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**THE INFLUENCE SERVICE QUALITY OF LAST-MILE DELIVERY
SERVICES ON CUSTOMER SATISFACTION
IN MALAYSIA**

By



TAN WEI BIN

UUM
Universiti Utara Malaysia

**Thesis Submitted to
School of Technology Management & Logistics (STML)
Universiti Utara Malaysia,
in Partial Fulfillment of the Requirement for the Master of Sciences
(Supply Chain Management)
April, 2024**

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Kolej Perniagaan
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ABSTRACT

In the dynamic landscape of last-mile delivery services, customer satisfaction stands as a critical metric for success. This study investigates the multifaceted influences of delivery, packaging, technology, accessibility and trust on customer satisfaction within the context of last-mile delivery services. Expectancy-Disconfirmation Theory and SERVQUAL model serve as the underpinning theory in this study. This study applies the quantitative research method to collect data through questionnaire surveys distributed to customers of last-mile delivery services within Kuala Lumpur context. The sampling technique applied is the convenience sampling technique in which respondents are selected based on their availability, accessibility or willingness to participate. There are 401 respondents participating in this study and the data been analyzed using SPSS. The findings underscored the pivotal role that delivery price, speed and accuracy, packaging, technological advancements, ease of accessibility and trustworthiness play in shaping the perception of service quality and subsequently influencing customer satisfaction levels. Notably, trust emerged as the most influential factor contributing towards customer satisfaction in last-mile delivery services.

Keywords: Last-mile delivery, customer satisfaction, delivery, packaging, technology, accessibility, trust



ABSTRAK

Dalam landskap dinamik perkhidmatan penghantaran last-mile, kepuasan pelanggan merupakan metrik penting untuk kejayaan. Kajian ini menyiasat pengaruh berbilang sisi penghantaran, pembungkusan, teknologi, aksesibiliti dan kepercayaan terhadap kepuasan pelanggan dalam konteks perkhidmatan penghantaran last-mile. Teori Pengharapan-Pengesahan dan Model SERVQUAL berfungsi sebagai teori asas dalam kajian ini. Kajian ini menggunakan kaedah penyelidikan kuantitatif untuk mengumpul data melalui soal selidik yang diedarkan kepada pelanggan perkhidmatan penghantaran last-mile dalam konteks Kuala Lumpur. Teknik persampelan yang digunakan adalah teknik persampelan keselesaan di mana responden dipilih berdasarkan ketersediaan, aksesibiliti atau kesediaan untuk mengambil bahagian. Terdapat 401 responden yang mengambil bahagian dalam kajian ini dan data dianalisis menggunakan SPSS. Penemuan kajian menekankan peranan penting harga, kelajuan dan ketepatan penghantaran, pembungkusan, kemajuan teknologi, kemudahan aksesibiliti dan kebolehpercayaan dalam membentuk persepsi tentang kualiti perkhidmatan dan seterusnya mempengaruhi tahap kepuasan pelanggan. Secara ketara, kepercayaan muncul sebagai faktor yang paling berpengaruh dalam menyumbang kepada kepuasan pelanggan dalam perkhidmatan penghantaran batu terakhir.

Kata Kunci: Penghantaran batu terakhir, kepuasan pelanggan, penghantaran, pembungkusan, teknologi, aksesibiliti, kepercayaan

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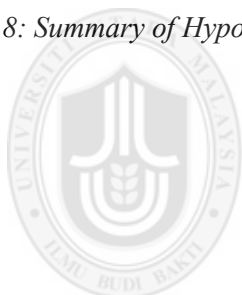
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LIST OF ABBREVIATIONS

A	Accessibility
CMX-LMD	Customer Delivery Experience- Last Mile Delivery
CS	Customer Satisfaction
D	Delivery
EDT	Expectancy-Disconfirmation Theory
LML	Last-mile Logistics
LSP	Logistics Service Provider
P	Packaging
P-P	Probability-Probability
Q-Q	Quantile-Quantile
SERVPERF	Service Performance
SERVQUAL	Service Quality
SPSS	Statistical Package for Social Sciences
TE	Technology
TR	Trust
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CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This chapter provides an overview of the study. It outlines the rationale for conducting this research by exploring problem statements, research objectives and research questions. The significance and contribution of this study are also discussed. This chapter also provides a concise introduction to specialized terminology and key concepts related to the topic of study. Lastly, it outlines the organizational structure of this study.

1.2 Background of Study

There has been a notable rise in academic interest for the field of last-mile logistics (LML) driven by several key factors such as the rise in urbanization and population growth, the continuous expansion of e-commerce, shifts in consumer preferences, ongoing innovation and the growing attention on sustainability (Alijohani & Thompson, 2019). Last-mile logistics encompasses the strategic planning, efficient execution and meticulous control of transportation and storage activities from point of origin to the end user aimed at ensuring the efficient and timely delivery of goods to the customer (Olsson et al., 2023). Figure 1.1 show the difference between first-mile, middle-mile and last-mile logistics. First-mile refer to the initial segment of a logistics or transportation journey in which the goods are transported from the manufacturer to the transportation hub, middle-mile refer to the intermediate segment in which the goods

are transported between distribution center or transportation hub and last-mile refer to the final segment in which the goods are transported from distribution center to customer or stores (Alamsyah & Purevdorj, 2021). Last-mile delivery is the last phase of the delivery process and it serves as the interface where the last-mile intersects with the receiver (Ranieri et al., 2018). Notably, it is widely acknowledged as the most complex, costly and inefficient part of the logistics process due to the difference of delivery address, the difference of customer requirements and the requirements for efficient delivery while maximizing operational efficiency and customer satisfaction (Rai et al., 2019).

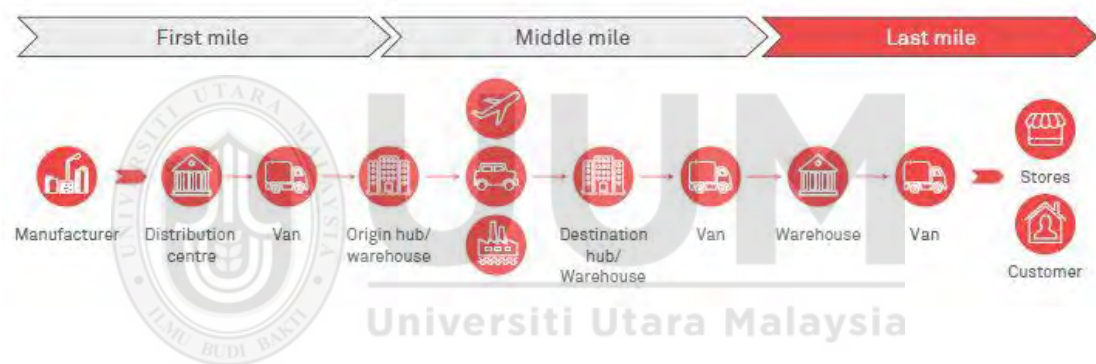


Figure 1. 1

First Mile, Middle Mile & Last Mile Logistics

Source: Abdul Gafoor Payyoli (2022)

In the past few years, last-mile delivery has grown in significance to the success of e-commerce especially during and after the Covid-19 pandemic as consumers worldwide turn to buy online for their routine and basic needs (Rai et al., 2021). Therefore, the e-commerce that was growing at an exponential rate had disrupted the supply chains and exerted a lot of demand on the last-mile delivery industry (Srivatsa & Marathe, 2021). With the surge in online shopping, last-mile delivery has become a significant phase in the logistics service process because it involves direct interactions with customers and

exerts a substantial influence on customer satisfaction (Li et al., 2020). Recent research underscores the critical role played by the last-mile delivery experience in shaping the overall user experience of online shopping (Xiao et al., 2017). Customers are now actively seeking reliability in delivery services, alongside the flexibility to choose both the delivery's time and location (Pham et al., 2019). According to a recent study, 85% of recipients choose e-commerce retailers based on how reliable and trustworthy their last-mile delivery is (UPS, 2021). In order to satisfy customers and stay competitive, retailers and logistics service providers must concentrate on offering a quick and excellent last-mile delivery experience (Sulkowski et al., 2022). When developing sustainable services for logistics providers, one of the pivotal elements should be the quality of services that customers perceive such as trust, delivery time, mobile applications, tracking capabilities and communication with the delivery personnel (Ejdys & Gulc, 2020).

Customers are extremely sensitive about the accuracy and speed of delivery when it comes to their satisfaction with the last-mile delivery services (Mangiaracina et al., 2019). Moreover, Merkert et al. (2022) concludes that customers place high value towards promptness and reliability of delivery. Customers anticipate convenience and would like to avoid dealing with delivery issues such as delivery delays, incorrect delivery or damaged goods. The user has a favourable experience that influences their loyalty and satisfaction when the delivery process lives up to their expectation (Mujahid et al., 2021). Customer satisfaction is impacted by punctual delivery, improved service quality, favourable perceived customer value and trustworthiness in logistics service providers (Uzir et al., 2021). In the long-term perspective, customer satisfaction serves as the bedrock of a thriving business which underpinning its sustained success (Pham et al., 2019; Sulkowski et al., 2022; Vakulenko et al., 2019).

Furthermore, the customer experience during the product delivery process is important in order to improve the overall customer satisfaction. Rao et al. (2011) found out that customer satisfaction with logistical quality and cost directly influences their satisfaction with purchases and their likelihood of remaining as customers. Researchers also emphasize the importance of speed, precise and efficient in delivery as a key factor for creating a customer's favourable impression of a good or service (Vakulenko et al., 2019). A good and positive experience can foster customer loyalty, generate positive reviews and stimulate recommendations, all of which have a direct impact on sales and revenue growth (Vakulenko et al., 2019). Despite being the most expensive component of the supply chain (Pham et al., 2019), some research shows that last-mile delivery represents the juncture where customers receive the greatest value creation (Mangiaracina et al., 2019). Conversely, a poor and unfavourable experience with the product delivery process can erode customer trust, prompt negative feedback and ultimately drop sales.

Recently, last-mile delivery is encountering a multitude of challenges that are impeding its ability to meet customer satisfaction effectively. The emergence of the knowledge gap underscores the importance of this research to bridge the gap and ultimately enhance the development of more efficient and customer-centric delivery solutions. The first issue is about the increased volume of parcels as the regional concentration and average number of online orders are increasing (Boysen et al., 2019). According to the Pitney Bowes Parcel Shipping Index (2023), the worldwide volume of parcels experienced a dramatic increase of 150% from 64 billion in 2016 to 161 billion in 2022 and is estimated rise to 225 billion by 2028. With more parcels to deliver, maintaining timely-delivery becomes a greater challenge.

Additionally, many online retailers have committed to providing fast delivery options such as next-day or even same-day deliveries as a fundamental part of their service offerings (Yaman et al., 2012). This means that last-mile delivery services are often under intense time pressure to meet these tight delivery deadlines. Besides, the spike of delivery due to unexpected events or cycle of holidays as well as sales seasons can also lead to the increased number of parcels to be delivered (Mun & Syriac, 2018). Longer delivery times can lead to customer dissatisfaction and lost business. Therefore, last-mile delivery services face varying workloads that require them to be adaptable and capable of quickly adjusting their operations (Boysen et al., 2020).

Moreover, a physically demanding sector like parcel delivery that sometimes has challenging working conditions and low salaries makes it difficult in hiring the required manpower (Vrhovac et al., 2023). Furthermore, distribution disturbance, delay in distribution, poor service quality and weak distribution network will negatively affect customer experience and result in dissatisfaction by bringing uncertainty, inconvenience and a perception of poor service quality (Boyer, Prud'homme, & Chung, 2009; Laseinde & Mpofu, 2017; Pronello, Camusso, & Valentina, 2017). Various internal factors such as mechanical breakdowns and external factors such as car accidents or road constructions can create disruptions in last-mile delivery (Dettenbach & Ubber, 2015). Customers may encounter delays, damaged goods and a perception of subpar service quality which ultimately results in dissatisfaction.

Customer satisfaction is defined as the evaluation by customers of a product or service in terms of whether that product or service has met their needs and expectations (Naini et al., 2022). To measure customer satisfaction, service quality serves as a fundamental determinant of customer satisfaction (Tsega, 2020). Service quality is commonly

defined as the assessment customers make by comparing their expectations with their perceptions of the service received (Sugiarto & Octaviana, 2021). Therefore, providing services with the highest quality is essential for satisfying customers (Lina, 2022). There were various models have been proposed to access service quality with one of the best models is SERVQUAL developed by Parasuraman et al. (Tsega, 2020). SERVQUAL is the most often used approach for measuring service quality as it compares customers' expectations before a service encounter and their perceptions of the actual service delivered (Kolat et al., 2020). Ibojo & Asabi (2015) also concluded that service quality is an important indicator of customer satisfaction. Therefore, this paper investigated the influence of service quality on customer satisfaction within the context of last-mile delivery.



1.2.1 Last-mile Delivery in Malaysia

In the context of Malaysia, last-mile delivery is also experiencing significant growth due to the steady expansion of e-commerce in Malaysia. As per the New Straits Times (2022), 9 out of 10 Malaysians are anticipated to shop online, with 88% of the country's population currently being digital consumers. Figure 1.2 shows the statistics of e-commerce income performance in Malaysia from the first quarter of 2022 to the first quarter of 2023. In the first quarter of 2023, Malaysia's e-commerce income experienced a noteworthy rise of 10.4% year over year to reach MYR 291.7 billion (\$62.6 billion USD). In 2022, the revenue generated by e-commerce was MYR 1.1 trillion (\$240 billion USD), a 6% increase over the previous year.



Figure 1. 2

Income of E-Commerce Performance, Malaysia, Q1 2022 - Q1 2023

Source: Digital News Asia (2023)

The explosive expansion of e-commerce has led to consciousness of the significance of logistics in each step of electronic commerce. As a result, there is an increasing reliance on third-party logistics service providers (LSPs) like courier, express and parcel (CEP) by retailers and business owners in order to ensure swiftly and efficiently delivery that fosters customer satisfaction. In Malaysia, LSPs include GDEX, DHL, POS Malaysia, J&T, KGW Logistics, Ninjavan and LalaMove (Zainuddin et al., 2022). Notably, it has elevated last-mile delivery to a crucial element in customer satisfaction as consumers are expecting swift, reliable and convenient delivery options (Yeo et al., 2017). Thus, efficient last-mile logistics are essential to bridge the gap between businesses and customers. Therefore, the question arises as to are Malaysian customers satisfied with the last-mile delivery provided as delivery concerns significantly affect people's decision when they are planning to buy online (Bharucha, 2017).

There is a case of increasing complaints by consumers and merchants against Shopee happening in Malaysia in 2022 regarding the dissatisfaction with their first and last-

mile delivery services as Shopee removed the option to choose their preferred courier service (FMT Reporters, 2022). When customers are unable to select their preferred courier, they lose a level of control and flexibility in the delivery process. This can result in various issues such as longer delivery times, subpar service quality and increased uncertainty about the fate of their orders. The increase in complaints from both consumers and merchants emphasizes that issues in the first and last-mile delivery services were causing problems for both parties. For consumers, it could mean delayed or problematic deliveries. For merchants, it could result in customer complaints, potential loss of sales and damage to their reputation. The dissatisfaction expressed by consumers and merchants can lead to a negative perception of Shopee's overall service quality. Customers who experience difficulties with delivery services are more likely to view their overall shopping experience with Shopee negatively which can result in reduced satisfaction and potentially fewer repeat purchases.

Therefore, this study aims to determine the influence of service quality on customer satisfaction in using last-mile delivery services primarily in the Malaysian context. It explored how delivery, packaging, technological advancements, accessibility factors and the establishment of trust between customers and delivery services collectively impact overall customer satisfaction. By carefully examining these dimensions, this research investigates how these elements can contribute positively to or detract from customer satisfaction. This paper holds significance due to its direct link to consumer satisfaction. Understanding and enhancing last-mile logistics in Malaysia can have far reaching implications for the industry as well as customer experience and satisfaction.

1.3 Problem Statement

Customer satisfaction within the last-mile delivery is still a new and unexplored aspect within the realm of logistics. While several studies have explored this topic (Lai et al., 2022; Olsson et al., 2023; Cho et al., 2021), there still exists a multitude of gaps when it comes to comprehensively understanding the customer experiences during product delivery. One of the disparities is the theoretical gap. Theoretical gap emphasizes the need for theoretical support to be applied to specific research concerns to produce new perspectives. This gap stems from a lack of established theory in the field which creates opportunity for further exploration and understanding (Müller-Bloch & Kranz, 2014). The theoretical gap can be seen in a recent study by Vrhovac et al. (2023). They introduced a new measuring instrument known as the Customer Delivery Experience-Last Mile Delivery (CMX-LMD) scale that will facilitate the assessment of customer experience in last-mile delivery. The development of this tool makes it easier to compare various customer experiences throughout the last-mile delivery process which might be crucial for enhancing the quality of currently offered services in this field.

Nevertheless, it is crucial to emphasize that this research primarily evaluated six factors including delivery efficiency, parcel tracking, seamless delivery, visual appeal, anticipation enjoyment and convenience. Vrhovac et al. (2023) did not investigate cost-related factors which constitute the price paid by customers. Price and cost considerations are important in last-mile delivery due to their profound implications for customer satisfaction and business success. High speed and low costs are often indicated as the key to success of last-mile delivery (Chen & Pan, 2016). Logistics costs play a central role in shaping the price customers pay for last-mile delivery. These costs are typically determined by factors like transportation time and distance (Gavaers et al.,

2014). This omission aligns with the call for future study as proposed by Olsson et al. (2023) to investigate the financial perspective of customer experience in last-mile delivery. This thereby underlining the significance of the current study in filling this theoretical gap left by prior research.

Furthermore, as highlighted by Kim et al. (2014), the increasing need for last-mile delivery services necessitates the optimization of logistics service providers to minimize transportation and sortation costs. This optimization directly impacts the affordability of last-mile delivery for customers. When distribution networks are efficiently designed to reduce costs, service providers can offer competitive pricing which benefits customers by keeping delivery costs in check. Price and cost considerations in last-mile delivery are intertwined with customer satisfaction and the economic viability of delivery services. Customers seek affordability, speed and value for their money, and businesses that can strike the right balance between cost-efficiency and service quality are better positioned to meet these customer expectations, foster loyalty and thrive in the competitive landscape of last-mile delivery. Therefore, it is important to consider the price and cost considerations as one of the factors to investigate the customer experience for last-mile delivery. In this study, price considerations have been included as part of the delivery dimensions.

Additionally, it is crucial to recognize that the last-mile delivery sector within the logistics industry is currently undergoing a significant transformation driven by innovations technologies (Jamous et al., 2022). E-retailers have recognized the importance of staying at the forefront of these technological advancements to enhance customer satisfaction. This strategic focus on technology is not only about competing effectively but also about reducing the substantial costs associated with the final stage

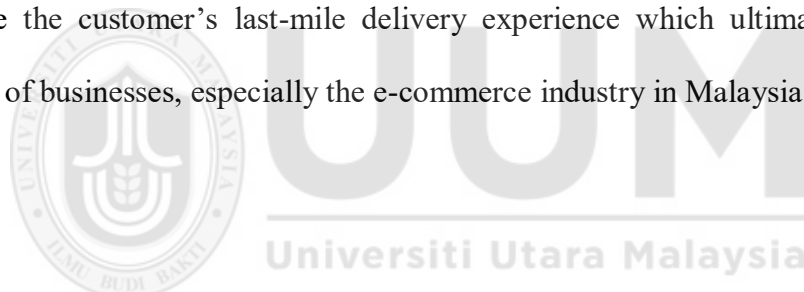
of the delivery process (Mangiaracina et al., 2019). However, less previous research has taken into account the influence of technology on customer satisfaction in the context of last-mile delivery. This omission aligns with the suggestions for future study by Lai et al. (2022) to investigate the technology acceptance model on customer satisfaction in last-mile delivery. It

The technology aspects encompass a wide range of features including parcel tracking, proof of delivery and the use of chatbots for customer support (Frederico, 2023; Barenji & Montreuil, 2022). These elements play a critical role in improving the efficiency of last-mile delivery, improving communication and elevating the overall quality of service. Consequently, it would be incomplete to evaluate customer satisfaction in the context of last-mile delivery without taking the impact of technology into account as technology is an indispensable component of the overall customer experience which significantly shapes the customers' perceptions of the delivery service and its efficiency. In this study, the influence of technology has been integrated within the framework of technology dimensions.

Other than that, the gap between different research contexts in terms of where the study is conducted and the types of settings and even environments are involved. In terms of the research location, most of the research was conducted outside the Malaysia context. For example, the study by Vrhovac et al. (2023) was conducted in Serbia, the study by Cho et al. (2021) and Lai et al. (2022) was conducted in China as well as the study by Olsson et al. (2023) was conducted in Sweden. Consequently, there has been a notable lack of studies focusing on the Malaysian context. It is evident in Scopus, where only 25 research papers are dedicated to Malaysia as compared to substantially larger numbers in countries such as United State (440 papers), China (351 papers) and

Germany (205 papers). This prevailing gap underscores the need for this research in order to address these specific gaps by focusing on the customer satisfaction in last-mile delivery within the unique Malaysian setting.

Thus, this paper attempts to bridge these gaps by investigating the critical aspects influencing customer satisfaction in Malaysia's last-mile delivery. Specifically, this study focused on the quality of delivery, the packaging of products, the role of technology, the range of accessibility options and the establishment of trust between customers and delivery services. These factors are crucial in shaping the customer experience as a whole and their likelihood of using the same delivery services in the future. Through this study, strategies and recommendations can be developed to improve the customer's last-mile delivery experience which ultimately drives the success of businesses, especially the e-commerce industry in Malaysia.



1.4 Research Objectives

Generally, the primary objective of this study is to thoroughly evaluate and analyze the customer satisfaction in last-mile logistics services within the context of Malaysia.

Specifically, this study aims:

- i. To examine the influence of delivery on customer satisfaction in last-mile delivery services.
- ii. To investigate the influence of packaging on customer satisfaction in last-mile delivery services.

- iii. To examine the influence of technology on customer satisfaction in last-mile delivery services.
- iv. To investigate the influence of accessibility on customer satisfaction in last-mile delivery services.
- v. To examine the influence of trust on customer satisfaction in last-mile delivery services.
- vi. To identify the most contributing factor towards customer satisfaction in last-mile delivery services.

1.5 Research Questions

Generally, this study attempted to identify and explore the impact of delivery, packaging, technology, convenience and trust on customer satisfaction in last-mile delivery services. Thus, this study aimed to address the following research questions:

- i. Does delivery influence customer satisfaction in last-mile delivery services?
- ii. Does packaging influence customer satisfaction in last-mile delivery services?
- iii. Do technology factors influence customer satisfaction in last-mile delivery services?
- iv. Does accessibility influence customer satisfaction in last-mile delivery services?
- v. Does trust influence customer satisfaction in last-mile delivery services?

vi. Which factor is the most contributing towards customer satisfaction in last-mile delivery services?

1.6 Significance of Research

1.6.1 Practical Contribution

Conducting research on customer satisfaction towards last-mile delivery services holds significant importance as it enables organizations to assess customer satisfaction with the delivery experience and their willingness to repeat their services in the future. This research serves as a valuable tool for e-tailers and logistics service providers to enhance customer satisfaction and loyalty while also optimizing their operations. By actively seeking and incorporating feedback from customers, businesses can refine their services to align more closely with consumer expectations which assist in fostering long-term relationships and positioning themselves for sustained success in a competitive marketplace. In essence, customer satisfaction research within the product delivery process is an instrumental strategy for businesses aspiring to thrive in the digital age by delivering precisely what their customers desire and demand.

Furthermore, the significance of this paper also lies in its direct association with consumer satisfaction and its potential implications for their future engagement with the same logistics service providers (LSPs). Understanding and improving last-mile logistics in Malaysia can have far-reaching consequences not only for the logistics industry but also for the overall customer experience and satisfaction. By identifying areas for improvement, this research aims to contribute valuable insights that can inform strategies and practices in the Malaysian last-mile logistics sector which

ultimately improve customer satisfaction and loyalty. This research holds the promise of positively impacting both the industry's competitiveness and the overall satisfaction of customers in the Malaysian last-mile delivery ecosystem. It underscores the pivotal role of customer satisfaction in shaping the success and resilience of the industry while elevating the overall customer experience.

Industry practitioners, policymakers, and businesses can benefit from this research with a better understanding of the variables affecting customer satisfaction in last-mile delivery. It empowers them to make informed decisions, devise strategies and implement practices that align with customer expectations and industry best practices. By using the insights from this research, businesses can align their practices with customer expectations. This alignment can lead to reduced customer complaints and improved customer satisfaction which are crucial for customer retention and loyalty. Companies are able to make informed decisions about how to invest in technology, train their workforce or optimize their delivery processes to meet customer needs more effectively.

1.6.2 Theoretical Contribution

This research expands the knowledge in logistics, e-commerce and customer satisfaction. Specifically, it contributes theoretically by addressing gaps related to the omission of cost-related factors, the role of technology and the limited focus on the Malaysian context in previous research on customer satisfaction in last-mile delivery.

Moreover, this study offers insight into the connections between delivery, packaging, technology, accessibility and trust and how these factors collectively influence

customer satisfaction. These insights can have broader implications beyond the last-mile delivery sector to various industries.

Furthermore, this research's findings serve as a reference point for future researchers and academics interested in customer satisfaction in last-mile delivery. By building upon these findings, scholars can delve deeper into related topics and further advancing the knowledge and understanding in this area.

1.7 Scope of Research

This study specifically tailored to focus on the last-mile delivery context and not included the considerations of the first-mile and middle-mile delivery segments. By narrowing the scope, this study aims to delve deeply into the unique challenges, dynamics and factors influencing customer satisfaction within the last-mile delivery.

Furthermore, this study primarily focused on the geographical boundaries of Malaysia. This geographic restriction is essential for understanding the unique challenges and dynamics of last-mile delivery in the Malaysian context. It will not include cross-border deliveries or international shipping as these may involve different regulatory frameworks and customer expectations.

In specific, this research focused on consumers at Kuala Lumpur as it is one of Malaysia's largest and most economically vibrant cities (Yasin et al., 2022). Besides, residents in Kuala Lumpur boast notably high levels of household disposable income and consumer spending in Malaysia (Fung, 2020). Moreover, projections from Euromonitor International (2022) indicate that Kuala Lumpur is anticipated to represent

38% of the nation's total consumer spending by 2030. Therefore, Kuala Lumpur as a major economic hub with a large consumer market, high levels of household disposable income and significant projections for future consumer spending makes it an ideal location as a research hub to explore trends in last-mile delivery and their influence on customer satisfaction. By focusing on Kuala Lumpur, the researcher can gain valuable insights into the ways to enhance last-mile delivery services and improve customer satisfaction not only within the city but also across Malaysia and potentially beyond.

Lastly, the factors that will be taken into consideration in this study are delivery, packaging, technology, accessibility and trust. Each of these factors performs a crucial function in shaping the customer experience and can provide valuable insights for enhancing service quality and customer retention in the last-mile delivery industry.



1.8 Limitation of Research

The first limitation is the methodological limitation in which the research's methodological approach is focus on data collection and analysis within the Malaysia context. It may limit the generalizability to other nations or regions with different logistical infrastructures, cultural norms and customer expectations. The findings derived from Malaysia's last-mile delivery landscape may not directly apply to areas with distinct logistical challenges or consumer behaviors.

Additionally, there is focus limitation in which this research specifically targets consumers in Kuala Lumpur. While Kuala Lumpur represents as capital and a major urban center in Malaysia with its unique set of consumer behaviours and preferences, it may not provide a complete representation of consumers in more rural or less

economically developed areas within the country. This is because rural areas often present distinct challenges including longer delivery times, limited access to e-commerce and different socioeconomic factors that can influence consumer satisfaction.

Besides, there is also variable limitation as this study may not fully account for external factors that can influence customer satisfaction such as the economic conditions, competitive landscape changes or unforeseen events like natural disasters that impact delivery services.

Furthermore, the customer preferences and satisfaction levels can vary significantly across demographic groups such as level of education, employment or geographic location. Therefore, this study may not fully capture these variations or provide a detailed analysis of customer segments.



1.9 Definition of Key Terms

1.9.1 Customer Satisfaction

Conceptual Definition

Customer satisfaction refers to the gauge assessing the level of contentment among customers regarding a company's offerings, including its products, services and capabilities (ASQ, 2023).

Operational Definition

Customer satisfaction in last-mile delivery refer to the measure of how satisfied customers are with the entire delivery process and their experience throughout (Mogire et al., 2023).

1.9.2 Service Quality

Conceptual Definition

Service quality is defined as the assessment customers make by comparing their expectations with their perceptions of the service received (Sugiarto & Octaviana, 2021). It refers to the extent to which a service meets or exceeds customers' expectations and requirements. It encompasses various dimensions such as reliability, responsiveness, assurance, empathy and tangibles.

Operational Definition

Service quality in last-mile delivery is defined as the degree to which the delivery service provider consistently meets or exceeds customer expectations and requirements during the final stage of the supply chain (Uzir et al., 2021). It includes the aspect of delivery price, speed and accuracy, quality of packaging materials, integration of technology solutions, ease of accessibility and establishment of trust.

Delivery

Delivery represents various aspects of the delivery process such as delivery price, speed and accuracy. It encompasses how well the product is transported from the distribution center to the customer's doorstep (Puri, 2022). Delivery price refers to the cost that

customers paid for the use of last-mile delivery services (Hagen & Scheel-Kopeinig, 2021). Delivery speed or timeliness refers to the time taken to transport goods from the transportation hub to the final destination (Wang et al., 2021). Accuracy in last-mile delivery refers to the precision and correctness of delivering the correct products to the intended recipients (Boysen et al., 2020).

Packaging

Packaging refers to the quality and appropriateness of how products are packaged for delivery (Kalpana et al., 2019). It includes factors like protective packaging, eco-friendliness and the condition in which the product arrives. Protective packaging can ensure that the products arrive at its destination in optimal condition and free from damage or defects. Moreover, a conscientious approach to packaging involves a commitment to eco-friendliness in order to acknowledge the environmental impact of materials used and striving for sustainability (Nguyen et al., 2020).

Technology

Technology refers to the integration of advance technology such as delivery tracking systems, mobile applications and digital communication channels to enhance customer experience (Markovic et al., 2020). This technological paradigm shift has revolutionized the traditional way of last-mile delivery by offering customers unprecedented levels of visibility, convenience and communication throughout the entire delivery process (Shah & Chan, 2021).

Accessibility

Accessibility refers to the ease and convenience with which customers can easily access and use the last-mile delivery services (Zhou et al., 2020). A crucial aspect involves the availability of diverse delivery options that cater to varying customer needs and preferences (Nguyen et al., 2019). This inclusivity ensures that customers can choose the most suitable delivery method to meet their specific requirements such as standard delivery for cost-effectiveness or express delivery for urgent items.

Trust

Trust refers to the level of confidence and belief that customers have with the delivery service provider (Leon et al., 2023). It includes factors like the reliability of the service, the integrity of the delivery personnel and the overall trustworthiness towards the logistics service providers.

1.10 Organization of Thesis

This research was structured across five chapters. The first chapter provided an introduction including background information, problem statements, research objectives, research questions, scope, limitations, significance, key terms definition and organization of the thesis. Chapter two discussed the literature review of previous studies and hypotheses development. It consists of the definition and concepts of variables, previous study on variables, hypotheses development, theoretical framework and underpinning theory. The third chapter outlined the research method which included the research framework and summary of research hypotheses, research design,

population, sample and sampling technique, questionnaire design, research measurement, data collection and data analysis technique. In the fourth chapter, an examination of the data and findings was carried out through processes such as reliability analysis, normality testing, descriptive statistics and inferential statistics. This chapter also delved into the discussion of hypotheses. The concluding chapter, chapter five, furnished a thorough overview the entirety of the study by presenting the outcomes derived from the data analysis concerning the research hypotheses. Subsequently, this chapter ended by providing suggestions for future research.



CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Overview

This chapter discussed the definition and concept of the variables. A comprehensive review of previous studies related to these variables was undertaken. This chapter also involved the development of hypotheses as well as introduction of theoretical framework and underpinning theory to measure customer satisfaction in last-mile delivery.

2.2 Previous Study on Variables

2.2.1 Customer Satisfaction

In the realm of last-mile delivery, customer satisfaction is critical as it has a profound impact on customer loyalty, the likelihood of repeat purchases and the overall business success (Olsson et al, 2023). When the delivery process meets with the customer's expectations, it contributes to a positive customer experience that in turn strengthens customer loyalty and satisfaction (Mujahid et al., 2021). Achieving customer satisfaction in last-mile delivery is contingent on various factors including on-time delivery, superior service quality, a positive perceived value by customer and trust in logistics service providers (Uzir et al., 2021).

Scholars widely believe that the quality of logistics services significantly influences customer satisfaction and significantly influences the likelihood of customers choosing the same service again (Cho et al., 2021). Based on a study by Rao et al. (2011) from

260 online retailers, they discovered the level of customer satisfaction regarding the quality and cost of logistics directly correlated with their satisfaction with purchases and the rate at which they remain loyal customers. Furthermore, Yang & Tsai (2007) found that customer satisfaction in the logistics service process will be positively and significantly impacted by core service quality and remedial service quality.

According to Tsega (2020), service quality must align with the demands or the expectations of customers to achieve customer satisfaction. To attain customer satisfaction, services must exhibit high quality and be delivered in a proper manner. It is imperative to verify whether the service is delivered effectively and to assess the level of service quality delivered. The researcher also emphasizes that one of the best models to measure the quality of service is SERVQUAL (Tsega, 2020).

Ma (2014) investigated the connection between service quality and customer satisfaction within the logistics industry. The results of that study underscored the positive and meaningful impact of the five dimensions of service quality on customer satisfaction (Ma, 2014). These findings collectively emphasize the substantial role played by service quality in the realm of logistics services which underline its capacity to directly impact customer satisfaction, retention and the overall customer experience.

Customer perception of service quality such as trust, delivery timeliness, mobile applications, shipment tracking capabilities and interactions with delivery personnel should be important elements for logistics providers (Ejdys & Gulc, 2020). If the customer is dissatisfied with the delivery process after the delivery stage, their level of satisfaction dramatically declines which proves the influence of the delivery service on the entire customer satisfaction (Jiang & Rosenbloom, 2005). In the long-term perspective, it is crucial to recognize that customer satisfaction acts as the foundational

pillar of a thriving business which underpinning its sustained success (Pham et al., 2019; Sulkowski et al., 2022; Vakulenko et al., 2019). Thus, ensuring customer satisfaction in the complex landscape of last-mile delivery is not only about meeting expectations but also about securing the continued vitality and prosperity of the business.

2.2.2 Independent Variables

Independent variables are the factors or variables that are hypothesized to influence or affect the dependent variable. In this research, there are five independent variables which are delivery, packaging, technology, accessibility and trust. These variables represent the service quality that can directly impact the customer's experience and overall satisfaction with the last-mile delivery service.

2.2.2.1 Delivery

Vasić et al. (2019) emphasize that the delivery pricing directly influences users' perception of the transaction's usefulness and the value it delivers. This in turn will influence customer satisfaction. The study mentioned that customers will evaluate the value they obtain in comparison to the cost they spend. If the delivery price is perceived as acceptable and reasonable, it can contribute to elevated levels of customer satisfaction (Vasić et al., 2019). Moreover, research by Kiba-Janiak et al. (2022) highlights that e-customers mostly consider price when choosing the last-mile delivery option. This indicates that customers consider the delivery price as a crucial factor in their decision-making process and it can significantly influence their satisfaction with the delivery service. Customers will evaluate the value they obtain in comparison to the cost they spend. If the delivery price is perceived as acceptable and reasonable, it can

contribute to higher levels of customer satisfaction. Conversely, if the delivery price is high and does not align with the perceived value of the service, it can negatively impact customer satisfaction.

Furthermore, the package distribution to the customer necessitates quick delivery with the least amount of time spent in transit to meet the customer's expectations in terms of delivery speed (Vrhovac et al., 2023). It is important to note that customers are highly demanding for the accuracy and speed of delivery (Mangiaracina et al., 2019). Merkert et al. (2022) have also concluded that customers highly prioritize both speed and accuracy of the delivery process. Besides, efficiency and timeliness are key factors in the delivery process as customers expect their packages to be delivered promptly and within the promised timeframe (Kapsler & Abdelrahman, 2020). Zhong et al. (2021) suggested that customers' expectations for faster delivery times contribute to their satisfaction with the last-mile delivery service. Delivery speed is one of the most appreciated factors by customers in the measurement of delivery service quality (Quan et al., 2022). Customers expect shorter delivery times and the speed of delivery is considered a crucial attribute in their evaluation of the last-mile delivery service.

Additionally, research by Quan et al. (2022) highlighted that accuracy along with delivery reliability and timeliness is a measurement item that reflects the quality of the delivery service. Customers appreciate accurate and error-free deliveries, and it is considered one of the most appreciated factors by customers in their evaluation of the last-mile delivery service (Quan et al., 2022). Other than that, Hagen & Scheel-Kopeinig (2021) emphasised that customers prefer to deliver to their home address within fixed times to ensure accuracy in the delivery process. Therefore, ensuring precision and correctness in the delivery process including accurate package

identification and delivery to the intended recipients is essential in meeting customer expectations and enhancing their satisfaction.

2.2.2.2 Packaging

The significance of packaging is particularly pronounced in the context of last-mile delivery. It not only safeguards the product's integrity but also enhances the overall customer experience which can foster a higher level of satisfaction and contribute to a positive brand image in the competitive market landscape. The design of packaging should not only safeguard the product but also provide convenience and ease of use for the end consumer (Nguyen et al., 2020). Researchers underscore the critical importance of thoughtful packaging design in last-mile delivery to protect the products during transportation and ensure that they arrive in good condition (Coelho et al., 2020). This is particularly important especially for fragile or perishable items as the packaging can serve as a protective barrier against potential damage. This is important as customers expect their orders to be delivered intact and undamaged, and packaging plays a crucial role in meeting this expectation.

In addition to protection, the sustainability of packaging can also influence customer satisfaction in last-mile delivery. With an increasing awareness of the environmental and social impacts associated with various choices, customers are becoming more conscious with the implications of their delivery options (Ignat & Chankov, 2020). The ability of last-mile delivery services to display and communicate the environmental and social dimensions of their packaging choices can significantly influence customers to opt for more sustainable alternatives. As a result, incorporating eco-friendly packaging practices not only aligns with evolving consumer values but also a strategic way for

enhancing customer satisfaction in the competitive landscape of last-mile delivery services (Ignat & Chankov, 2020).

2.2.2.3 Technology

Previous research emphasized the importance of technological advancements in improving last-mile delivery performance and customer satisfaction (Olsson et al., 2019). The integration of technology provides customers with visibility, convenience and personalized interactions which enhance their overall delivery experience. By leveraging technology effectively, it speeds up the logistics aspects of the delivery process and also fosters a more engaging and interactive experience for customers. It ultimately redefines the standards of convenience and satisfaction in the delivery process.

Moreover, delivery tracking systems that enable real-time monitoring allows customers to track the precise location and status of their orders, thereby alleviating uncertainties and enhancing overall transparency (Gupta, 2019). The tracking systems enable customers to monitor the location and status of their packages in real-time which provides them with visibility and assurance about the status and location of their deliveries (Kapser & Abdelrahman, 2020). The ability to track packages through technology contributes to customer satisfaction by providing a sense of control and reliability.

Furthermore, mobile apps provide users with intuitive interfaces to manage their deliveries, access real-time updates and streamline the interaction with the delivery service (Marbough et al., 2020). It enables customers to place orders, track deliveries and communicate with delivery personnel (Karakikes & Nathanail, 2022). It offers

convenience and ease of use which allow customers to have a seamless and personalized delivery experience. Therefore, the use of mobile apps in last-mile delivery enhances customer satisfaction by providing a user-friendly interface and facilitating efficient communication.

The advent of digital communication channels further facilitates a seamless flow of information which enables customers to receive timely notifications, communicate with delivery personnel and address any concerns promptly. It plays a crucial role which enable customers to communicate with delivery drivers, provide instructions and receive real-time updates (Castillo et al., 2022). The ability to communicate digitally enhances customer satisfaction by allowing for personalized interactions and addressing any concerns or special requests promptly.

2.2.2.4 Accessibility

The accessibility and convenience of the delivery method is equally important to shape customer satisfaction (Nguyen et al., 2019). It encompasses factors such as flexible delivery time slots and user-friendly interfaces that enhance the overall customer experience. By prioritizing accessibility, last-mile delivery services can bridge the gap between businesses and customers which foster a relationship founded on reliability, efficiency and customer-centricity. This emphasis on accessibility not only streamlines the logistics of the delivery process but also significantly contributes to heightened customer satisfaction and loyalty.

Research has shown that the accessibility of delivery options significantly impacts customer satisfaction. The availability of diverse delivery options such as attended home delivery or self-service options contributes to customer satisfaction by providing

flexibility and convenience (Boysen et al., 2020). Customers appreciate having various delivery options such as attended home delivery, unattended delivery or delivery at pick-up locations (Ignat & Chankov, 2020). The ability to choose a delivery method that suits their preferences and schedule enhances their overall delivery experience and even their satisfaction.

Furthermore, the proximity of delivery points to customers' locations also plays a crucial role in accessibility and customer satisfaction. Research has shown that the distance between customers' residences and delivery points significantly impacts their satisfaction with last-mile delivery (Allen et al., 2018). When delivery points are situated near customers, it reduces the time and effort required for customers to access their packages which leads to higher levels of satisfaction. Besides, strategically located delivery points or fulfillment centers contribute significantly to reducing transit times, minimizing delays and optimizing the efficiency of the last-mile delivery process (Janjevic et al., 2019).

2.2.2.5 Trust

Previous study demonstrated that trust has a beneficial impact on customer satisfaction by enhancing the overall delivery experience (Olsson et al., 2023). When the delivery process meets the customers' expectations, it will enhance customer satisfaction and loyalty and satisfaction through a positive experience (Mujahid et al., 2021). When customers trust the delivery service provider, they are inclined towards having favourable perceptions of the service which leads to higher levels of satisfaction. Trust also contributes to customer loyalty and repeat business as customers tend to choose a delivery service provider they trust for future deliveries.

Trust can be built through various factors including consistent and on-time deliveries, accurate tracking information, secure handling of packages and transparent communication (Al-Adwan et al., 2022). When customers trust the delivery service provider, they feel assured that their packages will arrive as guaranteed which helps to reduce their anxiety and uncertainty. Trust also plays a role in mitigating risks associated with lost or damaged packages as customers believe that the delivery service provider will take responsibility and resolve any issues that may arise. A high level of trust in last-mile delivery is essential for fostering positive customer experiences as it creates a sense of reliability and security which reinforces the customer-provider relationship.

Furthermore, the integrity of the delivery personnel plays a pivotal role in cultivating trust as customers entrust not only their packages but also their expectations of a secure and respectful interaction with the individuals facilitating the last-mile delivery. Besides, the overall trustworthiness towards logistics service providers as entities is crucial. This involves a comprehensive evaluation of the organization's commitment to transparency, communication and ethical business practices. Therefore, recognizing and actively cultivating trust emerges as a strategic imperative for delivery service providers aiming not only to satisfy their customers in the short term but also to establish lasting relationships that endure over time.

2.3 Underpinning Theory

2.3.1 *Expectancy-Disconfirmation Theory (EDT)*

The underpinning theory for this research is the Expectancy-Disconfirmation Theory (EDT). This theory is proposed by Rust and Oliver as a means to measure customer satisfaction by comparing perceived customer expectation with actual experience in products or services (Rust & Oliver, 1994). It explains that there are two main stages in the purchase decision of customers are pre-stage that belong to expectations, and post-stage that covers perceived usefulness and disconfirmation (Qazi et al., 2017).

This theory offers valuable insights into understanding the relationship between service quality in last-mile delivery and customer satisfaction. In the context of last-mile delivery, customers form expectations regarding the quality of delivery service based on various factors such as previous experiences, word-of-mouth recommendations and marketing communications (Cai & Chi, 2021). These expectations involve aspects such as timely delivery, effective communication and the condition of goods upon arrival (Uzir et al., 2021). As customers interact with last-mile delivery services, they evaluate the actual performance against their preconceived expectations. If the service delivery meets or exceeds their expectations, it results in a positive disconfirmation which lead to higher levels of satisfaction. Conversely, if the service falls short of expectations, it leads to negative disconfirmation and lower satisfaction levels.

Expectancy-Disconfirmation Theory (EDT) has been widely applied in the context of last-mile delivery by many researchers (Rashid et al., 2024; Teng et al., 2023; Mogire et al., 2023). For example, Mogire et al. (2023) conducted a study titled “Customer Satisfaction with Last-mile Delivery in Kenya: An Online Customer Perspective”. They

utilized the Expectancy-Disconfirmation Theory as underpinning theory to examine the customer satisfaction in last-mile delivery service. The study concluded that the customers were dissatisfied as the online retailers failed to meet or exceed the expectations of online customers (Mogire et al., 2023). This study demonstrates the application of the Expectancy-Disconfirmation Theory in accessing customer satisfaction in the context of last-mile delivery.

By applying this theory, the researcher explores how customers' expectations and perceptions influence their satisfaction levels. This involves examining the alignment between expectations and actual experiences as well as identifying factors that contribute to positive or negative disconfirmation. As a result, this research can provide valuable insights for improving service quality and enhancing customer satisfaction in last-mile delivery.

2.3.2 *SERVQUAL Model*

The researcher also employed the SERVQUAL model that explicitly considers customer expectations and perceptions as the underpinning theory for a more thorough comprehension of service quality in last-mile delivery landscape. SERVQUAL model is a widely recognized and extensively used model for measuring and assessing service quality (Czajkowska & Manuela, 2021). It provides a structured framework that has been applied in various service industries which make it a reliable choice to analyze service quality in last-mile delivery service. SERVQUAL evaluates the quality of services across five dimensions which are tangibles, reliability, responsiveness, assurance and empathy (Parasuraman et al., 1985). They believe that these elements will influence customer perceptions, satisfaction and subsequent behaviors such as repeat purchase and positive word-of-mouth.

Previous studies have been utilizing the SERVQUAL model in examining the customer satisfaction in the delivery industry. For example, Lai et al. (2022) conducted a study titled "Determinants of customer satisfaction with parcel locker services in last-mile logistics" which seeks to pinpoint the elements that influence customer satisfaction with parcel locker services in last-mile delivery. They applied the SERVQUAL model to assess service quality and customer satisfaction. The study found that reliability, responsiveness and assurance were important factors that affect the level of satisfaction customers are with parcel locker services.

Furthermore, Cho et al. (2021) conducted a study titled "Construction and application of customer satisfaction model with the service quality of last-mile delivery in rural areas" which aims to construct a customer satisfaction model for last-mile delivery in rural areas. They utilized the SERVQUAL model to assess service quality and its impact on customer satisfaction. The study found that all the service quality dimensions including tangibles, reliability, responsiveness, assurance and empathy significantly influenced customer satisfaction with last-mile delivery in rural areas. These studies demonstrate the application of the SERVQUAL model in measuring customer satisfaction in the context of last-mile delivery.

SERVQUAL model was adapted to develop independent variables that are more specified with the context of last-mile delivery. Each dimension of SERVQUAL can be relate to each of the independent variables. Firstly, the first independent variable, delivery is adapted from reliability dimensions of SERVQUAL. Reliability as per SERVQUAL is characterized by the consistency and dependability of service delivery (Barusman, 2019). This dimension become significant when examining critical elements of last-mile delivery such as delivery price, time and accuracy. When a last-

mile delivery service consistently provides clear and reasonable pricing, adheres to promised delivery timelines and ensures the accurate delivery of orders, it reinforces the reliability perceived by customers. This consistency fosters a sense of dependability and trust in the service which aligns with the principles of SERVQUAL's reliability. As a result, customers are more likely to perceive the last-mile delivery service as reliable, which in turn contributes significantly to their overall satisfaction (Lai et al., 2022). Therefore, the interplay between delivery price, time and accuracy as underpinned by the reliability dimension of SERVQUAL has emerged as an important element in shaping positive customer experiences and cultivating long-lasting relationships in the competitive landscape of last-mile delivery.

Other than that, the packaging variable is adapted from the tangible dimension of the SERVQUAL model. The tangible dimension of SERVQUAL emphasizes the physical and visible elements of service delivery that customers can assess (Parasuraman et al., 1985). When it comes to last-mile delivery, the tangible dimension is evident in the quality and appearance of the packaging materials. The packaging serves as a tangible representation of the service quality and its design, durability and visual appeal directly impact the perceived quality of the delivery service (Gil-Pérez et al., 2020). When the packaging is well-crafted and visually pleasing, it positively influences the overall perception of service quality. Beyond its functional role in protecting the products during transit (Quan et al., 2022), an attractive and protective packaging contributes to a positive service experience and enhances customer satisfaction (Chukwu et al., 2023). This is because customers are inclined to be more content with the overall service experience when they receive their orders in packaging that is not only functional but also aesthetically pleasing. Hence, this reinforces the significance of the packaging variable in the last-mile delivery service.

The third independent variable, technology is adapted from the responsiveness dimension of SERVQUAL. In SERVQUAL, responsiveness refers to a service provider's proficiency in delivering prompt and efficient service (Zygiaris et al., 2022). The integration of advanced technology such as real-time tracking, mobile apps and digital communication channels can significantly enhance responsiveness within the last-mile delivery context (Attaran, 2020). These technological tools serve as mechanisms for ensuring customers updated on the current status of their orders in real-time which contribute to an efficient and responsive service experience. Furthermore, technology's influence extends to the reliability dimension of SERVQUAL as well. In the last-mile delivery context, reliability refers to a service provider's capability to deliver services consistently and accurately. The use of advanced technology ensures the provision of precise and consistent updates on delivery times, order statuses and other important information (Kapsler & Abdelrahman, 2020). This reliability in communication builds trust as customers can rely on the accuracy of the information provided. As a result, a positive experience with a service provider's technology-driven responsiveness and reliability not only satisfies customers but also has the potential to foster loyalty, encouraging repeat business and establishing a positive brand-consumer relationship.

Furthermore, the accessibility variable is adapted from the empathy aspect of the SERVQUAL model. In SERVQUAL, empathy refers to the service provider's ability to understand and care for individual customer needs (Parasuraman et al., 1985). In the context of last-mile delivery, accessibility encompasses the ease and convenience with which customers can access and utilize delivery services (Olsson et al., 2023). A delivery service that prioritizes accessibility demonstrates a comprehensive of the varied requirements and desires of its customers. This may involve offering multiple

delivery options, ensuring convenient delivery points in proximity to customers' locations and providing flexible delivery methods. When a last-mile delivery service aligns with the principles of empathy, it signifies a genuine commitment in addressing the unique requirements of each customer. For example, providing options for flexible delivery time slots or accommodating specific delivery preferences showcases an empathetic approach. Therefore, the accessibility of last-mile delivery reflects a service provider's dedication in understanding and meeting the individual needs of customers which ultimately contributes to higher levels of customer satisfaction.

Lastly, the trust variable is adapted from assurance dimension of SERVQUAL. Assurance encompasses elements such as expertise, behaviour, reliability and security provided by the service provider (Lee & Seong, 2020). It essentially revolves around the service provider's capability to convey trust and confidence in the customer (Khan et al., 2021). In the realm of last-mile delivery, factors that contribute to customers' trust include transparent communication, accurate tracking mechanisms and secure payment options. These elements collectively contribute to customers' overall confidence in the reliability and security of the last-mile delivery service. In this circumstance, trust becomes a critical determinant of customer satisfaction (Muharam et al., 2021). When customers trust a service provider, they not only believe in the accuracy and security of the service but also feel assured that their needs will be met efficiently and reliably. Therefore, the establishment and maintenance of trust emerge as pivotal factors in fostering positive and enduring customer relationships within the last-mile delivery industry.

2.4 Conceptual Framework

The dependent variable is the customer satisfaction. and the independent variables consist of delivery, packaging, technology, accessibility and trust. The independent variables are adapted from SERVQUAL to better suit the context of last-mile delivery. The research is designed to examine how these independent variables collectively impact customer satisfaction in the realm of last-mile delivery services. Therefore, based on the variables, a conceptual framework for this research is developed and proposed as per Figure 2.1.

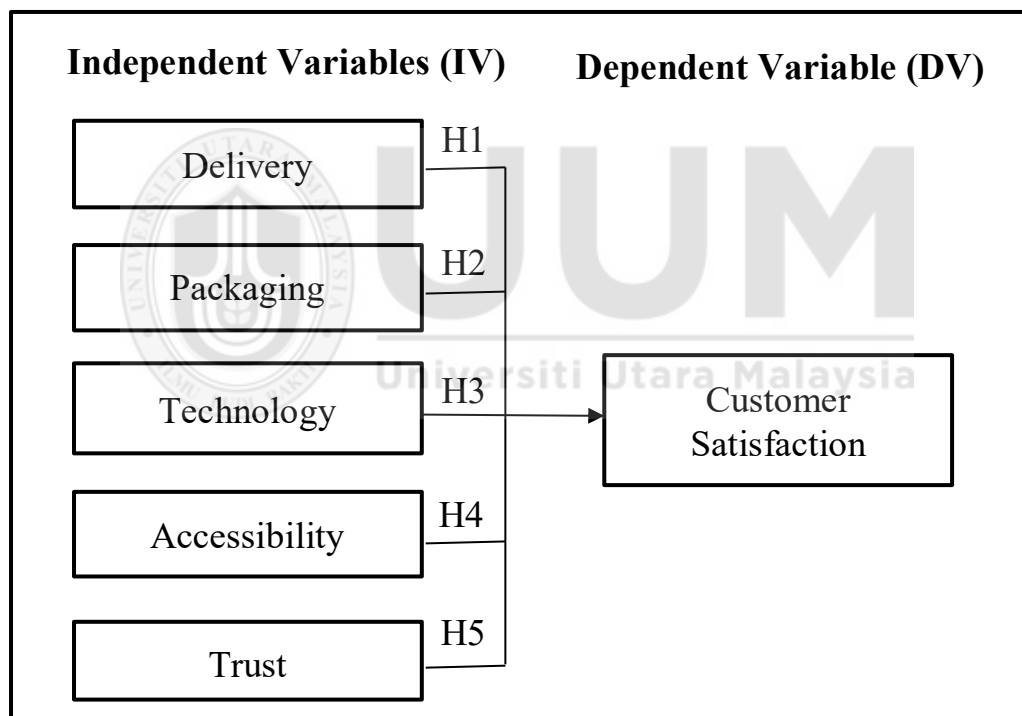


Figure 2. 1

Proposed Conceptual Framework

2.5 Hypotheses Development

Hypotheses refers to a description of the anticipated link between the objects under study that aims to clarify specific observations or facts (Oxford Reference, 2023). They are tentative explanations or predictions about the relationship between variables or the outcome of the study. The following are the hypotheses generated for this study:

2.5.1 Relationship between delivery and customer satisfaction

Delivery represents various aspects of the delivery process such as delivery price, speed and accuracy. It directly impacts the overall experience of customers and contributes to customer satisfaction in last-mile delivery.

Research has shown that overall customer satisfaction and the likelihood that they would return are positively impacted by price perception (Miao et al., 2022). Customers tend to evaluate the value they obtain in comparison to the price they spend and a favourable price perception can enhance their satisfaction.

Speed of delivery is another critical factor that affects customer satisfaction. Customers expect timely delivery for their orders and delays can lead to dissatisfaction. Researchers have demonstrated that delivery speed has a positive impact on customer satisfaction (Ali et al., 2021). Customers value prompt and efficient delivery. Meeting their expectations in terms of speed can contribute to their overall satisfaction.

Accuracy in last-mile delivery is also essential for customer satisfaction. Customers expect their orders to be delivered correctly and without any errors. Delivery accuracy refers to the capability to send the correct products to the right customers, in the right

quantities and without any damage or defects. Accurate delivery enhances customer satisfaction and builds trust with the delivery service provider (Olsson et al., 2022).

Customers value competitive pricing, timely delivery and accurate order fulfilment. Meeting these expectations can enhance customer satisfaction and contribute to the success of last-mile delivery operations. Therefore, researcher develops the hypotheses as:

H1: Delivery significantly influences customer satisfaction in last-mile delivery services.

2.5.2 Relationship between packaging and customer satisfaction

The quality and condition of the packaging has the potential to shape the customer's perception of the overall delivery experience. Research has shown that a secure packaging that can enhance the safety of a package can bring about beneficial effects on customer satisfaction (Quan et al., 2022). The sustainability impact of packaging can also affect customer satisfaction as customers are becoming more aware of the environmental consequences of their choices. Research suggests that customers may alter their preferred last-mile delivery option in light of the implications for sustainability (Ignat & Chankov, 2020). This indicates that offering sustainable packaging options such as eco-friendly materials or reduced packaging waste can contribute to customer satisfaction. Therefore, researcher develops the hypothesis as:

H2: Packaging significantly influences customer satisfaction in last-mile delivery services.

2.5.3 Relationship between technology and customer satisfaction

The use of technology including delivery tracking systems, mobile apps and digital communication channels can have a beneficial impact on the customer satisfaction in last-mile delivery. Research has shown that mobile apps that provide real-time tracking, delivery updates and communication options greatly improve customer satisfaction (Chen et al., 2019). Research has also found out that effective communication through digital communication channels such as SMS notifications and email updates positively influences customer satisfaction by providing transparency and reducing uncertainty (Zhang et al., 2018). By providing transparency, real-time updates and effective communication, these technological tools contribute to a positive customer experience and overall satisfaction. Therefore, researcher develops the hypothesis as:

H3: Technology significantly influences customer satisfaction in last-mile delivery services.

2.5.4 Relationship between accessibility and customer satisfaction

The accessibility such as ease and convenience for customers to access and use make a constructive influence on the customer satisfaction in last-mile delivery. Research has shown that the convenience and ease of the delivery procedure can significantly impact customer satisfaction (Olsson et al., 2023). Jiang & Rosenbloom (2005) further support that accessibility and convenience in last-mile delivery play a significant role in customer satisfaction. Ensuring that the delivery process is accessible and convenient for customers can significantly enhance their satisfaction. Therefore, researcher develops the hypothesis as:

H4: Accessibility significantly influences customer satisfaction in last-mile delivery services.

2.5.5 Relationship between trust and customer satisfaction

Trust such as the reliability of the service, the integrity of the delivery personnel and the overall trustworthiness towards the logistics service providers can have a direct impact on the customer satisfaction in last-mile delivery. Research has shown a positive connection between customer satisfaction, trust and intention to use online food delivery services again (Eaint, 2022). This suggests that trust in the delivery service is interconnected with customer satisfaction and repeat usage. Therefore, researcher develops the hypothesis as:

H5: Trust significantly influences customer satisfaction in last-mile delivery services.



2.6 Chapter Summary

This chapter is a literature review and hypotheses development section. In this chapter, the researcher reviewed the relevant literature and proposes a theoretical framework for the study on the influence of various factors including delivery, packaging, technology, accessibility and trust on customer satisfaction in last-mile delivery service. The Expectancy-Disconfirmation Theory and SERVQUAL Model is chosen as the underpinning theory as it provides a comprehensive framework for measuring and assessing service quality. The SERVQUAL model's dimensions including tangibles, reliability, responsiveness, assurance and empathy are applied to various aspects of last-mile delivery which connect them to customer satisfaction.

CHAPTER THREE

RESEARCH METHOD

3.1 Introduction

This chapter presented the research method for this study. It consists of the research process including research design, population, sample and sampling technique, questionnaire design, research measurement, data collection and data analysis technique. In the end, the methodology was summarized at the end of this chapter.

3.2 Research Design

In this study, the researcher adopted explanatory research design to understand the relationship between service quality and customer satisfaction. Explanatory research design would enable the researcher to investigate why and how variations in service quality can influence the customer satisfaction levels in last-mile delivery services.

Furthermore, the researcher adopted a quantitative research approach in using hard data and statistical tools to address specific research questions. Quantitative research approach refers to a systematic approach that relies on numerical data and statistical techniques to examine the data gathered and derive conclusions based on the analysis (Eyisi, 2016). The decision to use quantitative methods is also justified by the efficiency and cost-effectiveness it offers (Aliaga & Gunderson, 2002). It is structured and standardized which makes it relatively quicker to administer surveys and questionnaires. The data collected is also generally more manageable and amenable to statistical analysis which can help uncover patterns and relationships in the data. Moreover, the

goal of quantitative research is to ascertain how independent and dependent variables relate to one another (Creswell, 2009). This means that the study aimed to identify how variations in one factor correlate with alterations in another which potentially revealing cause-and-effect relationships. Through quantitative analysis, the researcher intends to contribute to a deeper understanding by uncovering and quantifying causal relationships between key factors.

In the pursuit of data collection for this study, the researcher has chosen to employ the use of questionnaires. Questionnaires are a widely accepted tool in survey research (Bird, 2009). The structured format of questionnaires not only ensures consistency in the information gathered but also contributes to the reliability and efficiency of both the data collection and subsequent analysis processes. The use of questionnaires allows the researcher to streamline the research process by enabling a more straightforward comparison and synthesis of responses. In turn, this structured approach enhances the validity of the research findings by minimizing potential biases and variations in data collection.

3.3 Population, Sample and Sampling Technique

Population referred to a specific group of individuals under scrutiny for a particular research project. In this study, the population comprises individuals who are the users of last-mile delivery services in Kuala Lumpur. Table 3.1 presents the population for various cities in Malaysia for year 2023. These figures have been sourced from the Department of Statistics Malaysia (2023). Notably, the population of Kuala Lumpur is reported to be 8,622,000 people.

Table 3. 1

Population of Cities in Malaysia for year 2023

City	Population
<u>Kuala Lumpur</u>	<u>8,622,000</u>
<i>Johor Bahru</i>	1,086,000
<i>Ipoh</i>	857,000
<i>Kuching</i>	642,000
<i>Kota Kinabalu</i>	589,000
<i>Kuantan</i>	537,000
<i>Seremban</i>	504,000
<i>Kuala Terengganu</i>	405,000
<i>Sandakan</i>	391,000
<i>Alor Star</i>	367,000
<i>Kota Bharu</i>	363,000

Source: Department of Statistics Malaysia (2023)

3.3.1 Sample Size

Singh & Masuku (2014) define the sample size as the number that will be chosen for the study. In determining the minimum sample size, G*Power was adopted to perform priori power analysis (Sarstedt et al., 2021). Based on five predictors and to obtain 95% power, medium effect size of 0.15 and a confidence level of 0.05, 74 minimal sample sizes are needed for this study.

Subsequently, the researcher used the Krejcie and Morgan Table as guideline to adjust the sample size in consideration of the population size of Kuala Lumpur as shown in Table 3.1. The researcher adjusted the sample size for this study by referring to Krejcie

and Morgan (1970) table as shown by Table 3.2 to consider the large population of Kuala Lumpur. It is important as a sample size that is larger than necessary will be better representative of the population and will hence provide more accurate results (Andrade, 2020). Given the large number of residents as the population, the researcher implies the maximum number of samples as suggested which is 384 samples for population size 100,000 people. Therefore, 408 questionnaires were distributed to the users of last-mile delivery service in Kuala Lumpur to ensure sufficient representativeness of the sample for this study.

Table 3. 2

Sample Size for a Given Population Size

N (Population Size)	S (Sample Size)	N (Population Size)	S (Sample Size)
8,000	367	30,000	379
9,000	368	40,000	380
10,000	370	50,000	381
15,000	375	75,000	382
20,000	377	<u>100,000</u>	<u>384</u>

Source: Krejcie & Morgan (1970)

3.3.2 Sampling Method

This study employed convenience sampling techniques for data collection. It is a non-probability sampling technique that involves participants choosing based on their availability, accessibility or willingness to participate (Adebayo & Ackers, 2021). The researcher distributed the questionnaires online to consumers in Kuala Lumpur,

especially individuals who are easy to reach such as those in close physical proximity or who are easily contacted.

While convenience sampling has practical advantages such as ease of implementation and cost-effectiveness, it also comes with limitations notably in terms of representativeness and potential bias. In order to manage or minimize the limitations of this sampling, the researcher diversified the sources of recruitment by utilizing multiple channels. The researcher engaged with various channels to collect data including online platforms, educational institutions, workplace and social media. Furthermore, the researcher avoid relying solely on one single convenient location in order to ensure a broader representation of the population by having respondents from different areas in Kuala Lumpur such as Kepong, Segambut, Cheras, Wangsa Maju, Bukit Bintang and Titiwangsa. By adopting a multi-channel recruitment strategy, the researcher aims to cast a wider net and attract participants from various segments of the population. This not only increases the likelihood of capturing diverse perspectives but also helps address concerns related to the limited representativeness of convenience sampling as well as minimizing biases to improve the comprehensive quality of the study.

Therefore, this method aids the researcher in cutting down on time-consuming and extremely economical approaches. This approach also allows for a practical and efficient way to collect data from customers who have firsthand experience with last-mile delivery services. It facilitates a deeper understanding of their insights and preferences within the last-mile delivery sector.

3.4 Questionnaire Design

This research is based on the primary data and is categorized as a quantitative study carried out through self-administered questionnaires. A self-administered questionnaire is a survey instrument that is completed by the respondents themselves without the presence or assistance of an interviewer. It is a method of data collection where participants are given a set of questions and are responsible for reading and responding to them on their own (Frey, 1994). The use of this approach allows for a standardized approach for data collection which ensures that all participants receive the same set of questions in the same structure (Frey, 1994).

Self-administered questionnaires also offer practical advantages in terms of cost and efficiency. They can be easily distributed among a vast quantity of participants which allows for data collection from a diverse and geographically dispersed sample. Furthermore, self-administered questionnaires can be completed at the participants' convenience which allows them to take their time and carefully consider their responses (Frey, 1994). This can lead to more thoughtful and accurate answers compared to interviews, where participants may feel rushed or influenced by the presence of an interviewer.

The questionnaire survey is distributed online to the consumers of last-mile delivery services in Kuala Lumpur. The questionnaire is developed by adapting from previous study to suit with the specific context and objectives of this study. The questionnaire was split into three sections, A, B and C. Section A focused on gathering demographic information from the respondents. There are five questions in this section which cover respondent's gender, age, income range, ethnicity and experience of using last-mile delivery service. Section B examined all the independent variables related to customer

satisfaction in last-mile delivery services. It includes delivery, packaging, technology, accessibility and trust. The last section, Section C comprised customer satisfaction for the five independent variables.

In Section B and C of the questionnaire, respondents express their agreement or disagreement with statements using a five-point Likert scale. This scale ranged from "strongly disagree" (1) to "strongly agree" (5). The Likert scale is a widely used tool in research to measure the level of agreement or disagreement among respondents. According to Colman, Norris and Preston (1997), the five-point Likert scale is a popular choice in research because of its simplicity. Respondents can easily select the appropriate response by marking a checkbox or circling a number on the provided scale. Therefore, the researcher employ this scale to access respondents' attitudes and opinions due to its simplicity and practicality.

3.5 Research Measurement

Measurement is a fundamental aspect of research methodology. It involves the allocation of symbols or numerical values to an attribute of an object based on a predetermined set of guidelines (Sekaran & Bougie, 2013). This process allows researchers to quantify and analyze various aspects of the object under study as well as allows for the recognition of patterns, relationships and trends within the data. The researcher employ nominal, ordinal and interval scales to gauge the insights of respondents regarding customer satisfaction concerning the five independent variables.

The nominal scale is utilized for labelling non-numeric demographic information such as gender, ethnicity and experience status. It is used to label respondents' gender where

"1" represents males and "2" represents females. Similarly, the nominal scale was applied to ethnicity and experience status from using last-mile delivery service. The ordinal scale is applied to rank individuals based on age groups and income levels in order to explore variations in preferences for last-mile delivery services. Age groups are divided into five levels from youngest to oldest, while income categories are structured into six levels from low income to high income. The interval scale, specifically a Five-point Likert scale that ranges from 1 for "strongly disagree" to 5 for "strongly agree" is used to assess customer satisfaction levels regarding delivery, packaging, technology, accessibility and trust.

This combination of nominal, ordinal and interval scales implies that this research not only categorized respondents into specific groups but also collected precise and quantifiable data to understand how they perceive customer satisfaction in relation to the five independent variables. It allows for a more extensive and detailed analysis of customer satisfaction and provides a structured way to measure and compare responses in the study.

3.5.1 Measurement for Independent Variables

The independent variable items in this study consist of twenty-three (23) items in total. It represents eight (8) items of delivery, four (4) items of packaging, four (4) items of technology, three (3) items of accessibility and four (4) items of trust. The originality of delivery, accessibility and trust items are positive statements, while the packaging and technology items are negative statements. The researcher has conducted reverse coding for the two independent variables of packaging and technology to ensure that

responses accurately reflect the underlying constructs or variables being measured. The measurement of independent variables are summarized as Table 3.3 below.

Table 3. 3

Measurement of Independent Variables

Independent Variable		Items	Adapted Source
Delivery	1	The overall cost of delivery service is reasonable and fair.	Yuen et al. (2019), Jiang et al. (2019), Cho et al. (2021)
	2	The delivery service is a cost-effective choice for sending and receiving.	
	3	The delivery service strikes a balance between affordability and quality.	
	4	The delivery service sends parcels at an impressive speed.	
	5	The goods are delivered within the specified time.	
	6	The goods delivered are correct.	
	7	The delivery destinations are correct.	
	8	There is no omission of the goods delivered.	
Packaging	1	The products arrived in bad condition. (R)	Cho et al. (2021), Vrhovac et al. (2023)
	2	There is no protective packaging provided. (R)	
	3	The delivery service does not use eco-friendly packaging materials that align with customer's value. (R)	
	4	The delivery packaging is not easy to use. (R)	

Technology	1	The delivery service does not offer transparency and visibility. (R)	Cho et al. (2021), Vrhovac et al. (2023)
	2	There are no real-time updates about the delivery status provided. (R)	
	3	Customers are unable to track their order easily. (R)	
	4	Customers are not well-informed and connected throughout the entire delivery process. (R)	
Accessibility	1	There are a variety of convenient delivery options that are hassle-free and user-friendly.	Cho et al. (2021), Vrhovac et al. (2023)
	2	There is a close proximity of delivery points nearby.	
	3	The convenience of the delivery methods align with different schedules and preferences of customers.	
Trust	1	Customers can trust the delivery service in ensuring the goods are in safe hands.	Cho et al. (2021), Chong et al. (2023)
	2	Customers can trust that their goods will be delivered as promised.	
	3	Customers trust the delivery service due to the integrity and professionalism of the delivery personnel.	
	4	The trust instilled by the delivery service ensures customers' peace of mind with every delivery.	

**(R): Reverse Coding*

Source: Yuen et al. (2019), Jiang et al. (2019), Cho et al. (2021), Vrhovac et al. (2023), Chong et al. (2023)

3.5.2 Measurement for Dependent Variable

The dependent variable items in this study consists of seven (7) items in total. The measurement of the dependent variable is summarized as Table 3.4 below.

Table 3. 4

Measurement of Dependent Variable

Dependent Variable	Items		Adapted Source
Customer Satisfaction	1	I am satisfied with the delivery price, speed and accuracy.	Lai et al. (2021)
	2	I am satisfied with the delivery packaging.	
	3	The utilization of technology in the delivery process leaves me satisfied.	
	4	The accessibility of the delivery service is exceptionally satisfying.	
	5	My satisfaction with the delivery service is rooted in the trust I have in it.	
	6	The last-mile delivery service that I experienced met my expectations.	
	7	Overall, I am satisfied with the last-mile delivery services.	

Source: Lai et al. (2021)

3.6 Data Collection

Figure 3.1 outlined the data collection process for this study. It beginning with the identification of the respondent. Next, the researcher design and develop questionnaire by adapting from previous study. Following the questionnaire's design, a crucial pilot

test is conducted to validate its effectiveness. Finally, with the refined questionnaire in hand, data collection commences in earnest.



Figure 3. 1

Data Collection Process

The primary data for this study were gathered in order to meet the research objectives. Primary data refers to the first-hand information that collected by the researcher to satisfy the study's requirements (Ajayi, 2017). To collect this primary data, a set of questionnaires was designed and distributed online to individuals who are consumers of last-mile delivery service in Kuala Lumpur. This data collection method involved the utilization of internet surveys which are a modern and efficient means of administering questionnaires and capturing responses from a varied group of participants.

An internet survey is a method of data collection that utilizes the internet to administer a questionnaire or set of questions to gather information and responses from participants. It involves the use of online platforms or survey tools to distribute the survey and collect responses electronically (Temple et al., 2021). Online surveys provide several benefits compared to traditional survey methods including cost-effectiveness, convenience, rapidity, timeliness and ease of data management (Temple et al., 2021). They provide the researcher with the flexibility to reach a large and diverse sample including geographically dispersed participants (Haag et al., 2020).

When it comes to internet surveys, convenience sampling is often the method of choice due to the ease of reaching a large pool of potential respondents quickly and cost-effectively (Adlakha et al., 2022). Therefore, the convenience sampling method was employed to distribute a total 408 numbers of questionnaires specifically to individuals who are the users of last-mile delivery services within the city of Kuala Lumpur. It would take around three to five minutes for them to fill-up the survey form. The data was collected during January 2024 through Google Form in an online survey form.

3.7 Reliability Analysis

As defined by Sekaran and Bougie (2013), reliability pertains to how consistently an instrument functions to measure a given concept. Sekaran (2003) further explains that measuring reliability involves assessing the degree to which measurements are consistent over time and across various items within the instrument in order to ensure unbiased and coherent measurement. Additionally, reliability is indicative of the internal consistency within variables. It emphasizes that each question within a survey instrument should be aimed at measuring the same underlying construct. This focus on internal consistency is pivotal for enhancing the reliability of survey instruments to establish a high level of trustworthiness in the data collected through the survey.

Reliability analysis, particularly employing Cronbach's coefficient alpha, are important in assessing the internal consistency and reliability of measurement instruments or scales. Cronbach's alpha is a statistical measure that evaluates the consistency of responses across multiple items within a scale which indicates the extent to which these items are measuring the same underlying construct (Aithal & Aithal, 2020). Table 3.5

below shows the summary of Cronbach's alpha level. A high Cronbach's alpha value, typically falling between 0 to 1 signifies robust internal consistency which suggests that the items reliably measure the intended construct (Sürücü & Maslakci, 2020). This analysis is crucial in the validation process of survey instruments as it helps the researcher to identify and eliminate poorly performing items, refine the instrument and ensure that it produces consistent and dependable results. By employing Cronbach's alpha, the researcher enhances the overall quality and validity of measurements which ultimately contribute to the robustness and reliability of the research findings.

Table 3. 5

Cronbach's Coefficient Alpha levels

Range of Reliability (Cronbach's Coefficient Alpha)	Descriptive of Strength
0.6 and below	Poor reliability
In range 0.70	Acceptable reliability
Over 0.80	Good reliability

Source: Sekaran & Bougie (2016)

3.7.1 Pilot Test and Preliminary Study

A pilot test is a crucial preliminary phase in the research process that serves as a preparatory measure before the full-scale implementation of a study (Lancaster & Thabane, 2019). The primary need for a pilot test lies in its ability to identify and rectify potential issues in the research design, instruments or procedures. By conducting a smaller-scale trial run with a subset of participants, the researcher gains valuable insights into the practicality and effectiveness of the methodologies. Furthermore, the pilot test enables the identification of any ambiguities or misunderstandings that participants may encounter which paves the way for necessary adjustments before the

main study (Lancaster & Thabane, 2019). It acts as a diagnostic tool that enhances the robustness and validity of the research by preemptively addressing potential pitfalls and ensuring a smoother, more reliable execution of the full-scale investigation.

In this study, the researcher distributed 30 questionnaires to respondents as part of the study testing process. The reason is because the average sample size of 30 participants per group is deemed sufficient for detecting issues in feasibility or pilot studies (Billingham et al., 2013). Before proceeding with the pilot test, the researcher coded some of the data using reverse coding. This decision was prompted by the inclusion of negative statements in the dimensions of responsiveness and empathy in order to ensure that the assessment accurately reflected participants' perceptions and responses (Sürücü & Maslakci, 2020).

The pilot test is distributed to the lecturers and master's students at UUM who are the users of last-mile delivery services. As the research aims to access the customer satisfaction levels, using users of last-mile delivery services as respondents for a pilot study can provide valuable insights into the clarity, relevance and comprehensibility of the survey items. Based on the feedbacks from the pilot test, the respondents revealed that the survey questions are clear, easily understandable and relevance to the research context. This positive feedback suggested that the survey instrument has good face validity, as it appears to measure what it is intended to measure based on its face value. Therefore, it can be ensured that the survey instrument is well-suited to capture the experiences and perceptions of the target population. With this confirmation from the pilot test participants, the researcher can confidently proceed with data collection.

3.8 Normality Test

The need for a normality test in research is paramount as it serves to validate crucial assumptions regarding the distribution shape and linearity of data (Osborne & Waters, 2019). Several methods exist for exploring the normality assumption including the Kolmogorov-Smirnov (K-S) test, Shapiro-Wilk test, Lilliefors corrected K-S test, D'Agostino skewness test and Anscombe-Glynn kurtosis test, with the K-S and Shapiro-Wilk tests being commonly employed (Kim & Park, 2019).

In this study, the researcher opted to use skewness and kurtosis statistics in SPSS to assess the normality of the data. The choice to use skewness and kurtosis statistics instead of the other formal statistical tests for assessing normality is because it is often considered as more robust, especially with larger sample sizes (Bono et al., 2019). It is less affected by the sample size and can provide a visual and quantitative assessment without the power concerns associated with some formal tests. Furthermore, the other tests often evaluate multiple assumptions simultaneously including normality and linearity. For the specific concern of normality in this study, skewness and kurtosis statistics can be more targeted by focusing solely on the shape of the distribution.

Positive skewness values indicate a positively skewed distribution, while positive kurtosis values suggest a peaked or leptokurtic distribution (Sharma & Ojha, 2020). Conversely, negative skewness values suggest a negatively skewed distribution, and negative kurtosis values indicate a flatter or platykurtic distribution (Sharma & Ojha, 2020). The results revealed no violations of the normality assumption which verify that all variables were normally distributed.

Haszeri & Rodzalan (2021) highlighted various tools for checking normality assumptions including histograms, box plots, stem-and-leaf plots, probability-probability (P-P) plots and quantile-quantile (QQ) plots. In this study, histograms and P-P plots were employed as the visualization tools for normality testing. The reason is that histograms are intuitive and easy to interpret which offer a visual summary of the distribution that enables quick understanding of the overall shape, central tendency and spread of data. It provided a visual representation of observed values which aid in identifying the bell shape and detecting gaps or outliers (Boels et al., 2019). P-P plots were used because they provide a clear comparison between the observed distribution and the expected distributions under normality. As a widely used normality testing tool, P-P plot evaluates outliers, skewness and kurtosis by assessing whether the data distribution follows a straight line or deviates from normality (Flatt & Jacobs, 2019). This simplicity may be advantageous when communicating findings to a broader audience that may not be familiar with statistical intricacies. In short, histograms and P-P plots offer a balance between simplicity, informativeness and ease of interpretation which makes them suitable as the visualization tools for normality test in this study.

3.9 Data Analysis Technique

The research incorporated three distinct analytical methods to examine the dataset comprehensively. It includes demographic analysis, descriptive analysis and inferential analysis.

3.9.1 Demographic Analysis

Demographic analysis focused on inspecting the demographic information such as age, gender, income and other relevant factors. The objective was to unveil patterns and trends among different subgroups in order to gain a better understanding on the characteristics of various subgroups within the population being studied.

3.9.2 Descriptive Analysis

Descriptive analysis is a fundamental statistical technique used to summarize and describe the characteristics of a dataset (Alabi & Bukola, 2023). It involves calculating various statistical measures such as mean, standard deviation, minimum and maximum values for numerical data. It also involves the creation of graphical representations and tables to visually summarize the data. These measures provide an initial understanding of the dataset by providing insights into the distribution, central tendency and variability of the data through numerical measures and visual representations.

3.9.3 Inferential Analysis

Inferential analysis is a statistical technique used to draw conclusions or make inferences about a population based on a sample of data. It involves using probability theory and statistical inference to make predictions or generalizations about a larger group or population based on observed data from a smaller sample (Stone, 1981). It was run through SPSS and consists of Pearson correlation analysis and Multiple Regression analysis.

3.9.3.1 Pearson Correlation Analysis

Pearson Correlation Analysis is a technique used to measure the strength and direction of the linear relationship between two continuous variables. It is commonly used to determine the significance of the bivariate relationship between the variables (Hair et al., 2019). The result is the Pearson correlation coefficient (r), which ranges from -1 to 1. A positive value indicates a positive correlation, while a negative value suggests a negative correlation (Obilor & Amadi, 2018). The magnitude of the coefficient represents the strength of the relationship. Table 3.5 shows the guidelines for Pearson Correlation Coefficient value.

Table 3. 6

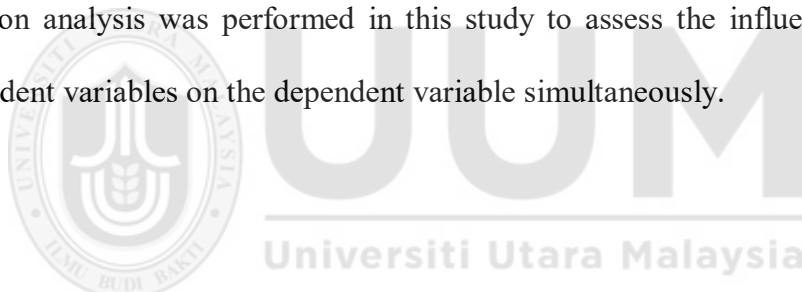
Pearson Correlation Coefficient Value

Correlation Coefficient Value (r)	Direction and Strength of Correlation
-1	Perfectly Negative
-0.8	Strongly Negative
-0.5	Moderately Negative
-0.2	Weakly Negative
0	No Association
0.2	Weakly Positive
0.5	Moderately Positive
0.8	Strongly Positive
1.0	Perfectly Positive

Source: Ratnasari et al., 2016

3.9.3.2 Multiple Regression Analysis

Regression analysis is a statistical method used to examine the relationships between one or more independent variables and a dependent variable. The main objective of regression analysis is to quantify the impact of these independent variables on the dependent variable and to understand the nature and strength of these relationships (Coakes & Steed, 2007). Multiple regression analysis is a variation of regression analysis that allows for the examination of the influence of multiple independent variables on the dependent variable simultaneously. It is particularly useful when there are multiple factors that may affect the dependent variable and when there is a need to control for the effects of other variables (Coakes & Steed, 2007). Therefore, multiple regression analysis was performed in this study to assess the influence of multiple independent variables on the dependent variable simultaneously.



3.10 Chapter Summary

This chapter explained the research methodology such as the quantitative research design, population and sample selection, questionnaire design, measurement scales, data collection through online surveys and data analysis using SPSS. It emphasized the use of nominal, ordinal and interval scale along with demographic, reliability analysis, normality test as well as descriptive and inferential analyses to investigate the relationship between independent variables (delivery, packaging, technology, accessibility, trust) and the dependent variable (customer satisfaction in last-mile delivery services). In short, this chapter provided valuable insights into the methodology that underpins the statistical analysis conducted by the researcher.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter outlined the outcomes of the data analysis in the statistical findings which served as the basis for the subsequent discussion in the following chapter. The analysis started with gathering demographic information from respondents and measuring variables. Subsequently, it delved into examining the intercorrelation of variables including reliability, normality, correlation and multiple linear regression. Finally, the analysis tested the hypotheses among the variables.

4.2 Reliability Analysis (Cronbach's Coefficient Alpha)

To demonstrate the stability and internal consistency of reliability, the concept of goodness of measure has been applied. Bujang et al. (2018) emphasized the importance of assessing the internal consistency of data to ensure the reliability of respondent feedback on research instruments or questionnaires. They highlight the use of Cronbach's alpha to measure consistency and reliability among items, measurements or ratings, as well as to evaluate the stability of instruments measuring research variables (Bujang et al., 2018). Cronbach's alpha is a widely accepted method for testing reliability (Barbera et al., 2020) and it is the most used internal consistency measure (Nawi et al., 2020). Cronbach's alpha indicates the degree of internal consistency by assessing the number of factors in the scale and their inter-correlations, with values ranging from zero to one representing the proportion of shared variability among factors

(Nawi et al., 2020). It evaluates the reliability of data collected from an assessment instrument by measuring consistency over time that is characterized by coefficients such as test-retest reliability (Barbera et al., 2020). According to Kotian et al. (2022), a score of .70 or greater indicates high consistent with 0.90 or greater indicates high consistent, 0.80-0.89 is good consistent and 0.70-0.79 is acceptable consistent.

In this study, the analysis indicates that variables such as customer satisfaction, delivery, packaging, technology, accessibility and trust exhibit a high level of reliability, as stipulated by Sekaran and Bougie (2016). These variables can be categorized as demonstrating high internal consistency for both the pilot test and the actual study as shown in Table 4.1 and Table 4.2.

4.2.1 Pilot Test

Table 4. 1

Reliability Analysis (Pilot Test): Cronbach's Coefficient Alpha

Constructs	No. of Items	Cronbach's Alpha	Level of Reliability
Customer Satisfaction	7	0.863	Good
Delivery	8	0.794	Acceptable
Packaging	4	0.742	Acceptable
Technology	4	0.863	Good
Accessibility	3	0.739	Acceptable
Trust	4	0.877	Good

N=30

4.2.2 Actual Study

Table 4. 2

Reliability Analysis (Actual Study): Cronbach's Coefficient Alpha

Constructs	No. of Items	Cronbach's Alpha	Level of Reliability
Customer Satisfaction	7	0.943	Good
Delivery	8	0.895	Good
Packaging	4	0.793	Acceptable
Technology	4	0.928	Good
Accessibility	3	0.781	Acceptable
Trust	4	0.889	Good

N=401

4.3 Normality Test (Skewness and Kurtosis Ratios)

The normal distribution is probably the most frequently observed distribution (Hernandez, 2021). Therefore, a normality test was performed to ensure that the assumption of normality is not violated (Hu & Plonsky, 2021). Skewness and Kurtosis statistics are employed to evaluate the significance of normality. Skewness assesses the extent to which a variable's distribution is symmetrical, while Kurtosis compares the dataset distribution to the normal distribution (Hatem et al., 2022). According to Hair et al. (2019) and Bryne (2010), data is considered to be normal if skewness is between -2 to +2 and kurtosis is between -7 to +7. The results presented in Table 4.3 indicate that while there is some skewness and kurtosis present in the data, it does not significantly deviate from normality as all values fall within the acceptable ranges.

Therefore, the skewness and kurtosis values support the conclusion that the data follows a normal distribution.

Additionally, assessing linearity aims to ensure a linear relationship between predictors and the outcome variable (Hope, 2020). According to Maydeu-Olivares et al. (2020), it is important that the variables exhibit consistent variance around the regression line to demonstrate linearity. To evaluate the linearity between variables, a normal probability plot was generated. Visual inspection of the normal probability plot and histograms (Figure 4.1, Figure 4.2, and Figure 4.3) suggests that the data are approximately normally distributed, albeit with some skewness as indicated by values below -2 for all variables. However, these deviations are not substantial, and the normal probability plot meets the basic assumption criteria. Therefore, it is appropriate to proceed with inferential statistics to address the research objectives.

Table 4. 3

Normality Analysis: Skewness and Kurtosis Ratios

Constructs	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Customer Satisfaction	-0.946	0.122	1.463	0.243
Delivery	-0.529	0.122	1.311	0.243
Packaging	-0.999	0.122	0.598	0.243
Technology	-1.023	0.122	0.942	0.243
Accessibility	-0.690	0.122	0.753	0.243
Trust	-0.984	0.122	2.468	0.243

N=401

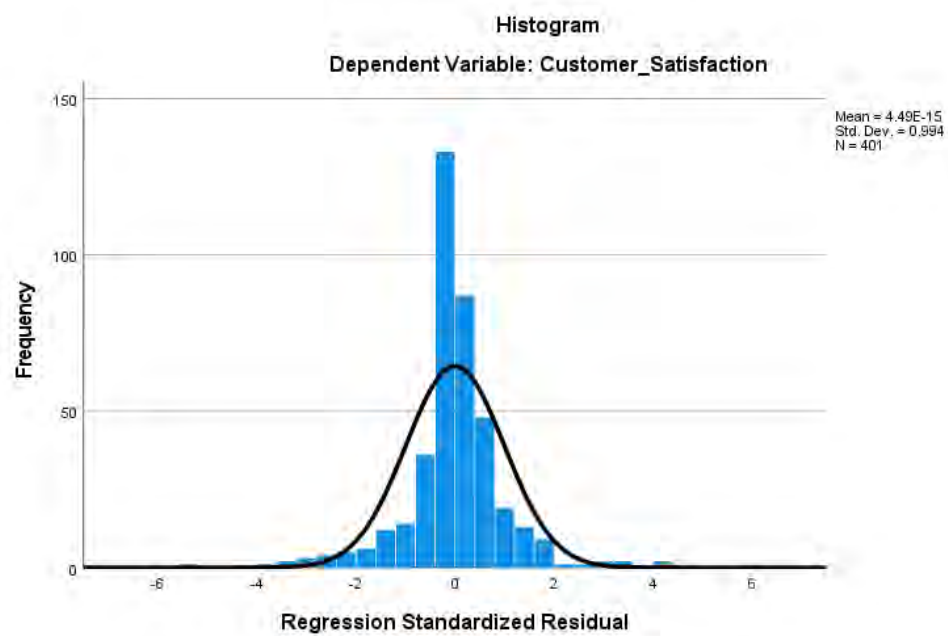


Figure 4. 1

Statistics Histogram

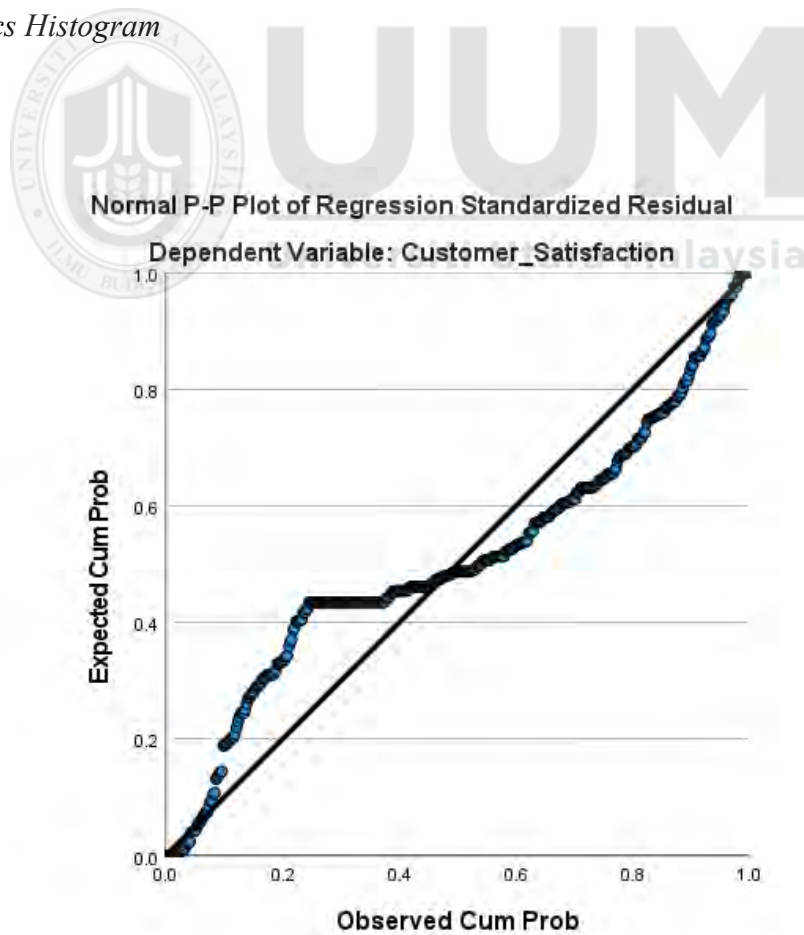


Figure 4. 2

Normal P-P Plot of Regression Standardised Residual

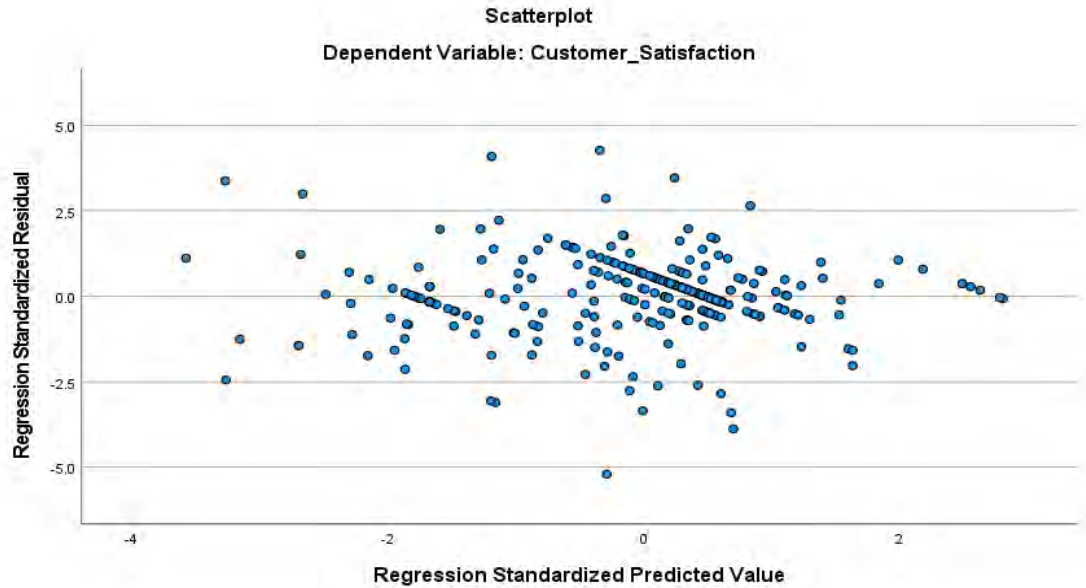


Figure 4. 3

Scatterplot

4.4 Descriptive Statistics

A self-administered questionnaire was distributed to 408 consumers of last-mile delivery services in Kuala Lumpur. The questionnaire comprised three sections including demographic information, independent variables (covering aspects such as delivery, packaging, technology, accessibility and trust), and a section focusing on the dependent variable of customer satisfaction. Out of the 408 questionnaires collected, a total of 401 (98.28%) were deemed usable for analysis. The remaining seven respondents were excluded from the analysis as they reported not having experience with last-mile delivery services. This high rate of questionnaire completion indicates a robustness in the reported results (Dizdarevic et al., 2020).

4.4.1 Participant's Demographic Distribution

Data for this study were gathered via a questionnaire randomly distributed among consumers of last-mile delivery services in Kuala Lumpur. This section of the study provides insight into the background of the respondents who took part in this study. The demographic information collected includes details such as gender, race, age and income range. Table 4.4 presents the demographic information of the sample that was involved in the study (n=401).

The analysis of the data reveals a nearly equal distribution of male and female respondents, with 209 females (52.1%) and 192 males (47.9%). Among the respondents, the majority identify as Malay (45.4%), followed closely by Chinese (41.9%), Indian (11.0%) and a smaller proportion from other ethnic backgrounds (1.7%). Regarding age demographics, the largest proportion falls within the 21 to 30 years old range which accounts for 39.7% of respondents. The second-highest age group is 31 to 40 years old which comprises 38.7% of the sample, followed by 41 to 50 years old (11.2%), 51 years old and above (8.7%) and those below 20 years old (1.7%).

Examining income distribution among respondents, the highest proportion falls within the RM 4,501 to RM 6,000 range, with 142 respondents (35.4%). Following closely is 122 respondents (30.4%) reported incomes in the RM 3,001 to RM 4,500 range. Income range RM 1,501 to RM 3,000 was reported by 42 respondents (10.5%), while 36 respondents (9.0%) fell within the RM 6,000 to RM 7,500 range. Conversely, the lowest income ranges were RM 7,501 and above (7.5%) and under RM 1,500 (7.2%). All these demographic data is summarized in Table 4.4 to provide a comprehensive overview of the background of respondents who participated in the study.

Table 4. 4

Respondents' Demographic Information

Demographic	Frequency	Percentage (%)
<i>Gender</i>		
Male	192	47.9
Female	209	52.1
<i>Race</i>		
Malay	182	45.4
Chinese	168	41.9
Indian	44	11.0
Others	7	1.7
<i>Age (Years Old)</i>		
Under 20	7	1.7
21 to 30	159	39.7
31 to 40	155	38.7
41 to 50	45	11.2
51 and above	35	8.7
<i>Income Range (RM)</i>		
Under RM 1,500	29	7.2
RM 1,501 - RM 3,000	42	10.5
RM 3,001 - RM 4,500	122	30.4
RM 4,501 - RM 6,000	142	35.4
RM 6,000 - RM 7,500	36	9.0
RM 7,501 and above	30	7.5

N=401

4.4.2 Measures of Central Tendency

The commonly used measures of central tendency are mean, median and mode (Andrade, 2020; Mertler et al., 2021). There are also researchers who use mean and standard deviation to assess participant responses' nature (Anjum, 2020). Thus, this study utilized mean, median, mode and standard deviation to ascertain the central tendency of the variable scores. To ensure consistency, negative items within the packaging and technology categories were reverse coded to align all items in a positive direction. Additionally, minimum and maximum values were included to detect any outliers within the scale (Boukerche et al., 2020). Table 4.5 presents minimum value, maximum value, mean, median, mode and standard deviation.

Overall, the mean, median and mode scores are closest to 4 on the five-point Likert scale which indicates a general trend across the variables. However, accessibility scores slightly lag behind the others. Furthermore, the minimum and maximum value indicating that there are no outliers fall out of the five-point Likert scale which underscore the reliability of the data.

Table 4. 5

Measures of Central Tendency for Variables

Variables	Min	Max	Mean	Median	Mode	Standard Deviation
Customer Satisfaction	1.57	5.00	3.7866	4.0000	4.00	0.54202
Delivery	2.50	5.00	3.8541	4.0000	4.00	0.42929
Packaging	1.50	5.00	3.6322	4.0000	4.00	0.60724
Technology	1.00	5.00	3.6509	4.0000	4.00	0.73271
Accessibility	1.00	5.00	3.4123	3.3333	4.00	0.64302
Trust	1.25	5.00	3.7263	4.0000	4.00	0.54835

*N=401***4.5 Inferential statistics***4.5.1 Pearson Correlation Analysis*

Pearson Correlation Analysis is a statistical method widely used to access the intensity and direction of the linear relationship between two continuous variables (Hair et al., 2019). It aids in determining the significance of the bivariate relationship between the variables. The result of this analysis is the Pearson correlation coefficient (r), which ranges from -1 to 1. A positive value indicates a positive correlation, while a negative value suggests a negative correlation (Obilor & Amadi, 2018). Furthermore, Coakes and Steed (2007) suggest that a significant value (p) of either 0.01 is acceptable.

The results presented indicate that all variables examined are significantly related to customer satisfaction. According to the correlation analysis, there exists a strong positive relationship between trust and customer satisfaction ($r = 0.756$, $p < 0.01$).

Furthermore, the remaining variables also exhibit positive relationships with customer satisfaction, with delivery ($r = 0.668$, $p < 0.01$), technology ($r = 0.535$, $p < 0.01$), packaging ($r = 0.525$, $p < 0.01$) and accessibility ($r = 0.414$, $p < 0.01$). Therefore, Table 4.6 displays the output of Pearson correlation analysis. Consequently, it can be inferred that the results demonstrate all independent variables positively correlated with the dependent variable which is customer satisfaction.

Table 4. 6

Pearson Correlation Analysis

	CS	D	P	Te	A	Tr
CS	1					
D	0.668**	1				
P	0.525**	0.452**	1			
Te	0.535**	0.467**	0.692**	1		
A	0.414**	0.418**	0.149**	0.273**	1	
Tr	0.756**	0.628**	0.520**	0.479**	0.402**	1

N=401

***Correlation is significant at the 0.01 level (2-tailed)*

4.5.2 Multiple Regression Analysis

Multiple linear regression analysis is a statistical technique that builds upon correlation analysis which aims to not only assess the overall contribution of a model but also to test specific hypotheses formulated for a study. It is a method within regression analysis that explores the connections between one or more independent variables and a dependent variable (Coakes & Steed, 2007). In the context of this study, the analysis

aimed to indicate the interplay between variables of delivery, packaging, technology, accessibility and trust in influencing customer satisfaction. The regression coefficient serves as an indicator of the importance of independent variables in predicting the dependent variable (Sekaran & Bougie, 2013). Table 4.7 presents the outcomes of the multiple regression analysis conducted for hypothesis testing purposes.

The R-squared (R^2) value of 0.658 serves as an indicator of the model's goodness of fit. This value suggests that approximately 65.8% of the variability in the dependent variable, customer satisfaction, can be explained by the independent variables (delivery, packaging, technology, accessibility and trust). Furthermore, the F-value of 152.044 with a p-value of less than 0.001 indicates a significant correlation between the independent variables and the dependent variable.

Additionally, the analysis reveals the significance of all variables in influencing customer satisfaction. Notably, trust ($\beta = 0.474$, $p < 0.05$) and delivery ($\beta = 0.250$, $p < 0.05$) emerge as highly significant factors in this study. Similarly, technology ($\beta = 0.121$, $p < 0.05$), accessibility ($\beta = 0.075$, $p < 0.05$) and packaging ($\beta = 0.070$, $p < 0.05$) also yield positive results. Consequently, the findings answered the first five research questions, achieved the first five research objectives and supported hypotheses H1, H2, H3, H4 and H5.

Based on the analysis, the most contributing factor towards customer satisfaction is trust because it has the highest Beta value ($\beta = 0.474$, $p < 0.05$) among the five independent variables. Therefore, this result answered the last research question and achieved the last research objective which is to identify the most contributing factors on customer satisfaction in last-mile delivery.

Table 4. 7

Multiple Regression Analysis

Variable	Beta (β) (Standardized Coefficient)	t	Sig.
(Constant)		.341	0.733**
Delivery	0.250	6.245	<0.001**
Packaging	0.070	1.614	0.047**
Technology	0.121	2.846	0.005**
Accessibility	0.075	2.226	0.027**
Trust	0.474	11.466	<0.001**
R Square (R^2)	0.658		
Adjusted R Square	0.654		
F Value	152.044		
Sig. F Change	<0.001		

*N= 401**Dependent Variable: Customer Satisfaction****Correlation is significant at the 0.05 level (2-tailed)*

4.6 Hypotheses Testing

The summary of hypotheses results was outlined in Table 4.8. The analysis conducted support all the hypotheses that delivery, packaging, technology, accessibility and trust significantly influences customer satisfaction in last-mile delivery services. The data reveals a clear correlation between all the independent variables with the customer satisfaction levels.

Table 4. 8

Summary of Hypotheses Results

Hypotheses	Description	Results
H1	Delivery significantly influences customer satisfaction in last-mile delivery services.	Supported
H2	Packaging significantly influences customer satisfaction in last-mile delivery services.	Supported
H3	Technology significantly influences customer satisfaction in last-mile delivery services.	Supported
H4	Accessibility significantly influences customer satisfaction in last-mile delivery services.	Supported
H5	Trust significantly influences customer satisfaction in last-mile delivery services.	Supported

4.7 Chapter Summary

Based on the above results, the research objectives have been successfully achieved and the research questions have been successfully answered through hypotheses testing. These findings indicated a strong connection between all independent variables and the dependent variable. The results showed that each independent variable examined has a significant relationship with customer satisfaction. Notably, trust emerged as the most influential factor contributing towards customer satisfaction in last-mile delivery services. The results of the statistical analyses (SPSS output) have been included in the appendices (Appendix B, C, D and E).



CHAPTER FIVE

DISCUSSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the results derived from the analysis conducted in the previous chapter. It delves into a detailed discussion of findings with a comprehensive review of the study's objectives. Furthermore, this chapter delved into suggestions for potential future research directions. Finally, a conclusive summary been provided which encapsulates the entirety of the research conducted.

5.2 Discussions of Findings

This study investigates the influence of delivery, packaging, technology, accessibility and trust on customer satisfaction in last-mile delivery service.

5.2.1 Objective 1 - Influence of delivery on customer satisfaction in last-mile delivery services

The first objective of this study was to examine the influence of delivery on customer satisfaction in last-mile delivery services. Through the utilization of multiple linear regression analysis, the findings unveiled a significant relationship between delivery and customer satisfaction with last-mile delivery services. Delivery represents various aspects of the delivery process such as delivery price, speed and accuracy. It encompasses the seamless transportation of products from distribution centers to customers' doorsteps which reflects its pivotal role in shaping satisfaction levels.

Research conducted by Kiba-Janiak et al. (2022) highlights that customers mostly consider price when choosing the last-mile delivery option. Similarly, Vasić et al. (2019) emphasize that reasonable delivery prices contribute to heightened customer satisfaction. This underscores the significance of perceived value relative to costs incurred, wherein acceptable pricing positively influences satisfaction levels.

Additionally, Vrhovac et al. (2023) underscores that the package distribution to the customer necessitates quick delivery with the least amount of time spent in transit to meet the customer's expectations in terms of delivery speed. Mangiaracina et al. (2019) and Merkert et al. (2022) also emphasize that customers are highly demanding and prioritizing delivery speed of the delivery process. Zhong et al. (2021) further accentuate that customers' expectations for expedited delivery times directly impact satisfaction levels. Therefore, delivery speed emerges as a critical determinant of service quality with customers prioritizing shorter delivery times in their assessment of service excellence.

Furthermore, Quan et al. (2022) emphasize that customers appreciate accurate and error-free deliveries, and it is considered one of the most appreciated factors by customers in their evaluation of the last-mile delivery service (Quan et al., 2022). Mangiaracina et al. (2019) and Merkert et al. (2022) also emphasize that customers are highly demanding and prioritizing delivery accuracy of the delivery process. Therefore, ensuring precision and correctness in the delivery process including accurate package identification and delivery to the intended recipients is essential in meeting customer expectations and enhancing their satisfaction.

The result of findings underscores the profound influence of delivery dimensions of price, speed and accuracy on customer satisfaction within last-mile delivery services. It

ranks as the second most influential factor which underscore its essential in influencing customer satisfaction. The ability to offer competitive pricing, expedited delivery timelines and precise order fulfillment emerges as critical determinants of customer satisfaction. Consequently, optimizing delivery dimensions becomes paramount for enhancing satisfaction within the last-mile delivery sector. By prioritizing price competitiveness, expeditious delivery and accuracy in order fulfillment processes, service providers can effectively meet customer expectations, foster positive experiences and cultivate customer loyalty even repeat business.

5.2.2 Objective 2 - Influence of packaging on customer satisfaction in last-mile delivery services

The second objective was to investigate the influence of packaging on customer satisfaction in last-mile delivery services. Through multiple linear regression analysis, the findings uncovered a significant relationship between packaging and customer satisfaction within last-mile delivery services. Coelho et al. (2020) underscore the critical importance of thoughtful packaging design in last-mile delivery operations to protect the products during transportation and thereby ensure that they arrive in good condition. This is important as customers expect their orders to be delivered intact and undamaged. Furthermore, Ignat & Chankove (2020) highlight the strategic advantage of incorporating eco-friendly packaging practices as a means to enhance customer satisfaction. With a growing awareness among consumers regarding the environmental impact of their choices, eco-conscious packaging not only aligns with their values but also contributes positively to their overall perception of the delivery service.

While the findings indicate that packaging ranks as one of the least contributing factors to customer satisfaction in last-mile delivery services, its significance in influencing

overall customer experience cannot be understated. Packaging serves as the final touchpoint between the delivery service and the customer which represents not only the physical protection of the product but also conveying brand image and quality perception. Despite its relatively lower ranking compared to other factors, packaging plays a pivotal role in shaping customers' perceptions and experiences. A well-designed, eco-friendly and sturdy package can enhance the overall delivery experience by instilling confidence and satisfaction in customers.

5.2.3 Objective 3 - Influence of technology on customer satisfaction in last-mile delivery services

The third objective of this study was to examine the influence of technology on customer satisfaction in last-mile delivery services. Through the utilization of multiple linear regression analysis, the findings uncovered a significant relationship between technology and customer satisfaction within last-mile delivery services. These findings resonate with the observations made by Olsson et al. (2019), who highlight the pivotal role of technological advancements in enhancing both the performance of last-mile delivery operations and overall customer satisfaction levels. Furthermore, Kapser & Abdelrahman (2020) emphasize that the ability to track packages through technology contributes to customer satisfaction by providing a sense of control and reliability. Additionally, Karakikes & Nathanail (2022) highlight that the use of mobile apps in last-mile delivery enhances customer satisfaction by providing a user-friendly interface and facilitating efficient communication. Castillo et al. (2022) also emphasize that the ability to communicate digitally enhances customer satisfaction by allowing for personalized interactions and addressing any concerns or special requests promptly.

The findings of the study underscore the significant role of technology as a catalyst for enhancing customer satisfaction within last-mile delivery services. Through the implementation of streamlined tracking systems and the facilitation of effective communication channels, technological advancements have fundamentally transformed the landscape of last-mile deliveries by enhancing transparency, control and customer-provider interaction. These advancements have not only improved the efficiency and accuracy of delivery operations but have also significantly enhanced the overall delivery experience for customers which thereby elevating customer satisfaction. As such, it can be conclusively affirmed that technology stands as an indispensable enabler in influencing and elevating customer satisfaction within last-mile delivery services.

5.2.4 Objective 4 - Influence of accessibility on customer satisfaction in last-mile delivery services

The fourth objective of this study was to investigate the influence of accessibility on customer satisfaction in last-mile delivery services. Through the utilization of multiple linear regression analysis, the findings revealed a notable correlation between accessibility and customer satisfaction with last-mile delivery services. This finding echoes the sentiments proposed by Boysen et al. (2020), who highlight the pivotal role of diverse delivery options in bolstering customer satisfaction. Additionally, insights from Ignat & Chankov (2020) further underscore the significance of accessibility in shaping customer satisfaction. The ability for customers to select a delivery method that aligns with their individual needs not only enhances the efficiency of the delivery process but also contributes to an overall positive delivery experience.

The findings of this study underscore the pivotal role of accessibility in shaping customer satisfaction within the realm of last-mile delivery services. Whether it's the ease of accessing delivery locations, the availability of diverse delivery options or the close proximity of delivery points to customers' location, each element plays a crucial role in shaping the customer's perception of the service. By offering a range of delivery methods, service providers afford customers the flexibility and convenience to tailor their delivery experience according to their preferences and schedules. As such, it can be inferred that accessibility is crucial in driving customer satisfaction within the last-mile delivery sector.

5.2.5 Objective 5 - Influence of trust on customer satisfaction in last-mile delivery services

The fifth objective of this study was to examine the influence of trust on customer satisfaction in last-mile delivery services. Through the utilization of multiple linear regression analysis, the findings uncovered a significant correlation between trust and customer satisfaction with last-mile delivery services. This finding resonates with the statements proposed by Olsson et al. (2023) that trust positively influences customer satisfaction by enhancing the overall delivery experience. Furthermore, Mujahid et al. (2021) highlights the profound impact of meeting customers' expectations during the delivery process on fostering loyalty and satisfaction. When customers place their trust in a delivery service provider, they are more inclined to perceive the service positively, leading to heightened levels of satisfaction. Moreover, trust engenders a sense of reliability and dependability, which are instrumental in cultivating customer loyalty and fostering repeat business. Customers are more likely to opt for a delivery service

provider they trust for future transactions, thereby solidifying the relationship between trust, satisfaction and long-term customer engagement.

The findings of the study highlight the crucial role of trust in shaping customer satisfaction within the realm of last-mile delivery services. The presence or absence of trust significantly impacts the customer's perception of the delivery service. Trust acts as a foundation upon which positive experiences are built by fostering a sense of confidence and assurance in the service provider. When customers trust the delivery service provider to fulfill their expectations reliably and transparently, it fosters a positive experience and enhances satisfaction with the last-mile delivery process. Therefore, it becomes evident that trust serves as a cornerstone in influencing customer satisfaction within the context of last-mile delivery services. Recognizing and prioritizing trust-building efforts is thus imperative for delivery companies seeking to enhance their customer satisfaction levels and maintain a competitive edge in the market.

5.2.6 Objective 6 - Most contributing factors towards customer satisfaction in last-mile delivery services

The last objective of this study was to identify the most contributing factors towards customer satisfaction in last-mile delivery services. The study reveals that trust emerged as the most contributing factor among the various factors considered including delivery, packaging, technology, accessibility and trust. This insight signifies that beyond the tangible aspects of service provision such as prompt delivery and robust packaging, the intangible yet critical element of trust significantly influences customers' overall satisfaction levels. It is justified by the statement proposed by Diputra et al. (2021) that trust is considered an important contributing factor to customer satisfaction service

quality. Customer satisfaction with a brand tends to increase when the brand successfully meets their expectations and fulfils their needs (Kundu & Datta, 2015).

This revelation emphasizes that beyond mere transactional interactions, establishing and nurturing trust between service providers and customers is fundamental in fostering positive perceptions and loyalty. Cultivating a culture of trust not only enhances customer satisfaction but also engenders brand advocacy and long-term loyalty which propels businesses towards sustained growth and success. As businesses strive to enhance their service offerings, prioritizing strategies that build and reinforce trust stands out as a key pathway to bolstering customer satisfaction and loyalty in the competitive landscape of last-mile logistics.

5.3 Contribution of Study

This study has practical contribution due to its direct applicability to real-world operations within the last-mile delivery sector. It provides actionable insights for delivery service providers to enhance customer satisfaction and loyalty. The findings highlighted the need for companies to optimize the delivery aspects of price, speed and accuracy to attract and retain customers effectively. Moreover, this study underscored the practical necessity for companies to invest in packaging design and eco-friendly practices to ensure positive delivery experiences and mitigate risks of returns or complaints.

Furthermore, this study urging companies to leverage technological advancements such as tracking systems and mobile apps to streamline delivery processes and enhance customer experiences. Additionally, this research reinforces the practical need for

companies to prioritize convenience and flexibility in their delivery services in order to meet evolving customer expectations. Lastly, this research indicated the importance of trust as a fundamental driver of satisfaction. It underscores the practical importance of building and maintaining trust-based relationships with customers through consistent delivery on promises, transparent communication and prompt issue resolution.

On a theoretical level, this study contributed significantly to the understanding of service quality, customer satisfaction and last-mile logistics. It enriches service quality theory by identifying specific factors that influence satisfaction levels within the logistics industry. Furthermore, this study advanced customer satisfaction theory by highlighting the role of delivery, packaging, technology, accessibility and trust in shaping customer perceptions and satisfaction. By recognizing these key factors as determinants of customer satisfaction and loyalty, this research provided theoretical frameworks for enhancing last-mile delivery operations.

Additionally, this study contributed to advancements in last-mile logistics theory by offering insights into best practices and strategies for optimizing delivery processes to meet customer expectations and stay competitive in the market. Ultimately, these theoretical contributions guiding future research endeavors and practical applications within the logistics industry which paving the way for continued improvement and innovation in last-mile delivery services.

5.4 Recommendations for Future Research

Future research on customer satisfaction in last-mile delivery services could benefit from a variety of avenues for exploration. Firstly, qualitative research such as in-depth interviews or focus groups could provide deeper insights and uncover nuanced perspectives that quantitative approaches may overlook. Furthermore, future researchers may delve into the influence of other variables beyond those already considered to broaden the scope of understanding. For instance, factors such as environmental sustainability, personalization and customer engagement could play significant roles in shaping satisfaction levels and warrant further exploration (Ignat & Chankov, 2020; Jain & Sundström, 2021; Ain & Siddiqui, 2020). Moreover, future researchers can investigate the impact of external factors such as traffic congestion, weather conditions, regulatory policies or socio-economic trends on customer satisfaction with last-mile delivery services (Eliyan et al., 2021; Borghetti et al., 2022; Xu et al., 2022).

Additionally, exploring different geographical areas beyond Kuala Lumpur such as other districts or regions across the country could provide a more comprehensive view of customer satisfaction. Lastly, investigating potential mediating or moderating variables such as the level of trustworthiness could deepen understanding of the underlying mechanisms shaping customer satisfaction. By pursuing these avenues of research, future studies can contribute to a deeper understanding of the complex dynamics shaping customer satisfaction. Such insights will be instrumental in guiding the development of more effective strategies to meet the evolving needs and preferences of customers which ultimately enhance the overall service quality in last-mile delivery services.

5.5 Conclusion

The comprehensive investigation conducted in this research explored the complex dynamics of last-mile delivery services, specifically examining the influence of delivery, packaging, technology, accessibility and trust on customer satisfaction. Focused on consumers within the Kuala Lumpur area, the study meticulously analyzed these variables and uncovered a compelling correlation between each factor and overall customer satisfaction. The findings underscored the pivotal role that delivery price, speed and accuracy, packaging, technological advancements, ease of accessibility and trustworthiness play in shaping the perception of service quality and subsequently influencing customer satisfaction levels. Therefore, this study successfully addresses its research question and achieves its stated objectives by providing empirical evidence to support the formulated hypotheses. Furthermore, its implications extend beyond academia by offering practical use for businesses seeking to optimize their delivery services and foster enduring customer relationships.

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APPENDIX A: QUESTIONNAIRE



THE INFLUENCE OF DELIVERY, PACKAGING, TECHNOLOGY, ACCESSIBILITY AND TRUST ON CUSTOMER SATISFACTION IN LAST-MILE DELIVERY SERVICES

Greetings,

Thank you very much for dedicating your time to participate in this survey. Your valuable insights are pivotal in shaping the understanding of the intricate factors influencing customer satisfaction within the last-mile delivery sector. This research aims to contribute to the enhancement of service quality, and your thoughtful responses will play a crucial role in achieving this goal. Please answer the following questions honestly and thoughtfully. Your responses are confidential, and the data collected will be used for internal purposes only.

Should you have any concerns or questions during the survey, please feel free to reach out. Thank you once again for your time and valuable contribution to this research endeavor.

Wish you have a great day!

Your sincerely,

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Section A- Demographic

Please choose the answer that best represents your demographic information.

1. What gender are you?

- Male
- Female

2. Which race are you?

- Malay
- Chinese
- Indian
- Others

3. Which age group are you in?

- Under 20
- 21 to 30
- 31 to 40
- 41 to 50
- 51 and above

4. What is your monthly income?

- Under RM 1,500
- RM 1,501 - RM 3,000
- RM 3,001 - RM 4,500
- RM 4,501 - RM 6,000
- RM 6,001 - RM 7,500
- RM 7,501 and above

5. Have you used last-mile delivery (GDEX, DHL, Skynet, POS Malaysia, J&T, Ninjavan, GrabExpress, LalaMove, Shopee Express) before?

- Yes
- No

Section B- Delivery

The following set of statements relates to the delivery of the last-mile delivery services. Please express your level of agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree) using a five-point Likert scale.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	Items	Scale				
1	The overall cost of delivery service is reasonable and fair.	1	2	3	4	5
2	The delivery service is a cost-effective choice for sending and receiving.	1	2	3	4	5
3	The delivery service strikes a balance between affordability and quality.	1	2	3	4	5
4	The delivery service sends parcels at an impressive speed.	1	2	3	4	5
5	The goods are delivered within the specified time.	1	2	3	4	5
6	The goods delivered are correct	1	2	3	4	5
7	The delivery destinations are correct.	1	2	3	4	5
8	There is no omission of the goods delivered.	1	2	3	4	5

Section B- Packaging

The following set of statements relates to the packaging of the last-mile delivery services. Please express your level of agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree) using a five-point Likert scale.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	Items	Scale				
1	The products arrived in bad condition.	1	2	3	4	5
2	There is no protective packaging provided.	1	2	3	4	5
3	The delivery service does not use eco-friendly packaging materials that align with customer's value.	1	2	3	4	5
4	The delivery packaging is not easy to use.	1	2	3	4	5

Section B- Technology

The following set of statements relates to the technology of the last-mile delivery services. Please express your level of agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree) using a five-point Likert scale.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	Items	Scale				
1	The delivery service does not offer transparency and visibility.	1	2	3	4	5
2	There are no real-time updates about the delivery status provided.	1	2	3	4	5
3	Customers are unable to track their order easily.	1	2	3	4	5
4	Customers are not well-informed and connected throughout the entire delivery process.	1	2	3	4	5

Section B- Accessibility

The following set of statements relates to the accessibility of the last-mile delivery services. Please express your level of agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree) using a five-point Likert scale.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	Items	Scale				
1	There are a variety of convenient delivery options that are hassle-free and user-friendly.	1	2	3	4	5
2	There is a close proximity of delivery points nearby.	1	2	3	4	5
3	The convenience of the delivery methods align with different schedules and preferences of customers.	1	2	3	4	5

Section B- Trust

The following set of statements relates to your trustworthiness with the last-mile delivery services. Please express your level of agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree) using a five-point Likert scale.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	Items	Scale				
1	Customers can trust the delivery service in ensuring the goods are in safe hands.	1	2	3	4	5
2	Customers can trust that their goods will be delivered as promised.	1	2	3	4	5
3	Customers trust the delivery service due to the integrity and professionalism of the delivery personnel.	1	2	3	4	5
4	The trust instilled by the delivery service ensures customers' peace of mind with every delivery.	1	2	3	4	5

Section C- Customer Satisfaction

The following set of statements relates to your satisfaction with the last-mile delivery services. Please express your level of agreement with the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree) using a five-point Likert scale.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	Items	Scale				
		1	2	3	4	5
1	I am satisfied with the delivery price, speed and accuracy					
2	I am satisfied with the delivery packaging.					
3	The utilization of technology in the delivery process leaves me satisfied.					
4	The accessibility of the delivery service is exceptionally satisfying.					
5	My satisfaction with the delivery service is rooted in the trust I have in it.					
6	The last-mile delivery service that I experienced met my expectations.					
7	Overall, I am satisfied with the last-mile delivery services.					

~END OF QUESTIONS~

Appreciate for your dedication in sharing valuable insights with me. Your participation is genuinely valued and your input will greatly impact the success of my study.

Please be assured that the information you shared in this questionnaire will be handled with the utmost confidentiality. Thank you for your time and valuable contribution.

APPENDIX B: RELIABILITY OF THE INSTRUMENTS

i. Delivery

Case Processing Summary

		N	%
Cases	Valid	401	100.0
	Excluded ^a	0	.0
	Total	401	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.895	.896	8

Item Statistics

	Mean	Std. Deviation	N
D1	3.82	.580	401
D2	3.83	.583	401
D3	3.76	.585	401
D4	3.74	.628	401
D5	3.85	.553	401
D6	3.98	.505	401
D7	3.99	.529	401
D8	3.86	.556	401

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
30.83	11.795	3.434	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
D1	27.02	9.012	.703	.569	.879
D2	27.00	9.200	.638	.503	.885
D3	27.07	9.192	.637	.469	.885
D4	27.09	8.861	.680	.593	.881
D5	26.98	9.185	.687	.567	.880
D6	26.85	9.311	.724	.700	.878
D7	26.84	9.298	.687	.659	.880
D8	26.97	9.269	.655	.518	.883

ii. Packaging

Case Processing Summary

		N	%
Cases	Valid	401	100.0
	Excluded ^a	0	.0
	Total	401	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.793	.805	4

Item Statistics

	Mean	Std. Deviation	N
R_P1	3.85	.671	401
R_P2	3.73	.774	401
R_P3	3.24	.901	401
R_P4	3.71	.725	401

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
14.53	5.900	2.429	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
R_P1	10.68	3.795	.632	.495	.734
R_P2	10.80	3.249	.735	.585	.674
R_P3	11.29	3.511	.467	.235	.827
R_P4	10.82	3.634	.629	.421	.731

iii. Technology

Case Processing Summary

		N	%
Cases	Valid	401	100.0
	Excluded ^a	0	.0
	Total	401	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.928	.928	4

Item Statistics

	Mean	Std. Deviation	N
R_T1	3.64	.772	401
R_T2	3.66	.802	401
R_T3	3.69	.805	401
R_T4	3.61	.851	401

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
14.60	8.590	2.931	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
R_T1	10.96	5.276	.767	.604	.927
R_T2	10.94	4.906	.855	.733	.898
R_T3	10.91	4.947	.836	.731	.904
R_T4	11.00	4.662	.871	.765	.893

iv. Accessibility

Case Processing Summary

		N	%
Cases	Valid	401	100.0
	Excluded ^a	0	.0
	Total	401	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.781	.782	3

Item Statistics

	Mean	Std. Deviation	N
A1	3.49	.739	401
A2	3.22	.811	401
A3	3.53	.762	401

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
10.24	3.721	1.929	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
A1	6.75	1.934	.605	.379	.720
A2	7.01	1.785	.590	.354	.739
A3	6.71	1.786	.666	.445	.652

v. **Trust**

Case Processing Summary

		N	%
Cases	Valid	401	100.0
	Excluded ^a	0	.0
	Total	401	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.889	.891	4

Item Statistics

	Mean	Std. Deviation	N
Trust1	3.76	.604	401
Trust2	3.82	.599	401
Trust3	3.63	.652	401
Trust4	3.71	.673	401

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
14.91	4.811	2.193	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Trust1	11.15	2.883	.762	.618	.856
Trust2	11.09	2.815	.814	.681	.838
Trust3	11.28	2.807	.723	.523	.871
Trust4	11.20	2.720	.738	.559	.866

vi. Customer Satisfaction

Case Processing Summary

		N	%
Cases	Valid	401	100.0
	Excluded ^a	0	.0
	Total	401	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.943	.943	7

Item Statistics

	Mean	Std. Deviation	N
CS1	3.81	.571	401
CS2	3.82	.625	401
CS3	3.76	.649	401
CS4	3.77	.652	401
CS5	3.70	.659	401
CS6	3.83	.632	401
CS7	3.82	.599	401

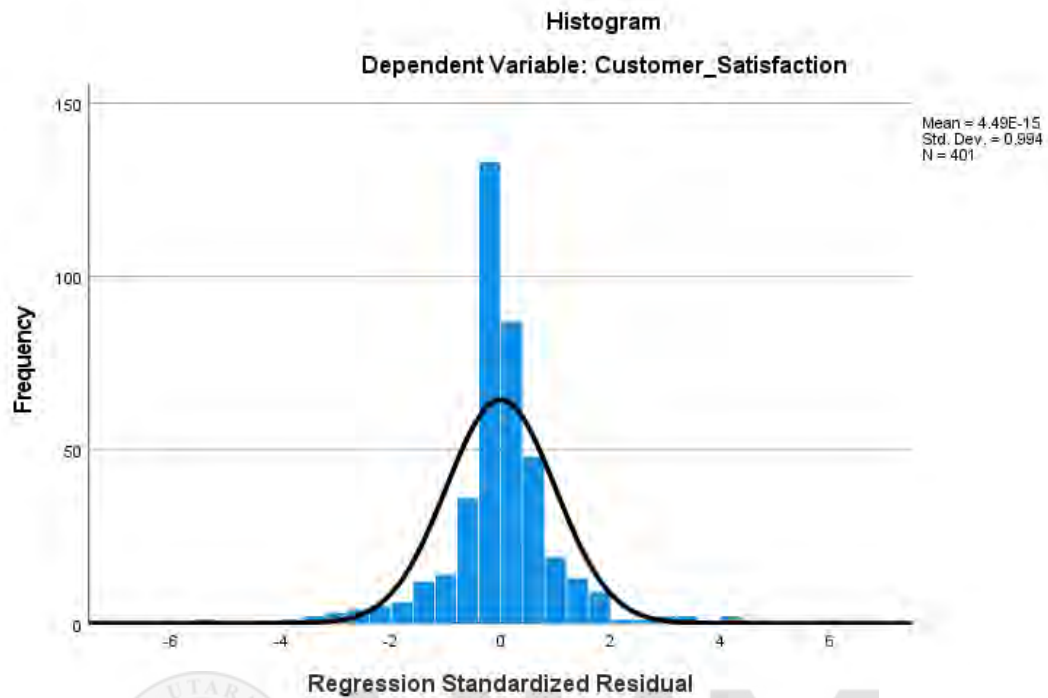
Scale Statistics

Mean	Variance	Std. Deviation	N of Items
26.51	14.396	3.794	7

Item-Total Statistics

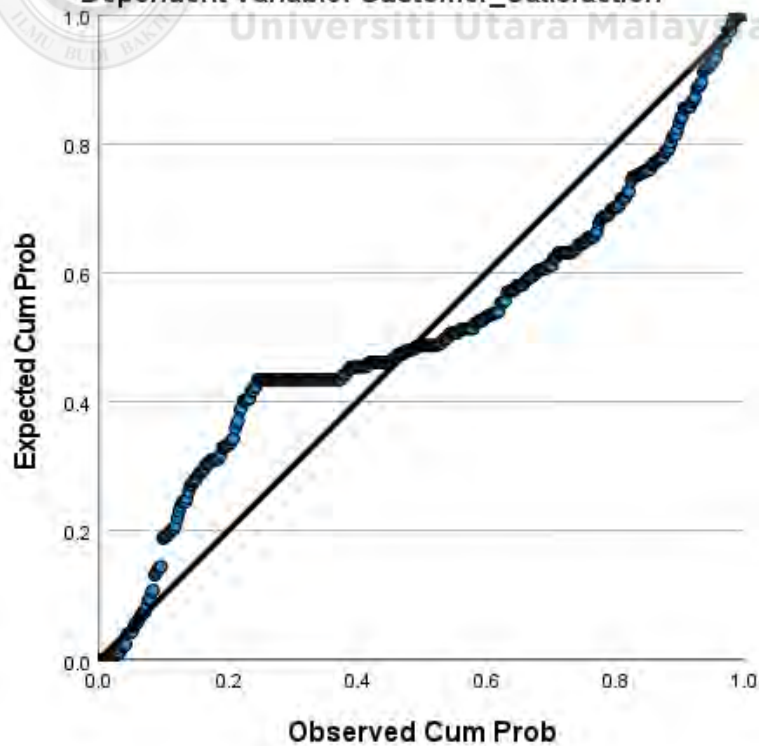
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CS1	22.70	11.386	.697	.508	.944
CS2	22.69	10.804	.779	.622	.937
CS3	22.74	10.421	.848	.750	.931
CS4	22.74	10.488	.825	.720	.933
CS5	22.80	10.414	.834	.712	.933
CS6	22.67	10.531	.845	.751	.932
CS7	22.69	10.690	.854	.775	.931

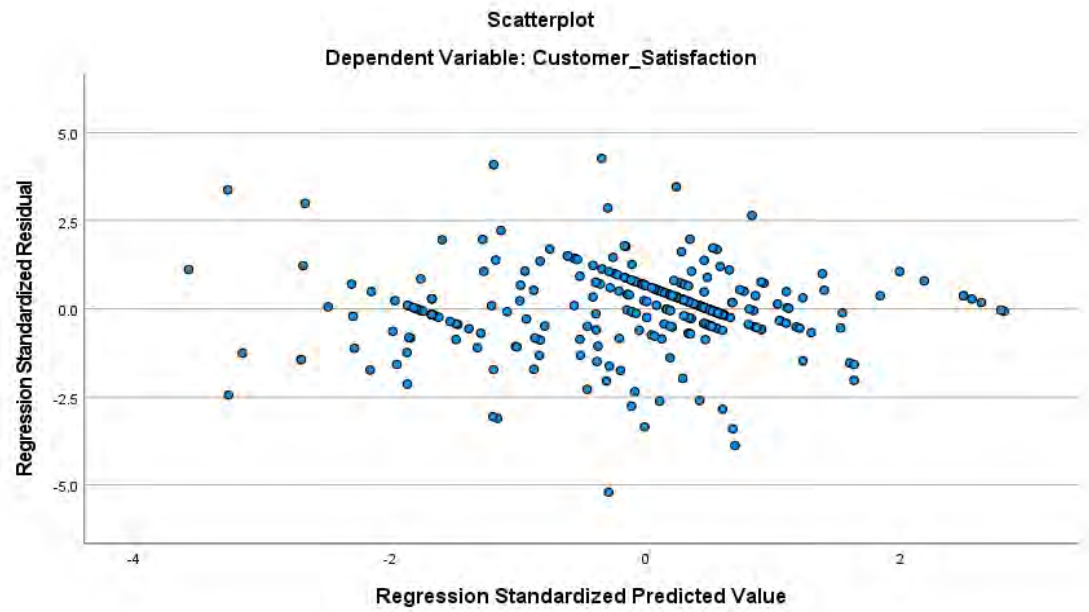
APPENDIX C: NORMALITY OF THE DATA



Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Customer_Satisfaction





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APPENDIX D: DESCRIPTIVE STATISTICS

i. Profile of Respondents

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	209	52.1	52.1	52.1
	Male	192	47.9	47.9	100.0
	Total	401	100.0	100.0	

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chinese	168	41.9	41.9	41.9
	Indian	44	11.0	11.0	52.9
	Malay	182	45.4	45.4	98.3
	Others	7	1.7	1.7	100.0
	Total	401	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21 to 30	159	39.7	39.7	39.7
	31 to 40	155	38.7	38.7	78.3
	41 to 50	45	11.2	11.2	89.5
	51 and above	35	8.7	8.7	98.3
	Under 20	7	1.7	1.7	100.0
	Total	401	100.0	100.0	

Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	RM 1,501 - RM 3,000	42	10.5	10.5	10.5
	RM 3,001 - RM 4,500	122	30.4	30.4	40.9
	RM 4,501 - RM 6,000	142	35.4	35.4	76.3
	RM 6,001 - RM 7,500	36	9.0	9.0	85.3
	RM 7,501 and above	30	7.5	7.5	92.8
	Under RM 1,500	29	7.2	7.2	100.0
	Total	401	100.0	100.0	

ii. Measures of Central Tendency for Variables

Statistics

		Customer_Satisfaction	Delivery	Packaging	Technology	Accessibility	trust
N	Valid	401	401	401	401	401	401
	Missing	0	0	0	0	0	0
Mean		3.7866	3.8541	3.6322	3.6509	3.4123	3.7263
Median		4.0000	4.0000	4.0000	4.0000	3.3333	4.0000
Mode		4.00	4.00	4.00	4.00	4.00	4.00
Std. Deviation		.54202	.42929	.60724	.73271	.64302	.54835
Minimum		1.57	2.50	1.50	1.00	1.00	1.25
Maximum		5.00	5.00	5.00	5.00	5.00	5.00

iii. Descriptive

Statistics

		Customer_Satisfaction	Delivery	Packaging	Technology	Accessibility	trust
N	Valid	401	401	401	401	401	401
	Missing	0	0	0	0	0	0
Skewness		-.946	-.529	-.999	-1.023	-.690	-.984
Std. Error of Skewness		.122	.122	.122	.122	.122	.122
Kurtosis		1.463	1.311	.598	.942	.753	2.468
Std. Error of Kurtosis		.243	.243	.243	.243	.243	.243

APPENDIX E: INFERENTIAL STATISTICS

i. Pearson Correlation Analysis

		Correlations					
		Customer_Sa tisfaction	Delivery	Packaging	Technology	Accessibility	trust
Customer_Satisfaction	Pearson Correlation	1	.668**	.525**	.535**	.414**	.756**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001
	N	401	401	401	401	401	401
Delivery	Pearson Correlation	.668**	1	.452**	.467**	.418**	.628**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001
	N	401	401	401	401	401	401
Packaging	Pearson Correlation	.525**	.452**	1	.692**	.149**	.520**
	Sig. (2-tailed)	<.001	<.001		<.001	.003	<.001
	N	401	401	401	401	401	401
Technology	Pearson Correlation	.535**	.467**	.692**	1	.273**	.479**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001
	N	401	401	401	401	401	401
Accessibility	Pearson Correlation	.414**	.418**	.149**	.273**	1	.402**
	Sig. (2-tailed)	<.001	<.001	.003	<.001		<.001
	N	401	401	401	401	401	401
trust	Pearson Correlation	.756**	.628**	.520**	.479**	.402**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	
	N	401	401	401	401	401	401

** . Correlation is significant at the 0.01 level (2-tailed).

ii. Multiple Linear Regression Analysis

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	trust, Accessibility, Technology, Delivery, Packaging ^b		Enter

a. Dependent Variable: Customer_Satisfaction

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.811 ^a	.658	.654	.31894	1.610

a. Predictors: (Constant), trust, Accessibility, Technology, Delivery, Packaging

b. Dependent Variable: Customer_Satisfaction

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	77.333	5	15.467	152.044	<.001 ^b
	Residual	40.182	395	.102		
	Total	117.515	400			

a. Dependent Variable: Customer_Satisfaction

b. Predictors: (Constant), trust, Accessibility, Technology, Delivery, Packaging

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.052	.152		.341	.733
	Delivery	.316	.051	.250	6.245	<.001
	Packaging	.063	.039	.070	1.614	.047
	Technology	.090	.031	.121	2.846	.005
	Accessibility	.063	.028	.075	2.226	.027
	trust	.468	.041	.474	11.466	<.001

a. Dependent Variable: Customer_Satisfaction

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.2155	5.0212	3.7866	.43970	401
Residual	-1.66055	1.36349	.00000	.31694	401
Std. Predicted Value	-3.573	2.808	.000	1.000	401
Std. Residual	-5.206	4.275	.000	.994	401

a. Dependent Variable: Customer_Satisfaction