TRACKING SYSTEM ACCURACY, DELIVERY SPEED AND TIMELINESS OF UPDATES AFFECT THE CUSTOMER EXPERIENCE IN E-COMMERCE

NURUL AIN NABILA BINTI ABDULLAH

MASTER OF SCIENCE (TRANSPORTATION AND LOGISTICS MANAGEMENT)

UNIVERSITI UTARA MALAYSIA

DECEMBER 2024

TRACKING SYSTEM ACCURACY, DELIVERY SPEED AND TIMELINESS OF UPDATES AFFECT THE CUSTOMER EXPERIENCE IN E-COMMERCE

By

NURUL AIN NABILA BINTI ABDULLAH

Thesis Submitted to

College of Business

Universiti Utara Malaysia,

in Fulfillment of the Requirement for the Master of Science (Transportation and Logistics Management)

Kolej Perniagaan
(College of Business)
Universiti Utara Malaysia

PERAKUAN KERJA TESIS / DISERTASI
(Certification of thesis / dissertation)

Kami, yang bertandatangan, memperakukan bahawa
(We, the undersigned, certify that)

NURUL AIN NABILA ABDULLAH

calon untuk Ijazah
(candidate for the degree of) **MASTER OF SCIENCE (TRANSPORTATION & LOGISTICS MANAGEMENT)**

telah mengemukakan tesis / disertasi yang bertajuk:
(has presented his/her thesis / dissertation of the following title)

TRACKING SYSTEM ACCURACY, DELIVERY SPEED AND TIMELINESS OF UPDATES AFFECT THE CUSTOMER EXPERIENCE IN E-COMMERCE

seperti yang tercatat di muka surat tajuk dan kulit tesis / disertasi.
(as it appears on the title page and front cover of the thesis / dissertation).

Bahawa tesis/disertasi tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan, sebagaimana yang ditunjukkan oleh calon dalam ujian lisan yang diadakan pada:
03 Disember 2024.
(That the said thesis/dissertation is acceptable in form and content and displays a satisfactory knowledge of the field of study as demonstrated by the candidate through an oral examination held on:
03 December 2024.

Pengerusi Viva *(Chairman for Viva)*	:	**Assoc. Prof. Dr. Kamal Imran Mohd Sharif**	Tandatangan *(Signature)*	
Pemeriksa Dalam *(Internal Examiner)*	:	**Assoc. Prof. Dr. Kamal Imran Mohd Sharif**	Tandatangan *(Signature)*	
Pemeriksa Dalam *(Internal Examiner)*	:	**Dr. Nooraini Ismail**	Tandatangan *(Signature)*	

Tarikh: **03 Disember 2024**
Date:

Nama Pelajar (Name of Student)	:	**Nurul Ain Nabila Abdullah**
Tajuk Tesis / Disertasi *(Title of the Thesis / Dissertation)*	:	**Tracking System Accuracy, Delivery Speed and Timeliness of Updates Affect the Customer Experience in E-Commerce**
Program Pengajian *(Programme of Study)*	:	**Master of Science (Transportation & Logistics Management)**
Nama Penyelia/Penyelia-penyelia *(Name of Supervisor/Supervisors)*	:	En. **Nizamuddin Dato' Zainuddin** Tandatangan
Nama Penyelia/Penyelia-penyelia *(Name of Supervisor/Supervisors)*	:	- Tandatangan

PERMISSION TO USE

In presenting this report in partial fulfilment of the requirements for a postgraduate master from Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this report in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor Log. Nizamuddin Bin Dato' Zainuddin, or his absence by the Dean of School of Technology Management and Logistics.

It is understood that any copying or publication or use of this report or parts of financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my report.

Request for permission to copy or to make other use of materials in this report, in whole or in part, should be addressed to:

Director of Postgraduate Studies Unit, College of Business
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
Malaysia

ACKNOWLEDGEMENTS

Throughout the journey to completion of this master dissertation, I have received assistance and support from an array of people. The path to success was never simple, since the chores and challenges were exhausting and stressful, but the productive result justified all the effort. To begin, I want to express my gratitude for the direction I received during this report writing process from my thesis's supervisor, Log. Nizamuddin Bin Dato' Zainuddin. His professional expertise in management disciplines and his unselfish willingness to share his experiences and valuable information aided me in completing this report successfully. Additionally, I would not have been able to conduct this research without the valuable information provided by the online buyers in 12 districts in the State of Kedah, Malaysia. In addition, I would like to thank to the online buyers who took the time to complete the surveys. This demonstrates my gratitude for their unselfish assistance and wisdom. Finally, I would want to express my gratitude to my husband, my family, Log. Nizamuddin Bin Dato' Zainuddin and my friends for providing me with the motivation and encouragement to complete this report. Once again, I owe thanks to everyone who helped me finish this report, both directly and indirectly.

ABSTRACT

The aim of this research is to investigate the tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce during purchase goods or services through the e-commerce. The existence of this advanced technology has created various types of e-commerce that are used for various jobs for example to study and purchase goods or services through e-commerce platform. The quantitative technique was used in this study to investigate how far the tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce. The population to be researched in this study is the people who are purchase goods or services through the e-commerce platform that stay in Kedah. There are about 368 online buyers from 12 districts (Baling, Bandar Baharu, Kota Setar, Kuala Muda, Kubang Pasu, Kulim, Langkawi, Padang Terap, Sik, Yan, Pendang, Pokok Sena) in the State of Kedah, Malaysia was participated in this study. According to the finding in this research, the e-commerce platform is very important for online buyers in surveys and purchase goods or services. As a result, the ANOVA analysis support the hypothesis where there is a positive relationship between the tracking system accuracy, delivery speed and timeliness of updates with the customer experience in e-commerce.

Keywords: E-commerce, tracking system accuracy, delivery speed, timeliness of updates, customers experiences, goods or services

ABSTRAK

Tujuan penyelidikan ini adalah untuk mengkaji ketepatan sistem penjejakan, kelajuan penghantaran dan ketepatan masa kemas kini mempengaruhi pengalaman pelanggan dalam e-dagang semasa pembelian barangan atau perkhidmatan melalui e-dagang. Kewujudan teknologi canggih ini telah mewujudkan pelbagai jenis e-dagang yang digunakan untuk pelbagai pekerjaan contohnya untuk mengkaji dan membeli barangan atau perkhidmatan melalui platform e-dagang. Teknik kuantitatif digunakan dalam kajian ini untuk menyiasat sejauh mana ketepatan sistem penjejakan, kelajuan penghantaran dan ketepatan masa kemas kini mempengaruhi pengalaman pelanggan dalam e-dagang. Populasi yang akan dikaji dalam kajian ini adalah mereka yang membeli barangan atau perkhidmatan melalui platform e-dagang yang menetap di Kedah. Terdapat kira-kira 368 pembeli dalam talian dari 12 daerah (Baling, Bandar Baharu, Kota Setar, Kuala Muda, Kubang Pasu, Kulim, Langkawi, Padang Terap, Sik, Yan, Pendang, Pokok Sena) di Negeri Kedah, Malaysia telah menyertai kajian ini. Menurut penemuan dalam penyelidikan ini, platform e-dagang sangat penting untuk pembeli dalam talian dalam tinjauan dan pembelian barangan atau perkhidmatan. Hasilnya, analisis ANOVA menyokong hipotesis di mana terdapat hubungan positif antara ketepatan sistem penjejakan, kelajuan penghantaran dan ketepatan masa kemas kini dengan pengalaman pelanggan dalam e-dagang.

Kata kunci: E-dagang, ketepatan sistem penjejakan, kelajuan penghantaran, ketepatan masa kemas kini, pengalaman pelanggan, barangan atau perkhidmatan

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviations	Description
ANOVA	Analysis of Variance
SPSS	Statistical Packages for Social Science
IoT	Internet of Things
RFID	Radio-Frequency Identification

CHAPTER 1 – INTRODUCTION

1.0 Introduction

This research will begin with some background information on the e-commerce. The background of this research will more be focusing on the tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce. The highlight of the following section is about the problem statement and also the research objectives. The other part that has been highlighted in this research is the scope of the study and the significance of the study. The summary will be presented at the end of this chapter when overall concept is already presented.

1.1 Background of the Study

After the advent of the internet and the world wide web revolution took place, the electronic commerce or e-commerce platform became one of the new and constantly changing area of the information technology and business management. Since the internet has become widely accessible, the e-commerce platform has emerged as a new business trend and will ultimately increase in the popularity. Electronic business procedures for physical goods, online marketing, ordering, payment, delivery, and even customer support is all part of the e-commerce. In other words, an e-commerce platform is a recent development that involves the process of buying and selling of goods, services, and information across computer networks connected to the internet (Tokase & Mujmule, 2021).

Nowadays, the electronic commerce or e-commerce has become a widely recognized business platform practically in every region of the world where there is an adoption of different types of technology that have been implemented in the process of the e-

commerce (Taher, 2021). Nowadays, a business unable to remain without utilizing the social media and digital platforms. Social media adoption is one of the most beneficial tools for enhancing the e-commerce strategy as the e-commerce industry has become more adaptable (Sulthana & Shanmugam, 2023).

E-commerce is a largest sector where the customers prefer to buy and the seller to sell the item on a website or on the trading applications (Sharma & Gandhi, 2021). The e-commerce is the process of shifting the physical buying of goods to the online buying, where a physical store is not required to facilitate the transaction between buyers and also the sellers. (Hafez et al., 2021). Social media including the Facebook and Twitter have become the important drivers of e-commerce almost all over the world.

E-commerce platforms enable customers to purchase the goods and services from their homes by using the available devices including the computers, smartphones, or tablets. The customers can access the detailed information about the products such as the specifications, descriptions, and also read the reviews from other buyers where this will be helping them make informed decisions.

In addition, e-commerce also allows the customers to compare the price and quality of a product across numerous stores quickly and simply. Compare to the traditional physical stores, the prices may be higher due to factors including overhead costs warehousing and inventory management costs, and advertising expenses, the customers can frequently obtain the better offers and discounts by doing this. This convenience and cost-effectiveness are the main reasons many more customers are turning to the e-commerce for their purchase requirements. The rapid growth of e-commerce has transformed the retail landscape, while offering the customers the

unprecedented convenience and choice. The figure 1 below show the index of retail sale over the internet in January 2021 until September 2023.

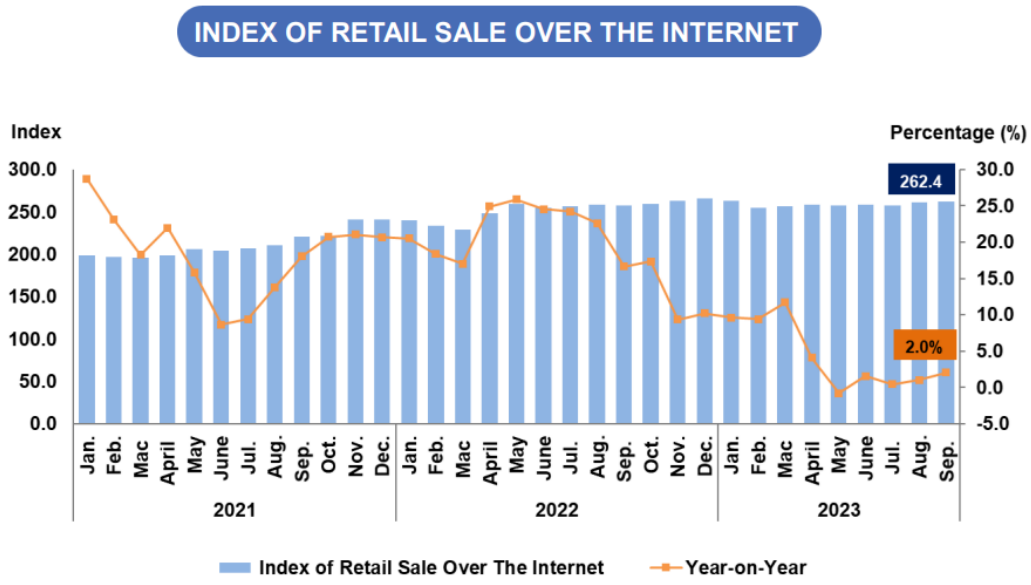


Figure 1.1: Index of retail sale over the internet, January 2021-September 2023
Source: Department of Statistics Malaysia, 2023

1.2 Problem Statement

There are three independent variables that influence the accuracy of the tracking system, delivery speed and timeliness of updates on the customer experience which is the dependent variable. Although these factors are commonly associated with increasing the customer satisfaction, there is still a significant research gap in understanding how these elements interact in specific industry contexts, such as logistics in emerging markets or specialized delivery services such as e-commerce.

Every company, as but particularly those in the e-commerce industry, has to manage their logistics effectively. The e-commerce industry's existence has demonstrated how crucial it is for the businesses to use an effective logistical procedure to ensure the customer satisfaction, lower expenses, and boost competitiveness. Furthermore, as the number of customers who choose to shop through e-commerce platform has increases,

the business has to adapt to meet the customers' demands while offering them a positive shopping experience. Therefore, from receiving an order to product delivery, the logistics management plays a crucial role in ensuring the effectiveness of the delivery process (Gomes et al., 2023). Furthermore, the product delivery and shipping are essential components of e-commerce logistics management, particularly when it comes to fulfilling the deadlines and also minimizing the costs. The primary cause of this is because the customers now have higher expectations for delivery times (Gomes et al., 2023).

Addressing this research gap is crucial as, in highly competitive industries, customer experience has become an important difference. Businesses that can optimize delivery speed, tracking accuracy, and update timeliness will be in a better position to increase customer loyalty and retention. By looking into this gap, the practitioners may further adjust their operational methods to successfully satisfy customers expectations, especially in emerging markets. In the end, the research's conclusions might help to create a strong service delivery models that satisfy shifting customer demands.

A common issue that involves in the e-commerce is delivery delay which may affecting the customer satisfaction in e-commerce and it poses a major challenge for a business's that trying to build trust and retain their loyal customers. The delivery attempt fails, usually because of the incorrect address provided by the customer, the customer is not at home, or there is a logistical issue, which may cause the delivery is unsuccessful or delayed. This might lead to an additional shipping trials or required the customers to pick up packages from the delivery facility, which would be inconvenient and time-consuming (Periyasamy et al., 2023).

The customers may become frightened and unsatisfied with the service when they experience a lack of transparency as a result of the order delays. Moreover, the minor delivery delays can have a negative effect on a brand's reputation, reduce repeat purchases, and generate negative feedback in the highly competitive e-commerce industry. Even though, there is more initiatives to enhance the logistics services, the supply chain coordination issues, incorrect delivery time estimates, and ineffective route planning represent a few of the reasons that deliveries are still delayed.

Other issue is inaccurate tracking information. The customers require an accurate tracking information to be able to keep track of the status of their packages. However, the tracking data is incorrect or not updated in real time by the courier will leads to confusion and doubt regarding the package's location (Periyasamy et al., 2023). For example, the customers may have to wait for an item that is described as "out for delivery", and they could lose confidence in the online shop if their items shipment is delayed without any explanation. The broad perception of the brand's effectiveness and reliability is affected by this inconsistent communication.

Moreover, in cases of time-sensitive deliveries, especially the perishable goods or critical items, the inaccurate tracking can result in products being late delivered and may cause to the returns or refunds from the customers. This not only impacts the customer satisfaction but also will produces revenue loss for the business. Resolving this issue is crucial to preserving customer loyalty and ensuring the efficient running of e-commerce businesses.

The other issues were lack of update timeliness. Timeliness of updates is a critical factor in improving customer experience in e-commerce, especially through Internet of Things or IoT-enhanced systems. IoT was created to help in managing and

developing the customer experience. Data collected at several contact areas can be automatically collected and transferred by the smart devices using sensors. The analysis is then used to reduce the customer-rated negative experiences and boost the amount of good interactions between the customers and brands, products, or the businesses (Marek & Woźniczka, 2019). The customers in usual e-commerce environments frequently experience anxiety and frustration due to uncertainty about the status of their orders. A bad purchasing experience might be caused by incorrect delivery estimates, poor communication, or a lack of real-time tracking.

Despite the potential of IoT to improve the timeliness of updates, there are still some challenges in ensuring that this information is consistently accurate and reliable. The location, status, and movement of items are continually monitored by IoT-enabled inventory management systems using a collection of sensors, RFID (Radio-Frequency Identification) tags, and linked devices (Sallam et al., 2023). These systems have the ability to quickly identify and notify customers and businesses about the location, status, and possible delays of an order. IoT may forecast delivery timings accurately and proactively handle interruptions like traffic or bad weather by incorporating predictive analytics. If these issues are not resolved, it could undermine the advantages of IoT in improving the customers experience.

1.3 Research questions

This research was to identify how tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce. The research questions are created as follows:

- RQ1: How does the accuracy of tracking systems impact the customer experience in the context of delivery services?
- RQ2: How does the delivery speed impact on the overall customer experience?
- RQ3: To what extent does the timeliness of delivery updates influence the customer experiences?

1.4 Research Objective

The objectives of this research are:

- RO1: To determine how the accuracy of tracking systems impact the customer experience in the context of delivery services.
- RO2: To determine how the delivery speed impact on the overall customer experience.
- RO3: To determine how the timeliness of delivery updates influence the customer experiences.

1.5 Scope of the Study

The objective of this research is to identify the tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce. Therefore, the research is planning to get the relevant information from respondents in 12 districts in the State of Kedah, Malaysia who are purchase the goods or services through the e-commerce platform. This research study was plan to get the data by

simple random quantitative method with targeted sample size of 368 online shoppers. The data will be collected by Google form, WhatsApp and Facebook (Social Media platform) within two months period which are October to November 2024. The relevant sources of respondents' contact will be on the Facebook and WhatsApp that focusing on online buyer's communities.

1.6 Significance of the Study

This research is particularly useful for online shopper to ensure that they get benefits from their daily utilization of the e-commerce. This research will be more focus on the online shoppers between ages 18 until 41 years old and above, from 12 districts (Baling, Bandar Baharu, Kota Setar, Kuala Muda, Kubang Pasu, Kulim, Langkawi, Padang Terap, Sik, Yan, Pendang, Pokok Sena) in Kedah who are frequently purchases goods through the e-commerce platform.

This research was conducted to identify how to improve the customer experience in e-commerce through the tracking system accuracy, delivery speed and timeliness of updates. It is important to know what extent all these three elements can impact on the customers experience through the e-commerce platform. Figure 1.3 below show the percentage of individuals using the internet by age group in Malaysia from 2021 and 2022 while figure 1.4 show 2187,000 of total population in Kedah. This study focuses on internet users ages 18 until 41 years old and above because this group is among the highest internet users based on the diagram below.

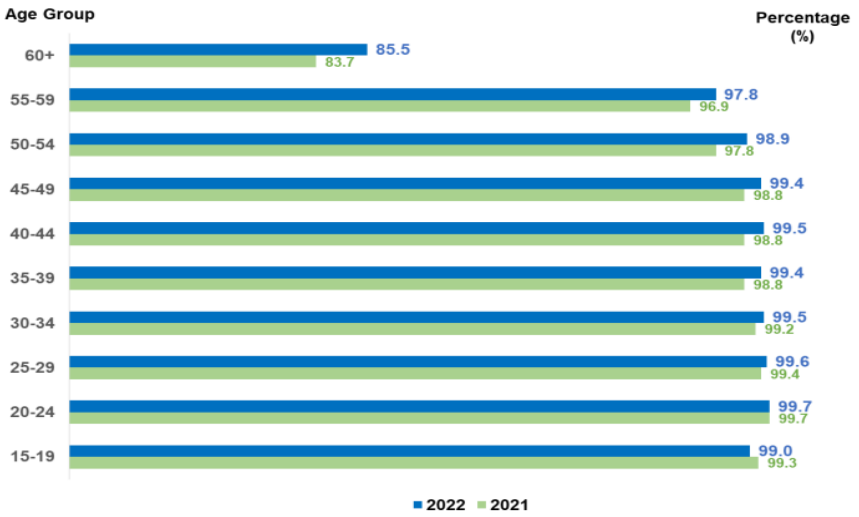


Figure 1.2: Percentage of Individuals Using the Internet by Age Group, Malaysia, 2021 & 2022
Source: Department of Statistics Malaysia, 2023

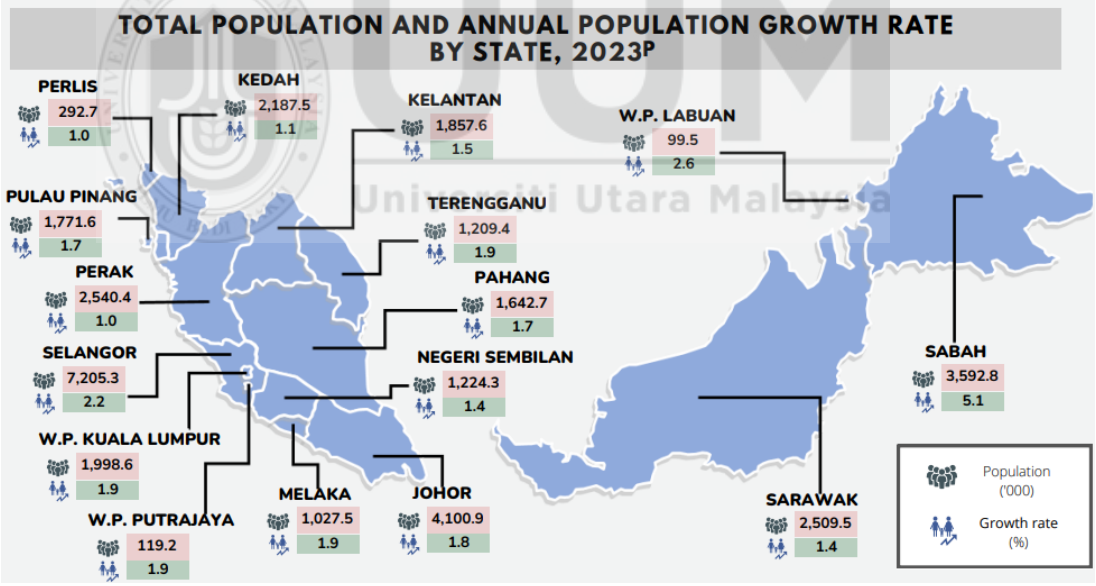


Figure 1.3: Total population and annual population by state, 2023
Source: Jabatan Perangkaan Malaysia, 2023

1.7 Operational Definitions

The research has several operational definitions that be used regularly which are as listed as follows:

- E-commerce - The term “e-commerce” or electronic commerce is as defines the exchange of funds or information through an electronic network, most commonly the internet, as well as the purchasing and selling of goods and services. This type of business model enables people and organizations to conduct out transactions virtually, eliminating the necessity for physical contact (Ayob, 2021).

  A wide range of online activities such as digital payments, digital marketing, and online buying are included in the e-commerce. In an online marketplace, the sellers will advertise their goods, prices, and the conditions of goods to the potential buyers, who subsequently analyse their choices, negotiate over terms and pricing if required place orders, and make payment to the seller.

- Customer Experience

  The process during a company interacts with their customers is known as the customer experience. Along with product purchases and service utilization, these interactions also involve customer attraction, awareness, discovery, and support. It is determined by that person’s experience at every point of contact that differs from their expectations (Wereda & Grzybowska, 2016).

  The term “customer experience” indicates the way of customer experiences and evaluates the business during their entire interaction with them from initial contact to after-sale assistance. It involves all of the interactions a customer has with the business, both online and offline, and includes factors such the ease of the website is to use, how well customer service is provided, how

quickly orders are delivered, and how satisfied customers are with the goods or services they have purchased. A customer's level of engagement and satisfaction is significantly affected by their general brand experience, which is the total of all of their experiences with the business (Liputri & Gosal, 2024). With so much information at their fingertips, customer are likely to search for the products or services through online and read the reviews before deciding to make a purchase. Negative reviews can damage a company's reputation and drive away customers, while positive reviews can build a company's reputation and attract in prospective customers. To provide the best possible customer experience, the businesses must thus actively monitor and respond to feedback from customers (Patil & Rane, 2023).

- Tracking system accuracy

  Tracking system accuracy refers to the precision and reliability with tracking system can monitor, report, and provide the real-time information about the location, movement, or status of the items such as the package. An accurate tracking system are essential to e-commerce and logistics as it enable the customers to receive real-time updates on the status of their purchases, including the shipping status, estimated arrival timings, and any potential delays.

- Delivery speed

  Delivery speed refers to the amount of time it takes for a product or service to be delivered to the customer after an order is placed. It is a key factor in e-commerce and logistics, influencing customer satisfaction and overall shopping experience. Faster delivery speeds are often associated with higher

customer satisfaction, as customer increasingly expect quick and reliable service, particularly with the rise of same-day or next-day delivery options.

- Timeliness of updates.

  Timeliness of updates refers to the speed and accuracy with which information is provided or communicated, particularly in real-time situations. When it comes to the e-commerce, customer support, logistics, and technology systems, among other contexts, timeliness ensures that users receive current and relevant data as soon as possible. This could include notifications of changes, system alarms, shipping status, and order status updates in real time.

1.8 Chapter Summary

In chapter 1 has described about the overview, background, problem statement, motivation and the purpose of this research. The problem statement of this research will be discussed about the tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce. Other than that, in this research also will be discuss about the research objective and research questions that has been stated. The significant and the scope of study also will be discussed in this research. The scope of this research will focus on the customer experience who purchase goods through e-commerce and also stay at the 12 districts in the State of Kedah, Malaysia.

CHAPTER 2 – LITERATURE REVIEW

2.0 Introduction

The literature review is covered in Chapter 2 of this research. This chapter is divided into several parts, the first of which discusses the e-commerce in general, and the second part will be discusses about customer experience in the e-commerce. The important of e-commerce also will be discuss in the next part of this chapter. The subject has become a popular issue among online shoppers in the 12 districts in the State of Kedah, who are buy the products through an e-commerce platform. This chapter will also discuss about the relationship between the independent and dependent variables.

2.1 E-Commerce

The term “e-commerce” or electronic commerce, refers to the process of buying and selling of the products and services through the internet. The way businesses operate has been slightly modified by e-commerce, which enables the customers to shop from the convenience of their own homes. With the advent of e-commerce, the traditional retail has been severely impacted and the customers now have access to global marketplaces. The leading e-commerce sites such Amazon, Alibaba, and eBay have led the way and made it simpler for every type of companies to connect with their customers worldwide. Furthermore, a variety of main e-commerce models such as Business-to-Business (B2B), Business-to-Consumer (B2C), and Consumer-to-Consumer (C2C) has provide businesses with flexibility in how they engage with their customers and other businesses (Taranenko et al., 2021).

This growth in e-commerce has been driven by a number of factors such as an increased use of smartphones, improved internet accessibility and advances in payment systems. The businesses may utilize it to collect the useful data about their customers, employ digital marketing tools, and offer a customized purchasing experience, which is can boost the customer engagement. Logistics and supply chain innovations, such as next-day delivery or click-and-collect services, have also supported the rapid growth of e-commerce and making the online shopping is simpler to the existing customers and can attract more customers.

2.2 The Important E-commerce

E-commerce has revolutionized the shopping experience for customers by offering unparalleled convenience and also accessibility. The customers can explore and purchase the goods and services from the comfort of their homes through an e-commerce platform while minimizing the need for going to a physical store. Customers can make purchases of goods and services anytime they decide, whether it is late at night or on a busy day, due to this unlimited accessibility. Accessibility is further increased by having access to a large selection of goods from many different sellers worldwide, offering customer more options than ever before.

One of the most significant advantages of e-commerce for customers is cost savings. Due to the regular sales and lower overhead, the e-commerce platforms frequently provide a competitive price. The customers can also quickly compare the prices of goods or services from other sellers to make sure that they are receiving the greatest price for their purchase. To further improve the customer experience, many of e-commerce platforms now are provide a reward programs and free or significantly

reduced shipping for the customers. This to some extent can attract more new customers and can maintain the loyalty of existing customers.

Additionally, the e-commerce platforms also offer the users a highly customized purchasing experience. To recommend products that meet specific needs, the advanced algorithms can analyse the user preferences, browsing history, and also previous purchases. By offering an appropriate option, this customized method will not only save the customers time but also improves their satisfaction. Additionally, the tools such as the user reviews and ratings can assist the customer in making well-informed choices and ensure the goods they purchase meet up to their expectations.

In addition, the e-commerce contributes to the easier access for every customer, especially for those who are live in the remote locations or have physical restrictions. By bringing the goods to places where physical stores would not be accessible, it can reduce the gap between the urban and rural customers. The e-commerce offers the customers with mobility issues a practical alternative for traditional retail. E-commerce's significance in enhancing accessibility and customer satisfaction is becoming increasingly clear as it develops further with innovations such virtual reality and improved payment options.

2.3 Customer Experience

The internal and subjective reaction that customers have to any kind of direct or indirect interaction with a business is known as the customer experience (Marek & Woźniczka, 2019). In e-commerce, the term "customer experience" describes the whole customer experience, starting from the initial visit to the after-sale assistance. It covers every aspect of contact, such as the usability of websites, product browsing, payment procedures, and the customer support.

Online shopping began to take off in the early of 1990s, as it evidenced by the popular sites such as Amazon and eBay. Since these platforms provide convenience and access to a greater variety of things, they have started to influencing how the customers engage and react. The scope and functionality of e-commerce have been greatly increased over the past ten years by the technology advancements, which have brought the dynamic features including the interactive customer support systems, real-time inventory management, and also the personalized suggestions (Putha, 2021).

Customer experience in e-commerce is a critical factor that determines the success of an online platform. It covers every process of customer interaction with a merchant on the e-commerce platform, starting from the process of browsing a product to completing a purchase and receiving the after-sales support. In addition, a smooth and user-friendly display with intuitive navigation can help to ensure that the customers can easily find the goods or services that they need. In addition, the features such as clear product descriptions, high-quality images and search filters further enhance convenience and satisfaction. By prioritizing simplicity and accessibility, e-commerce platforms can create a positive first impression that encourages customers to engage more deeply.

Furthermore, the customer experience on e-commerce platforms is significantly shaped by the post-purchase service. Post-purchase actions including customer service, post-affective experiences such customer satisfaction, and affective behaviour are acknowledged to be important (Cao et al., 2018). The feeling of satisfaction and confidence that one customer experiences after obtaining a goods or service that is better to comparable offerings is known as customer satisfaction (Oetama et al., 2024). Whether through phone, email, or in-person, the quick and effective customer care can assist in ensure that any problem or question is handled effectively. Stronger customer

relationships are achieved by platforms that value the user feedback and implement the constant updates to their offerings in response to it. In the end, a better e-commerce customer experience can boost the retention rates, repeat business, good word-of-mouth recommendations, and customer satisfaction, all of which support the long-term business development.

2.3.1 Tracking System Accuracy

A tracking system's accuracy significantly enhances the overall customer experience in e-commerce by providing transparency and reliability throughout the order journey. Customers can verify the real status of a production or shipment at any time and from any location with the aid of a track and trace system, which can help to provide end-to-end transparency in the supply chain. The tracking system provide as an interface between customer and sellers, with real-time insight the status of deliveries (Diangha, 2024). Customers can organize their day and prevent the inconvenience of missed deliveries by receiving accurate information about delivery timelines instead of having to wait in uncertainty. This level of transparency builds trust and strengthens the connection between the customer and also the e-commerce platform.

Furthermore, the effectiveness of an accurate tracking system may reduce the customers frustration in the case of the unexpected issues or delays. The proactive strategies in customer service can help in increase the satisfaction and reduce the frustration among the customers (Rane et al., 2024). The customers are constantly informed about the changes to delivery schedules by proactive updates, which ensure reasonable expectations. The process may be made easier and more predictable with an accurate tracking, which can even provide delivery time estimates down to the hour. Additionally, a trustworthy tracking system makes it easier to find and address the

issues more rapidly in the event of lost or delayed shipments, thereby confirming the platform's commitment to customer satisfaction.

Accurate tracking systems enable the customer interaction and personalization in addition to the basic delivery updates. Advanced tracking technology can be used by the e-commerce platforms to send messages that are customized for each customer, including the delivery reminders or confirmations upon receipt. These characteristics encourage the repeat business and increase customer loyalty by providing a smooth and comforting experience. E-commerce platforms that prioritize monitoring accuracy not only improve operational efficiency but also ensure that customers feel appreciated and cared for during their whole buying experience.

2.3.2 Delivery Speed

A delivery service is a type of service that makes it easier to move the goods safely from one location to another and that the person providing the service can be held responsible. As a result, it becomes essential for retaining the customers who use delivery services in order for the items they purchased to arrive in good condition (Kraugusteeliana & Violin, 2024). Delivery speed plays a crucial role in shaping customer experience in e-commerce, as it directly influences customer satisfaction and trust in the platform. The fast delivery can fulfil both expected purchases and urgent demands by ensuring that the customers receive their orders on time. A significant benefit over traditional physical purchasing is the impression of the convenience and dependability that occurs when the customers know they can rely on the e-commerce platform to deliver their goods quickly. Additionally, the rapid delivery provides the platform a competitive edge and helps it stand out in a crowded business.

Delivery speed not only fulfil the customer demands but also increases the overall effectiveness of purchasing the goods online. The online merchants can further improve their customer experience by utilizing structural alternatives such assuring delivery speed (Cui & Sun, 2020). The customers are able to begin experiencing their purchases faster because of the shorter delivery windows, which will reduce the waiting times. For companies who provide same-day or next-day delivery, the procedure is more fulfilling because it appears nearly instant. The customers may feel less worried about their orders if delivery is made more quickly, especially for the expensive or the urgent goods. E-commerce platforms increase customer confidence and build long-term relationships by offering immediate support.

Additionally, the rapid delivery also can increase the customer loyalty and promotes the repeat business. Because they know their demands will be effectively satisfied, the customers who receive fast, perfect delivery are more likely to use the platform again for the future purchases. Positive feedback and more word-of-mouth referrals may result from that, further improving the platform's reputation. Furthermore, the e-commerce platforms demonstrate a customer-first approach by continuously emphasizing delivery speed, which is essential for maintaining long-term connections and remaining competitive in a rapidly changing digital world.

2.3.3 Timeliness of Updates

In e-commerce, timely updates are essential to the customer experience since they provide transparency and confidence throughout the purchasing process. The ability to efficiently and rapidly react to the customer requests is known as timeliness. These include the delivery timelines, the capacity to respond to shipping orders in a fast way, and the merchant's ability to ship goods and respond to return requests (Daengs &

Istanti, 2022). The customers may be sure that their transactions are being handled effectively when they receive real-time updates about order status, payment confirmations, shipment progress, and delivery schedules. Regular updates help customers stay informed and adjust their schedules by reducing uncertainty and worry. Customers are more likely to make repeat purchases from the e-commerce platform when there is a certain level of transparency.

When delays or unexpected issues occur, the proactive communication through timely updates is extremely crucial. Timeliness also includes having rapid order and return waiting periods and responding to orders quickly, all of which will help to increase customer satisfaction (Daengs & Istanti, 2022). Early notification of delays to customers, accompanied by the comprehensive explanation and updated delivery schedule will shows professionalism and accountability of the sellers to their customers. This will help in minimizes the discomfort brought on by a breakdown in communication and helps manage customer demands. The platforms that offer accurate and frequent updates while problems are being resolved further show their dedication to the customer satisfaction while building connections and promoting the repeat business.

Furthermore, the timely updates create a smooth and easy shopping experience. Notifications tailored to the individual preferences for example including the delivery alerts, payment reminders or return confirmations can increase customer engagement. Such personalization will ensure that the customers feel valued and cared for, and this will be improving their overall perception of the platform. By prioritizing the timeliness of updates, the e-commerce platforms not only improve operational efficiency but also create a positive and reliable shopping environment that keeps customers coming back.

2.4 Theoretical Framework

A framework is a physical or conceptual structure that is intended to facilitate or direct the construction of something that extends the structure into something useful. For independent variable, it shown about tracking system accuracy, delivery speed and timeliness of updates. While for the dependent variable, it shows about the customers experiences.

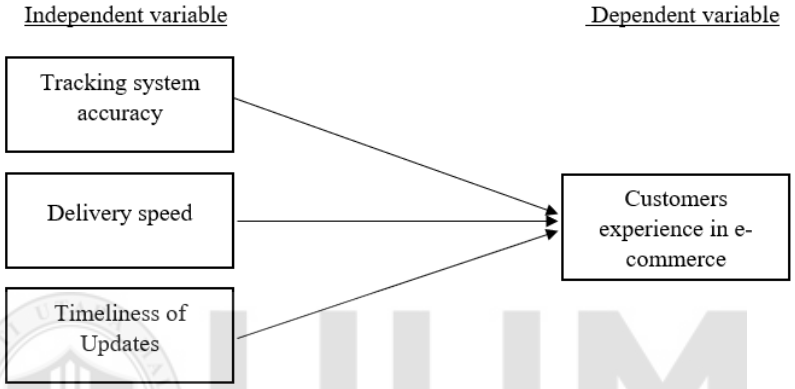


Figure 2.1: Research framework

2.5 Underpinning Theory

A theory that serves as the foundation for research is known as an underpinning theory. Any theoretical or background work done in the topic that will assist your study and thesis serves as the underpinning (Barrus, 2017). In research, having an underpinning theory was important. The customer's view of service quality and their assessment of the service process are greatly influenced by the service encounter, which is the central component of the construction of service quality (Wu & Dong, 2023).

The underpinning theory provides a foundational lens for interpreting the relationships within the research framework. In the case of this framework, the theories like SERVQUAL can explain how the independent variables which is tracking system accuracy, delivery speed, and timeliness of updates can affect the dependent variable

which is the customer experience. The SERVQUAL model, which evaluates the service quality across dimensions including the reliability, responsiveness, and assurance, aligns well with the framework. For instance, the tracking system accuracy enhances the reliability of delivery services, while timeliness of updates contributes to responsiveness, ensuring customers are informed promptly. The delivery speed impacts assurance by meeting or exceeding the customer expectations regarding service fulfilment. Together, these dimensions shape the overall perception of customer experience, confirming the causal connections within the framework (Wu & Dong, 2023).

Since the 1970s, the electronic commerce has been a relatively recent concept in the business terminology. Numerous commercial operations regularly come across are supported by technological means. The terms “electronic business”, “electronic commerce”, “electronic markets”. and other related terms are frequently used similarly in literature and trade publications (Wigand, 2014).

Economists categorize transactions between and within organizations into two categories which is the first one is the transactions that facilitate market coordination between buyers and sellers, or transactions, and the second one is the transactions that facilitate coordination within the company. A standard market hierarchy also is present, moving up from manufacturers to wholesalers, retailers, and customer. There are three hypotheses for this research which is the accuracy of tracking systems have positive impact in improve customer experiences in e-commerce (H1), delivery speed can improve customer experiences in e-commerce (H2) and timeliness of delivery updates can help to improve the customer experiences (H3). The corresponding transaction expenses are also provided. According to Williamson (1981), a variety of elements, such as the asset’s specificity, the parties’ interests, and the ambiguity and

confusion around the transaction's description, influence the decision of which transaction to pursue (Wigand, 2014).

2.6 Chapter Summary

Based on the previous research, this chapter was addressed the introduction to the literature review. In addition, this chapter was covers about the independent variables and dependent variables, as well as the relationship between the independent and dependent variable, and the theoretical framework. In the next chapter will discuss about the methodology that will be implemented in this study.

CHAPTER 3 – METHODOLOGY

3.0 Background

This chapter provides insight to the research methods that will be used to accomplish the objectives of the study. The research design and methodology are critical since they are platform used to complete the research. The design summary and research methodology will be briefly presented. The appropriate approach will be used to collect data and implement quantitative methodology. The other aspects of research methodology also presented such as the research design and, in this part, will be discuss about the process flow chart. Sampling, sample size the research design element also will be discussed in this chapter. Other than that, bias and measuring scale will also be discussed. The type of questionnaire and the data analysis is going to be discussed as one of the most significant elements of this chapter.

3.1 Research Design

Research design is a framework of methods and strategies that selected by the researcher to integrate different study components in a reasonably logical way to effectively address the research topic (Khanday & Khanam, 2023). It describes the approach that will be used to accomplish the objectives of the study and provide an answer to the research questions. A well-organized research design guides the researcher through each phase of the process and ensures that the study is valid, reliable, and logical.

There are two sorts of research designs which is the qualitative research and the quantitative research. In terms of data collection and the answer for the relationship between the variables developed inside the theoretical framework of the study. This

study was used the quantitative technique. The necessary questions are relevant to the primary issues of this study, therefore they will be developed and included in the questionnaire that the representatives will fill out.

Quantitative research is systematic study which employs statistical, mathematical, or computational techniques along with the collecting of numerical data. Quantitative research originates from the positivism paradigm, which supports for an integrated statistical breakdown approach that incorporates various techniques such as statistical analysis, hypothesis testing, mathematical exposition, experimental design and quasi-randomized experiments, blinding, structured protocols, and questionnaires with multiple choice questions before the answers (Adedoyin, 2020). The systematic approach applied by this research will be used to answer the questions, objectives and hypothesis as summarized in table 3.1.

Table 3.1: Research summary

Research Questions	Research Objective	Research Hypothesis
Q1: How does the accuracy of tracking systems impact the customer experience in the context of delivery services?	O1: To determine how the accuracy of tracking systems impact the customer experience in the context of delivery services.	H1: Accuracy of tracking systems have positive impact in improve customer experiences in e-commerce.
Q2: How does the delivery speed impact on the overall customer experience?	O2: To determine how the delivery speed impact on the overall customer experience.	H2: Delivery speed can improve customer experiences in e-commerce.

Q3: To what extent does the timeliness of delivery updates influence the customer experiences?	O3: To determine how the timeliness of delivery updates influence the customer experiences.	H3: Timeliness of delivery updates can help to improve the customer experiences.

3.2 Population and Sample Size

The population to be researched in this study is the people who are purchase goods or services through the e-commerce that stay in Kedah. This is because this study is about the tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce that influence customers' experience during purchase goods through the e-commerce. The focus of this research will be on the online shoppers' in 12 districts in the State of Kedah, Malaysia (Baling, Bandar Baharu, Kota Setar, Kuala Muda, Kubang Pasu, Kulim, Langkawi, Padang Terap, Sik, Yan, Pendang, Pokok Sena). As a result, the data and results that will be obtained for this study will be accurate and valid.

However, because there are so many people who are purchase goods or services through the e-commerce in 12 districts in the State of Kedah, it would be difficult and time consuming to look at all of them. Particularly, an overly large sample size only wastes money, resources, and time while a small sample fails to produce significant and reliable findings (Adhikari, 2021). As a result, a sample is employed to assist and complete this research. The sample for this research will include the online shoppers between the ages of 18 until 41 years old and above. This study was quantitative and employed sample sizes recommended by numerous social science scholars. In general, a sample size of 10% to 20% of the total population is sufficient for this type of study.

The gathering of more than 500 samples is not recommended since it may result in hypothesis testing that is not significant enough to avoid type 1 error.

In addition, the composition or attributes of the population have an impact on sample size. When a population unit has almost the same features, it is considered to have identical characteristics. To arrive at conclusions from a random sample and prevent bias or sampling errors, the sample must be large enough. This is because, in comparison to the complexity of the population, the researcher's objective, and the sort of statistical manipulation to be employed in the data analysis, the absolute size of the selected sample is less essential than the sample's complexity (Taherdoost, 2017).

This study employed a confidence level of 95% or = 0.05 and a statistical value of Z 1.96, with a sampling error (E) of 2% as one step to achieve accuracy. In this study, the degree of dispersion (p) is assumed to be 0.5, and the sample size that is most effective for this study is recommended to follow Krejcie & Morgan (1970) formula in the figure 3.1 below. Sampling used in this study is mostly the people who are purchase goods or services through the e-commerce in 12 districts in the State of Kedah (Baling, Bandar Baharu, Kota Setar, Kuala Muda, Kubang Pasu, Kulim, Langkawi, Padang Terap, Sik, Yan, Pendang, Pokok Sena) between the ages of 18 until 41 years old and above.

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Figure 3.1: Sample size using Krejcie and Morgan table (1970)
Source: Bukhari, 2021

3.3 Sampling

The non-probability sample was used in this research. The non-probability is involved in this research because the participants are required to meet the specified requirements, such as the respondent must purchase goods or services through the e-commerce. The data for this research has been obtained through a google form that is shared on Facebook and WhatsApp groups. This is the main reason why random sampling cannot be performed.

Non-probability sampling is typically used in experiments and research which is not representative of the target population. The selection of population units and subjective evaluation are key components of this non-probability sampling technique. Compared to a personal interview survey, this non-probability sampling technique will be less cost to implement.

3.4 Unit Analysis and Respondent

This research uses the people who are purchase goods or services through the e-commerce in 12 districts in the State of Kedah as the unit of analysis. The unit of analysis is one of the most important concepts in research. The main entity that the researcher examines in their research is the unit of analysis. Improving customer experience in e-commerce through the important factor which is tracking system accuracy, delivery speed and timeliness of updates is the unit of observation used to collect information as the unit of analysis in this study. The online shoppers' in Kedah are the respondents chosen through the sampling technique. A respondent is someone who filled out a questionnaire or responded to an advertising by providing information. The respondents in this study are those who are actively using online platform to purchase goods or services and who will be able to understand and respond to the questions in the questionnaire. Below is some information about the analysis unit and respondent in this research:

- Population : 2187,000
- Sample size : 368 online shoppers'
- Unit analysis : Individual
- Data collection: Online Survey – Google Form

3.5 Time Horizon

The cross-sectional time horizon was used in this research. The data for this research intended to be collect once over the course of two months which is from October to November 2024. The data for this research was collected through a Google Form questionnaire from the people who are purchase goods or services through the e-

commerce in 12 districts in the State of Kedah around Kedah. This method is the most effective in assisting researchers in gathering data from respondents because of the cheaper costs and the speed at which it is delivered to the respondents.

3.6 Data Collection

The information was obtained from online shoppers who using e-commerce to purchase goods or services in Kedah specifically for the research purposes only. The purpose of this research is focusing on the tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce. The data for this research will be gathered and measured after the results are being received from the respondents who are filled out the google form questionnaire. Google Forms was utilized in this study to send the questionnaire to the participants. A WhatsApp group and a Facebook group for online shoppers will receive the questionnaire.

The questionnaire can be completed quickly and conveniently by using a laptop or smartphone. Facebook and WhatsApp are the most popular social media platforms for online shopping, therefore it is easy to post questions on these platforms. Among Facebook groups is Penduduk Alor Setar/Jitra (PASJ) II, Komuniti Taman Pulasan Jitra Kedah, Penduduk Bukit Pinang, Kepala Batas, Kedah, Penduduk Kuala Ketil, Baling & Sik, Penduduk Sungai Petani and other groups. This study uses a Google Form because it simplifies and makes easier for respondents to answer the questions. In addition, using this google form has no restrictions, does not involve costs, and is incredibly simple to complete with just a smartphone. The application also enables integration techniques such as google email and the data collecting will be recorded immediately into Microsoft excel software.

3.7 Research Design Element

Research design is the conceptual framework that will guide the research process. This covers strategies for data collection, measurement, and analysis. Decisions are also made regarding the research's or plan's what, where, when, how much, and other details. Research design is the configuration of parameters for data collection and evaluation with the goal of balancing current economics with relevance to the research question ("Research Design: Meaning, Classification and Elements", 2019). The elements of research design are listed in the table 3.2

Table 3.2: Research design element

Research Design Element	Application in Study
• Research objective • Type of investigation • Researcher involvement • Setting study • Analysis unit • Time horizon	• Hypothesis testing • Correlation • Minimal • Field research • Individual (online shoppers) • Cross sectional

3.8 Measuring Instrument

The reliability test determines the consistency of the questionnaire's results over the time. The Cronbach's Alpha is often used to measure the internal consistency of the questions within each construct. A Cronbach's Alpha value of 0.7 or higher is typically considered acceptable for reliability. For this study, the reliability test was applied to the questions adapted from international journals to ensure they consistently measure constructs like tracking system accuracy, delivery speed, timeliness of updates, and customer experience. This process is essential as it evaluates whether respondents interpret the questions similarly across the sample.

The validity test determines if the questionnaire collects the information it is supposed to measure. Construct validity was ensured by adapting questions from previous research published in reputable international journals, including those were found on the platforms like ResearchGate. Content validity was reinforced by reviewing these questions with subject matter experts to confirm their alignment with the research framework. Furthermore, a pilot test was conducted with a small subset of respondents from Facebook and WhatsApp groups to check for clarity and relevance, ensuring the instrument's validity for the more extensive research.

3.9 Bias

Respondents to this study completed a self-assessment online survey using a Google Form that was distributed via certain Facebook and WhatsApp online business groups. A bias is defined as a propensity that prevents a certain subject from being considered uncultured. Bias in research occurs when there are systemic errors in sampling or testing that favour or encourage a particular outcome or response over another. Bias can occur during the research phase, such as during research design or data collecting, or during the data analysis and publication process (Pannucci and Wilkins, 2010).

3.10 Measuring Scale

This research's instrument is a questionnaire that is easier for respondents to fill out the google form. There are five sections in this research, which is section A, section B, section C, section D and section E. In total, there were around 25 questions in these three sections. Section A is made up of five questions that are based on the demographics of the respondents. The respondent will respond to the questions by selecting the most appropriate answer. The type of e-commerce platform that has been using e-commerce to purchase goods or services will be ask in Section B. Section C,

on the other hand, is about how tracking system accuracy is used in improving customer experience in e-commerce. In section D, is about how delivery speed can improve the customer experience in e-commerce. Last section which is section E was about how timeliness of updates is improving customer experience in e-commerce It will consist about 3 primary questions with each of the have other five questions. A five-point Likert-type scale will be used for both sections C, section D and section E. The 1 represents “strongly disagree” and the 5 represents “strongly agree” on this Likert-type scale. This technique was frequently used to generate agreement from the respondents.

Table 3.3: Five-point Likert scale

1 - Strongly Disagree	2 - Disagree	3 - Undecided	4 - Agree	5 - Strongly Agree

The Likert scale in its final form, is have a five-point scale that allows people to express how strongly they agree or disagree with a given proposition (Mcleod, 2023). The opportunity to compare reliability coefficients with other studies that use a 5-point Likert scale is one of the many benefits of utilizing a 5-point Likert scale as opposed to a 6- or 7-point one. Furthermore, by adopting the five-point scale makes it simple for respondents to read and choose from a comprehensive list of scale descriptors, such as 1= strongly disagree and 2 = disagree. Other than that, by using the 5-point Likert type scale also can improve the response rate and the quality of the responses (refer to table 3.3). This is because respondents will take longer time to respond to questions when using the 7-point Likert Scale.

3.11 Questionnaire

This study instrument employed a simple and straightforward questionnaire form. The Google Form tool was used to produce those questions, and the majority of online shoppers were already familiar with and could easily respond to the inquiries. Descriptive correlation approach in natural environment is the choice of this study distributes the questionnaire from within three weeks. The questionnaires in this study instrument have been adapted from some previous research and have internal consistency with Cronbach's Alpha (α) value 0.07 and above. Below is the five section of questionnaire question with total of 23 questions in this research instrument:

- Section A – Demography (5 questions)
- Section B – E-Commerce Platform (5 questions)
- Section C – Tracking system accuracy (5 questions)
- Section D – Delivery speed (5 questions)
- Section E – Timeliness of updates (5 questions)

3.11.1 Section A – Demography

The research's instrument is including an introduction that outlines of the research's purpose, privacy protection, and the respondents' agreement to participate in this voluntary survey and self-assessment. The objective of this part is to collect demographic data from the online sellers who use social media as a commercial platform (see table 3.4).

Table 3.4: Section A (Demography)

No.	Questions	References
1.	Gender	(Ayob, 2021)
2.	Age	(Picoto et al., 2023)
3.	Race	(Harn et al., 2006)
4.	District	-
5.	Monthly Income	(Rajendran et al., 2018)

3.11.2 Section B – E-Commerce Platform

The dependent variable in Section B is primarily concerned with the sort of e-commerce platform that used by the customers to purchase the products or services. Table 3.5 below shows the questions that are asked in this section.

Table 3.5: Section B (E-commerce Platform)

No.	Questions	References
1.	Type of e-commerce	-
2.	Time frame spent on e-commerce	(Rajendran et al., 2018)
3.	Shopping frequency in last 6 months	(Rajendran et al., 2018)
4.	Time spent on e-commerce	(Rajendran et al., 2018)
5.	Products mostly purchased	(Rajendran et al., 2018)

3.11.3 Section C – Tracking system accuracy

Section C is primarily concerned with the tracking system accuracy in improving customers experience in e-commerce. Table 3.6 shows the questions that are asked in this part.

Table 3.6: Section C (Tracking system accuracy)

No.	Questions	References
1.	Utilization of tracking system	(Cahyadi et al., 2021)
2.	Accurate information	(Cahyadi et al., 2021)
3.	Complete information	(Cahyadi et al., 2021)
4.	Fast Information	(Cahyadi et al., 2021)
5.	Satisfaction with shipping tracking app	(Cahyadi et al., 2021)

3.11.4 Section D – Delivery speed

Section D is primarily concerned with the delivery speed in improving customers experience in e-commerce. Table 3.7 below shows the questions that are asked in this section.

Table 3.7: Section D (Delivery speed)

No.	Questions	References
1.	Delivery speed	(Nguyen et al., 2019)
2.	Flexibility of delivery	(Jahwari et al., 2018)
3.	Increase intention to repurchase	(Saha et al., 2020)
4.	Express delivery service	(Zhong et al., 2021)
5.	Satisfaction with the delivery service	(Senlikci & Gulc, 2023)

3.11.5 Section E – Timeliness of updates

Section E is primarily concerned with the timeliness of updates in improving customers experience in e-commerce. Table 3.8 below shows the questions that are asked in this section.

Table 3.8: Section E (Timeliness of updates)

No.	Questions	References
1.	Customers updated	(Siali et al., 2018)
2.	Reaching customers house	(Siali et al., 2018)
3.	Satisfied with the accuracy of information	(Siali et al., 2018)
4.	Accurate estimate of the delivery period	(Zhong et al., 2021)
5.	Real-time information in viewing the information	(Prapinit et al., 2024)

3.12 Data Analysis

Requires the collection of all questionnaire responses, the SPSS software and Microsoft Excel, both of which stand for Statistical Package for the Social Sciences (SPSS) will be used to analyse and test the efficiency of the various dimensions of variables, or categories of requirements. The descriptive data in this study was utilized to describe the demographic characteristics of the respondents by calculating the numerical statistics such as mean, mode, median, and standard deviation in Microsoft Excel. Descriptive analysis is used to provide basic information about variables in a data set as well as to highlight potential correlations between independent and dependent variables. SPSS, on the other hand, is better suited to large-scale research such as market research and data mining. SPPS can perform ANOVA (analysis of variance) on data.

It is a statistical method for comparing groups, events, and processes and determining their differences. SPSS may be used to understand the differences between the two sample types, and researchers utilize this method to determine which the two types of groups.

3.13 Reliability Test

The reliability assessment using Cronbach's Alpha (α) is one of the factors that examined by the SPPS. Internal consistency is another name for it. Cronbach's Alpha was frequently used as an analytical approach to test the reliability of each latent variable in survey questions that used the Likert scale. The table 3.9 below shows the Cronbach's Alpha assessment value for internal consistency.

CA (α)	Internal Consistency	References
$\alpha \geq 0.9$	Excellent	
$0.9 > \alpha \geq 0.8$	Good	
$0.8 > \alpha \geq 0.7$	Acceptable	Cronbach (1951)
$0.7 > \alpha \geq 0.6$	Questionable	
$0.6 > \alpha \geq 0.5$	Poor	
$0.5 > \alpha$	Unacceptable	

Table 3.9: Analysis Cronbach's Alpha

Furthermore, several tests, such as the ANOVA test, Pearson's correlation coefficient, and the correlation will be used to determine the strength of the links between the independent and dependent variables.

3.14 Chapter Summary

Chapter 3 has been described the methodology that have been used to design this qualitative research, including the discussion about the research design and the flow chart. The non-probability sample was use in this research. This research also focusing

on the online customers who stay in Kedah and purchase goods through e-commerce platform. The data will be collected from the online customers within two months starting from October until November 2024. The research design element and measuring interment also being discussed in this chapter. The questionnaire will be distributed to the respondent through the Facebook and WhatsApp group. This study will use the 5-point Likert Scale which more accurate rather than 6- or 7-point Likert Scale. For questionnaire part, there are five sections will be provided to the respondent which is section A is about demography, section B is about e-commerce platform, section C is about tracking system accuracy, while section D is about delivery speed and section E is about timeliness of updates. For the data analysis, the SPSS software and Microsoft Excel will be used to analyse the data that have been received by the respondents.

CHAPTER 4 – DATA ANALYSIS

4.0 Introduction

This chapter will present the data that have been gathered from the researcher's study instrument, as well as the findings and data analysis based on the responses received from the respondents. The study is conducted through the distribution of questionnaire about the investigated variables which is tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e- in the 12 districts in the State of Kedah.

4.1 Demographic Analysis

The total number of the respondents that is involved in this research is 368 respondents who are stay in 12 districts in the State of Kedah and purchase the goods and services through e-commerce. There are 5 questions that have been asked in this section, which is gender, age, race, district, and monthly income.

Table 4.1: Gender of Respondents

Gender (1M, 2F)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	135	36.7	36.7	36.7
	2	233	63.3	63.3	100.0
	Total	368	100.0	100.0	

The table above shows that the total number of respondents that is involved in this research, which is 368 respondents, including of 135 males which is representing for 36.7% and 233 females which is representing for 63.3%.

Table 4.2: Age of Respondents

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	85	23.1	23.1	23.1
	25-30	146	39.7	39.7	62.8
	31-40	91	24.7	24.7	87.5
	41 and above	46	12.5	12.5	100.0
	Total	368	100.0	100.0	

The table above showed the percentages of 18-24 years old respondent which is representing for 23.1% with 85 respondents. Then it was followed by 25-30 years old respondents representing for 39.7% with 146 respondents. Next followed by 31-40 years old respondents representing for 91 respondents with 24.7%. Lastly, respondents for 41 and above years old with 46 respondents are representing for 12.5%.

Table 4.3: Race of Respondents

Race					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	268	72.8	72.8	72.8
	Indian	51	13.9	13.9	86.7
	Chinese	49	13.3	13.3	100.0
	Total	368	100.0	100.0	

The table above showed that out of 368 respondents, 268 respondents are Malay races which is representing for 72.8%. Then it was followed by Indian races with 51 respondents and representing for 13.9%. Lastly, Chinese races have the 49 respondent which is representing for 13.3%.

Table 4.4: District of Respondents

District					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Baling	23	6.3	6.3	6.3
	Bandar Baharu	12	3.3	3.3	9.5
	Kota Setar	64	17.4	17.4	26.9
	Kuala Muda	21	5.7	5.7	32.6
	Kubang Pasu	126	34.2	34.2	66.8
	Kulim	30	8.2	8.2	75.0
	Langkawi	16	4.3	4.3	79.3
	Padang Terap	19	5.2	5.2	84.5
	Sik	11	3.0	3.0	87.5
	Yan	14	3.8	3.8	91.3
	Pendang	17	4.6	4.6	95.9
	Pokok Sena	15	4.1	4.1	100.0
	Total	368	100.0	100.0	

The table above showed that there 23 respondents from Baling and representing for 6.3%. For Bandar Baharu, there was 12 respondents which is representing for 3.3%. While Kota Setar representing for 17.4% from 64 respondents. Then, Kuala Muda with 21 respondents are representing for 45.7%. Kubang Pasu become the highest with the amount of the respondents are 126 and representing for 34.2%. Then, 30 respondents form Kulim are representing for 8.2%. Langkawi are representing for 4.3% from 16 respondents, while Padang Terap with 19 respondents and representing for 5.2%. There are 11 respondents from Sik and it is representing for 3.0%, while Yan have 14 respondents and representing for 3.8%. For Pendang, there are 17 respondents and representing for 4.6%. Lastly, Pokok Sena are representing for 4.1% with 15 respondents.

Table 4.5: Monthly Income of Respondents

Monthly Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	RM 0 - RM 2,000	118	32.1	32.1	32.1
	RM 2,001 - RM 5,000	187	50.8	50.8	82.9
	RM 5,001 - RM 8,000	47	12.8	12.8	95.7
	RM 8,001 - RM 10,000	10	2.7	2.7	98.4
	More than RM 10,000	6	1.6	1.6	100.0
	Total	368	100.0	100.0	

The table above showed the percentages of respondent's monthly income from RM0-RM2,000 which is representing for 32.1% with 118 respondents. Then it was followed by monthly income from RM2,001-RM5,000 and representing for 50.8% with 187 respondents. Next followed by monthly income from RM5,001-RM8,000 which is representing for 47 respondents with 12.8%. Then it was followed by monthly income from RM8,001-RM10,000 and representing for 2.7% with 10 respondents. Lastly, monthly income more than RM10,000 with 6 respondents are representing for 1.6%.

4.2 Normality Analysis

Skewness and Kurtosis values were studied to test the normality of the investigated variables.

Table 4.6: The Normality of Data based on Mean, Standard Deviation, Skewness and Kurtosis

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
TSA	368	4.20	21.00	19.0630	2.71645	-1.833	.127	4.701	.254
DS	368	6.20	20.00	17.1598	2.22400	-1.261	.127	1.811	.254
TU	368	4.20	21.00	19.1853	2.50864	-1.893	.127	5.117	.254
Valid N (listwise)	368								

From the table 4.6 above, it showed that the Skewness Z-value for tracking system accuracy (IV 1), delivery speed (IV 2) and timeliness of updates (IV 3) are -1.83, -

1.26, and -1.89. Meanwhile, the Kurtosis Z-value for tracking system accuracy (IV 1), delivery speed (IV 2) and timeliness of updates (IV 3) are 4.70, 1.81, and 5.12.

The Skewness values of investigated variables are within the range of -1.96 to +1.96. From the table 4.2.1, the Z-value of variable are calculated. From the result of Skewness, researcher indicates that the data of these investigated variable are approximately normally distributed. Meanwhile, the Kurtosis value of investigated variables are within the range not less than 3 and not greater than 10. From the table 4.2.1, the Z-value of variable are calculated. From the result of Kurtosis, researcher indicates that the data of these investigated variable are approximately normally distributed.

4.3 Reliability Analysis

To perform the study, the researcher conducted a pilot test on the questionnaire that will be distributed to the respondents, who are online shoppers that purchase the goods and services through e-commerce and live in the 12 districts of the state of Kedah. The purpose of this pilot test is to confirm that the questionnaire is reliable and that the respondents who responded it was understand the questions. After validating the questionnaire's reliability, researcher had to continue sending the questionnaire to respondents. After the data was obtained, the researcher used a reliability test to determine whether the result was reliable. A method's consistency in measuring something is called reliability. If using the same methods under comparable circumstances yields the same result every time, the measurement is considered dependable (Ahmed & Ishtiaq, 2021).

4.3.1 Reliability Test on Variables in Questionnaire

Table 4.7: Reliability Test on Tracking System Accuracy (IV 1)

Reliability Statistics

Cronbach's Alpha	N of Items
.944	5

The table above showed the Cronbach's Alpha of the questions on tracking system accuracy (IV 1) is 0.94 which is more than 0.6. Therefore, it can be considering as reliable.

Table 4.8: Reliability Test on Delivery Speed (IV 2)

Reliability Statistics

Cronbach's Alpha	N of Items
.824	5

The table above showed the Cronbach's Alpha of the questions on the delivery speed (IV 2) is 0.82 which is more than 0.6. Therefore, it can be considering as reliable.

Table 4.9: Reliability Test on Timeliness of Updates (IV 3)

Reliability Statistics

Cronbach's Alpha	N of Items
.900	5

The table above showed the Cronbach's Alpha of the questions on the timeliness of updates (IV 3) is 0.82 which is more than 0.6. Therefore, it can be considering as reliable.

4.3.2 Reliability Test on Overall Questions

Table 4.10: Reliability Test on Overall Questions

Reliability Statistics

Cronbach's Alpha	N of Items
.956	15

Based on Table 4.1.9 above, it showed that the Cronbach's Alpha of overall questions on all variables including IV 1, IV 2, and IV 3 are 0.96 which is more than 0.6. The result showed that the questions asked in the questionnaire are strongly reliable.

4.4 Correlation Analysis

The strength of the association between variables is described through correlation analysis. The r2 coefficient of determination is computed. It indicates the percentage of changes in the dependent variable that are linked to changes in the independent variables.

Correlations

		CE	TSA
CE	Pearson Correlation	1	-.108*
	Sig. (2-tailed)		.039
	N	368	368
TSA	Pearson Correlation	-.108*	1
	Sig. (2-tailed)	.039	
	N	368	368

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.11: Correlation of customers experiences and tracking system accuracy

H0: Customers experiences has no relationship with tracking system accuracy

H1: Customers experiences has relationship with tracking system accuracy

1. Compare: P (0.039) > α (0.05)

2. Decide: Reject H0

3. Concludes: Customers experiences has negative and weak relationship with tracking system accuracy

Pearson correlation was performed to determine the association between customers experiences and tracking system accuracy. Based on the table 4.11 above, the result shows a negative and weak correlation between customers experiences and tracking system accuracy (p=0.039, r=-0.108).

Correlations

		CE	DS
CE	Pearson Correlation	1	-.088
	Sig. (2-tailed)		.093
	N	368	368
DS	Pearson Correlation	-.088	1
	Sig. (2-tailed)	.093	
	N	368	368

Table 4.12: Correlation of customers experiences and delivery speed

H0: Customers experiences has no relationship with delivery speed

H1: Customers experiences has relationship with delivery speed

1. Compare: P (0.093) > α (0.05)

2. Decide: Reject H0

3. Concludes: Customers experiences has negative and weak relationship with delivery speed

Pearson correlation was performed to determine the association between customers experiences and delivery speed. Based on the table 4.12 above, the result shows a negative and weak correlation between customers experiences and delivery speed (p=0.093, r=-0.088).

Correlations

		CE	TU
CE	Pearson Correlation	1	-.077
	Sig. (2-tailed)		.141
	N	368	368
TU	Pearson Correlation	-.077	1
	Sig. (2-tailed)	.141	
	N	368	368

Table 4.13: Correlation of customers experiences and timeliness of update

H0: Customers experiences has no relationship with timeliness of update

H1: Customers experiences has relationship with timeliness of update

1. Compare: P (0.141) > α (0.05)

2. Decide: Reject H0

3. Concludes: Customers experiences has negative and weak relationship with timeliness of update

Pearson correlation was performed to determine the association between customers experiences and delivery speed. Based on the table 4.13 above, the result shows a negative and weak correlation between customers experiences and delivery speed (p=0.141, r=-0.077).

4.5 Regression Analysis

The table below showed the summary of multiple regression table.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2	Sig. F Change
1	.110[a]	.012	.004	1.93878	.012	1.499	3	364	.215

a. Predictors: (Constant), TU, DS, TSA

Table 4.14: Model summary of multiple regression

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.898	3	5.633	1.499	.215[b]
	Residual	1368.221	364	3.759		
	Total	1385.120	367			

a. Dependent Variable: CE

b. Predictors: (Constant), TU, DS, TSA

Table 4.15: Analysis of variance between customers experiences with tracking system accuracy, delivery speed and timeliness of updates

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	7.980	.831		9.603	.000	6.346	9.614
	TSA	-.096	.076	-.135	-1.263	.207	-.246	.054
	DS	-.013	.082	-.015	-.160	.873	-.174	.148
	TU	.036	.077	.047	.473	.637	-.115	.187

a. Dependent Variable: CE

Table 4.16: The Coefficient Analysis of the Independent Variable and Dependent Variable

The purpose of a coefficients analysis is to verify the existence of a significant relationship and to define the relationship between the dependent and independent variables.

H0: Customers experiences has no relationship with tracking system accuracy, delivery speed and timeliness of update

H1: Customers experiences has relationship with tracking system accuracy, delivery speed and timeliness of update

1. Compare: P (0.215) > α (0.05)

2. Decide: Reject H0

3. Concludes: Customers experiences has negative and weak relationship with tracking system accuracy, delivery speed and timeliness of update

The summary of multiple regression table was performed to determine the association between customers experiences and tracking system accuracy, delivery speed and timeliness of update. Based on the table 4.14 above, the result shows a negative and weak correlation between customers experiences and tracking system accuracy, delivery speed and timeliness of update (p=0.215).

Individual result:

- Tracking system accuracy (P= 0.054, t=-0.25)

  Concludes: Tracking system accuracy influence negatively on customers experiences

- Delivery speed (P=0.148, t=-0.17)

  Concludes: Delivery speed influence negatively on customers experiences

- Timeliness of update (P=0.187, t=0.115)

  Concludes: Delivery speed influence positively on customers experiences

4.6 T-test Analysis

Group Statistics

	Gender (1M, 2F)	N	Mean	Std. Deviation	Std. Error Mean
TSA	1	135	19.3630	2.51446	.21641
	2	233	18.8893	2.81754	.18458

Table 4.17: Group statistics between male and female

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TSA	Equal variances assumed	1.329	.250	1.616	366	.107	.47369	.29318	-.10283	1.05022
	Equal variances not assumed			1.665	306.266	.097	.47369	.28444	-.08601	1.03339

Table 4.18: Independent sample test between tracking system accuracy and gender

Independent Sample t-Test was performed to investigate the mean difference of tracking system accuracy (IV 1) between genders. An independent sample t-test was conducted compare the online shopper's experiences for group male and female. There were significant differences in the scores with men score for (Male) (M=19.36, SD = 2.51) was lower than and (Female) (M = 19.36, SD =2.82). The result shows there is significant difference in tracking system accuracy between male and female respondents.

Group Statistics

	Gender (1M, 2F)	N	Mean	Std. Deviation	Std. Error Mean
DS	1	135	17.5719	2.04854	.17631
	2	233	16.9210	2.29007	.15003

Table 4.19: Group statistics between male and female

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
DS	Equal variances assumed	1.206	.273	2.729	366	.007	.65082	.23847	.18188	1.11976
	Equal variances not assumed			2.811	305.727	.005	.65082	.23150	.19528	1.10636

Table 4.20: Independent sample test between delivery speed and gender

Independent Sample t-Test was performed to investigate the mean difference of delivery speed (IV 2) between genders. An independent sample t-test was conducted compare the online shopper's experiences for group male and female. There were significant differences in the scores with men score for (Male) (M=17.57, SD = 2.05) was higher than and (Female) (M = 16.92, SD =2.29). The result shows there is significant difference in tracking system accuracy between male and female respondents.

Group Statistics

	Gender (1M, 2F)	N	Mean	Std. Deviation	Std. Error Mean
TU	1	135	19.5259	2.32632	.20022
	2	233	18.9880	2.59287	.16986

Table 4.21: Group statistics between male and female

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TU	Equal variances assumed	1.819	.178	1.991	366	.047	.53794	.27025	.00650	1.06939
	Equal variances not assumed			2.049	305.043	.041	.53794	.26257	.02127	1.05461

Table 4.22: Independent sample test between timeliness of update and gender

Independent Sample t-Test was performed to investigate the mean difference of timeliness of updates (IV 3) between genders. An independent sample t-test was conducted compare the online shopper's experiences for group male and female. There were significant differences in the scores with men score for (Male) (M=19.52, SD = 2.32) was higher than and (Female) (M = 18.98, SD =2.59). The result shows there is significant difference in tracking system accuracy between male and female respondents.

4.7 Analysis of Variance (ANOVA)

The purpose of an ANOVA analysis is to determine whether the research hypothesis is significant and supported or not.

ANOVA

CE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	172.427	20	8.621	.781	.737
Within Groups	3829.482	347	11.036		
Total	4001.908	367			

Table 4.23: ANOVA Analysis of the Independent Variable, Tracking System Accuracy and the Dependent Variable

H0: Customers experiences has no relationship with tracking system accuracy

H1: Customers experiences has relationship with tracking system accuracy

From table 4.23 above, it showed that the probability value for the statistic was more than 0.05 (P=0.737). Based on this result, researcher concludes that the null hypothesis about the tracking system accuracy (IV 1) was rejected. Therefore, there is a relationship between the customers experiences and tracking system accuracy.

ANOVA

CE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	353.211	25	14.128	1.324	.140
Within Groups	3648.697	342	10.669		
Total	4001.908	367			

Table 4.24: ANOVA Analysis of the Independent Variable, Delivery Speed and the Dependent Variable

H0: Customers experiences has no relationship with delivery speed

H1: Customers experiences has relationship with delivery speed

From table 4.24 above, it showed that the probability value for the statistic was more than 0.05 (P=0.140). Based on this result, researcher concludes that the null hypothesis about the delivery speed (IV 2) was rejected. Therefore, there is a relationship between the customers experiences and delivery speed.

ANOVA

CE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	257.931	25	10.317	.942	.546
Within Groups	3743.978	342	10.947		
Total	4001.908	367			

Table 4.25: ANOVA Analysis of the Independent Variable, Timeliness of Updates and the Dependent Variable

H0: Customers experiences has no relationship timeliness of update

H1: Customers experiences has relationship with timeliness of update

From table 4.25 above, it showed that the probability value for the statistic was more than 0.05 (P=0.546). Based on this result, researcher concludes that the null hypothesis about the timeliness of update (IV 3) was rejected. Therefore, there is a relationship between the customers experiences and timeliness of update.

CHAPTER 5 – DISCUSSION, RECOMMENDATION AND CONCLUSION

5.1 Introduction

This section concluded with a summary of the findings of this research on the tracking system accuracy, delivery speed and timeliness of updates affect the customer experience in e-commerce. This chapter will cover about the discussion, the achievement of the objectives, the limitations, the recommendations, and also the research's conclusion. This discussion briefed, explained, and summarized the important of the recommendation based on the findings and conclusions of this research, and carried out the research's conclusion.

5.2 Discussion

The purpose of this research is to see whether tracking system accuracy, delivery speed and timeliness of updates have an impact on customers experiences that the e-commerce platforms to purchase goods or service. The tracking system accuracy, delivery speed and timeliness of updates are the three independent variables, while the customers experiences is the dependent variable. The data for this research study was gathered from a total of 368 respondents. The respondents are from 12 districts in Kedah were chosen by 368 respondents to answer the questionnaire questions. The people who fill out the surveys come from various districts. According to the results of the pilot test, 100% of the respondents comprehended the questions in the surveys. All three independent variables have a weak and negative relationship with the dependent variable, according to the data.

5.3 Objective Achievement

The main purpose of this research is to investigate whether the tracking system accuracy, delivery speed and timeliness of updates have an impact on customers experiences that the e-commerce platforms to purchase goods or service. Based on the Chapter 4, it can be concluded that:

5.3.1 Objective 1: To identify the relationship between tracking system accuracy and the customers experience.

According to the correlation analysis, the independent variable, which is tracking system accuracy, has a negative and weak relationship with the dependent variable which is customers experiences. The correlation coefficient is 0.039, and because the value of the correlation coefficient is greater than 0.5 but less than 1.0, it indicates a strong relationship between the independent and dependent variables. This demonstrated that the customers experiences may be influenced by tracking system accuracy.

The researcher found that the ANOVA analysis supports the hypothesis that there is a positive relationship between tracking system accuracy and the customers experiences. According to the findings of this study, most respondents agree that tracking system accuracy is related to the customers experiences.

5.3.2 Objective 2: To identify the relationship between delivery speed and the customers experience.

According to the correlation analysis, the independent variable, which is delivery speed, has a negative and weak relationship with the dependent variable which is customers experiences. The correlation coefficient is 0.093, and because the value of the correlation coefficient is greater than 0.5 but less than 1.0, it indicates a strong

relationship between the independent and dependent variables. This demonstrated that the customers experiences may be influenced by delivery speed.

The researcher found that the ANOVA analysis supports the hypothesis that there is a positive relationship between delivery speed and the customers experiences. According to the findings of this study, most respondents agree that delivery speed is related to the customers experiences.

5.3.3 Objective 3: To identify the relationship between timeliness of updates and the customers experience.

According to the correlation analysis, the independent variable, which is timeliness of updates, has a negative and weak relationship with the dependent variable which is customers experiences. The correlation coefficient is 0.141, and because the value of the correlation coefficient is greater than 0.5 but less than 1.0, it indicates a strong relationship between the independent and dependent variables. This demonstrated that the customers experiences may be influenced by timeliness of updates.

The researcher found that the ANOVA analysis supports the hypothesis that there is a positive relationship between timeliness of updates and the customers experiences. According to the findings of this study, most respondents agree that timeliness of updates is related to the customers experiences.

5.4 Limitation of Research

The researcher encountered a few limitations throughout the execution of this research. One of the research's limitations is the length of time it took to complete the research. A typical research project takes most researchers more than a half year to finish. However, the researcher was only given 1 to 2 months to finish the entire study, which was insufficient time to investigate further issues and resources. Another

limitation is geographical constraints. The research was conducted in one state only, namely in Kedah where it limited the diversity of participants or sources, which may not represent a wider context or global perspective.

5.5 Recommendations

One of the recommendations for the future researcher is the researcher needs to further specify the scope of the area studied for example only choose to study two districts only. This is because it will affect the accuracy and the reliability of the data to be obtained. Furthermore, the researcher would advise future researchers to conduct their research over a longer period. This is because collecting more responses from more the online customers takes longer to ensure that the information and responses are sufficient to prove the study. Because the categories of need will have a positive or negative impact on the customers experience, additional research should be conducted to generalize the study's findings and to validate and confirm tracking system accuracy, delivery speed and timeliness of updates are the key factors that influence the customers experiences. Finally, the researchers suggest that future research investigate other dependable aspects that influence the customers experiences.

5.6 Conclusion

As a conclusion, the research showed that there is negative and weak relationship between independent variables which is tracking system accuracy, delivery speed and timeliness and the dependent variable which is the customers experiences. It is also showed the degree of relationship between the of social media platform, which are tracking system accuracy, delivery speed and timeliness, with the customers experiences. Based on the study, the online buyers in 12 districts in Kedah, are fully understand that these tracking system accuracy, delivery speed and timeliness play a

very important role in purchase the goods and services through e-commerce platform. With the use of e-commerce platform, it can help the customers with allows the customers to monitor the real-time status and location of their orders while reducing uncertainty and building trust in the service. The accurate tracking also can help the customers to plan their schedules around delivery times, improving the convenience. In addition, fast delivery ensures customers receive their items on schedule, regularly taking into consideration the last-minute purchases or urgent demands. This effectiveness gives the platform an advantage over its competitors through improving the customer satisfaction or experiences and platform trust. Additionally, faster delivery will reduce the waiting period, enhancing the whole buying experience while encouraging repeat customers.

Lastly, the customers remain informed while becoming less worried by receiving the real-time information regarding order status, shipping status, and also the delivery schedules. The customers can arrange their schedules around the deliveries with the help of timely updates, which ensures convenience and helps to avoid missed items. Active interaction can enable the customers to modify their expectations and request help when there are delays or problems. The e-commerce platforms increase the customer happiness and improve customer relationships by promoting regular and regular interaction, resulting in repeat business.

REFERENCES

"Research Design: Meaning, Classification and Elements." Theintactone.com, 4 May 2019, theintactone.com/2019/05/04/brm-u2-topic-1-research-design-meaning-classification-and-elements/.

Adedoyin, O. (2020). Quantitative Research Method. Research Gate, 1-8. Retrieved from https://www.researchgate.net/publication/340594619_Quantitative_Research_Method

Adhikari, G. P. (2021). Calculating the Sample Size in Quantitative Studies. *Scholars' Journal*, *4*(1), 1–17. https://doi.org/10.3126/scholars.v4i1.42458

Ahmed, I., & Ishtiaq, S. (2021). Reliability and validity: Importance in Medical Research. *The Journal of the Pakistan Medical Association*, *71*(10). PubMed. https://doi.org/10.47391/JPMA.06-861

Ayob, A. H. (2021). E-commerce adoption in ASEAN: who and where? *Future Business Journal*, *7*(1), 1–11. https://doi.org/10.1186/s43093-020-00051-8

Barrus, J. (2017). How to Write a Research Underpinning Paper. Retrieved 21 May 2021, from https://penandthepad.com/write-research-underpinning-paper-10050223.html

Bukhari, S. A. R. (2021). Sample Size Determination Using Krejcie and Morgan Table. *Research Gate*, 1–3.

Cahyadi, E. R., Widianti, K. R., & Slamet, A. S. (2021). The Use Behavior of Tracking and Tracing Services in E-Commerce Logistics. Jurnal Manajemen Dan Organisasi (JMO), 12(1), 1–11. https://doi.org/10.29244/jmo.v12i1.35373

Cao, Y., Ajjan, H., & Hong, P. (2018). Post-purchase shipping and customer service experiences in online shopping and their impact on customer satisfaction: an empirical study with comparison. Asia Pacific Journal of Marketing and Logistics, 30(2), 1–19. https://doi.org/10.1108/apjml-04-2017-0071

Cui, R., & Sun, T. (2020). Sooner or Later? Promising Delivery Speed in Online Retail. Research Gate, 1–21. https://doi.org/10.13140/RG.2.2.17771.69927

Daengs, A. D., & Istanti, E. (2022). The Role of Timeliness in Improving Customer Satisfaction, Customer Loyalty of PT. JNE. IJEBD (International Journal of Entrepreneurship and Business Development), 5(2), 1–7. https://doi.org/10.29138/ijebd.v5i2.1782

Department of Statistics Malaysia. (2023). *MALAYSIA DIGITAL ECONOMY 2023 Announcement* (pp. 1–295). https://storage.dosm.gov.my/gdp/digitaleconomy_2022.pdf

Diangha, N. S. (2024). Evaluation of the Effect of Tracking System Quality on Customer Satisfaction: Evidence from Logistics Companies in Cameroon. *Data Journal of Information Systems and Management*, *2*(4), 1–19. https://doi.org/10.61978/data.v2i1

Gomes, A. C., De Lima Junior, F. B., Soliani, R. D., Oliveira, P. R. de S., De Oliveira, D. A., Siqueira, R. M., Nora, L. A. R. da S., & De Macêdo, J. J. S. (2023). Logistics management in e-commerce: challenges and opportunities. *Revista de Gestão E Secretariado (Management and Administrative Professional Review)*, *14*(5), 1–22. https://doi.org/10.7769/gesec.v14i5.2119

Hafez, L., Elakkad, E., & Gamil, M. (2021). A Study on the Impact of Logistics Service Quality on the Satisfaction and Loyalty of E-Shoppers in Egypt. *Open Journal of Business and Management*, *9*(5). https://doi.org/10.4236/ojbm.2021.95133

Harn, A. C. P., Khatibi, Ali., & Ismail, H. (2006). E-Commerce: A Study on Online Shopping in Malaysia. *Journal of Social Sciences*, *13*(3), 1–13.

Jabatan Perangkaan Malaysia. (2023, July). *Current Population Estimates, Malaysia 2023*. Kerajaan Negeri Melaka. https://melaka.gov.my/images/artikel/media/penerbitan/polisi/anggaran_penduduk_semasa_malaysia_2023.pdf

Jahwari, N. S. A. -, Rahman Khan, M. F., Al Kalbani, G. K., & Al Khansouri, S. S. (2018). Factors Influencing Customer Satisfaction of Online Shopping in Oman – Youth Perspective. Humanities & Social Sciences Reviews, 6(2), 1–10. https://doi.org/10.18510/hssr.2018.628

Khanday, S. A., & Khanam, D. (2023). The Research Design. *Journal of Critical Reviews*, *6*(3), 1–11.

Kraugusteeliana, K., & Violin, V. (2024). Application of Decision Support in Performance Assessment of Delivery Services in the E-Commerce Industry. Jurnal Galaksi (Global Knowledge, Artificial Intelligent and Information System), 1(1), 1–10. https://doi.org/10.70103/galaksi.v1i1.6

Liputri, E., & Gosal, G. G. (2024). The Relationship of Customer Experience, Customer Engagement, Customer Satisfaction, and Customer Loyalty in Shopee E-Commerce. *Jurnal Ilmiah Manajemen Bisnis Dan Inovasi*, *11*(1), 1–9.

Marek, L., & Woźniczka, J. (2019). The Internet of Things as a customer experience tool. Jagiellonian Journal of Management, 3(3), 1–15. https://doi.org/10.4467/2450114xjjm.17.011.9562

Mcleod, S. (2023, July 31). *Likert Scale definition, Examples and Analysis*. Simply Psychology. https://www.simplypsychology.org/likert-scale.html

Nguyen, D. H., Leeuw, S. de, Dullaert, W., & Foubert, B. P. J. (2019). What Is the Right Delivery Option for You? Consumer Preferences for Delivery Attributes in Online Retailing. Journal of Business Logistics, 40(4), 1–23. https://doi.org/10.1111/jbl.12210

Oetama, S., Susanto, H., & Rizwannur, W. (2024). Effect of Online Tracking System and Delivery Timeliness on Customer Satisfaction (Case Study on J & T Express Sampit). International Journal of Science, Technology & Management, 1–8.

Pannucci, Christopher J., and Edwin G. Wilkins. “Identifying and Avoiding Bias in Research.” Plastic and Reconstructive Surgery, vol. 126, no. 2, 1 Aug. 2010, pp. 619–625, www.ncbi.nlm.nih.gov/pmc/articles/PMC2917255/, https://doi.org/10.1097/PRS.0b013e3181de24bc.

Patil, D. R., & Rane, N. L. (2023). Customer Experience and Satisfaction: Importance of Customer Reviews and Customer Value on Buying Preference. *International Research Journal of Modernization in Engineering Technology and Science*, *5*(3), 1–11. https://doi.org/10.56726/IRJMETS36460

Periyasamy, S., Joghee, M. V., Kaushik, S., Gongada, T. N., Naqvi, S. R., & Chandra, A. (2023). Analysis of Delivery Issues That Customer Face Upon E-Commerce. *Research Gate*, 2–10.

Picoto, W. N., Abreu, J. C., & Martins, P. (2023). Integrating the Internet of Things into E-Commerce: The Role of Trust, Privacy, and Data Confidentiality Concerns in Consumer Adoption. *International Journal of E-Business Research (IJEBR)*, *19*(1), 1–18. https://doi.org/10.4018/IJEBR.321647

Prapinit, P., Kafi, A., Osman, N. H., & Melan, M. (2024). IoT in Courier Services: Impact on Customer Satisfaction and Supply Chain Sustainability. International Journal of Sustainable Development and Planning, 19(2), 1–9. https://doi.org/10.18280/ijsdp.190224

Putha, S. (2021). AI-Driven Personalization in E-Commerce: Enhancing Customer Experience and Sales through Advanced Data Analytics. *Journal of Bioinformatics and Artificial Intelligence*, *1*(1), 1–46.

Rajendran, S. D., Wahab, S. N., Ling, Y. W., & Yun, L. S. (2018). The Impact of Logistics Services On the E-Shoppers' Satisfaction. *International Journal of Supply Chain Management*, *7*(5), 1–10.

Rane, J., Kaya, Ö., Mallick, S. K., & Rane, N. L. (2024). Enhancing customer satisfaction and loyalty in service quality through artificial intelligence, machine learning, internet of things, blockchain, big data, and ChatGPT. Deep Science, 1–58. https://doi.org/10.70593/978-81-981271-7-4_3

Saha, S. K., Zhuang, G., & Li, S. (2020). Will Consumers Pay More for Efficient Delivery? An Empirical Study of What Affects E-Customers' Satisfaction and Willingness to Pay on Online Shopping in Bangladesh. *Sustainability*, *12*, 1–22. https://doi.org/10.3390/su12031121

Sallam, K. M., Mohamed, A. W., & Mohamed, M. (2023). Internet of Things (IoT) in Supply Chain Management: 1 Challenges, Opportunities, and Best Practices. *Sustainable Machine Intelligence Journal*, *2*, 1–32. https://doi.org/10.61185/SMIJ

Senlikci, M., & Gulc, A. (2023). Impact of Delivery Service Quality on Customer Satisfaction in Online Shopping. Academy of Management, 7(2), 1–25. https://doi.org/10.24427/az-2023-0026

Sharma, V., & Gandhi, M. K. (2021). Internet of Things (IoT) on E-commerce Logistics: A Review. *Journal of Physics: Conference Series*, *1964*(6), 1–10. https://doi.org/10.1088/1742-6596/1964/6/062113

Siali, F., Wen, A. W. S., & Hajazi, M. U. A. (2018). Booming of Online Shopping in Malaysia: Do Customers Satisfy with Parcel Delivery Service? *International Journal of Academic Research in Business and Social Sciences*, *8*(12), 1–23. https://doi.org/10.6007/ijarbss/v8-i12/5042

Sulthana, A. N., & Shanmugam, V. (2023). Effect of Internet of Things (IoT) and Social Media on e-Commerce. *Lecture Notes in Networks and Systems*, 1–9. https://doi.org/10.1007/978-981-19-5181-7_17

Taher, G. (2021). E-Commerce: Advantages and Limitations. *Human Resource Management Academic Research Society*, *11*(1), 1–15. https://doi.org/10.6007/IJARAFMS/v11-i1/8987

Taherdoost, H. (2017). Determining Sample Size; How to Calculate Survey Sample Size. Research Gate, 1-4. Retrieved from https://www.researchgate.net/publication/322887480_Determining_Sample_Siz e_How_to_Calculate_Survey_Sample_Size

Taranenko, I., Chychun, V., Korolenko, O., Goncharenko, I., & Zhuvahina, I. (2021). Management of the Process of E-Commerce Development in Business on the Example of the European Union. Studies of Applied Economics, 39(5), 1–12. https://doi.org/10.25115/eea.v39i5.4911

Tokase, V., & Mujmule, V. P. (2021). A History of e-Commerce. Research Gate, 1–5.

Wereda, W., & Grzybowska, M. (2016). Customer Experience – Does It Matter? *Modern Management Review*, *23*, 2–10. https://doi.org/10.7862/rz.2016.mmr.35

Wigand, R. T. (2014). Electronic Commerce: Definition, Theory, and Context. The Information Society, 13(1), 1–17. https://doi.org/10.1080/019722497129241

Wu, J. and Dong, M. (2023) 'Research on customer satisfaction of pharmaceutical e-commerce Logistics Service Under Service encounter theory', Electronic Commerce Research and Applications, 58, p. 101246. doi: 10.1016/j.elerap.2023.101246.

Zhong, S., Lomas, C., & Worth, T. (2021). Understanding customers' adoption of express delivery service for last-mile delivery in the UK. *International Journal of Logistics Research and Applications*, *25*(12), 1–19. https://doi.org/10.1080/13675567.2021.1914563

APPENDIX 1

Survey Questionnaire

Section 1 of 7

TRACKING SYSTEM ACCURACY, DELIVERY SPEED AND TIMELINESS OF UPDATES AFFECT THE CUSTOMER EXPERIENCE IN E-COMMERCE)

Dear Respected Respondents,
I am a Master student from Universiti Utara Malaysia (UUM) and currently doing a Master dissertation. This Master dissertation is to explore about Improving Customer Experience in E-Commerce Through Internet of Thing (IoT) in 12 districts in Kedah, Darul Aman. Please answer ALL the questions. Your time and effort in participating in this project is very important and sincerely appreciated. It should not more than 15 minutes to complete the survey questionnaire. The responses will be strictly treated confidential and only be used for academic purposes.
Thank you so much for supporting your valuable knowledge, time, and efforts to ensure this project successful.

Your sincerely,
Nurul Ain Nabila Binti Abdullah
Master of Science (Transportation and Logistic Management)
School of Technology and Logistics,
College of Business, Universiti Utara Malaysia,
06010 Sintok, Kedah Darul Aman.

After section 1 Continue to next section

Section 2 of 7

SECTION A: DEMOGRAPHIC

Description (optional)

Gender *

- Male
- Female

Age *

- 18-24
- 25-30
- 31-40
- 41 and above

Race *

- Malay
- Indian
- Chinese
- Other...

District *

- Baling
- Bandar Baharu
- Kota Setar
- Kuala Muda
- Kubang Pasu
- Kulim
- Langkawi
- Padang Terap
- Sik
- Yan
- Pendang
- Pokok Sena

Monthly Income *

- RM 0 - RM 2,000
- RM 2,001 – RM 5,000
- RM 5,001 – RM 8,000
- RM 8,001 – RM 10,000
- More than RM 10,000

After section 2 Continue to next section

Section 3 of 7

SECTION B: E-COMMERCE PLATFORM

Description (optional)

Type of e-commerce (Tick more than one if applicable) *

- [ ] Shopee
- [ ] Lazada
- [ ] Instagram
- [ ] Facebook Marketplace
- [ ] WhatsApp Business
- [ ] TikTok
- [ ] Carousell
- [ ] Go Shop
- [ ] Other...

How long respondents have been shopping through e-commerce platform? *

- Last 6 months
- 6 months – 1 year
- 1 – 3 years
- 3 – 5 years
- More than 5 years

How often respondents shop through e-commerce platform in the last 6 months? *

- Rare (only 1 time within 6 months)
- Occasional (1 - 3 times within 6 months)
- General (1 - 3 times in a month)
- Often (4 - 10 times in a month)
- Frequent (more than 10 times in a month)

How long respondents spent on e-commerce platform? *

- Less than 1 hour
- 1 hour
- 2 hours
- 3 hours
- More than 3 hours

Types of products mostly purchased by the respondents *

- Fashion and Accessories
- Health and Beauty
- Home and Living
- Home Electronic
- Mobile, IT and Camera
- Books
- Sports and Automobiles
- Food and Beverage
- Other...

Section 4 of 7

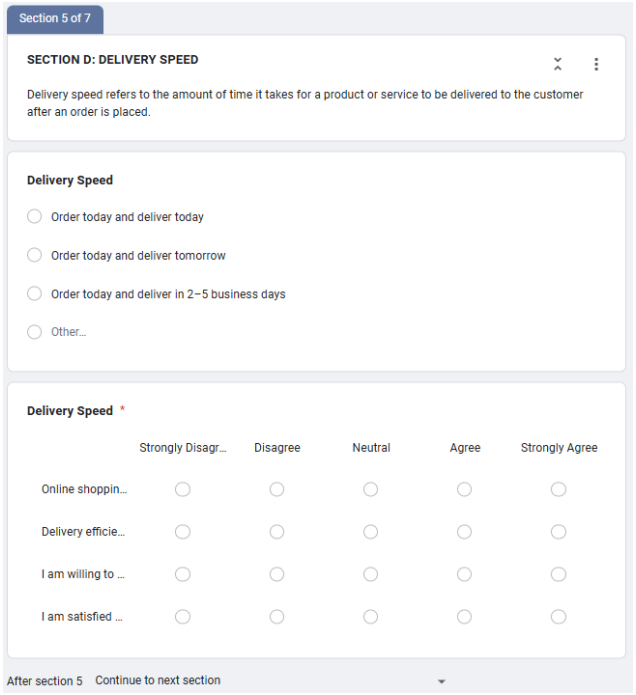
SECTION C: TRACKING SYSTEM ACCURACY

Tracking system accuracy refers to the precision and reliability with tracking system can monitor, report, and provide the real-time information about the location, movement, or status of the items such as the package.

Tracking System Accuracy *

	Strongly Disagr...	Disagree	Neutral	Agree	Strongly Agree
Tracking syste...					
Tracking syste...					
Tracking syste...					
The tracking sy...					
I am satisfied ...					

After section 4 Go to section 4 (SECTION C: TRACKIN... SYSTEM ACCURACY)


Section 5 of 7

SECTION D: DELIVERY SPEED

Delivery speed refers to the amount of time it takes for a product or service to be delivered to the customer after an order is placed.

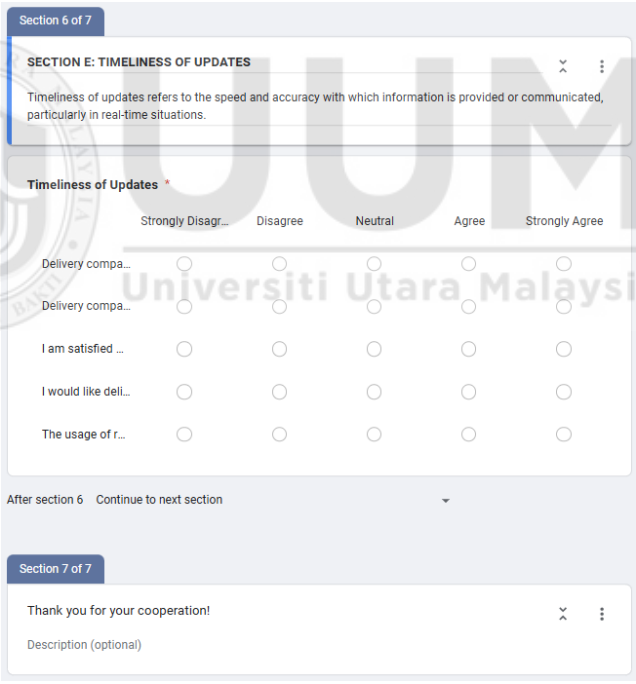
Delivery Speed

- Order today and deliver today
- Order today and deliver tomorrow
- Order today and deliver in 2–5 business days
- Other...

Delivery Speed *

	Strongly Disagr...	Disagree	Neutral	Agree	Strongly Agree
Online shoppin...					
Delivery efficie...					
I am willing to ...					
I am satisfied ...					

After section 5 Continue to next section


Section 6 of 7

SECTION E: TIMELINESS OF UPDATES

Timeliness of updates refers to the speed and accuracy with which information is provided or communicated, particularly in real-time situations.

Timeliness of Updates *

	Strongly Disagr...	Disagree	Neutral	Agree	Strongly Agree
Delivery compa...					
Delivery compa...					
I am satisfied ...					
I would like deli...					
The usage of r...					

After section 6 Continue to next section

Section 7 of 7

Thank you for your cooperation!

Description (optional)