranked as the most crucial SERVQUAL dimension and exerts a strong positive influence on customer satisfaction (Jamal et al., 2018). Accordingly, this study proposes:

H1: Reliability has a positive effect on customer satisfaction with courier services in Malaysia. Responsiveness refers to service providers' willingness and ability to assist customers promptly and effectively (Parasuraman et al., 1985). It encompasses not only timeliness but also employees' sensitivity to customer needs, flexibility in handling issues, and the ability to resolve problems efficiently (El Saghier & Nathan, 2013). Previous studies suggest that responsiveness is strongly associated with customer satisfaction, particularly in time-sensitive service contexts such as courier services (Al-Weshah et al., 2013; Gulc, 2021). Delays and complex logistics processes may significantly undermine perceived responsiveness, while well-trained service personnel enhance service efficiency and satisfaction (Jamal et al., 2018). Therefore, this study proposes:

H2: Responsiveness positively affects customer satisfaction with courier services in Malaysia. Empathy emphasises personalised care, understanding, and individualised attention in service interactions (El Saghier & Nathan, 2013; Sureshchandar et al., 2002). It is reflected in flexible service arrangements, respectful communication, and attentiveness to customers' specific needs. In the courier industry, empathy can enhance emotional attachment and improve service experiences by offering customer-centred delivery arrangements and proactive communication. Prior research suggests that empathetic service behaviours contribute positively to customer satisfaction and loyalty (Sureshchandar et al., 2002). Thus, this study proposes:

H3: Empathy positively affects customer satisfaction with courier services in Malaysia. Tangibility captures the physical elements of service provision, encompassing facilities, equipment, employees' appearance, and related communication materials (El Saghier & Nathan, 2013). Although Parasuraman et al. (1994) suggested that tangibility has a relatively weaker effect on satisfaction, subsequent studies have reported mixed findings across industries (Chodzaza & Gombachika, 2013). In the courier industry, tangibility is reflected in modern delivery equipment, professional staff appearance, service outlet conditions, and digital interface design. While its impact may vary, tangibility remains essential for shaping first impressions and organisational image. Therefore, this study proposes:

H4: Tangibility positively affects customer satisfaction with courier services in Malaysia.

Assurance refers to the knowledge, courtesy, and professionalism of service personnel that fosters customer trust and confidence (Parasuraman et al., 1991). It reflects employees' ability to convey reliability, safety, and competence during service delivery (El Saghier & Nathan, 2013). Empirical research highlights assurance as a key determinant of trust and satisfaction in service industries (Shahin & Chan, 2006). In courier services, standardised procedures and professional training are essential to strengthening customer confidence and perceived service quality. Accordingly, this study proposes:

H5: Assurance has a positive effect on customer satisfaction with courier services in Malaysia.

Convenience refers to the time and effort required by customers to access and use a service (Chan et al., 2010). In courier services, it is reflected in service accessibility, ease of operation, digital booking and tracking, and flexible delivery options (Park et al., 2009). Previous studies consistently identify convenience as a key determinant of customer satisfaction and positive behavioural responses (Dabholkar & Bagozzi, 2002; Ranjbarian et al., 2012). Empirical evidence across service sectors confirms that reduced customer effort significantly enhances satisfaction (Akbaba, 2006; Cho & Sung, 2007; Lai et al., 2007). Thus, this study proposes:

H6: Convenience positively affects customer satisfaction with courier services in Malaysia.

Price is commonly conceptualised as both the monetary cost of a service and the overall value perceived by customers (Kotler et al., 2015; Petrick, 2004). From a customer value perspective, satisfaction arises when perceived benefits exceed the sacrifices associated with price (Woodruff, 1997). Empirical studies across industries consistently demonstrate that favourable price perceptions positively influence customer satisfaction (Ahmed et al., 2023; Almanwari et al., 2024; Elgarhy & Mohamed, 2023). Research in courier and e-commerce contexts further confirms that reasonable pricing enhances satisfaction and repurchase intention (Handoyo et al., 2025; Nugraha et al., 2023). Accordingly, this study proposes:

H7: Price has a positive effect on customer satisfaction with courier services in Malaysia.

Green logistics refers to environmentally responsible logistics practices that aim to reduce environmental impact while maintaining operational efficiency (Rodrigue et al., 2017; Sbihi & Eglese, 2010). Typical practices include low-emission vehicles, route optimisation, and environmentally friendly packaging (Sureeyatanapas et al., 2018). Recent studies indicate that green logistics enhances perceived service value and customer satisfaction, thereby offering competitive advantages (Elektra et al., 2024; Lee & Klassen, 2008). Accordingly, this study examines the role of green logistics in shaping customer satisfaction and proposes:

H8: Green logistics positively affect customer satisfaction.

Service flexibility refers to a firm's ability to respond effectively to changes in customer demand across logistics processes, operational execution, and coordination mechanisms (Upton, 1994; Zhang et al., 2005). Empirical studies demonstrate that higher logistics service flexibility significantly enhances customer satisfaction (Gonzalo et al., 2017; Zhang et al., 2005). However, user-centred evidence from the courier industry remains limited, particularly in emerging e-commerce markets. Therefore, this study examines service flexibility within the Malaysian CEP context and proposes:

H9: Service flexibility positively affects customer satisfaction with courier services in Malaysia.

Complaint management refers to the systematic handling of customer dissatisfaction through structured response and recovery processes (Gewald, 2001). Effective complaint handling can restore trust, improve satisfaction, and enhance organisational reputation (Stauss & Seidel, 2022). Although only a small proportion of dissatisfied customers formally submit complaints (Bateson & Hoffman, 1999), customer complaints provide valuable opportunities for service improvement. Under the PAKEJ+ framework, this study examines the role of complaint management in shaping user satisfaction and proposes:

H10: Complaint management has a positive effect on customer satisfaction with courier services in Malaysia.

Customer satisfaction reflects the degree to which service performance meets or exceeds customer expectations (Kotler et al., 2014). It is widely recognised as a central outcome of service quality and a key predictor of behavioural intention (Kar, 2016). In Malaysia's CEP industry, customer satisfaction also serves as a critical indicator of the PAKEJ+ initiative's effectiveness, linking service quality improvement, green transformation, and user experience enhancement. Therefore, this study proposes:

H11: Customer satisfaction has a positive effect on re-use intention with courier services in Malaysia.

Accordingly, the research framework adopted in this study is depicted in Figure 1.

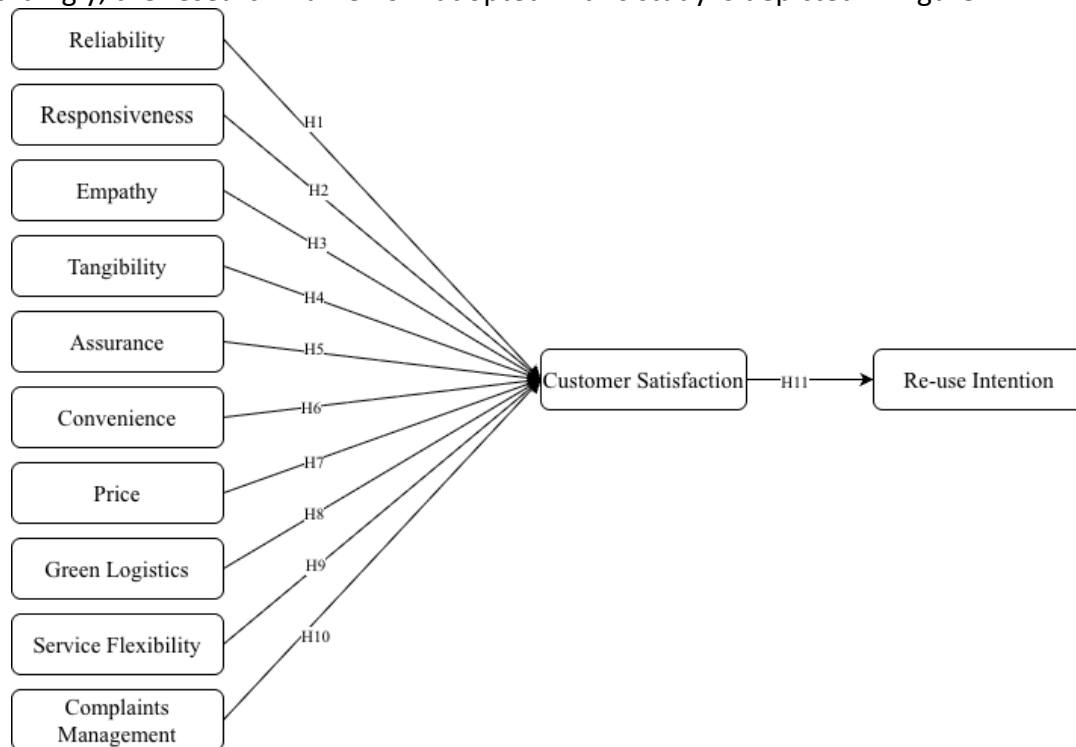


Figure1. The Framework of Research

Methodology

This study aims to identify and empirically validate the key factors influencing re-use intention among users of the CEP industry in Malaysia. To achieve this objective, the study adopts a positivist research paradigm, which emphasises the systematic collection and analysis of observable data to test dominant variables and hypothesised relationships within a theoretical framework (Alharahsheh & Pius, 2020). Methodologically, a quantitative research approach was employed using a cross-sectional survey design. Data were collected from the target population through structured questionnaires, and statistical analyses were conducted to test the hypotheses proposed in the earlier stages of the study.

Target Population and Sampling Design

The target population of this study consists of individual consumers who have previously used CEP services. A purposive sampling strategy was adopted to ensure that respondents possessed relevant service experience. Data collection focused on the northern, central, and southern regions of Malaysia, covering 10 cities, including Selangor, Negeri Sembilan, and

Penang. According to data released by the MCMC, these regions have the highest concentration of CEP infrastructure.

The minimum required sample size was estimated using G*Power. The analysis indicated that a minimum sample size of 146 responses was needed to achieve adequate statistical power. Given the overall research design and the need for a regional comparison, the final target sample size was set at 438 respondents.

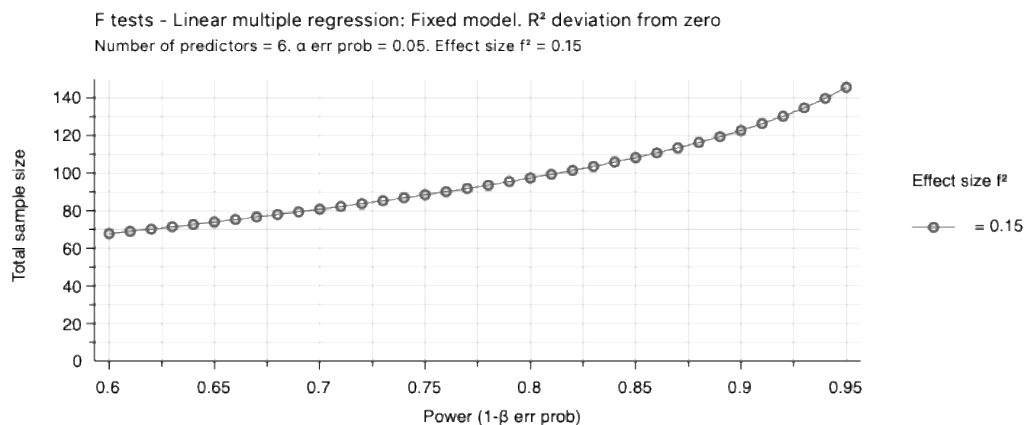


Figure 2. The Result of G*Power

Data Collection Procedure

Data were collected via an online questionnaire administered via Google Forms between 10 and 24 October 2025. During the data collection period, a rolling data-cleaning procedure was implemented to enhance data quality. Responses were screened in real time, and invalid entries were removed, including those with duplicate IP addresses, patterned or inattentive responses, questionnaires completed in an unusually short time, and responses originating from non-target regions. In total, 503 responses were initially collected. After data cleaning, 482 valid questionnaires were retained for analysis. The final number of valid responses exceeded the predetermined target sample size, thereby ensuring the robustness of subsequent statistical analyses.

Measurement Scale

The measurement items for each construct in the research framework were adapted from established literature, with the specific sources presented in Table 1. Regarding measurement scales, all constructs were measured on a 5-point Likert scale.

Table 1

The sources of the measurement items

No.	Constructs	Number of items	Source
1	Reliability (REL)	5	Yaacob and Yaacob (2022)
2	Responsiveness (RES)	4	Valaei et al. (2016)
3	Empathy (EMP)	5	Yaacob and Yaacob (2022)
4	Tangibility (TAN)	4	Libo-On (2021)
5	Assurance (ASS)	4	Libo-On (2021)
6	Convenience (CON)	5	Valaei et al. (2016)
7	Service Flexibility (SF)	7	Fouda (2020)
8	Complaints Management (CM)	3	Fouda (2020)
9	Price (Price)	5	Siali et al. (2018)
10	Green Logistics (GL)	6	Kawa and Pierański (2021); Shyu et al. (2023)
11	Customer Satisfaction (CS)	5	Siali et al. (2018)
12	Re-use Intention (RI)	5	Lin et al. (2023)
13	Total		58

Data Analysis Strategy

Statistical analyses were conducted using SPSS version 28.0 and SmartPLS version 4.0. SPSS was first employed for data screening and cleaning to ensure data quality. On this basis, descriptive demographic analyses and hypothesis-driven multivariate analyses were performed.

Given that the research model in this study is prediction-oriented rather than confirmatory in nature, and that partial least squares structural equation modelling (PLS-SEM) demonstrates greater robustness when handling non-normal data distributions (Ramayah et al., 2018), SmartPLS was subsequently used to assess both the measurement model and the structural model (Ringle et al., 2022). The analytical procedure consisted of two main stages.

The analysis began with an assessment of the measurement model. After conducting descriptive statistics and reliability analyses, PLS-SEM was employed to evaluate composite reliability, average variance extracted (AVE), and the heterotrait–monotrait ratio (HTMT), ensuring adequate convergent and discriminant validity for all constructs.

In the second stage, the structural model and the hypothesised relationships were examined after the measurement model satisfied the required criteria. A bootstrapping procedure with 10,000 resamples was employed to assess the significance of path coefficients using p-values, thereby providing a rigorous test of the thirteen theoretical hypotheses. Additionally, coefficients of determination (R^2) and effect sizes (f^2) were analysed to assess the model's explanatory power and the relative influence of key antecedents.

Ethical Considerations

Participation in this social science research was entirely voluntary, and only individuals capable of providing informed consent were included. Participants were fully informed of their rights and obligations before participation. The study focused exclusively on the investigation of human behaviour and did not involve any experimental interventions with human subjects or animals. No personal or sensitive information, such as names, contact details, or residential addresses, was collected through the questionnaire.

The Results*Demographic Profile*

The final sample comprised 482 valid responses. Overall, respondents were mainly young and female, with students forming the largest subgroup, which is consistent with the profile of high-usage courier service users in Malaysia's digital economy. Key demographic characteristics are presented as follows.

Regarding gender distribution, female respondents constitute 73% (n = 354), while male respondents account for 27% (n = 128). This imbalance suggests higher levels of engagement among women in courier service usage, which aligns with existing research showing that women tend to be more active in online shopping and personal parcel transactions.

The age distribution is heavily skewed toward younger cohorts. Respondents aged 18–24 represent the largest group at 72% (n = 347), followed by those aged 35–44 (7.7%), 55+ (7.5%), 25–34 (6.6%), and 45–54 (6.2%). This concentration of young users corresponds with the demographic segment most involved in e-commerce, digital platforms, and routine parcel reception, indicating that the sample accurately captures the primary consumer base of CEP services in Malaysia.

Regarding occupation, students form the overwhelming majority at 72.6% (n = 350), followed by public/government sector employees (10.4%), private-sector employees (8.7%), retirees (3.9%), self-employed individuals (3.1%), and homemakers (0.8%). The dominance of students suggests that courier services are closely tied to online shopping, receipt of educational materials, and routine parcel delivery among younger users.

Table 2

The Details of Profile

Demographic	Frequency	Per cent (%)
Gender		
Female	354	73
Male	128	27
Total	482	100
Age		
18-24	347	72
25-34	32	6.6
35-44	37	7.7
45-54	30	6.2
55 years and above	36	7.5

Total	482	100
Occupation	Frequency	Per cent (%)
Agent	1	0.2
Homemaker	5	1.1
Private sector employee	42	8.7
Public/Government sector employee	50	10.4
Retired	19	3.9
Self-employed	15	3.1
Student	350	72.6
Total	482	100

Geographically, respondents were distributed across three major regions: the North (Penang, Kedah, Perlis, Perak), Central (Kuala Lumpur, Selangor, Putrajaya), and South (Negeri Sembilan, Melaka, Johor). The Central region accounts for 165 respondents, followed by the South (201) and the North (116). These numbers reflect Malaysia's actual population distribution and e-commerce logistics patterns, with the Central and Southern regions hosting higher delivery volumes and denser logistics activity.

Table 3
The Area of Profile

Area	City	Responses	Total
North	Penang	58	116
	Kedah	24	
	Perlis	12	
	Perak	22	
Central	Kuala Lumpur	9	165
	Selangor	143	
	Putrajaya	13	
South	Negeri Sembilan	133	201
	Melaka	22	
	Johor	46	
Total		482	482

The income distribution shows that 46.9 per cent of respondents earn less than RM 2,500 per month, while 31.3 per cent preferred not to disclose their income. Other income groups include those earning RM 5,001–RM 10,000 (8.9 per cent), RM 2,501–RM 5,000 (6.6 per cent), and more than RM 10,000 (6.2 per cent). This income pattern reflects the predominance of students and early-career individuals within the sample, indicating that many users may prioritise affordability and service reliability when selecting courier providers.

Table 4

The Monthly Income of Profile

Monthly Income (in Ringgit Malaysia)		
Items	Frequency	Percent
Less than RM 2,500	226	46.9
More than RM 10,000	30	6.2
Prefer not to say	151	31.3
RM 2,501 – RM 5,000	32	6.6
RM 5,001 – RM 10,000	43	8.9
Total	482	100

In terms of frequency, 40 per cent of respondents use courier services a few times per month, while 28.6 per cent use them only when needed. Meanwhile, 16 per cent use courier services several times per week, 13.3 per cent once per week, and 2.1 per cent daily or almost daily. These figures indicate that, while most respondents are moderate or low-frequency users, courier services remain an integral part of the routine lifestyles of a significant subset of the population.

Table 5

The Frequency of Use

How often do you use courier or parcel services? (Please choose ONE only)		
Items	Frequency	Percent
A few times a month	193	40
About once a week	64	13.3
Daily or almost daily	10	2.1
Rarely / only when needed	138	28.6
Several times a week	77	16
Total	482	100

Overall, the demographic characteristics of the sample illustrate a highly representative picture of Malaysia's core CEP user base: predominantly female, young, digitally active, concentrated in key population centres, and largely dependent on personal-use parcel deliveries. These characteristics provide a robust foundation for subsequent analyses on courier selection behaviour, regional differences, and policy implications under the PAKEJ+ initiative.

Common Method Variance (CMV)

CMV refers to variables evaluated from the same methodology and/or references (Richardson et al., 2009). The CMV problem arose when respondents in the same survey evaluated both independent and dependent variables at a single point in time (Kock et al., 2021; Podsakoff et al., 2003). To address the CMV issue, marker variables should be included in the questionnaire to investigate its effects and bolster the research's discriminant validity (Lindell & Whitney, 2001). Thus, a marker variable comprising three items from Oreg (2003) was included in the questionnaire. The result illustrates the difference in R^2 values, ranging from

0% to 1%. Since the R^2 difference was less than 10%, this indicates that common method variance is not a concern in this study.

Assessment of Measurement Model

This research first tested the validity of the study's measures using convergent and discriminant validity analyses. The average variance extracted (AVE) was used to test convergent validity, and composite reliability was used to evaluate reliability. The AVEs were all above 0.5, and the CRs were all above 0.7 (see Table 6), indicating that the measures were valid and reliable (Hair & Alamer, 2022; Ramayah et al., 2018). We checked for discriminant validity using the more recent criterion proposed by Franke and Sarstedt (2019), the HTMT. According to Franke and Sarstedt (2019), the HTMT ratios should be less than 0.9, as shown in Table 7. Most of the HTMT ratios are lower than 0.90, suggesting the variables are distinct, but we had three pairs of HTMT ratios that were greater than 0.9, which were the SF <-> CM (0.911), CS <-> RI (0.937), REL <-> RES (0.917), and EMP <-> RES (0.939). Thus, we ran a 90% bootstrap confidence interval. The results showed that all upper limits were lower than 1. Based on the recommendations of Franke and Sarstedt (2019), we can conclude that this research does not have any issues with discriminant validity.

Table 6
Measurement Model

Constructs	Items	Outer Loadings	CR	AVE
Assurance	ASS1	0.880	0.916	0.798
	ASS2	0.912		
	ASS3	0.911		
	ASS4	0.869		
Complains Management	CM1	0.932	0.936	0.886
	CM2	0.948		
	CM3	0.944		
Convenience	CON1	0.813	0.904	0.718
	CON2	0.831		
	CON3	0.843		
	CON4	0.887		
	CON5	0.862		
Customer Satisfaction	CS1	0.908	0.948	0.828
	CS2	0.925		
	CS3	0.902		
	CS4	0.907		
	CS5	0.907		
Empathy	EMP1	0.856	0.911	0.737
	EMP2	0.866		
	EMP3	0.875		
	EMP4	0.835		
	EMP5	0.859		
	GL1	0.852	0.898	0.714

Green Logistics	GL2	0.849		
	GL3	0.796		
	GL4	0.880		
	PRICE1	0.912		
Price	PRICE2	0.905		
	PRICE3	0.901	0.927	0.766
	PRICE4	0.827		
	PRICE5	0.827		
	REL1	0.837		
Reliability	REL2	0.817		
	REL3	0.828	0.883	0.676
	REL4	0.777		
	REL5	0.852		
	RES1	0.864		
Responsiveness	RES2	0.872		
	RES3	0.868	0.884	0.734
	RES4	0.823		
	RI1	0.896		
Re-use Intention	RI2	0.909		
	RI3	0.930	0.947	0.823
	RI4	0.887		
	RI5	0.912		
	SF1	0.885		
Service Flexibility	SF2	0.869		
	SF3	0.880	0.904	0.722
	SF4	0.794		
	SF5	0.816		
Tangibility	TAN1	0.846		
	TAN3	0.900	0.855	0.776
	TAN4	0.896		

Note: The TAN 2 (0.646) was deleted due to low loading.

Table 7

Discriminant Validity (HTMT)

	ASS	CM	CON	CS	EMP	GL	PRICE	REL	RES	RI	SF	TAN
ASS												
CM	0.753											
CON	0.845	0.693										
CS	0.819	0.719	0.845									
EMP	0.797	0.804	0.724	0.724								
GL	0.638	0.716	0.657	0.728	0.617							
PRICE	0.733	0.858	0.720	0.767	0.752	0.661						
REL	0.736	0.641	0.791	0.740	0.833	0.500	0.708					
RES	0.749	0.704	0.741	0.724	0.939	0.606	0.744	0.917				
RI	0.798	0.709	0.869	0.937	0.722	0.694	0.772	0.751	0.737			
SF	0.773	0.911	0.773	0.753	0.823	0.727	0.843	0.708	0.785	0.769		
TAN	0.870	0.728	0.863	0.817	0.763	0.730	0.719	0.773	0.760	0.821	0.778	

Assessment of Structural Model

To test the structural model, we ran a bootstrap resample of 10,000 to report the percentile bootstrap, testing the hypotheses generated by Becker et al. (2023) since the data were not multivariate normally distributed.

As shown in Figure 3, the results of this study indicate that the R^2 values for Customer Satisfaction and Re-use Intention are 0.751 and 0.789, respectively, indicating that the model explains 75.1% of the variance in customer satisfaction and 78.9% of the variance in re-use intention. Reliability (REL) ($\beta = 0.120$, $p < 0.05$), Assurance (ASS) ($\beta = 0.209$, $p < 0.05$), Convenience (CON) ($\beta = 0.257$, $p < 0.05$), PRICE ($\beta = 0.191$, $p < 0.05$), and Green Logistics (GL) ($\beta = 0.239$, $p < 0.05$) were positively related to Customer Satisfaction (CS), while Responsiveness (RES), Empathy (EMP), Tangibility (TAN), Service Flexibility (SF) and Complain Management (CM) were not significant. These findings support H1, H5, H6, H7, and H8 while H2, H3, H4, H9 and H10 were not supported. Customer Satisfaction (CS) ($\beta = 0.888$, $p < 0.05$) was positively related to Re-use Intention (RI), supporting H11 (see Table 8).

Following the recommendations of Shmueli et al. (2019), a PLS-Predict procedure with 10-fold cross-validation and 10 repetitions was conducted to evaluate the model's predictive performance (see Table 9). The results show that across all indicators, the root mean square error (RMSE) of the PLS model was lower than that of the linear model (LM), indicating stronger predictive capability.

Table 8

Hypotheses Testing

Hypothesis	Relationships	Std. Beta	Std. Dev.	T values	P values	PCL LL	PCL UL	f ²	Decision
H1	REL -> CS	0.120	0.053	2.250	0.012	0.036	0.212	0.016	Supported
H2	RES -> CS	-0.015	0.061	0.246	0.403	- 0.114	0.085	0.000	Not Supported
H3	EMP -> CS	-0.004	0.056	0.080	0.468	- 0.095	0.090	0.000	Not Supported
H4	TAN -> CS	0.064	0.049	1.310	0.095	- 0.013	0.147	0.005	Not Supported
H5	ASS -> CS	0.209	0.047	4.412	0.000	0.130	0.286	0.048	Supported
H6	CON -> CS	0.257	0.050	5.132	0.000	0.176	0.340	0.076	Supported
H7	PRICE -> CS	0.191	0.052	3.649	0.000	0.103	0.275	0.042	Supported
H8	GL -> CS	0.239	0.044	5.414	0.000	0.170	0.315	0.103	Supported
H9	SF -> CS	-0.018	0.052	0.349	0.364	- 0.100	0.072	0.000	Not Supported
H10	CM -> CS	-0.024	0.057	0.430	0.334	- 0.120	0.066	0.001	Not Supported
H11	CS -> RI	0.888	0.016	56.735	0.000	0.860	0.911	3.748	Supported

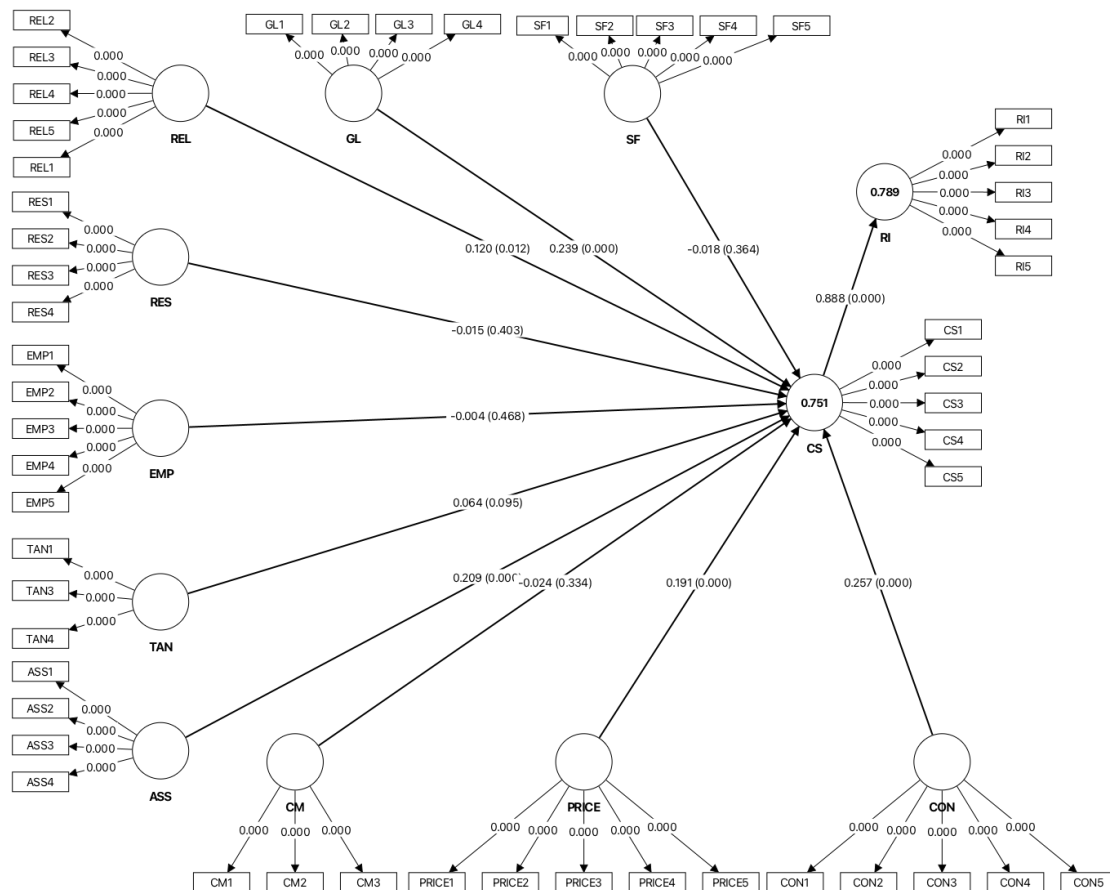


Figure 3. Assessment of Structural Model

Table 9
PLS-predict

Items	Q ² predict	PLS-SEM_RMSE	LM_RMSE	IA_RMSE	PLS-LM	PLS-IA
RI1	0.580	0.705	0.710	1.088	-0.005	-0.383
RI2	0.561	0.737	0.768	1.112	-0.031	-0.375
RI3	0.613	0.696	0.740	1.118	-0.044	-0.422
RI4	0.581	0.796	0.851	1.231	-0.055	-0.435
RI5	0.627	0.729	0.772	1.194	-0.043	-0.465

Discussion

This study examines end users of the CEP industry in Malaysia and extends the SERVQUAL framework by incorporating convenience, price, green logistics, service flexibility, and complaint management. It systematically analyses how multidimensional service attributes influence customer satisfaction and re-use intention. The results show that reliability, assurance, convenience, price, and green logistics have significant positive effects on customer satisfaction, whereas responsiveness, empathy, tangibility, service flexibility, and complaint management do not. Customer satisfaction, in turn, has a strong positive effect on re-use intention.

Overall, these findings are consistent with prior CEP research identifying customer satisfaction as a key mediating mechanism between service quality and behavioural intention (Kusumawardani & Hastayanti, 2020; Sivadas & Baker-Prewitt, 2000). At the same time, the

results indicate that under the combined influence of the PAKEJ+ policy framework and a B2C-dominated e-commerce environment, the relative importance of service dimensions has undergone a structural reconfiguration.

Reliability and assurance emerge as significant predictors of customer satisfaction, consistent with studies emphasising fulfilment accuracy, consistency, and professional credibility as core determinants of courier service evaluation (Jamal et al., 2018; Kusumawardani & Hastayanti, 2020). In the Malaysian CEP context, rising transaction frequency and parcel volumes have intensified users' reliance on timely, error-free, and predictable service performance. PAKEJ+ priorities, such as service standardisation, workforce training, and quality assurance, are therefore primarily translated into user experience through these two dimensions, which explains their continued salience.

Convenience also exerts a significant positive effect on customer satisfaction, aligning with prior research highlighting accessibility, operational simplicity, and smooth service processes (Tang et al., 2022; Lin et al., 2023). In Malaysia's B2C-oriented e-commerce environment, CEP services are deeply embedded in everyday routines, particularly among younger users. The extensive deployment of pick-up and drop-off points, together with digitalised ordering and tracking systems, has elevated convenience to a central benchmark for service evaluation. The significant effect of price further suggests that, in high-frequency usage contexts, users prioritise value-for-money assessments over absolute price minimisation, echoing Lei et al. (2022).

Green logistics emerges as one of the strongest predictors of customer satisfaction, representing a key policy-relevant finding. Consistent with Kawa and Pierański (2021) and Fan et al. (2025), the results show that environmentally responsible practices enhance perceived service value. Under PAKEJ+, green logistics has increasingly shifted from an internal operational concern to a user-recognisable service attribute, such as eco-friendly packaging, low-emission delivery, and consolidated collection models. This shift indicates that green logistics has become a salient determinant of customer satisfaction rather than an abstract form of corporate social responsibility.

By contrast, responsiveness, empathy, and tangibility do not exhibit significant effects. This does not suggest their irrelevance but rather indicates that they may have reached a baseline level within Malaysia's highly platformised and standardised CEP system. As prior research notes, when service attributes become industry norms, their differentiating power diminishes (Valaei et al., 2016). Similarly, service flexibility and complaint management do not significantly influence satisfaction. In B2C contexts, users have limited involvement in service customisation, while complaint handling is typically activated only after service failures. As a result, complaint management functions more as a risk-control mechanism than as a direct driver of satisfaction, consistent with trust-based interpretations in Gulc (2020).

Finally, customer satisfaction shows a strong positive effect on re-use intention, reinforcing extensive empirical evidence in service research (Kusumawardani & Hastayanti, 2020; Sivadas & Baker-Prewitt, 2000). Within the CEP industry, re-use intention reflects not only customer loyalty but also platform competitiveness and the long-term effectiveness of policy implementation. Under PAKEJ+, customer satisfaction thus serves as a pivotal link connecting

service quality improvement, green transformation objectives, and user behavioural outcomes.

Theoretical Implication

This study contributes to the CEP service literature by refining and contextualising the service quality–customer satisfaction–behavioural intention framework. First, by integrating traditional SERVQUAL dimensions with extended service attributes, the study advances understanding of how customer satisfaction is formed in the CEP industry. The findings demonstrate that satisfaction is shaped not by linear aggregation, but by a structured hierarchy of service attributes operating within specific usage contexts, offering empirical support for a layered conceptualisation of service quality.

Second, the results provide a contextual refinement of SERVQUAL’s applicability. The non-significant effects of responsiveness, empathy, and tangibility suggest that in highly platform-based and standardised environments, some service dimensions may become baseline expectations, thereby weakening their explanatory power. This insight supports a shift from assumptions of model universality towards context-sensitive testing of service quality frameworks in digital logistics.

Third, the study reinforces the central mediating role of customer satisfaction in linking multidimensional service attributes to re-use intention. In high-frequency CEP usage contexts, satisfaction remains the primary mechanism that translates service experience into continued use, thereby strengthening the robustness of the satisfaction–behavioural intention pathway. Fourth, by incorporating green logistics into the satisfaction framework, the study extends the conceptual boundaries of service value in CEP research. The findings reflect a theoretical shift from efficiency-oriented evaluations towards value- and responsibility-oriented assessments.

Finally, by focusing on Malaysia as an emerging e-commerce market, the study highlights the importance of regional context and market development stage in shaping users’ evaluative logics, underscoring the need for contextual sensitivity in future service quality research.

Managerial Implications

The findings offer several managerial implications for CEP practitioners operating in competitive, platform-based service environments. First, reliability and assurance remain foundational. Firms should prioritise on-time delivery, low error rates, parcel security, and employee professionalism through process stabilisation, standardised procedures, and systematic training. Re-use intention is therefore grounded primarily in service credibility rather than peripheral features.

Second, the significant effects of convenience and price highlight the importance of users’ perceived cost structures in high-frequency usage contexts. Managers should optimise pick-up and delivery processes, digital interfaces, and network accessibility, while adopting pricing strategies that emphasise alignment between cost, convenience, and service stability rather than price competition alone. Third, the strong influence of green logistics indicates that environmental practices have become user-perceivable service value attributes. Green initiatives should be embedded directly into service design, such as through eco-friendly

packaging, consolidated collection, and low-disruption delivery models, to generate sustainable differentiation.

Fourth, the non-significant effects of responsiveness, empathy, and tangibility caution against resource misallocation through over-servicing. In standardised CEP systems, marginal improvements in baseline attributes may yield limited returns in satisfaction or re-use intention. Similarly, service flexibility and complaint management function primarily as risk-control mechanisms rather than direct satisfaction drivers. Managerial focus should therefore be placed on preventing service failures *ex ante* rather than relying on *post hoc* recovery. Finally, customer satisfaction remains the central mediator between service attributes and re-use intention. Sustained user retention and long-term competitiveness in homogenised CEP markets depend on systematically enhancing overall customer satisfaction.

Conclusion

This study focuses on end users of the courier, express, and parcel (CEP) industry in Malaysia and systematically examines the key factors influencing re-use intention. The study elucidates the mechanisms by which CEP service experiences are translated into sustained usage behaviour from the user perspective by developing and empirically testing an integrated research framework that incorporates service quality dimensions, extended service attributes, customer satisfaction, and re-use intention.

The findings demonstrate that different service attributes play distinct roles in shaping customer satisfaction. Reliability, assurance, convenience, price, and green logistics exert significant positive effects on customer satisfaction. In contrast, some traditional service quality dimensions do not show significant effects in the current context, indicating a structural shift in users' service evaluation logic. Moreover, customer satisfaction is confirmed as a key mediating variable linking multidimensional service attributes to re-use intention, underscoring the central role of overall service experience in users' continued usage decisions.

At the theoretical level, this study enriches understanding of service quality constructs in the CEP industry through a contextualised examination and extension of the SERVQUAL model, while also broadening conceptualisations of logistics service value. By focusing on end-user behaviour in an emerging e-commerce market, the study provides empirically grounded, contextually sensitive insights into re-use mechanisms within digitalised logistics service environments.

Overall, the findings suggest that CEP users' re-use intention is grounded in an integrated evaluation of service stability, predictability, and perceived overall value. This insight offers a valuable foundation for future research seeking to further explore user behaviour mechanisms across different market contexts and service models.

Limitations and Directions for Future Studies

Despite its contributions to understanding the determinants of re-use intention among CEP users in Malaysia, this study is subject to several limitations, which also suggest avenues for future research.

First, the study relies on cross-sectional survey data. Although this approach is widely adopted in service quality and user behaviour research, it constrains the ability to draw strong causal conclusions. Future research could employ longitudinal designs or experimental methods to capture the dynamic evolution of service experiences, customer satisfaction, and re-use intention, thereby providing a more nuanced account of behavioural formation processes.

Second, the sample consists exclusively of end users of the Malaysian CEP industry, and the findings are therefore shaped by the specific market environment and user structure examined. Although this context provides valuable insights into user behaviour in emerging e-commerce markets, the generalisability of the results to other countries or markets at different stages of development remains to be established. Future research could employ cross-national or cross-regional comparative analyses to test the robustness of the proposed framework across diverse institutional and market contexts.

Finally, although this study integrates multiple dimensions of service quality and extended service attributes, it does not encompass all relevant factors in CEP service contexts. Future research could incorporate user heterogeneity variables, such as usage frequency and service channel preferences, as well as platform-related characteristics, to examine differentiated mechanisms underlying service evaluation and re-use decisions across user groups.

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