DARREN, PENNY, QUAH, & WOO PARCEL LOCKER SERVICES BLS (HONS) December 2023

THE INTENTION TO ADOPT PARCEL LOCKERS AS A LAST-MILE DELIVERY SERVICES IN MALAYSIA

DARREN PETER

PENNY YONG PEI NEE

QUAH YAN YEE

WOO YIN LIN

BACHELOR OF BUSINESS ADMINISTRATION (HONS) LOGISTICS & SUPPLY CHAIN MANAGEMENT

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE

DEPARTMENT OF ENTREPEURSHIP AND SUPPLY CHAIN MANAGEMENT

DEC 2023

THE INTENTION TO ADOPT PARCEL LOCKERS AS A LAST-MILE DELIVERY SERVICES IN MALAYSIA

BY

DARREN PETER
PENNY YONG PEI NEE
QUAH YAN YEE
WOO YIN LIN

A final year project submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF BUSINESS ADMINISTRATION (HONS) IN LOGISTICS & SUPPLY CHAIN MANAGEMENT

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE
DEPARTMENT OF ENTREPEURSHIP AND SUPPLY CHAIN MANAGEMENT

DEC 2023

DECLARATION

We hereby declare that:

(1) This undergraduate FYP is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this FYP has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the FYP.

(4) The word count of this research report is 11318 words.

	Name of Student:	Student ID:	Signature:
1.	Darren Peter	22ABB00095	*Darren*
2.	Penny Yong Pei Nee	20ABB03278	*Penny*
3.	Quah Yan Yee	20ABB03297	*Quah*
4.	Woo Yin Lin	20ABB02812	*Woo*
5.			

Date: 8th December 2023

ACKNOWEDGEMENT

We would like to express our deepest gratitude to Dr. Yew Chee Fong, our research project supervisor, for his tremendous guidance, constant support, and patience throughout our final year project. His support in guiding us during our regular meetings and thought-provoking conversations not only assisted in solving challenges but also brought a level of pleasure to the project's advancement. We would also like to thank Dr. Peter for his invaluable guidance and support. His insightful contribution have greatly enriched our knowledge in research. Further, we would like to thank to the examiners Dr. Nurliyana, Dr. Ng Yin Kuan, Mr. Azim and Mr. Adi Wira for their insightful comments and suggestions have greatly enhanced our project overall and helped to further develop and enhance its overall.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

EDI	Electronic data interchange
IT	information technology
TPB	Theory of Planned Behavior
PBC	perceived behavioral control
TAM	Technology Acceptance Model
SPSS	Statistical Package for the Social Sciences
KMO	Kaiser-Meyer-Olkin
Conv	Convenience
Att	Consumers' Attitude Towards Parcel Locker Service
Int_Adpt	Intention To Adopt Parcel Locker Service
Reli	Reliability
Re_Ad	Relative Advantage
Comp	Complexity

PREFACE

This study explores the intention to adopt parcel lockers as a last-mile delivery services in Malaysia, focusing on the lack of attention given to this sector, as the last mile delivery impact is increasingly recognized. The study aim of the study is to identify the patterns and dimensions of consumer preferences, such as convenience, reliability, relative advantage, and complexity. Additionally, the research examines the mediation effect of customers' attitudes towards parcel locker services in determining their intention to adopt parcel locker service as this enhances the value of the research findings and is highly relevant to bridge the gap in the emerging literature on parcel locker service in Malaysia.

ABSTRACT

Last-mile delivery serves as the final connection between the upstream supply chain operations and the end consumers, acting as the ultimate link in the supply chain. Research indicates that the logistics sector has experienced significant financial gains as a result of the swift growth of online commerce. Nevertheless, there has been much attention given to the difficulties that accompany the potential benefits of parcel lockers. To overcome the limitations of conventional last-mile logistics in various distribution scenarios and to update the delivery service concept with advanced technology, the implementation of self-collection services is necessary. This research aims to utilize the Technology Acceptance Model and Theory of Planned Behavior to investigate consumers' preferences in adopting parcel locker services. Specifically, the study seeks to identify the patterns and dimensions of consumer preferences, such as convenience, reliability, relative advantage, and complexity. Additionally, the research examines the mediation effect of customers' attitudes towards parcel locker services in determining their intention to adopt this service. The data was gathered via an internet-based questionnaire (Google Forms) from 138 participants situated within Malaysia. The study's hypotheses were tested using the Statistical Package for the Social Sciences (SPSS) version 27.0. This was done through the application of linear regression, multiple regression analysis, and mediation analysis using the PROCESS Macro. The results indicated that consumer preference, including factors such as convenience, reliability, relative benefit, and complexity, had a substantial impact on consumers' sentiments towards parcel locker service. Furthermore, the results indicated that the attitude towards parcel locker service acts as a mediator in the relation between consumer preferences and the intention to utilize parcel locker service. Therefore, this research contributes to the growing body of knowledge on parcel locker services in Malaysia, a topic that is still in its early stages in the country. This enhances the value of the research findings and is highly relevant to bridge the gap in the emerging literature on parcel locker service in Malaysia.

Keywords: parcel locker, last mile delivery, consumers, attitude, intention

CHAPTER 1

1.0 Research Background

Recent years have seen a notable increase in the popularity of e-commerce, as seen by a notable rise in online transactions. Electronic data interchange (EDI) and information technology (IT) facilitate online transaction of products and services, known as e-commerce. This change has given customers more capacity to interact with the worldwide market. They can now evaluate product variations, compare costs between locations, and investigate alternatives with the ease of their mobile devices. Over the last decade, the Malaysian e-commerce industry has grown at double-digit rates, especially in the retail and electronics sectors, according to eCommerce Malaysia (Statista Market Forecast, 2023). Parcel lockers have become an increasingly popular self-service solution to improve last-mile delivery efficiency, solving issues with traditional ways because of the need for more flexible and practical strategies (Yusoff et al., 2023).

A parcel locker is a safe and convenient storage form where customers may send and receive packages. Providers are then allowed to hold onto their packages in each locker until the receiver comes to retrieve them. (Gssparcel, 2021) However, even if the delivery service provider offers automated package lockers, customer utilization in Malaysia is not as beneficial as the supplier was anticipating (Yusoff et al., 2023). According to Mangiaracina et al. (2019), last-mile delivery services have improved lead times, reliability, security, and flexibility for quick deliveries. However, there were issues with last-mile delivery as well.

Delivering products straight to customers' front doors is known as "home delivery," a last-mile delivery technique whose success depends on the client physically receiving the item (Yusoff et al., 2023). However, problems occur when customers are not at the delivery address; this results in missed deliveries, higher expenses, and postponed deliveries. Customer complaints have also brought attention to issues with parcel security, including the high rate of misplaced packages. Many customers filed reports regarding missing packages, which prompted inquiries into possible theft or losses at different points in the delivery process. Parcel

lockers have become a viable alternative in response to these issues. Packages can be safely stored in parcel lockers, which also inform users via an OTP (one-time password) to make retrieval easier. This cutting-edge self-service delivery system saves opportunity costs by enabling consumers to send and collect goods at their convenience, round the clock. Additionally, parcel lockers help last-mile service providers (LSPs) operate more efficiently by reducing failed deliveries, which results in a more efficient and economical delivery procedure (Yusoff et al., 2023).

1.1 Research Problem

Online buying has increased significantly yearly in Malaysia, particularly during the COVID-19 pandemic. The surge in e-commerce has resulted in a significant increase in the quantity of parcels that Malaysian courier services are required to transport (Mokhsin et al., 2021). According to survey data, Malaysia handled approximately 737.36 million domestic package deliveries in 2021 (Statista, 2022). Parcel deliveries have increased due to the growing e-commerce industry; however, this has resulted in many challenges and problems for courier services and clients (Mokhsin et al., 2021).

During last-mile delivery, package security is the main priority. Customers who buy online frequently request door-to-door delivery, yet the parcels are accepted or left unattended. The delivery will be left outside the door if no one can take it from the courier. Shipment loss or theft is increased (An et al., 2022). Package thieves can commit crimes during the interval that occurs between the recipient's departure and return. According to Mokhsin et al. (2021), the survey revealed that 36% of the 2,000 participants had at least one encounter with parcel theft in Malaysia.

Previous research conducted in Malaysia has delved into aspects related to using parcel lockers. For instance, studies have explored shoppers' intentions to use these lockers (Mohamad & Ngah, 2022) and this delivery service's overall adoption and efficiency (Yusoff et al., 2023; Keen et al., 2022). However, a knowledge gap exists regarding adopting parcel lockers, specifically as a last-mile delivery solution in Malaysia. Although these services are available, their usage remains limited primarily due to availability and public awareness

barriers. Furthermore, there is a lack of familiarity and acceptance of the concept of parcel lockers across regions within Malaysia. Existing research primarily focuses on users' willingness to adopt services in other countries, creating a noticeable information void regarding the Malaysian context. To address this gap and tackle last-mile delivery challenges, this research investigates consumers' attitudes toward parcel locker services, exploring the connections between convenience, reliability, comparative advantage, integrity, and the adoption of parcel lockers.

1.2 Research Objectives & Research Questions

1.2.1 Research Objectives

RO1: To determine the relationship between consumer preference (convenience, reliability, relative advantage, and complexity) and consumers' attitude towards parcel locker service.
RO2: To determine the mediating effect of consumers' attitude relationship between consumer preference (convenience, reliability, relative advantage, and complexity) and intention to adopt parcel locker service.
RO3: To determine the relationship between consumers' attitude toward parcel locker service and intention to adopt parcel locker service.

1.2.2 Research Questions

RQ1: Does consumer preference (convenience, reliability, relative advantage, and complexity) significantly related to consumers' attitude toward parcel locker service?
RQ2: Does consumers' attitude toward parcel locker service mediate the relationship between consumer preferences (convenience, reliability, relative advantage, and complexity) and intention to adopt parcel locker service?
RQ3: What is the significant relationship between consumers' attitude toward parcel locker service and intention to adopt parcel locker service?

1.3 Research Significance

The parcel locker study is significant mainly because of its ability to enlighten policymakers and impact regulatory frameworks. The parcel delivery sector is changing rapidly as parcel lockers become more popular. As a result, policymakers have an outstanding opportunity to develop standardized guidelines that maximize beneficial outcomes for customer satisfaction and the community. Furthermore, policymakers could encourage parcel locker use by understanding its benefits, such as reduced consumption of fuel, less greenhouse gas emissions, and improved efficacy in the final mile delivery.

1.4 Scope of the Study

The study investigates Malaysians' intention to use parcel locker services in peninsular Malaysia. Customers who purchase merchandise online using digital platforms serve as the unit of analysis. This study focuses on convenience, reliability, relative advantage, complexity, consumers' attitudes toward parcel locker service, and their intention to use it.

1.5 Operational Definition

For this research, the following definitions are provided to ensure a common understanding of terms used within this research that commonly have varied definitions.

1.5.1 Convenience

Consumers' perception of parcel lockers is whether they save time and effort compared to traditional final mile options. Parcel locker systems include accessibility, convenience, quick mail/parcel redemption, and night-time operations.

1.5.2 Reliability

Trust towards constancy of information delivery in conjunction with parcel locker services promised to the consumers. The reliability of parcel locker services can be ascertained using past performance, accuracy of tracking, and overall reliability.

1.5.3 Relative Advantage

Parcel lockers are quick, cheap, and intelligent last-mile alternatives. The benefits of mailbox lockers can be measured against the advantages of conventional approaches.

1.5.4 Complexity

Customers' view point on the usability of parcel locker services. Among these are the possible complications in the parcel locker adoption process, registration procedures, and user interfaces.

1.5.5 Customers' Attitude Towards Parcel Locker Services

Clients view an overall evaluation and sentiment of the parcel locker service. These comprise the sense of happiness, faith, and general feelings about the experience with the delivery—be it positive or negative.

1.5.6 Intention To Adopt Parcel Locker Service

Customer reluctance to receive parcels in parcel lockers during the last mile deliveries. This goal is measured by intention, perceived likelihood of future use, and preferred parcel locker service acceptance.

CHAPTER 2 LITERATURE REVIEW

2.0 Introduction

This chapter covers all relevant scholarly literature on the research topic. Assessing the literature helps improve comprehension of the research issue and find unexplored areas.

2.1 Underlying theories

2.1.1 Theory of Planned Behavior

Azjen's development of the Theory of Planned Behaviour (TPB) in 1985 proposed that an individual's potential behavior was primarily governed by their intention to perform it (Brookes, 2003). According to the TPB, the three primary predictors of behavioral intention are PBC, subjective norm, and attitude toward the behavior. Subjective norm refers to the social pressure a person perceives on the act's performance, attitude refers to an individual's positive/negative opinions, and PBC refers to the conviction that they can accomplish the act under conditions (Ajzen, 2020).

This study investigates the effects of four independent variables on perceived behavioral control and attitudes. Perceived behavioral control is recognized as a factor influenced by convenience and reliability. First, convenience and speedy performance of chores with parcel lockers add to perceived behavioral control. Secondly, on-time deliveries build consumer confidence. Parcel lockers are advantageous relative to their traditional counterparts. This leads to positive attitudes regarding parcel lockers, while negative attitudes towards their complexity influence acceptance (Tsai & Tiwasing, 2021).

The TPB has also been substantiated in several studies about post-intention acceptance, trial behavior, and consumer intentions to use parcel lockers (Thongkam et al., 2021; Fessler

et al., 2023). Therefore, TPB is essential in establishing clients' intentions to utilize parcel lockers in the final delivery mileage.

2.1.2 Technology Acceptance Model

The TAM model introduced by Davis in 1989 (Surendran, N.D.) is a prominent study framework for predicting the adoption of information systems and technology among individual users. TAM is an abbreviation for technology acceptance model (Davis et al., 1989). It focuses on adopting and using information technology to provide individuals and organizations with short- and long-term benefits such as improved performance, increased efficiency, and convenience. It aims to uncover the fundamental forces underlying technology acceptance, providing practitioners with information on improving system adoption before implementation through perceived ease of use and usefulness (Marikyan & Papaiannidis, 2023).

The study reveals that the more opportunities consumers have to try out new services, the more positive their assessment of their utility and usability gets. This is especially noticeable in parcel locker services, where user-friendliness and advantages over home delivery correspond with overall happiness and trust in superior suitability. Consumers' impression of not having to wait for home delivery emphasizes perceived utility, boosting the chance of adoption and intention to use parcel locker services (Thongkam et al., 2021).

In the current study, TPB and TAM emerge as crucial theories to support the intention to use parcel lockers and last-mile delivery services, providing insight into individual behavior and decision-making processes in this context.

2.2 Review of variables

2.2.1 Convenience

Convenience, in the context of consumer purchasing, is defined by the level of effort and motivation involved in acquiring goods or services, transcending product attributes to encompass a seamless and comfortable buying experience (Ali & Rafiq, 2021). Location emerges as a pivotal factor in convenience, particularly in the case of parcel lockers, where proximity significantly influences consumer decisions. Parcel lockers strategically positioned within walking distance of residential areas, subway entrances, supermarkets, and other convenient locations enhance accessibility, saving consumers time and effort (Po-Lin et al., 2022). Additionally, the efficiency and speed of parcel locker services contribute to their perceived convenience. The availability of 24-hour service proves advantageous for office workers and students, addressing their parcel pickup needs effectively. Adopting parcel lockers improves delivery efficiency for last-mile service providers, reducing waiting and communication times. Parcel lockers streamline the package drop-off process, eliminating the need for in-person handoffs and attempted deliveries, saving time, increasing overall efficiency, and increasing customer satisfaction (Issuu, 2023).

2.2.2 Reliability

In the context of last-mile delivery and parcel lockers, reliability is defined as a company's capacity to provide error-free services throughout the delivery process (Lai et al., 2022). Tang et al. (2021) define reliability as the consistency and efficacy of parcel locker services in meeting the needs of consumers. As an alternative to traditional home delivery, parcel lockers are recognized for their dependability in tackling last-mile distribution difficulties by providing a dependable option (Gangi et al., 2023). Unlike residential delivery, parcel lockers are considered more dependable, reducing the chance of late deliveries and eliminating failures when recipients are unavailable. In this study, customers' perceptions of parcel lockers as a dependable delivery service shape the overall sense of perceived behavioral control (Tsai & Tiwasing, 2021). Despite the problems created by package diversity and the requirement for space optimization, the positive impact of dependable parcel lockers on client happiness and service quality is evident. The dependability of parcel lockers directly impacts consumers' views of benefits and downsides, emphasizing its critical role in encouraging the adoption of self-service technology (Tsai & Tiwasing, 2021).

2.2.3 Relative Advantage

The concept of perceived relative advantage is essential in innovations since it reflects how much an innovation is seen to be superior to its predecessor (Ghareeb et al., 2019). This concept, which emphasizes improvements and benefits, promotes consumer involvement with self-service technology and motivates by providing rewards and incentives (Ma et al., 2023). When comparing self-collection services to home deliveries, consumers' perceptions of relative advantage become critical, comprising economic, social, convenience, and satisfaction aspects (Pradhan, 2022). Consumer satisfaction and adoption intentions are increased by the perceived superiority of self-collection, which is influenced by economic favorability, social prestige, convenience, and prior favorable experiences (Yuen et al., 2021). Chang (2020) emphasizes the need to concretize these benefits in the consumer's thinking to improve adoption intentions. However, Kotty (2021) mentions accessibility and user familiarity with parcel locker services as potential barriers. While these services provide secure, contactless delivery and extended pickup hours, difficulties may occur for people who do not have easy access to locker locations or who are uncomfortable with technology, indicating a trade-off between convenience and inclusivity (Alkhalifah et al., 2022).

2.2.4 Complexity

In the context of innovations and new technologies, complexity refers to individuals' difficulty when attempting to understand and apply a particular invention (Yuen et al., 2018). According to studies, innovations that require users to learn new skills are accepted more slowly than simpler alternatives since people favor easy-to-use technologies (Tsai & Tiwasing, 2021). This preference for simplicity is extreme among older people, who may be less likely to engage with sophisticated technologies (Mitrea et al., 2020). According to Rohmer and Gendron (2020), the complexity of parcel locker services in last-mile delivery includes user acceptance, interface familiarity, geographical accessibility, and coordination. While parcel lockers are convenient, those unfamiliar with technology may find the digital interfaces challenging (Evanschitzky et al., 2020). To improve accessibility, locker placement must

consider varied consumer locations and lifestyles (Lachapelle et al., 2018). Scholars emphasize the importance of striking a careful balance between technology simplicity, geographic coverage, and operational efficiency to give consumers a smooth experience throughout the last mile of delivery.

2.2.5 Consumers' attitude towards parcel locker service

Attitude is an essential concept in social psychology, indicating an individual's evaluative judgment of a particular object of thought (Drover et al., 2018). Duchi et al. (2020) emphasize that attitude includes an evaluation of behaviors impacted by ideas about their effects. According to Ajzen (1991), attitude is vital in determining intention since it reflects a person's favorable or unfavorable judgment of behavior. This study investigates the relationship between consumer attitudes and their propensity to use parcel locker services, emphasizing the predictive ability of emotional attitudes (Nez-Barriopedro et al., 2021; Azjen, 1980). On the other hand, a negative attitude towards parcel locker services may limit their potential benefits by raising concerns about security and dependability (Mitrea et al., 2020). This negativity can stifle uptake, limiting the spread of parcel locker networks and impeding last-mile delivery optimization. A positive approach is consequently required to realize the transformative potential of parcel locker services and improve the package delivery ecosystem and the overall consumer experience.

2.2.6 The intention to adopt parcel locker services

The intent to use parcel locker services significantly impacts the future of last-mile delivery, affecting customer behavior and driving logistics development (Che et al., 2022). Businesses should plan and spend resources strategically based on consumer desire to embrace, extend, and optimize parcel locker networks in convenient places to improve delivery efficiency (Sears, 2020). This purpose drives investment in technology and automation to streamline the last-mile process, decreasing delivery times and costs.

Furthermore, the desire to use parcel lockers has broader implications for urban sustainability since it will reduce traffic congestion and carbon emissions connected with existing delivery systems (Ranjbari et al., 2023). This is consistent with the increased emphasis on environmentally friendly practices and sustainable urban development, contributing to more liveable cities. Finally, parcel locker services optimize last-mile operations while encouraging a robust, efficient, and ecologically responsible approach to urban logistics (Silva et al., 2023). The adoption of parcel lockers indicates consumer willingness to embrace innovative, self-service solutions that improve delivery efficiency (Zhou et al., 2020).

2.3 Proposed Theoretical/ Conceptual Framework

Figure 2.1 depicts the study's recommended conceptual framework. The intention to use a parcel locker service is the dependent variable, whereas convenience, dependability, complexity, and relative advantage are the independent variables. Finally, customers' attitudes towards parcel locker services were presented as a mediator between convenience, dependability, complexity, relative advantage, and the intention to use parcel locker services.

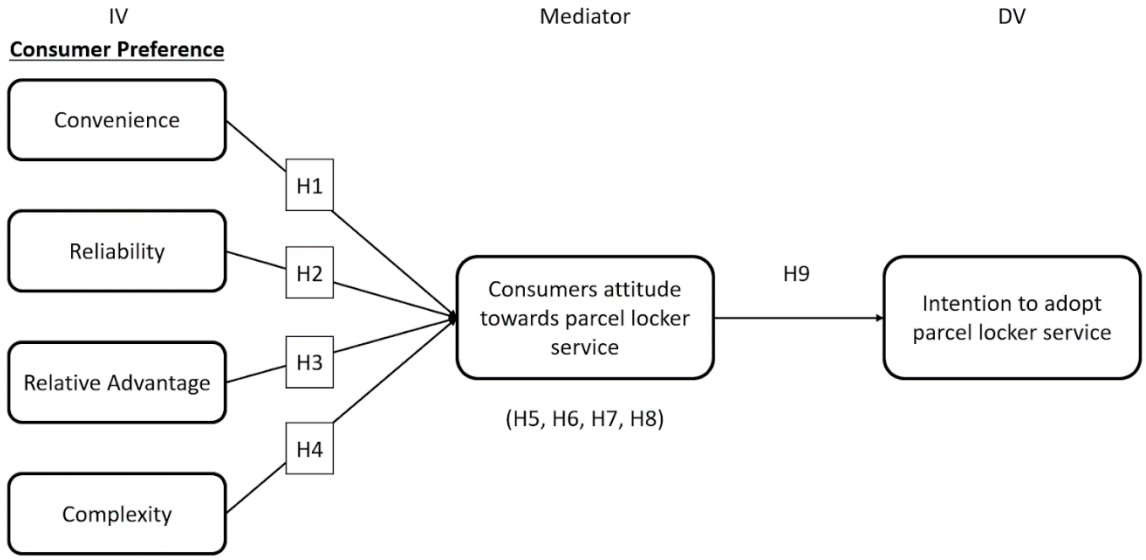

Figure 2.1: Proposed Conceptual Framework

2.4 Hypotheses Development

2.4.1 Convenience and consumers' attitude towards parcel locker services

According to Tsai and Tiwasing (2021), convenience is integrally connected to the effort and time consumers spend performing tasks. Xu et al. (2019) conducted a study emphasizing the importance of collection and delivery locations in e-commerce, influencing consumer preferences and operational costs for businesses. According to the study, customers find parcel lockers straightforward and speedy, with 24-hour service efficiently catering to the pickup demands of office professionals and students. As a result, the current study aims to evaluate whether there is a direct relationship between convenience and customer attitudes toward using parcel locker services, which leads to the first hypothesis:

H_1: There is a significant relationship between convenience and consumers' attitudes towards parcel lockers services.

2.4.2 Reliability and consumers' attitude towards parcel lockers services

In the current study, reliability is defined as consumers' trust in the dependability of parcel lockers as a delivery service. Any flaws in reliability might result in substantial time waste for customers and negatively influence their overall experience. The dependability level directly impacts how consumers view the benefits and downsides of parcel lockers (Tsai & Tiwasing, 2021). As a result, the current study intends to evaluate whether there is a direct relationship between reliability and consumers' willingness to use parcel locker services, which leads to the second hypothesis:

H_2: There is a significant relationship between reliability and consumers' attitudes toward parcel locker services

2.4.3 Relative advantages and consumers' attitude towards parcel lockers services

As a type of self-collection, parcel locker services allow consumers to select preferred times for parcel collection, leveraging the strategic positioning of lockers to coincide with consumers' schedules and allowing customers to choose the parcel locker location that best suits their needs. As a result, the need for several delivery efforts is reduced, improving the efficiency of the package delivery process for both courier services and consumers. This simplified strategy not only increases efficiency and parcel collecting but also adds to increased customer satisfaction. As a result, the current study intends to examine whether there is a direct relationship between relative advantage and consumers' willingness to use parcel locker services, which leads to the third hypothesis:

H_3: There is a significant relationship between relative advantages and consumers' attitudes toward parcel locker services

2.4.4 Complexity and consumers' attitude towards parcel lockers services

User acceptability, interface familiarity, geographical accessibility, and coordination are all problems related to parcel locker services. While these lockers are convenient, those with little technological skill may struggle to navigate the digital interfaces for locker access, as Evanschitzky et al. (2020) point out. The organization of package drop-off into the right lockers and managing limited locker capacity during peak delivery hours add to the system's complexity (Rohmer and Gendron, 2020). The user-unfriendly conditions connected with parcel lockers dilute the apparent benefits, as consumers may be hesitant to use a system believed to be unnecessarily complex. The current study seeks to investigate whether there is a direct relationship between complexity and intention to use parcel locker services, which leads to the fourth hypothesis:

H_4: There is a significant relationship between complexity and consumers' attitudes towards parcel lockers services.

2.4.5 Consumers' attitude, convenience, and intention to adopt parcel locker services

Existing research, such as Tsai and Tiwasing (2021), has found a strong link between convenience and the propensity to use parcel locker services. To assess the strength and direction of this link, additional variables such as accessibility, utility, accommodation, appliance, and support must be considered (Prabowo & Nugroho, 2019). This is due to the function of convenience in improving the ease of use of products and services, resulting in a positive attitude among customers. The interaction between consumer attitudes and the convenience parcel lockers provides is a critical stimulant for their widespread adoption and incorporation into current package delivery systems (Kolasiska-Morawska et al., 2022). As a result, the current study aims to evaluate whether consumers' attitudes mediates the association between convenience and intent to use parcel locker services, leading to the fifth hypothesis:

H_5: Consumers' attitude mediates the relationship between convenience and intention to adopt parcel locker services.

2.4.6 Consumers' attitude, reliability, and intention to adopt parcel locker services

Scholars such as Kim (2021) and Marikyan et al. (2020) emphasize that a favorable attitude, driven by convenience, security, and efficiency, accelerates adoption, motivating customers to effortlessly incorporate the offered product or service into their daily lives. Regardless of the criteria discovered to explain consumer attitudes, studies consistently show that when reliability is reduced, consumers are less likely to adopt a favorable attitude (Mitrea et al., 2022; Tang et al., 2021). According to studies by Nguyen et al. (2019) and Park et al. (2020), consumer attitude substantially impacts the success and widespread adoption of a product or

service. As a result, the current study seeks to evaluate whether consumers' attitudes mediates the relationship between convenience and intent to use parcel locker services, leading to the sixth hypothesis:

H_6: Consumers' attitude mediates the relationship between reliability and intention to adopt parcel locker services.

2.4.7 Consumers' attitude, relative advantage, and intention to adopt parcel locker services

According to Park and Zhang (2020), a favorable attitude powered by convenience, security, and efficiency accelerates adoption, driving consumers to integrate the offered product or service smoothly into their everyday routines. Consumers are less likely to adopt a positive attitude when their relative advantage is compromised, according to studies (Wang et al., 2020). Despite the numerous determinants found to understand consumer attitudes, Tedjo et al. (2022) and Klein & Popp (2022) research emphasizes the critical importance of consumer attitude in influencing the success and universal acceptance of a product or service. As a result, the current study aims to evaluate whether consumers' attitudes influence the relationship between relative advantage and intention to use parcel locker services, which leads to the seventh hypothesis:

***H_7*: Consumers' attitude mediates the relationship between relative advantage and intention to adopt parcel locker services.**

2.4.8 Consumers' attitude, complexity, and intention to adopt parcel locker services

A favorable perspective, driven by ease, security, and efficiency, accelerates the adoption process, motivating consumers to effortlessly incorporate the offered product or service into their everyday routines, according to Lai and Liew (2021). According to research, people are less likely to evaluate a product or service favorably when it is complex. Despite several established drivers aiming to understand consumer viewpoints, Orîndaru et al. (2021)

emphasize the critical significance of consumer attitude in determining a product's or service's success and widespread adoption. As a result, the current study aims to evaluate whether consumers' attitudes influence the relationship between convenience and intention to use parcel locker services, which leads to the following eight hypotheses:

***H*$_8$: Consumers' attitude mediates the relationship between complexity and intention to adopt parcel locker services**

2.4.9 Consumers' attitude and Intention to adopt parcel locker services

Attitude is a fundamental concept in social psychology that influences information processing cognitively. It denotes an evaluative judgment focused on a particular mental object (Bohner & Dickel, 2011). According to Ajzen (1991), attitude plays a vital role in shaping intention by reflecting an individual's favorable or unfavorable judgment of behavior. This viewpoint is shared by Saadé et al. (2008), who find a strong and positive relationship between attitude and behavioral intention, which is compatible with planned behavior. Liao and Fang (2019) agree with this association, stating that attitude influences an individual's behavioral intent. As a result, the current study seeks to evaluate whether consumers' attitudes mediate the relationship between convenience and intent to use parcel locker services, leading to the ninth hypothesis:

H$_9$: There is a significant relationship between consumers' attitudes and intention to adopt parcel locker services.

CHAPTER 3 METHODOLOGY

3.0 Introduction

This chapter outlines how the research will be conducted. This chapter aims to discuss the study's research designs and suitable methodologies to examine the relationship between consumers' preferences and the mediating effect of consumers' attitudes toward parcel locker services.

3.1 Research Design

This research used descriptive research as the quantitative research design type because our study used quantitative research as the research method. According to McCombes (2019), descriptive research aims to correctly and thoroughly define a population, situation, or phenomenon. Figure 3.1 illustrates the research design of the study.

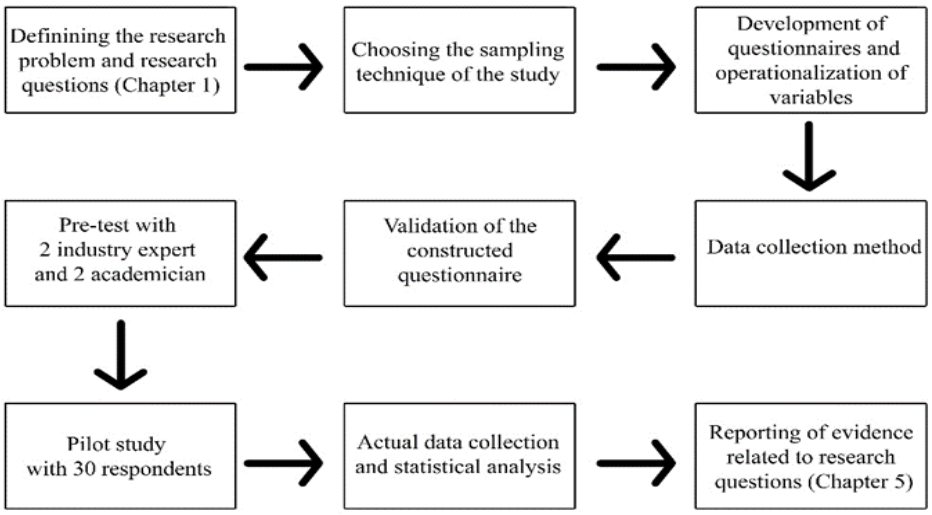

Figure 3.1: Research Design

3.2 Sampling Design

3.2.1 Target Population

This research project focuses on the consumers in Peninsular Malaysia (within the 13 states in Malaysia). The respondents are then targeted between the ages of 18 and 60. Thus, the participants who responded to the research questionnaire formed the intended population for the study. These targeted respondents were requested to provide their input and insights regarding their initial impressions and encounters with parcel lockers as part of the survey completion process.

3.2.2 Sampling Size

Since the sample size can be estimated, this research will use the G*Power 3.1 Sample Size Calculator, an evidence-based measure of effect size, to determine the sample size. G*Power Sample size calculations measure the effect, show more empirical rigour on the researchers' part, and add internal validity to the study (Faul et al., 2007, 2009). In the context of this study, the number of predictors is 5, and as such, the total number of respondents needed is 138.

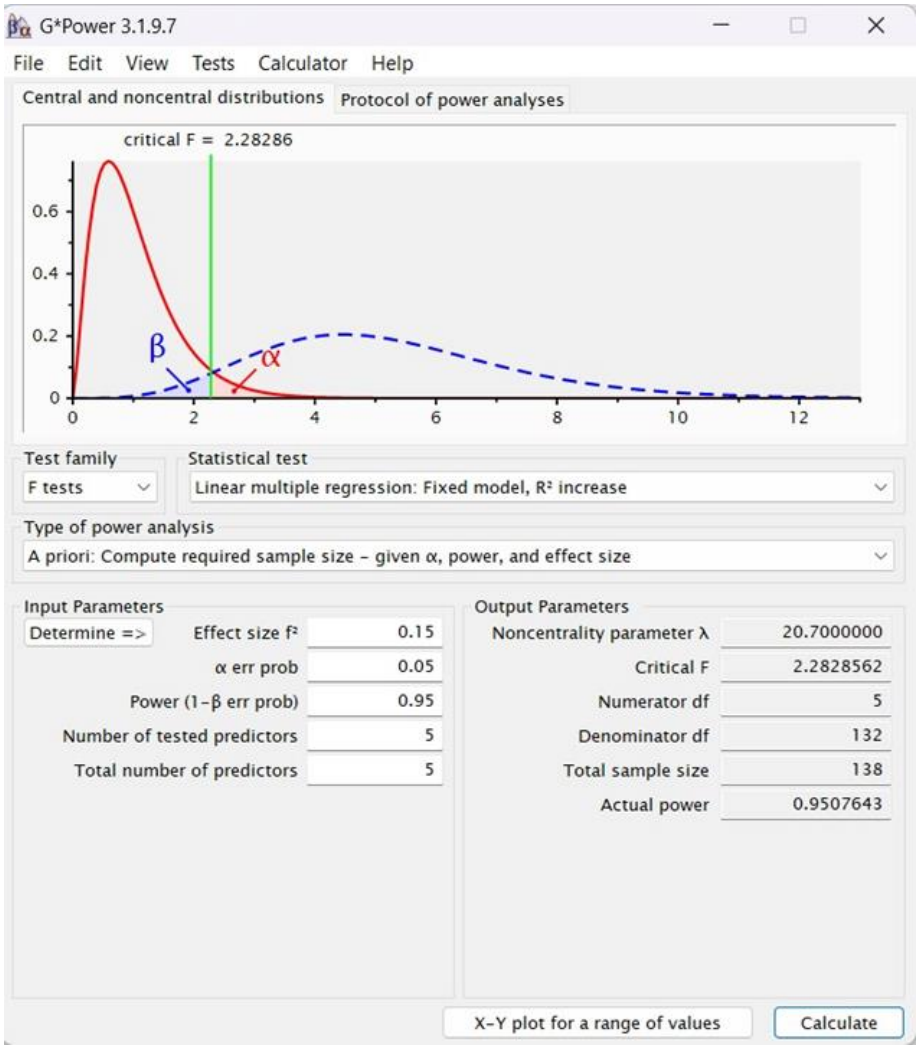

Figure 3.2: G*Power 3.1 Sample Size Calculator

3.2.3 Sampling process

Electronic questionnaires were created and distributed to participants to collect data for this study. The online survey was executed utilizing the Google Forms platform. Respondents to these questionnaires are contacted via social media such as WhatsApp, Instagram, Facebook, etc. This is the simplest and quickest way to collect information from participants.

3.2.4 Sampling Technique

Sampling methods are categorized as probability and non-probability (Showkat & Parveen, 2017). Non-probability sampling was used in this study. This study employed snowball sampling as it makes it easier and quicker to get data (Showkat & Parveen, 2017). Furthermore, this strategy uses existing participants to recruit future participants from others they know and is often used in hard-to-recruit populations (Berndt, 2020).

3.3 Data Collection

Data collecting as a first step in research can increase the quality of results achieved by reducing the possibility of mistakes occurring during a research effort. Data collection methods can be divided into primary and secondary data (Taherdoost, 2021). This research employed a primary data collection method.

3.3.1 Primary Data

Primary data collection involves gathering first-hand information from the source or speaking with respondents face-to-face. This technique enables researchers to gather first-hand data that matches their research goals (Simplilearn, 2023). Engaging in primary data collection and subsequent analysis generally demands more time and effort than secondary data research.

3.4 Research Instruments

3.4.1 Questionnaire Design

The questionnaire survey is fixed-alternative questions that provide respondents with restricted options. There are seven sections in the questionnaires. Section A is the demographic profile, which includes the respondents' demographics such as age, gender, location, and others.

Section B is about convenience; Section C is about reliability; Section D is about relative advantages; Section E is about complexity; Section F is about consumers' attitude towards parcel locker services; Section G is about intention to adopt parcel locker services, which is the dependent variable.

3.4.2 Operationalization of Variables

A total of seven components made up the questionnaire. Additionally, the 5-point Likert scale is classified as an ordinal scale, and it employs a technique to enhance its resemblance to interval data by adjusting the wording of the second and fourth response choices (Hutchinson, 2021). Besides, a standard 5-point Likert item is structured with a numerical representation and a descriptive key for levels of agreement. For instance, the coding assigns a value of 1 for "strongly disagree," 2 for "disagree," 3 for "neutral," 4 for "agree," and 5 for "strongly agree."

Table 3.1: Operationalization of Variables

Section	Variable	Measurements	Scale Technique
A	Awareness of the existence of parcel locker	Nominal	Close ended-question
	Gender	Nominal	Close ended-question
	Age	Ordinal	Multiple choice question
	Location (State)	Nominal	Multiple choice question
	No packages received/month	Ordinal	Multiple choice question

	Education Level	Ordinal	Multiple choice question
	Employment Status	Nominal	Multiple choice question
	Approximate Package Weight	Ordinal	Multiple choice question
	Product Type	Nominal	Multiple choice question
B	Convenience	Ordinal	5-points Likert scale
C	Reliability	Ordinal	5-points Likert scale
D	Relative Advantages	Ordinal	5-points Likert scale
E	Complexity	Ordinal	5-points Likert scale
F	Consumers' attitude towards parcel locker services	Ordinal	5-points Likert scale
G	Intention to adopt parcel locker services	Ordinal	5-points Likert scale

3.4.3 Pre-Test

Pretesting can ensure the potential effectiveness of the questionnaire before conducting the actual questionnaire. This study will go through expert reviews as a pretest method. Two

experts (2 academicians and 2 industrial experts) review and provide feedback for improvement.

3.4.4 Pilot Study

The pilot study was conducted on a smaller scale rather than a full-scale one. This study will conduct a pilot study by distributing 30 questionnaires to the respondents. According to Johanson and Brooks (2010), the researchers suggested that 30 respondents from the interested groups are a minimum and reasonable recommendation for a preliminary survey or scale development.

3.5 Data Processing

Data processing is gathering unprocessed data and turning it into information that can be used. The unprocessed data is gathered, categorized, processed, evaluated, maintained, and displayed in a usable format. As a result, it provides the requisite structure and context for computer interpretation and enables utilization by employees across the organization (Duggal, 2023).

3.5.1 Data reliability and validity

Reliability and validity are two important factors to consider when evaluating the quality of the study. They reflect the accuracy with which a method, approach, or test measures something. Reliability is the consistency with which a method measures something, while validity describes how well it measures what it is supposed to measure (Middleton, 2023).

3.5.1.1 Data Analysis

Data pre-screening was conducted in the course of primary data collection. Upon collection of each questionnaire response, it was checked to ensure that no questions were left incomplete. The statistical software Statistical Package for the Social Sciences (SPSS) version 27.0 was

utilized in this study by coding all questions with numeric values and entering the primary data for analysis.

3.6 Proposed Data Analysis Tool

3.6.1 Descriptive analysis

Descriptive analysis gives extensive, accurate, trustworthy, and objective information about items. It generates such data using individuals as measuring instruments under controlled settings to reduce bias. The analysis transformed the numerical data into valuable data by applying the frequency and percentage distribution, including the respondents' socio-demographic and Likert scale distribution.

3.6.2 Reliability Analysis

Reliability analysis allows us to investigate the qualities of measuring scales and the items that make up the scales. Besides, in measurement, reliability means consistency and accuracy. Cronbach's alpha measures a set of measures of internal reliability or consistency. Cronbach's Alpha Rule of Thumb, Alpha values of 0.70 or higher are preferred, whereas values less than 0.6 are avoided since they may result in unanticipated complications (Habidin et al., 2015).

Table 3.2: Cronbach's Alpha Rule of Thumb

Cronbach's Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable

$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Note. From Habidin et al. (2015).

3.6.3 Inferential Analysis

Inferential analysis entails utilizing gathered information from a population sample to derive and assess the dependability of conclusions about the entire population. The results of inferential analysis will always be subject to a particular degree of uncertainty when examining the entire population.

3.6.3.1 Pearson Correlation Coefficient

Pearson correlation was used to determine the strength of correlations between different variables. The degree of the correlation between the two continuous variables is measured (Srivastac, n.d.). Pearson's Correlation Coefficient analysis was chosen for this study because of its usefulness for evaluating the relationships between independent variables and the mediator and the links between the mediator and the dependent variable.

Table 3.3 The Scale of Pearson's Correlation Coefficient

The scale of Correlation Coefficient	**Value**
$0 < r \leq 0.19$	**Very Low Correlation**
$0.2 \leq r \leq 0.39$	**Low Correlation**

$0.4 \leq r \leq 0.59$	**Mediates Correlation**
$0.6 \leq r \leq 0.79$	**High Correlation**
$0.8 \leq r \leq 1.0$	**Very High Correlation**

Source: (Selvanathan, Jayabalan, Saini, Supramaniam, & Hussin, 2020)

3.6.3.2 Linear Regression Analysis

Linear regression analysis is a statistical method that describes and investigates the relationship between a dependent variable and one or more independent variables by fitting a linear equation to observed data points. The main goal of linear regression is to find the best-fitting line that minimizes the difference between the equation's predicted and observed values (Montgomery et al., 2021; Kumari & Yadav, 2018).

3.6.3.3 Mediation Analysis

When metrics of the mediating process are available, one way to improve the amount of information gleaned is through mediation analysis. This study employed Andrew Hayes' PROCESS macro while boot-strapping used the Sobel Test as PROCESS macro to do mediation analysis in SPSS. In mediation analysis, the Sobel Test (Sobel, 1982) is used to determine an indirect effect's statistical significance.

3.7 Ethical Clearance

The researcher will apply for ethical clearance and obtain approval from the Scientific and Ethical Review Committee (SERC) of Universiti Tunku Abdul Rahman (UTAR) before the data collection process. The approval is needed because this study collects primary data from

human participants and students from eight selected universities. In addition, the researcher will ensure that every code of practice for research involving humans as prescribed by UTAR is followed.

CHAPTER 4 :DATA ANALYSIS AND FINDINGS

4.0 Introduction

Chapter 4 was dedicated to analyzing and interpreting the data obtained from the distribution of survey responses. To validate the information collected, SPSS statistical software is being carried out. Additionally, descriptive, inferential, and reliability analyses were carried out.

4.1 Survey Return for data analysis

Based on the G*Power 3.1 Sample Size Calculator, the minimum number of responses needed is 138 respondents, and according to Rowley's (2014) recommendation, this quantity is adequate for SPSS analyses and reporting.

4.2 Inferential Analysis

Table 4.1 describes the total respondent profile, followed by a detailed explanation. In this study, 138 questionnaires were distributed to individuals in Malaysia, and all were successfully collected from the respondents. Subsequently, demographic statistics will be presented using pie charts. The demographic section comprises nine questions, which include inquiries about respondents' awareness of parcel lockers, gender, age, location (state), monthly package receipt quantity, education level, employment status, estimated package weight, and product preferences.

4.2.1 Awareness of parcel locker

Table 4.1: Awareness of Parcel Locker

Awareness of parcel locker	Frequency	Percentage (%)
Yes	116	84
No	22	16

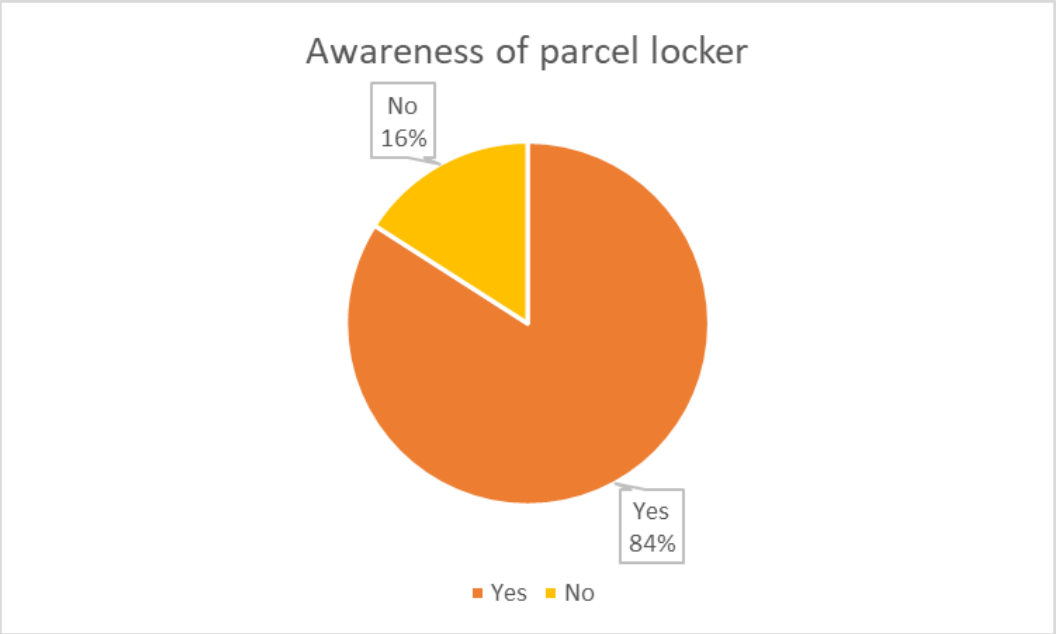

Figure 4.1: Awareness of Parcel Locker

Table 4.1 and Figure 4.1 show that 84% of respondents are aware of parcel lockers, while 16% are unaware of parcel lockers.

4.2.2 Gender

Table 4.2: Gender

Gender	Frequency	Percentage (%)

Male	54	39
Female	83	61

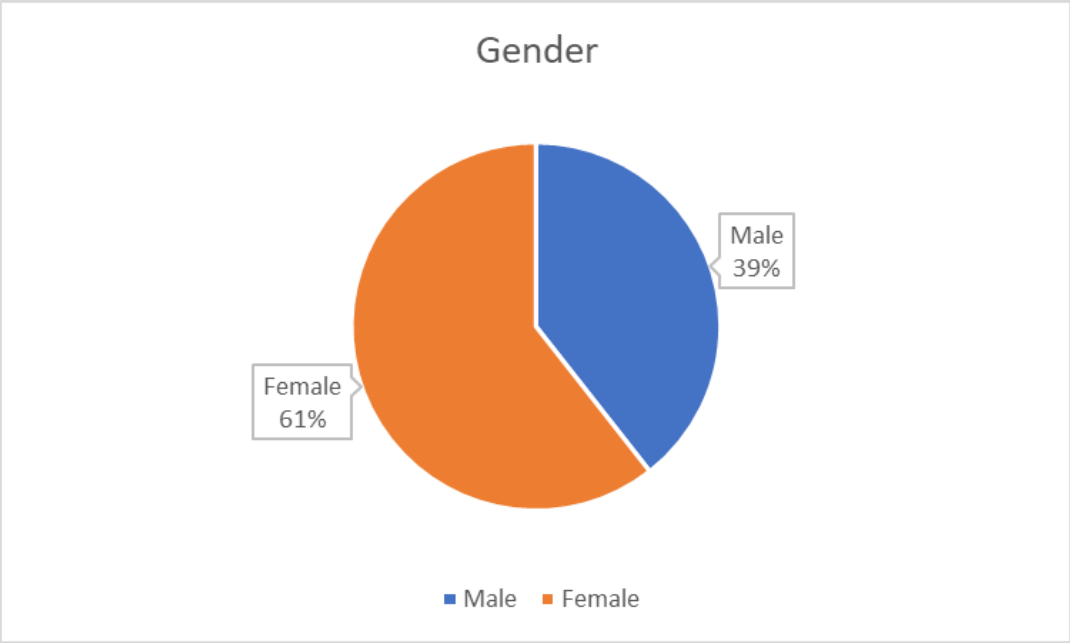

Figure 4.2: Gender

Table 4.2 and Figure 4.2 show that 61% of respondents are female and 39% are male.

4.2.3 Age

Table 4.3: Age

Age	Frequency	Percentage (%)
Below 25 years	106	77
26 to 35 years	11	8
36 to 45 years	14	10
46 to 60 years	7	5

Above 60 years	0	0

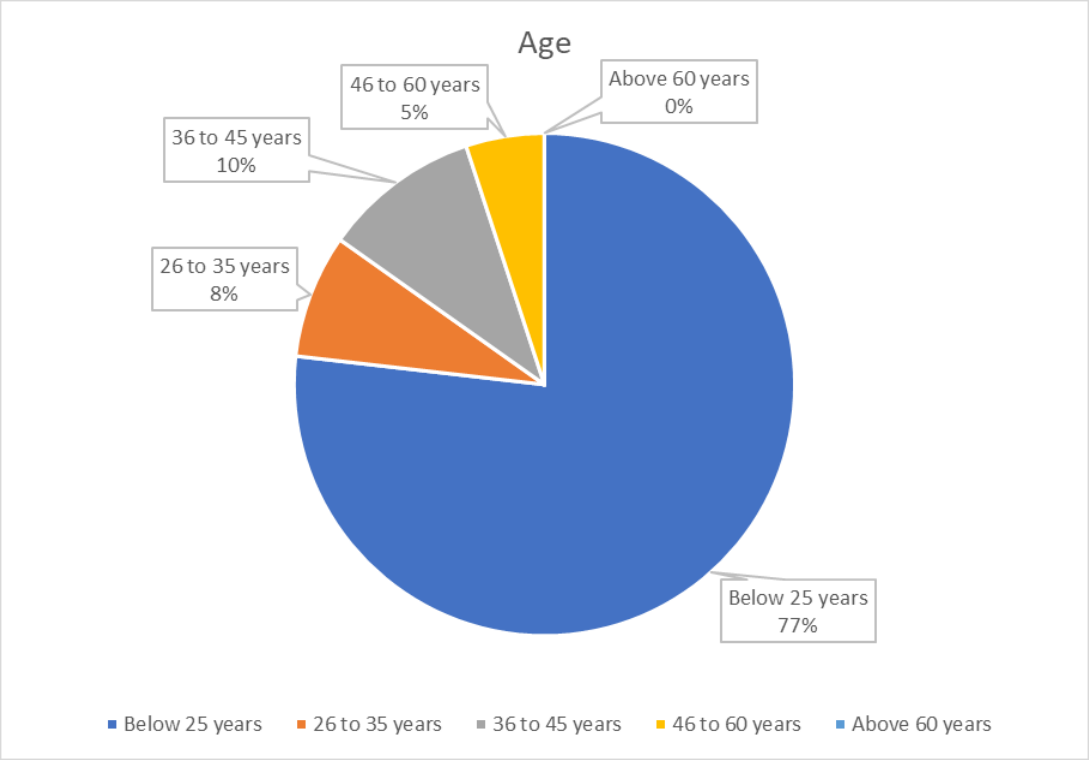

Figure 4.3: Age

Table 4.3 and Figure 4.3 shows 77% of respondents are below 25 years, 8% are 26 to 35 years, 10% are 36 to 45 years, 55% are 46 to 60 years, and 0% are above 60 years.

4.2.4 Location (State)

Table 4.4: Location (State)

Location	Frequency	Percentage (%)
Perlis	1	1
Kedah	3	2
Penang	4	3
Perak	46	35

Selangor	59	45
Negeri Sembilan	2	1
Melaka	1	1
Johor	8	6
Kelantan	0	0
Terengganu	0	0
Pahang	1	1
Wilayah Persekutuan	6	5
Putrajaya	0	0

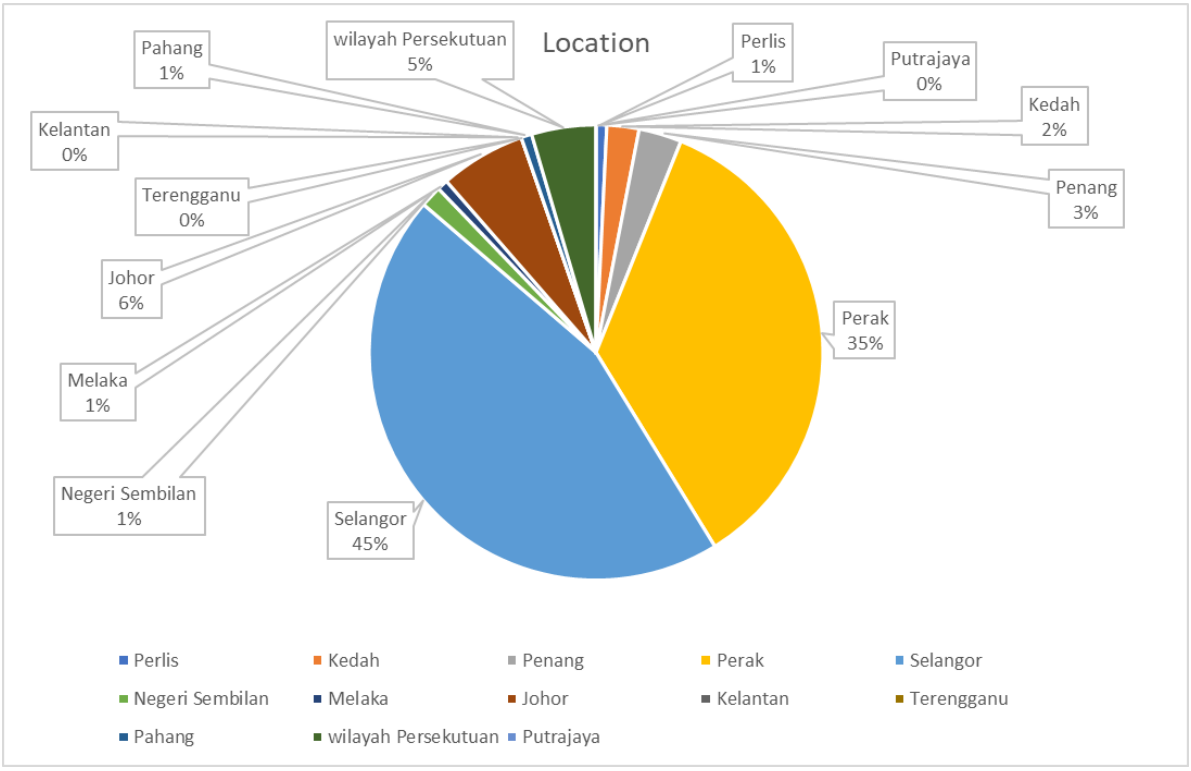

Figure 4.4: Location (State)

Table 4.4 and Figure 4.4 provide data indicating that most respondents, making up 45% of the total, are situated in Selangor. Perak follows closely with 35% of the respondents. A smaller

segment, accounting for 6%, is located in Johor, while 5% are in Wilayah Persekutuan, 3% are in Penang, and 2% are in Kedah. Additionally, Perlis, Melaka, Negeri Sembilan, and Pahang each have 1% of the total respondents. It is noted that there are no respondents located in Kelantan, Terengganu, and Putrajaya.

4.2.5 Number of packages received (per month)

Table 4.5: Number of Packages Received (per month)

Number of packages received (per month)	Frequency	Percentage (%)
Below 5 packages	100	72
6 to 10 packages	26	19
11 to 15 packages	3	2
16 to 20 packages	5	4
Above 21 packages	4	3

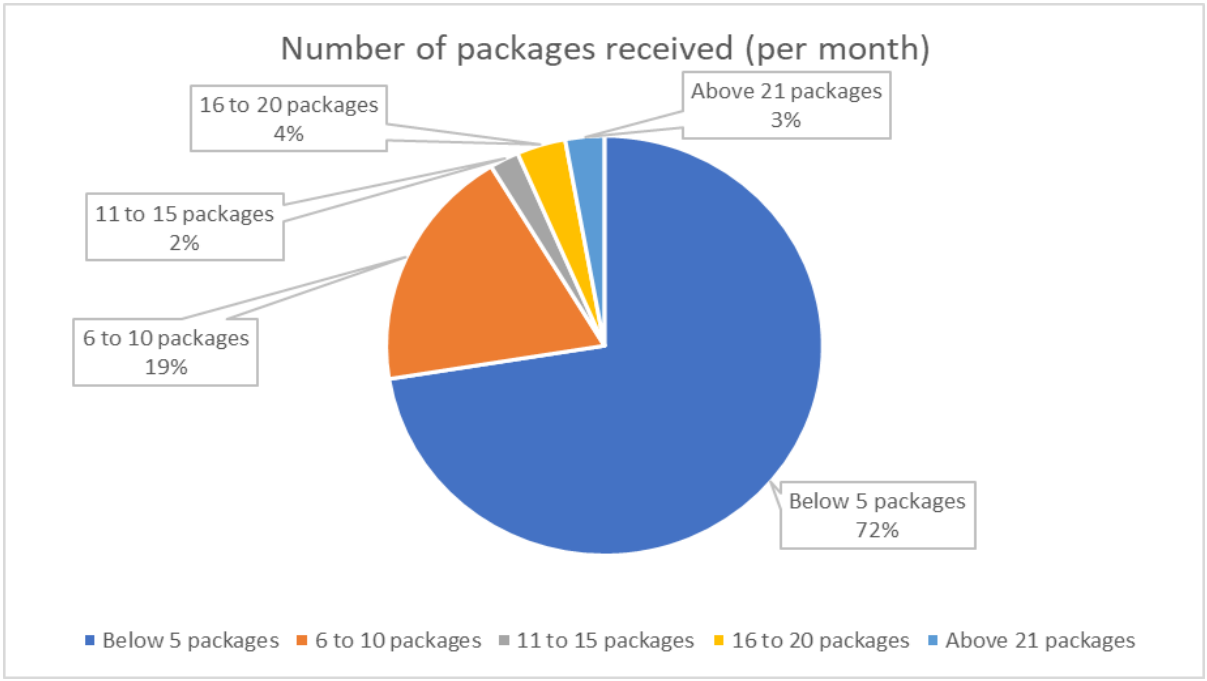

Figure 4.5: Number of Packages Received (per month)

Table 4.5 and Figure 4.5 show that 72% of respondents received less than five packages per month, and 19% received 6 to 10 packages per month. Other than that, 2% of respondents received 11 to 15 packages per month, 4% received 16 to 20 packages, and 3% received more than 21 packages per month.

4.2.6 Education level

Table 4.6: Education Level

Education level	Frequency	Percentage (%)
High school	10	7
Diploma	28	21
Degree	86	64
Master	6	4
PhD	1	1
Foundation	4	3

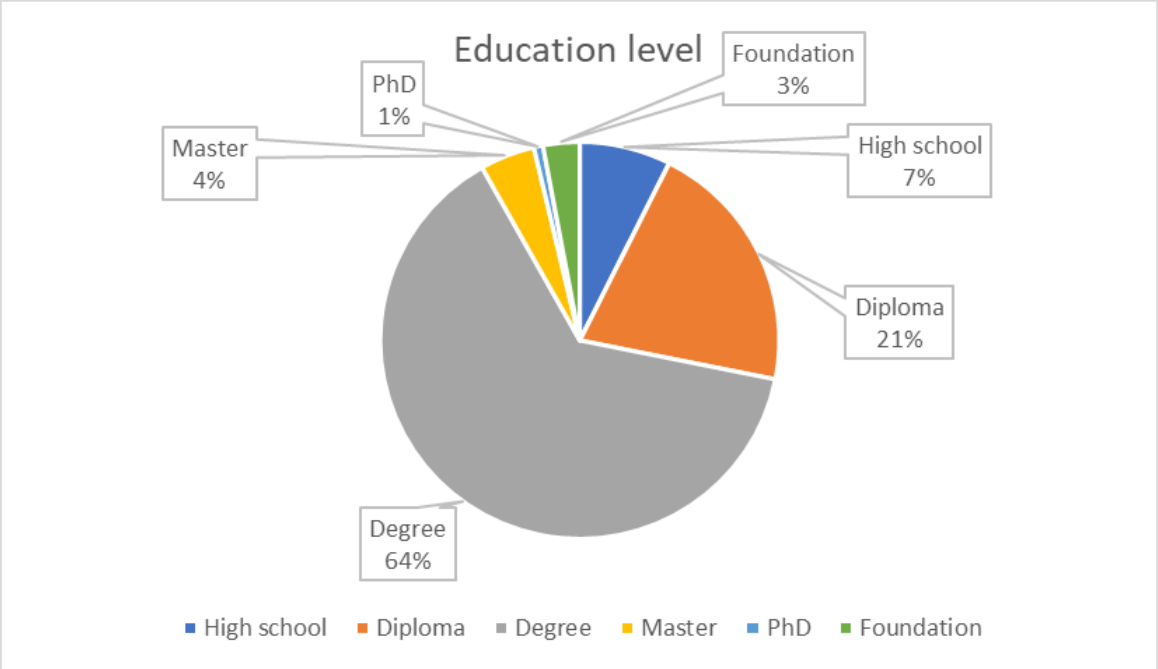

Figure 4.6: Education Level

Table 4.6 and Figure 4.6 illustrate that most respondents, accounting for 64%, have completed a degree level of education. Additionally, 21% of respondents possess a diploma, while 7% have a high school level of education. A smaller proportion of respondents includes those with a master's degree at 4%, a foundation level at 3%, and a PhD level at 1%.

4.2.7 Employment Status

Table 4.7: Employment Status

Employment Status	Frequency	Percentage (%)
Student	100	73
Office Worker	24	17
Business Owner	4	3
Freelancer	7	5

Unemployed	3	2

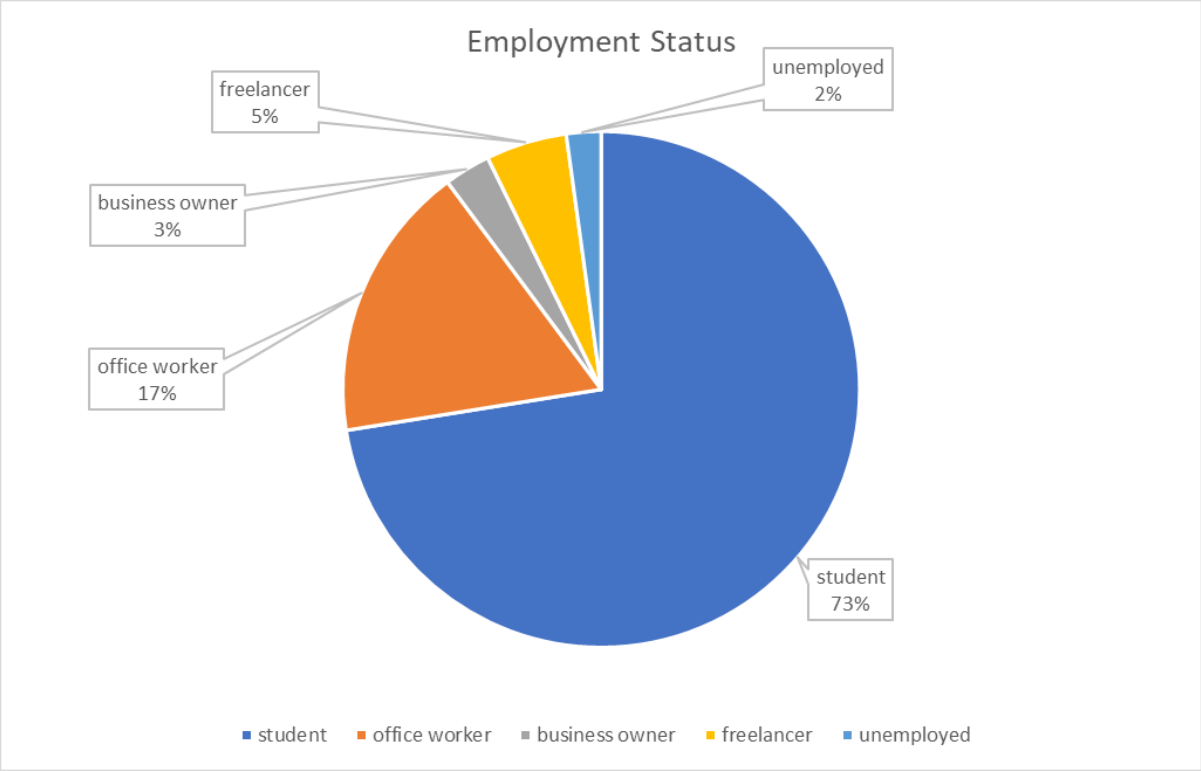

Figure 4.7: Employment Status

Table 4.7 and Figure 4.7 present the data, indicating that the largest % of respondents, 73%, consist of students. Furthermore, 17% of the respondents are employed as office workers. A smaller fraction of the respondents comprises freelancers at 5%, business owners at 4%, and the unemployed at 2%.

4.2.8 Approximate package weight

Table 4.8: Approximate Package Weight

Approximate package weight	Frequency	Percentage (%)
Below 1 kg	74	55
1 to 3 kg	51	38

4 to 6 kg	9	6
7 to 10 kg	0	0
Above 11 kg	1	1

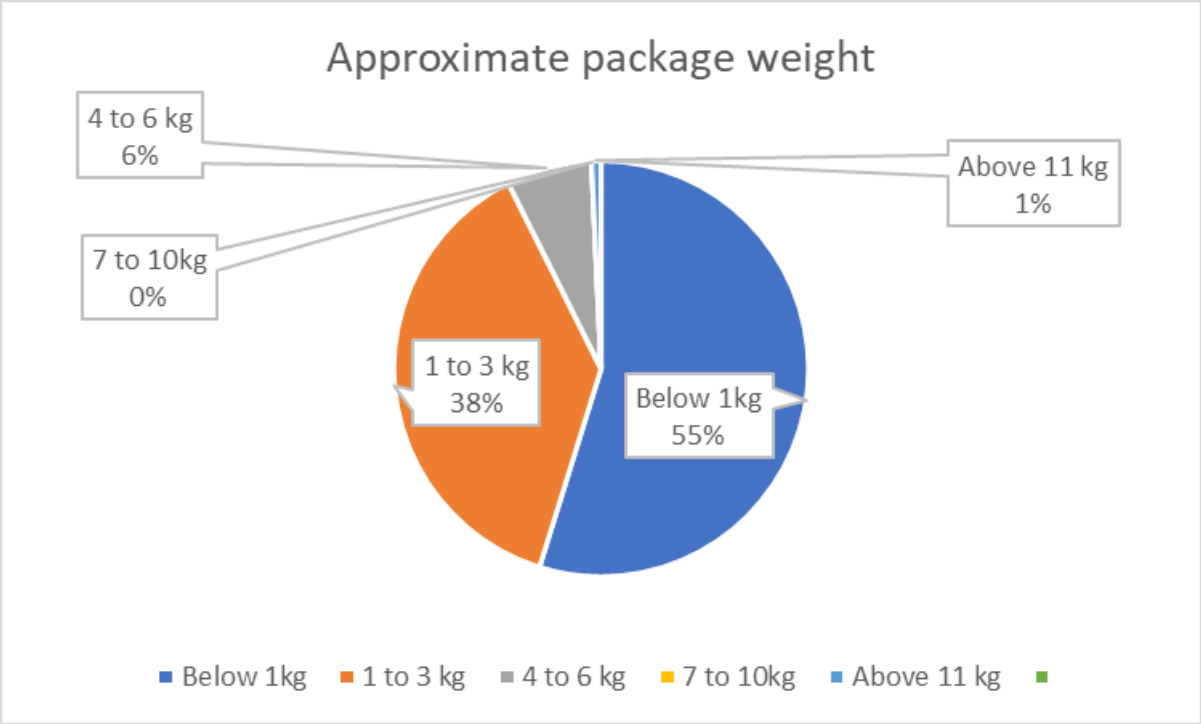

Figure 4.8: Approximate Package Weight

Table 4.8 and Figure 4.8 depict the data, showing that a significant majority of respondents, making up 55%, report an approximate package weight below 1 kg. Furthermore, 38% of respondents specify their package weight as 1 to 3 kg, while 6% state their package weight falls within the 4 to 6 kg range. It's important to note that there are no respondents with package weights in the 7 to 10 kg range, and only 1% of respondents report package weights above 11 kg.

4.2.9 Product Type

Table 4.9: Product Type

Product type	Frequency	Percentage (%)
Toiletries	5	3
Grocery items	17	12
Clothing/Accessories/Cosmetics	91	66
Books/Magazines/Newspaper	1	1
Electronic gadget	21	15
Others	3	3

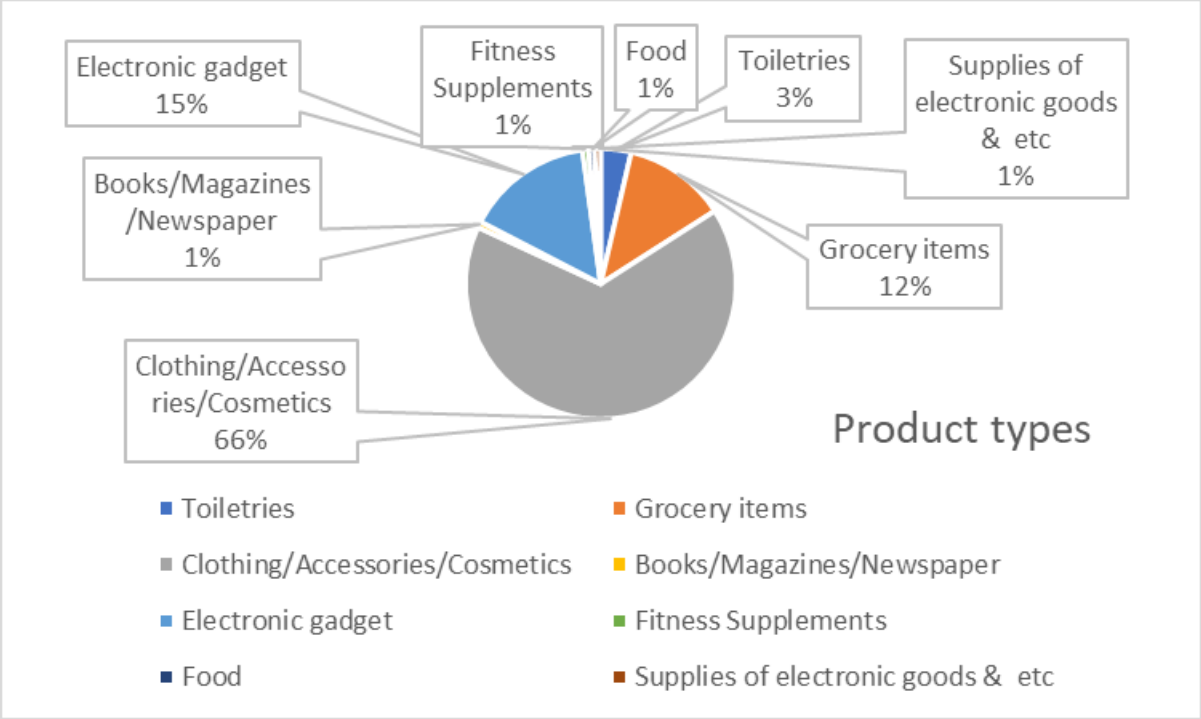

Figure 4.9: Product Type

Table 4.9 and Figure 4.9 present the data, demonstrating that the most significant proportion of respondents, comprising 66%, is associated with the product category of Clothing/Accessories/Cosmetics. Furthermore, 15% of respondents are connected to electronic

gadgets, while 12% are connected to grocery items. In addition, 3% of respondents are related to toiletries. Additionally, the product categories of Books/Magazines/Newspapers, Fitness Supplements, food, electronic goods &, etc. represent 1% of the total respondents.

4.3 Descriptive Analysis

This study uses parametric statistics since sample data are homogeneous and customarily distributed (Garson, 2012). Skewness and Kurtosis were found to be -1.96 to + 1.96 (Doane & Seward, 2011), rejecting the skewed or Kurtosis data issue that may increase the boot-strapped standard error (Chernick, 2011). Therefore, the study used parametric approaches that presume normality. (Refer to Appendix B)

4.4 Goodness of Measure

Before multivariate analysis, the goodness of measures of this study was analyzed through validity and reliability tests. The results of both tests are discussed in the following sections, and the detailed results can be seen in Appendix 3.

4.4.1 Factor Analysis

This research employed Factor Analysis with Principle Component Analysis, including KMO and Bartlett's Sphericity Tests. The factors were extracted using Kaiser's Eigenvalue >1.0 criteria. Analysis of regression requires independence. Therefore, Varimax with Kaiser Normalization rotated factors to simplify rather than minimize. Hair et al. (2010) say sample size depends on items with loadings above 0.50. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is at 0.877, which is suitable for factor analysis. Additionally, Bartlett's Test of Sphericity is significant ($p < .001$). The correlation matrix is not an identity matrix because this significance level rejects the null hypothesis. (Refer to Appendix C)

4.4.2 Total Variance Explained

Using Kaiser's criterion, the study sought variables with Eigenvalues greater than or equal to 1. The first eleven components had Eigenvalues greater than or equal to 1. They accounted for 80.54% of the variations, with Component 1 accounting for 39%, component 2 for 51.51%, and component 3 for 58.70%. (Refer to Appendix C)

Overall, 34 items using five Likert-type scales were used to measure convenience, reliability, relative advantage, complexity, consumers' attitude towards parcel lockers, and intention to adopt parcel lockers. The results demonstrates a degree of convergent validity for all items as they had loadings above 0.50 on their expected constructs (Hair et al., 2010). Henceforth, items loading less than the abovementioned value are excluded to aid the interpretation of factors. (Refer to Appendix C)

4.5 Reliability Analysis

The internal consistency of a measurement instrument can be assessed using Cronbach's alpha (α) coefficient, as seen in Table 4.10. The scale's internal consistency increases when Cronbach's alpha approaches 1.0. All measurement items that represent the dimensions generated in this study have reliability coefficients over 0.904, indicating high internal consistency.

Table 4.10: Reliability Analysis

Variable	No. of item	Cronbach's Alpha
Convenience	5	.802
Reliability	6	.838

Relative Advantage	5	.846
Complexity	6	.885
Consumers' Attitude Towards Parcel Locker Services	7	.904
Intention to adopt parcel locker service	5	.891

***. Correlation is significant at the 0.001 level (2-tailed).*

Dependent Variable: Intention to adopt parcel locker service

4.6 Pearson Correlation

The relationship between two metric variables was examined using the Pearson correlation coefficient (r) test before hypothesis testing. A positive correlation coefficient, r, implies a direct link between variables, while a negative value indicates an inverse association (Hair et al., 2010). Variables are unrelated when r is 0. Cohen (1988) classified correlation strength as low (r = 0.10 to 0.29), medium (r = 0.30 to 0.49), and high (r = 0.50 to 1.00). Two-tailed Pearson's correlation for independent variables is summarized in Table 4.11.

Table 4.11: Pearson Correlation Coefficient

Independent Variable	r	Sig.
Convenience	.456**	.000
Reliability	.611**	.000
Relative_Advantage	.816**	.000
Complexity	.097	.259
Consumers Attitude Towards Parcel Locker Services	.883**	.000

Dependent Variable: Intention to Adopt Parcel Locker

**. Correlation is significant at the 0.001 level (2-tailed).

According to Cohen (1988), there is a significant positive correlation between parcel locker adoption and reliability ($r = 0.611$, $p < .001$), relative advantage ($r = 0.816$, $p < .001$), consumers' attitude towards parcel locker services ($r = 0.883$, $p < 0.001$), and convenience ($r = 0.456$, $p < .001$). Interestingly, complexity has a low positive link with parcel locker adoption ($r = 0.097$, $p > 0.1$). The correlation matrix of multidimensional constructs is presented in Appendix 5.

4.7 Linear Regression Analysis

The purpose of linear regression analysis is to evaluate the relative impact of an independent variable on a dependent variable. Table 4.12 provides the results related to the analysis of independent variables of convenience, reliability, relative advantage, and complexity with dependent variables of intention to adopt parcel locker. In contrast, detailed information on the analysis is presented in Appendix 6 to 8.

Table 4.12: Linear Regression Analysis

Hypothesis	Variables	R^2	Adj R^2	B	F	Durbin Watson	Sig
H_1	Convenience	.298	.293	.681	57.746	1.611	.000***
H_2	Reliability	.451	.447	.751	111.777	1.757	.000***
H_3	Relative Advantage	.738	.736	.808	382.633	2.102	.000***
H_4	Complexity	.004	-.004	.047	0.482	1.454	.489
H_9	Intention to Adopt Parcel Locker	.780	.778	.993	482.148	1.838	.000***

Significant levels: ***p < 0.001; **p < 0.01; *p < 0.05

Dependent variable: Intention to Adopt Parcel Locker

4.7.1 Correlation between Convenience and Consumers' Attitude Toward Parcel Locker Service

The relationship between convenience and consumers' attitudes toward parcel locker service was examined by testing the first research hypothesis (H_1), which was:

H_1: There is a significant relationship between convenience and consumers' attitude towards parcel locker service

Regarding the linear regression analysis in Table 4.7, H_1 was calculated to predict consumers' attitudes toward parcel locker service based on convenience. A significant regression equation was found F (1, 136) = 57.746, p < .001, with an R^2 of .298. Consumers' attitude towards parcel locker service is predicted to be equal to 1.039 + .681 units when convenience is measured. Henceforth, the intention to adopt parcel lockers increased by .681 for each convenience unit. The regression model shows a positive relationship between convenience and consumers' attitudes toward parcel locker service. Therefore, H_1 is accepted.

4.7.2 Correlation between Reliability and Consumers' Attitude Toward Parcel Locker Service

The relationship between reliability and consumers' attitudes towards parcel locker service was examined by testing the second research hypothesis (H_2), which was:

H_2: There is a significant relationship between reliability and consumers' attitudes towards parcel locker service.

H_2 was intended to predict the consumers' attitude towards parcel locker service based on reliability. A significant regression equation was found F (1, 136) = 111.777, p < .001, with an R^2 of .451. Consumers' attitude towards parcel locker service is projected to be equal to 0.935

+ .751 units when reliability is measured. Therefore, consumers' attitudes towards parcel locker service increased by .751 for each reliability unit. The regression model confirms a positive relationship between reliability and consumers' attitudes toward parcel locker service. Thus, H_2 is accepted.

4.7.3 Correlation between Relative Advantage and Consumers' Attitude Toward Parcel Locker Service

The relationship between relative advantage and consumers' attitudes towards parcel locker service was examined by testing the third research hypothesis (H_3), which was:

H_3: There is a significant relationship between relative advantage and consumers' attitudes towards parcel locker service.

H_3 was calculated to predict consumers' attitudes towards parcel locker service based on relative advantage. A significant regression equation was found F (1, 136) = 382.633, p > .001, with an R^2 of .738. Consumers' attitude towards parcel locker service is predicted to be .749 + .808 units when relative advantage is measured. Therefore, consumers' attitudes towards parcel locker service increased by .808 only for each unit of relative advantage. The regression model confirms a positive relationship between relative advantage and consumers' attitudes toward parcel locker service. Thus, H_3 is accepted.

4.7.4 Correlation between Complexity and Consumers' Attitude Toward Parcel Locker Service

The relationship between complexity and consumers' attitudes towards parcel locker service was examined by testing the fourth research hypothesis (H_4), which was:

H_4: There is a significant relationship between complexity and consumers' attitudes towards parcel locker service.

H_4 was calculated to predict consumers' attitudes towards parcel locker service based on complexity. A non-significant regression equation was found F (1, 136) = 0.482, p > .001, with a weak R^2 of .004. Consumers' attitude towards parcel locker service is predicted to be equal to 3.753 + .047 units when complexity is measured. Therefore, consumers' attitudes towards parcel locker service increased by .047 only for each unit of complexity. Therefore, the regression model above shows a weak relationship between complexity and consumers' attitudes toward parcel locker service. It is concluded that even if consumers' levels of delivery experience increase, it does not necessarily increase their attitudes toward parcel locker service. Therefore, H_4 is rejected.

4.7.5 Correlation between Consumers Attitude Towards Parcel Locker and Intention To Adopt Parcel Locker

The relationship between consumers' attitudes towards parcel lockers and intention to adopt parcel lockers was examined by testing the ninth research hypothesis (H_9), which was:

H_9: There is a significant relationship between consumers' attitudes toward parcel lockers and intention to adopt parcel lockers.

H_9 was calculated to predict the intention to adopt parcel lockers based on consumers' attitudes. A significant regression equation was found F (1, 136) = 482.148, p > .001, with an R^2 of .780. It is predicted that intention to adopt parcel lockers is equal to -.003 + .993 units when consumers' attitude towards parcel lockers is measured. Therefore, intention to adopt parcel lockers increased by .710 only for each unit of consumer attitude towards parcel lockers. The regression model confirms a positive relationship between consumers' attitudes toward parcel lockers and their intention to adopt parcel lockers. Thus, H_9 is accepted.

4.8 Mediation Model Testing

H5: Consumers' Attitude Towards Parcel Locker Service mediates the relationship between Convenience and Intention to Adopt Parcel Locker Service

Table 4.13 assessed the mediating role of consumers' attitudes towards parcel locker service on the relationship between convenience and intention to adopt parcel locker service. The results revealed a significant indirect effect of the impact of convenience on intention to adopt parcel locker service (b= 0.6926, t = 6.234). Furthermore, the direct effect of convenience on the intention to adopt parcel locker service in the presence of the mediator was insignificant (b = -0.0525, $p < 0.001$). Hence, consumers' attitude towards parcel locker service fully mediates the relationship between convenience and intention to adopt parcel locker service. The mediation analysis summary is presented in Table 4.13.

Table 4.13: Mediation Model Testing: Mediating Effect of Consumers's Attitude Towards Parcel Locker Service on Convenience and Intention to Adopt Parcel Locker Service

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		t	Conclusion
				Lower Bound	Upper Bound		
Conv→Att→ Int_Adpt	0.6402 (0.0000)	-0.0525 (0.4383)	0.6926	0.4900	0.9221	6.234	Full Mediation

Note. Conv = Convenience, Att = Consumers' Attitude Towards Parcel Locker Service, Int_Adpt = Intention To Adopt Parcel Locker Service

The Sobel test of the indirect effect was significant, indicating complete mediation. Using 10,000 boot-strapped samples, the estimate of the indirect effect again suggested complete mediation, with a point estimate of 0.005 (SE = 0.0982, 95% CI = 0.4900 to 0.9221). It can be concluded that consumers' attitude towards parcel locker service fully mediates the relationship between convenience and intention to adopt parcel locker service.

H6: Consumers' Attitude Towards Parcel Locker Service mediates the relationship between Reliability and Intention to Adopt Parcel Locker Service

Table 4.14 assessed the mediating role of consumers' attitudes towards parcel locker service on the relationship between reliability and intention to adopt parcel locker service. The results revealed a significant indirect effect of the impact of reliability on intention to adopt parcel locker service (b= 0.6067, t = 7.818). Furthermore, the direct effect of reliability on intention to adopt parcel locker service in the presence of the mediator was insignificant (b = 0.0333, p > 0.001). Hence, consumers' attitude towards parcel locker service fully mediates the relationship between reliability and intention to adopt parcel locker service.

Table 4.14: Mediation Model Testing: Mediating Effect of Consumers's Attitude Towards Parcel Locker Service on Reliability and Intention to Adopt Parcel Locker Service

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		t	Conclusion
				Lower Bound	Upper Bound		
Reli→Att→ Int_Adpt	0.6399 (0.0000)	0.0333 (0.5607)	0.6067	0.4636	0.7722	7.818	Full Mediation

Note. Reli = Reliability, Att = Consumers' Attitude Towards Parcel Locker Service, Int_Adpt = Intention To Adopt Parcel Locker Service

The Sobel test of the indirect effect was significant, indicating complete mediation. Using 10,000 boot-strapped samples, the estimate of the indirect effect again suggested complete mediation, with a point estimate of 0.005 (SE = 0.069, 95% CI = 0.4636 to 0.7722). It can be concluded that consumers' attitude towards parcel locker service fully mediates the relationship between reliability and intention to adopt parcel locker service.

H7: Consumers' Attitude Towards Parcel Locker Service mediates the relationship between Relative Advantage and Intention to Adopt Parcel Locker Service

Table 4.15 assessed the mediating role of consumers' attitudes towards parcel locker service on the relationship between relative advantage and intention to adopt parcel locker service. The results revealed a significant indirect effect of the impact of relative advantage on intention to adopt parcel locker service (b= 0.6330, t = 7.728). Furthermore, the direct effect of relative advantage on intention to adopt parcel locker service in the presence of the mediator was significant (b = 0.0333, p < 0.001). Hence, consumers' attitude towards parcel locker service partially mediates the relationship between relative advantage and intention to adopt parcel locker service.

Table 4.15: Mediation Model Testing: Mediating Effect of Consumers's Attitude Towards Parcel Locker Service on Relative Advantage and Intention to Adopt Parcel Locker Service

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		t	Conclusion
				Lower Bound	Upper Bound		
Re_Ad→Att→ Int_Adpt	0.8637 (0.0000)	0.2307 (0.005)	0.6330	0.4503	0.7765	7.728	Partial Mediation

Note. Re_Ad = Relative Advantage, Att = Consumers' Attitude Towards Parcel Locker Service, Int_Adpt = Intention To Adopt Parcel Locker Service

The Sobel test of the indirect effect was significant, indicating full mediation. Using 10,000 boot-strapped samples, the estimate of the indirect effect again suggested full mediation, with a point estimate of 0.005 (SE = 0.0767, 95% CI = 0.4503 to 0.7765). It can be concluded that consumers' attitude towards parcel locker service partially mediates the relationship between relative advantage and intention to adopt parcel locker service.

H8: Consumers' Attitude Towards Parcel Locker Service mediates the relationship between Complexity and Intention to Adopt Parcel Locker Service

Table 4.16 assessed the mediating role of consumers' attitudes towards parcel locker service on the relationship between complexity and intention to adopt parcel locker service. The results revealed a significant indirect effect of the impact of complexity on intention to adopt parcel locker service (b= 0.0386, t = 0.629). Furthermore, the direct effect of complexity on the intention to adopt parcel locker service in the presence of the mediator was insignificant (b = 0.0329, p > 0.001). Hence, consumers' attitude towards parcel locker service does not mediate the relationship between complexity and intention to adopt parcel locker service.

Table 4.16: Mediation Model Testing: Mediating Effect of Consumers's Attitude Towards Parcel Locker Service on Complexity and Intention to Adopt Parcel Locker Service

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		t	Conclusion
				Lower Bound	Upper Bound		
Comp→Att→ Int_Adpt	0.0715 (0.2587)	0.0329 (0.2711)	0.0386	-0.0939	0.1469	0.629	No Mediation

Note. Comp = Complexity, Att = Consumers' Attitude Towards Parcel Locker Service, Int_Adpt = Intention To Adopt Parcel Locker Service

The Sobel test of the indirect effect was significant, indicating full mediation. Using 10,000 boot-strapped samples, the estimate of the indirect effect again suggested full mediation, with a point estimate of 0.005 (SE = 0.0557, 95% CI = -0.0939 to 0.1469). It can be concluded that consumers' attitude towards parcel locker service does not mediate the relationship between complexity and intention to adopt parcel locker service.

CHAPTER 5 :Discussion, Conclusion, and Implications

5.0 Introduction

This chapter highlighted the significant discussion based on the result analysis in Chapter 4. Then, this chapter further validated the hypotheses introduced in Chapter 1. Last, the study's implications, acknowledged limitations and recommendations for future research are introduced.

5.1 Discussion of Major Findings

Given the integration of parcel locker services in workplaces, particularly in the logistics sector, examining the impact and efficiency of various elements of parcel lockers becomes crucial. This study explores how convenience, reliability, complexity, and relative advantages may affect the effectiveness of parcel locker services.

1. **Does consumer preference (convenience, reliability, relative advantage, and complexity) significantly related to consumers' attitudes toward parcel locker service?**

5.1.1 Convenience

The Linear Regression Analysis in Chapter 4 indicates a medium and positive linear relationship with a value of 0.298. This suggests that convenience significantly influences the intention to adopt parcel locker services. Convenience is a pivotal factor influencing the consumers' attitude towards parcel locker services within the Malaysian population. The result indicates that most respondents view parcel locker services favorably due to the ability to collect their packages at their preferred time. This underscores the perception of these services as being exceptionally convenient. This alignment with convenience extends to geographical, temporal, and effort-related aspects, ultimately enhancing the functional utility. This minimizes

the effort required for the self-parcel collection associated with parcel locker services (Yuen et al., 2019).

The discussion above showed that convenience has a significant positive relationship with the consumers' attitude towards parcel lockers. Therefore, the Research Question (RQ1) is answered, and the Hypothesis (H1) is supported.

5.1.2 Reliability

The Linear Regression Analysis result reveals a high and positive linear connection with a value of 0.451. This implies that the reliability factor substantially impacts the consumers' attitude towards parcel locker services. The reliability provided by parcel lockers may influence consumers' attitudes towards parcel lockers for last-mile delivery in Malaysia. According to Po-Lin et al. (2022), reliability is an essential factor that positively influences customers' satisfaction with parcel locker services. For example, companies that consistently provide customers with accurate and easy-to-use service throughout the journey. Besides, this high level of reliability ensures accurate service, facilitates on-time delivery, and effectively reduces the number of instances where parcels are not received in the absence of the recipient (Tsai & Tiwasing, 2021).

The discussion above showed that reliability has a significant positive relationship with the consumers' attitude toward parcel locker services. Therefore, the Research Question (RQ1) is answered, and the Hypothesis (H2) is supported.

5.1.3 Relative advantages

The independent factors show a significant positive linear relationship ($r = 0.738$) with the relative advantage and attitude towards parcel lockers factor, according to the results of the Linear Regression Analysis. Relative advantage is vital in Malaysian consumers' perspective toward parcel locker services. People are intrinsically curious and seek to learn about new stuff and helpful services with visible effects. People will be willing to keep using parcel locker

services, for instance, if they learn that these services can assist them in collecting parcels more successfully than home delivery services. This idea corresponds with the research results of such scholars as Yuen et al. (2021) and Chang (2020), who paid attention to the association between relative advantages and the desire for various services.

According to the above discussion, relative advantages positively affect consumers' attitudes toward parcel locker services. As a result, the Research Question (RQ1) is addressed, and the Hypothesis (H3) is supported.

5.1.4 Complexity

The result of the Linear Regression Analysis was 0.004, demonstrating a negative linear association between complexity and consumers' attitudes toward parcel locker services. Complexity is one of the factors that can influence the adoption of parcel locker services among Malaysians. The majority of respondents perceive parcel locker services as straightforward and not requiring significant effort to use. However, their intentions to adopt parcel locker services were presented negatively. This may be because some people may find the process complicated or inconvenient due to the complexity of using parcel lockers. It can put off people uncomfortable with new technology or prefer more conventional ways of getting items. Furthermore, some people might think that the possible advantages of parcel lockers outweigh the learning curve that comes with them (Mitrea et al., 2020).

The discussion above showed that complexity has no relationship with consumers' attitudes towards parcel locker services. Therefore, the Research Question (RQ1) is answered, and the Hypothesis (H4) is rejected.

2. Does consumer attitude toward parcel locker service mediate the relationship between consumer preferences (convenience, reliability, relative advantage, and complexity) and Intention to adopt parcel locker service?

5.1.5 Convenience

The result from the mediation model testing analysis shows that the consumer attitude positively mediates the relationship between convenience and intention to adopt parcel locker services, which obtains the value of 0.357. When consumers perceive parcel locker services as user-friendly and available at their convenience, it tends to foster a favorable attitude. Convenience plays a crucial role in promoting the adoption of parcel locker services, resulting in time and effort savings during the package collection process.

The discussion above shows that convenience has a significant positive relationship with the intention to adopt parcel locker services. Therefore, the Research Question (RQ2) is answered, and Hypothesis (H5) is supported.

5.1.6 Reliability

The result from the mediation model testing analysis shows that the consumer attitude positively mediates the relationship between reliability and intention to adopt parcel locker services, which obtains the value of 0.462. A reliable parcel locker system that regularly performs as intended fosters consumer trust. Customers who believe their items will be secure and available when needed are more willing to choose parcel locker services.

The discussion above showed that reliability has a significant positive relationship with the intention to adopt parcel locker services. Therefore, the Research Question (RQ2) is answered, and Hypothesis (H6) is supported.

5.1.7 Relative advantages

Based on the results obtained from the mediation model testing analysis, it is evident that consumer attitude is a positive mediator in the relationship between convenience and the intention to adopt parcel locker services, as indicated by the value 0.386. The perceived relative advantages of using parcel lockers compared to alternative methods, such as traditional mail delivery or in-store pickup, significantly influence and shape consumer attitudes. When

consumers recognize tangible benefits, such as time savings, enhanced security, or reduced effort in managing their packages, it is more likely to lead to a positive attitude toward parcel lockers.

The discussion above showed that reliability has a significant positive relationship with the intention to adopt parcel locker services. Therefore, the Research Question (RQ2) is answered, and Hypothesis (H7) is supported.

5.1.8 Complexity

The result from the mediation model testing analysis shows that the consumer attitude negatively mediates the relationship between convenience and intention to adopt parcel locker services, which obtains a value of 0.386. Although most participants are well-educated young adults, their attitude doesn't mediate the connection between the perceived complexity of parcel locker services and the intention to adopt them despite the user-friendly services. This lack of mediation could be attributed to safety apprehensions, mainly because many parcel lockers are on the street. Safety concerns arise during the parcel collection, with potential accidents being a significant worry (Mitrea et al., 2020). Hence, straightforward, user-friendly procedures and interfaces are more likely to produce negative attitudes.

Based the discussion above, it showed that complexity has a significantly no relationship with intention to adopt parcel locker services. Therefore, the Research Question (RQ2) is answered, and the Hypothesis (H8) is rejected.

3. What is the significant relationship between consumers' attitudes toward parcel locker service and their intention to adopt it?

5.1.9 Consumers attitude towards parcel locker service

The Linear Regression Analysis results reveal a strong positive linear relationship with a value of 0.780 for the independent variables. This suggests that attitude towards parcel lockers

significantly influences the intention to adopt parcel locker services. Consumer attitudes toward parcel locker services significantly influence the intention to adopt parcel locker services. Customer attitudes represent the evaluation of behavior and also reflect the extent to which an individual feels good or bad about a particular behavior. Furthermore, attitudes have a positive influence on intentions. For instance, when individuals perceive parcel lockers as interesting, exciting, and valuable for future use, these positive attitudes can significantly influence their intent to use the services (Tsai & Tiwasing, 2021).

The discussion above shows that customer attitude has a significant positive relationship with the intention to adopt parcel locker services. Therefore, the Research Question (RQ3) is answered, and Hypothesis (H9) is supported.

5.2 Implications of the study

5.2.1 Practical implications

Malaysia's desire to use parcel lockers for last-mile delivery is vital for understanding and addressing logistics safety risks. It also examines how Malaysian companies may use parcel lockers in real life to improve last-mile deliveries. Data security in parcel locker services has a practical impact. Adding parcel lockers to last-mile delivery can reduce consumer security concerns and increase convenience. Package theft or loss during residential delivery services still poses security risks for consumers and businesses. This issue causes consumer goods losses and privacy concerns, including identity theft, since packages often display personal information like the recipient's name and address. Untimely package delivery can damage a company's reputation by unhappy customers and lowering customer retention (An et al., 2022). Thus, parcel locker data security must be strengthened. In addition, parcel locker companies must carefully protect data. Access controls and security audits should be implemented to restrict sensitive data access to authorized users. Using a parcel locker service protects senders' items and data. As a secure storage option and alternative delivery address for all the packages,

a parcel locker minimizes the need to reveal the sender's and receiver's home addresses (GSSparcel, 2021).

5.2.2 Theoretical implications

According to Tsai & Tiwasing (2021), regarding the theoretical implications, this research utilizes the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM) to explore consumers' inclination to adopt parcel lockers for last-mile delivery in Malaysia. Prior studies have employed TPB and TAM to investigate consumers' intentions to use parcel locker services. In this study, we introduce TPB to contribute to the existing body of literature and offer a fresh theoretical perspective. This study contends that while resources and innovative concepts can forecast a customer's intention, they must be prompted by the factors influencing the performance of specific actions. Furthermore, validating and interpreting data using previous studies is the second benefit. This study found that convenience, reliability, and relative advantage strongly influence Malaysian customers' intentions. However, the fourth independent variable, complexity, does not affect customer intention; thus, Malaysian consumers value it highly. This research also suggests that customer attitude mediates the relationship between convenience, reliability, and relative advantages, but not complexity. The results suggest that these two theories can assist the research in understanding the consumers' intentions, which can vary depending on the context. Our analysis demonstrates the significance of this linkage by connecting these factors (Tsai & Tiwasing, 2021).

5.3 Limitations of the study

Firstly, there has been little past research on parcel lockers and their adoption plans in Malaysia. Due to this scarcity, gathering extensive data on parcel lockers in Malaysia is difficult. Furthermore, there is a scarcity of benchmarking resources for academics to use as a foundation for evaluating data on parcel locker services in Malaysia. As a result, these constraints make it challenging to research Malaysians' propensity to use parcel locker services for last-mile delivery. Second, there are geographical dispersion limitations because this study covers Peninsular Malaysia without focusing on one state. Finally, there are constraints related to the methods of data collection. This research relies exclusively on Google Forms surveys as the data collection method. Nevertheless, data collected through Google Forms may sometimes

not accurately represent the intended population due to respondents not taking the survey seriously or delaying its completion.

5.4 Recommendation for future study

Drawing insights from global research and experience can enrich the understanding of parcel lockers and their impact in Malaysia. This provides a broader perspective and potential solutions that may not have been explored. Hence, this approach can significantly increase the depth and comprehensiveness of a researcher's study of this relatively unknown area. Therefore, a more precise geographic focus is recommended, moving away from the broader categorization of Malaysia. For instance, researchers could have specified Selangor as the study area. This geographical scope can enhance data accuracy, as respondents in Selangor may enjoy more convenient access to parcel locker services. Besides the survey approach, future studies may employ mixed-method techniques combining qualitative and quantitative techniques.

REFERENCES

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. Human Behavior and Emerging Technologies, 2(4), 314–324. https://doi.org/10.1002/hbe2.195

Ali, & Rafiq. (2021). The Determinants of Customers' Intention to Use Smart Lockers for Last-Mile Deliveries: A Case of Pakistan. IJICC. Retrieved August 14, 2023, from https://www.ijicc.net/images/Vol_15/Iss_2/15262_Ali_2021_E1_R.pdf

Alkhalifah, A., Alorini, F., & Alturki, R. (2022). Enhancement of E-commerce Service by Designing Last Mile Delivery Platform. Computer Systems Science & Engineering, 42(1).

An, H. S., Park, A., Song, J. M., & Chung, C. (2022). Consumers' adoption of parcel locker service: protection and technology perspectives. Cogent Business & Management, 9(1). https://doi.org/10.1080/23311975.2022.2144096

An, H. S., Park, A., Song, J. M., & Chung, C. (2022). Consumers' Adoption Of Parcel Locker Service: Protection And Technology Perspectives. Cogent Business & Management, 9(1). https://doi.org/10.1080/23311975.2022.2144096

Asdecker, B. (2021). Building the E-Commerce Supply Chain of the future: What influences consumer acceptance of alternative places of delivery on the Last-Mile. Logistics, 5(4), 90. https://doi.org/10.3390/logistics5040090

Berndt, A. E. (2020, March 10). Sampling Methods. Journal of Human Lactation, 36(2), 224–226. https://doi.org/10.1177/0890334420906850

Boysen, N., Fedtke, S., & Schwerdfeger, S. (2021). Last-mile delivery concepts: a survey from an operational research perspective. Or Spectrum, 43, 1-58.

Brookes, E. (2023). The Theory of planned Behavior: Behavioral intention. Simply Psychology. https://www.simplypsychology.org/theory-of-planned-behavior.html

Brunner, V., & Majcher, W. (2022). Last Mile Delivery – Examination of Customer Satisfaction Regarding Parcel Lockers. Jonkoping University. Retrieved July 30,2022, from https://hj.diva-portal.org/smash/get/diva2:1659831/FULLTEXT01.pdf

Chang, C. (2020). How branded videos can inspire consumers and benefit brands: Implications for consumers' subjective well-being. Journal of Advertising, 49(5), 613-632.

Che, Z., Chiang, T., & Luo, Y. (2022). Multiobjective Optimization for Planning the Service Areas of Smart Parcel Locker Facilities in Logistics Last Mile Delivery. Mathematics, 10(3), 422. https://doi.org/10.3390/math10030422

Chernick, M. R. (2011). Bootstrap methods: A guide for practitioners and researchers. John Wiley & Sons. https://doi.org/10.1007/978-3-642-04898-2_150

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ:Erlbaum https://books.google.com.my/books?hl=en&lr=&id=rEe0BQAAQBAJ&oi=fnd&pg=PP1&dq=Cohen,+J.+(1988).+Statistical+power+analysis+for+the+behavioral+sciences+(2nd+ed.).+Hillsdale,+NJ:+Erlbaum&ots=sw0ZMtNWt4&sig=dEKTeZVuzTOiWX8jxNFXE9GBJ7k&redir_esc=y#v=onepage&q&f=false

Doane, D. P., & Seward, L. E. (2011). Measuring skewness: a forgotten statistic?. Journal of statistics education, 19(2). https://doi.org/10.1080/10691898.2011.11889611

Drover, W., Wood, M. S., & Corbett, A. C. (2018). Toward a cognitive view of signalling theory: Individual attention and signal set interpretation. Journal of management studies, 55(2), 209-231.

Duchi, L., Lombardi, D., Paas, F., & Loyens, S. M. (2020). How a growth mindset can change the climate: The power of implicit beliefs in influencing people's view and action. Journal of Environmental Psychology, 70, 101461.

Duggal, N. (2023, July 24). What Is Data Processing: Cycle, Types, Methods, Steps And Examples. Simplilearn. https://www.simplilearn.com/what-is-data-processing-article#what_is_data_processing

Evanschitzky, H., Bartikowski, B., Baines, T., Blut, M., Brock, C., Kleinlercher, K., ... & Wünderlich, N. V. (2020). Digital disruption in retailing and beyond. SMR-Journal of Service Management Research, 4(4), 187-204.

Fessler, A., Cash, P., Thorhauge, M., & Haustein, S. (2023). A public transport based crowdshipping concept: Results of a field test in Denmark. Transport Policy, 134, 106–118. https://doi.org/10.1016/j.tranpol.2023.02.014

Gangi, M., Polimeni, A., & Belcore, O. M. (2023). Freight Distribution in Small Islands: Integration between Naval Services and Parcel Lockers. Sustainability, 15(9), 7535. https://doi.org/10.3390/su15097535

Garson, G. D. (2012). Testing statistical assumptions. Asheboro, NC: Statistical Associates Publishing.

George, D., & Mallery, P. (2018). Reliability analysis. In IBM SPSS Statistics 25 Step by Step (pp. 249-260). Routledge.https://doi.org/10.4324/9781351033909

Ghareeb, A. M., Darwish, N. R., & Hefney, H. A. (2019). E-government adoption: literature review and a proposed citizen-centric model. Electronic Government, an International Journal, 15(4), 392-416.

Gssparcel. (2021, July 6). What is a parcel locker?. GSparcel.com. Retrieved from https://gsparcel.com/insights/parcel-locker-faqs/

Gssparcel. (2021, October 13). Smart Lockers For Safer And More Secure Deliveries. Granite State Parcel. https://gsparcel.com/insights/smart-lockers-for-safer-and-more-secure-deliveries/

Habidin, N. F., Zubir, A. F. M., Fuzi, N. M., Latip, N. A. M., & Azman, M. nor A. (2015). Sustainable Performance Measures for Malaysian Automotive Industry. World Applied Sciences Journal, 33(6), 1017–1024. https://doi.org/10.5829/idosi.wasj.2015.33.06.257

Hair, J., Black, W.C., Babin, B. J., & Anderson, R.E. (2010). Multivariate Data Analysis (7th Edition). NJ: Prentice-Hall Publication.

Hutchinson, D. (2021). Exploring Optimal Response Labels for Constructing An Interval Type 5-Point Likert Scale. ProQuest. https://www.proquest.com/openview/13b72ead5697870eb44b880885fe9063/1?pq-origsite=gscholar&cbl=18750&diss=y

Indeed Editorial Team. (2022, December 27). Multiple Regression Analysis: Definition, Formula and Uses. Indeed. https://www.indeed.com/career-advice/career-development/multiple-regression-analysis-definition

Keen, C., Liang, C., & Sham, R. (2022). The effectiveness of parcel locker that affects the delivery options among online shoppers in Kuala Lumpur, Malaysia. International Journal of Logistics Systems and Management, 41(4), 485. https://doi.org/10.1504/ijlsm.2022.123452

Kemp, S. E., Ng, M., Hollowood, T., & Hort, J. (2018). Introduction to descriptive analysis. In John Wiley & Sons, Ltd eBooks (pp. 1–39). https://doi.org/10.1002/9781118991657.ch1

Kotty, V. M. S. H. K. (2021). An abductive study to identify key influencing variables affecting the last mile logistics endpoint selection: A study done at PostNord AB.

Kumari, K., & Yadav, S. (2018). Linear regression analysis study. Journal of the practice of Cardiovascular Sciences, 4(1), 33.

Lachapelle, U., Burke, M., Brotherton, A., & Leung, A. (2018). Parcel locker systems in a car dominant city: Location, characterisation and potential impacts on city planning and consumer travel access. Journal of Transport Geography, 71, 1-14.

Lagorio, A., & Pinto, R. (2020). The Parcel Locker Location Issues: An Overview Of Factors Affecting Their Location. ResearchGate. https://www.researchgate.net/profile/Alexandra-Lagorio/publication/350726102_The_parcel_locker_location_issues_an_overview_of_factors_affecting_their_location/links/606ecd1b92851c8a7bafb611/The-parcel-locker-location-issues-an-overview-of-factors-affecting-their-location.pdf

Lai, P. L., Jang, H., Fang, M., & Peng, K. (2022, March). Determinants of customer satisfaction with parcel locker services in last-mile logistics. The Asian Journal of Shipping and Logistics, 38(1), 25–30. https://doi.org/10.1016/j.ajsl.2021.11.002

Ma, H., Kwon, J., & Ahn, J. (2023). The impact of regulations and motivations on behavioural intentions of customers with self-service technology difficulties. Current Issues in Tourism, 1-12.

MacKinnon, D. (2012). Introduction to statistical mediation analysis. Routledge.

Mamun, A. A. (2018). Diffusion of innovation among Malaysian manufacturing SMEs. European Journal of Innovation Management, 21(1), 113-141.

Marikyan, D. & Papaiannidis, S. (2023, May 14). Technology Acceptance Model: A review. TheoryHub. https://open.ncl.ac.uk/theories/1/technology-acceptance-model/

McCombes, S. (2022). Descriptive Research | Definition, Types, Methods & Examples. Scribbr. https://www.scribbr.com/methodology/descriptive-research/

Mcleod, S. (2023). Qualitative vs Quantitative Research Methods & Data Analysis. Simply Psychology. https://www.simplypsychology.org/qualitative-quantitative.html

Middleton, F. (2023). Reliability vs. Validity in Research | Difference, Types and Examples. Scribbr. https://www.scribbr.com/methodology/reliability-vs-validity/

Minhaz, M. (2023). Operational Definition In Research. iEduNote. https://www.iedunote.com/operational-definition

Mitrea, I. A., Zenezini, G., De Marco, A., Ottaviani, F. M., Delmastro, T., & Botta, C. (2020, July). Estimating e-Consumers' Attitude Towards Parcel Locker Usage. 2020 IEEE 44th Annual Computers, Software, and Applications Conference (COMPSAC). https://doi.org/10.1109/compsac48688.2020.000-5

Mohamad, F., & Ngah, A. H. (2022). The Role of Openness To Change In Automated Parcel Locker Usage Intention Among Online Buyer In Malaysia. Acta Logistica, 9(3), 255–266. https://actalogistica.eu/issues/2022/III_2022_02_Mohamad_Ngah.pdf

Mokhsin, M., Ludin, M. a. M., Suhaimi, A. I. H., Zainol, A. S., Som, M. H. M., & Halim, H. A. (2021). ParcelRestBox: IOT-based parcel receiving box system design for smart city in Malaysia. https://ieeexplore-ieee-org.libezp2.utar.edu.my/document/9673588

Montgomery, D. C., Peck, E. A., & Vining, G. G. (2021). Introduction to linear regression analysis. John Wiley & Sons.

Moslem, S., & Pilla, F. (2023). A hybrid decision making support method for parcel lockers location selection. Research in Transportation Economics, 100, 101320. https://doi.org/10.1016/j.retrec.2023.101320

Po-Lin, L., Hyunmi, J., Fang, M., & Peng, K. (2022). Determinants of Customer Satisfaction With Parcel Locker Services In Last-Mile Logistics. The Asian Journal of Shipping and Logistics, 38(1), 25–30. https://doi.org/10.1016/j.ajsl.2021.11.002

Pradhan, R. (2022). Consumer motivation to shop groceries online-a focus group study.

Ranjbari, A., Diehl, C., Dalla Chiara, G., & Goodchild, A. (2023). Do parcel lockers reduce delivery times? Evidence from the field. Transportation Research Part E: Logistics and Transportation Review, 172, 103070.

Rohmer, S., & Gendron, B. (2020). A guide to parcel lockers in last mile distribution: Highlighting challenges and opportunities from an OR perspective (Vol. 11). Montreal: Cirrelt.

Rossolov, A. (2021). A last-mile delivery channel choice by E-shoppers: assessing the potential demand for automated parcel lockers. International Journal of Logistics Research and Applications, 1-23.

Schwerdfeger, S., & Boysen, N. (2020). Optimizing the changing locations of mobile parcel lockers in last-mile distribution. European Journal of Operational Research, 285(3), 1077–1094. https://doi.org/10.1016/j.ejor.2020.02.033

Sears, S. (2020). Movement of Goods in Canada: A State-of-the-Art Review and a Grounded Theory Investigation of Perceived Barriers (Doctoral dissertation).

Selvanathan, M., Jayabalan, N., Saini, G. K., Supramaniam, M., & Hussin, N. (2020). Employee Productivity In Malaysia Private Higher Educational Institutions. PalArch's Journal of Archaeology of Egypt / Egyptology, 17(3), 66–79. https://www.researchgate.net/publication/345693737_Employee_Productivity_in_Malaysian_Private_Higher_Educational_Institutions

Shapiro, S.S. and Wilk, M.B. (1965). An Analysis of Variance Test for Normality (Complete Samples). Biometrika, Vol. 52, No. 3/4, pp. 591-611. https://doi.org/10.2307/2333709

Showkat, N., & Parveen, H. (2017). Non-Probability and probability sampling. ResearchGate. https://www.researchgate.net/publication/319066480_Non-Probability_and_Probability_Sampling

Silva, V., Amaral, A., & Fontes, T. (2023). Sustainable urban last-mile logistics: A systematic literature review. Sustainability, 15(3), 2285.

Simplilearn. (2023, August 23). What Is Data Collection: Methods, Types, Tools, And Techniques. Simplilearn. https://www.simplilearn.com/what-is-data-collection-article

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. Sociological methodology, 13, 290-312.

Srivastav, A. K. (n.d.). What Is Pearson Correlation Coefficient? WallStreetMojo. https://www.wallstreetmojo.com/pearson-correlation-coefficient/

Statista Research Department. (2023, August 3). Malaysia: population distribution by state 2023. Statista. https://www.statista.com/statistics/1040670/malaysia-population-distribution-by-state/

Statista. (2022, October 7). Postal items delivered by postal delivery service Malaysia 2014-2021. https://www.statista.com/statistics/1052177/malaysia-postal-items-delivered-by-the-malaysian-post/

Sunny, P., & George, A. (2018). Determinants of behavioral intention to use mobile wallets--a conceptual model. Journal of Management (JOM), 5(5), 52-62.

Surendran, P. (n.d.). Technology Acceptance Model: A Survey Of Literature. The journal of business. https://thejournalofbusiness.org/index.php/site/article/download/161/160/319

Taherdoost, H. (2021). Data Collection Methods and Tools for Research; A Step-by-Step Guide to Choose Data Collection Technique for Academic and Business Research Projects. International Journal of Academic Research in Management (IJARM). https://hal.science/hal-03741847

Tang, Y. M., Chau, K. Y., Xu, D., & Liu, X. (2021). Consumer perceptions to support IoT based smart parcel locker logistics in China. Journal of Retailing and Consumer Services, 62, 102659. https://doi.org/10.1016/j.jretconser.2021.102659

Thongkam, O., Lohatepanount, M., & Pornchaiwiseskul, P. (2021, May 31). Factors Influencing Customers Intention To Use Self-collection Services Via Automated Parcel Locker In Bangkok Metropolitan Area, Thailand. Journal of Supply Chain Management: Research & Practice. https://jscm.au.edu/index.php/jscm/article/download/188/137/

Tsai, Y. T., & Tiwasing, P. (2021, July). Customers' intention to adopt smart lockers in last-mile delivery service: A multi-theory perspective. Journal of Retailing and Consumer Services, 61, 102514. https://doi.org/10.1016/j.jretconser.2021.102514

Vakulenko, Y., Hellström, D., & Hjort, K. (2018, July). What's in the parcel locker? Exploring customer value in e-commerce last mile delivery. Journal of Business Research, 88, 421–427. https://doi.org/10.1016/j.jbusres.2017.11.033

Wang, X., Wong, Y. D., Chen, T., & Yuen, K. F. (2021). Adoption of shopper-facing technologies under social distancing: A conceptualisation and an interplay between task-technology fit and technology trust. Computers in Human Behavior, 124, 106900.

Why Use Parcel Lockers? (2023, April 14). Arka. https://www.arkarobot.com/blog/articles/why-use-parcel-lockers

Wiederhold, M., & Martinez, L. F. (2018). Ethical consumer behaviour in Germany: The attitude-behaviour gap in the green apparel industry. International journal of consumer studies, 42(4), 419-429.

Xu, X., Shen, Y., Chen, W., & Gong, Y. (2019, August 22). Optimization models of collection and delivery points for online retailers based on customer behavior data. ResearchGate.

Yu, V. F., Susanto, H., Jodiawan, P., Wei, H., Lin, S., & Huang, Y. (2022). A Simulated Annealing Algorithm for the Vehicle Routing Problem With Parcel Lockers. IEEE Access, 10, 20764–20782. https://doi.org/10.1109/access.2022.3152062

Yuen, K. F., Cai, L., Qi, G., & Wang, X. (2021). Factors influencing autonomous vehicle adoption: An application of the technology acceptance model and innovation diffusion theory. Technology Analysis & Strategic Management, 33(5), 505-519.

Yuen, K. F., Wang, X., Ma, F., & Wong, Y. D. (2019). The Determinants Of Customers' Intention To Use Smart Lockers For Last-Mile Deliveries. Journal of Retailing and Consumer Services, 49, 316–326. https://doi.org/10.1016/j.jretconser.2019.03.022

Yuen, K. F., Wang, X., Ng, L. T. W., & Wong, Y. D. (2018, August). An investigation of customers' intention to use self-collection services for last-mile delivery. Transport Policy, 66, 1–8. https://doi.org/10.1016/j.tranpol.2018.03.001

Yusoff, F. A. M., Mohamad, F., Tamyez, P. F., & Panatik, S. A. (2023, January). Adoption of parcel locker in Malaysia: Literature Review and research agenda. UMP Institutional Repository. Retrieved from http://umpir.ump.edu.my/id/eprint/37948/

Zhou, M., Zhao, L., Kong, N., Campy, K. S., Xu, G., Zhu, G., ... & Wang, S. (2020). Understanding consumers' behavior to adopt self-service parcel services for last-mile delivery. Journal of Retailing and Consumer Services, 52, 101911.

Zurel, Ö., Van Hoyweghen, L., Braes, S., & Seghers, A. (2018). Parcel lockers, an answer to the pressure on the last mile delivery?. New business and regulatory strategies in the postal sector, 299-312.

APPENDICES

Appendix A

Questionnaire

Survey on 'The Intention to Adopt Parcel Locker Services as a Last-Mile Delivery in Malaysia'

Dear respondents,

We are students of Bachelor of Business Administration (Honours) Business Administration Logistics and Supply Chain Management from Faculty of Business and Finance (FBF) in Universiti Tunku Abdul Rahman (UTAR). The purpose of this study is to research about the intention to adopt parcel locker services as a last-mile delivery in Malaysia. This study can help us to know more about the consumers preference and attitude towards parcel locker services and know about their feedback at the intention to adopt parcel locker services.

There are Seven (7) sections in this questionnaire. Section A is on Demographic Profile. Section B is on Convenience , Section C is on Reliability, Section D is on Relative Advantage, Section E is on Complexity, Section F is on Attitude to use parcel locker service and Section G is on Intention to adopt parcel locker service. Please read the instructions carefully before answering the questions. Please answer ALL questions in ALL sections. Completion of this questionnaire will take you approximately 5 to 7 minutes.

Your participation in this study is entirely voluntary. There will be no disadvantage if you decide not to complete the attached anonymous questionnaire. You can withdraw at any time without any penalty. You can refuse to answer any question at any time if you feel uncomfortable.

The information collected from you will be kept strictly private and confidential. All responses and findings will be used solely for academic purpose.

Your assistance in completing this questionnaire is very much appreciated. Thank you for your participation. If you have any question regarding to this questionnaire, you may contact us at wyinlin0303@1utar.my.

If you decide to complete this attached anonymous questionnaire, this will be taken as you voluntarily agree and formal consent to participate in this study. Thank you very much for your cooperation and willingness to participate in this study.

Your sincerely,

Darren Peter
Penny Yong Pei Nee
Quah Yan Yee
Woo Yin Lin

Section A: Demographic Profile

Please select one for each of the following

No.	Items	Indicators	Sources
	Awareness of existence of parcel locker	○ Yes ○ No	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)
1.	Gender	○ Male ○ Female	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)
2.	Age	○ Below 25 years ○ 26 to 35 years ○ 36 to 45 years ○ 46 to 60 years ○ Above 60 year	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)
3.	Location (State)	○ Perlis ○ Kedah ○ Penang ○ Perak ○ Selangor ○ Negeri Sembilan ○ Melaka ○ Johor ○ Kelantan ○ Terengganu ○ Pahang ○ Wilayah Persekutuan ○ Putrajaya	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)
4.	No of packages received/month	○ Below 5 packages ○ 6 to 10 packages ○ 11 to 15 packages ○ 16 to 20 packages ○ Above 21 packages	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)
5.	Education Level	○ High school ○ Diploma ○ Degree ○ Master ○ PhD ○ Others	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)
6.	Employment Status	○ Student ○ Office worker ○ Business owner ○ Freelancer ○ Unemployed	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)

7.	Approximate Package Weight	○ Below 1kg ○ 1 to 3 kg ○ 4 to 6 kg ○ 7 to 10 kg ○ Above 11 kg	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)
8.	Product Type	○ Toiletries ○ Grocery items ○ Clothing/Accessories/Cosmetics Books/magazines/newspaper ○ Electronics gadget ○ Others	Darren Peter, Penny Yong Pei Nee, Quah Yan Yee, Woo Yin Lin (2023)

Section B: Independent Variable

Level of agreement

The following statements indicate the level of convenience towards the intention to adopting parcel locker services. The numbers 1 to 5 reflect a scale, with representing 1 strongly disagree and 5 representing strongly agree. Please choose the option that best represents your view regarding the intention to adopting parcel locker services.

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

Convenience

No.	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Sources
1.	I feel that using parcel locker service is easy.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
2.	I feel that using parcel locker service does not require much effort.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
3.	I feel that using parcel locker service allows me to collect parcels at my convenient time.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
4.	I feel that parcel lockers near my residential area will ease my daily activities	1	2	3	4	5	Adapted from: Alia & Rafiqb (2021)
5.	I feel that parcel lockers operation 24/7 allocate sufficient time for me to collect my parcels	1	2	3	4	5	Adapted from: Alia & Rafiqb (2021)

Level of agreement

The following statements indicate the level of reliability towards the intention to adopting parcel locker services. The numbers 1 to 5 reflect a scale, with representing 1 strongly disagree and 5 representing strongly agree. Please choose the option that best represents your view regarding the intention to adopting parcel locker services.

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

Reliability

No.	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Sources
1.	I think the functions and services promised by the parcel locker service to customers can be completed in time.	1	2	3	4	5	Adapted from: Lai et al. (2022)
2.	I think when I encounter problems in using parcel lockers, the service provider can provide immediate solutions.	1	2	3	4	5	Adapted from: Lai et al. (2022)
3.	I think parcel lockers can provide delivery within the promised time.	1	2	3	4	5	Adapted from: Lai et al. (2022)
4.	I think the parcel lockers service provider is reliable and trustworthy.	1	2	3	4	5	Adapted from: Lai et al. (2022)
5.	I think I can rely on parcel lockers service provider to provide accurate services	1	2	3	4	5	Adapted from: Alia & Rafiqb (2021)
6.	I think that parcel lockers service are more reliable than the courier delivery services	1	2	3	4	5	Adapted from: Alia & Rafiqb (2021)

Level of agreement

The following statements indicate the level of relative advantage towards the intention to adopting parcel locker services. The numbers 1 to 5 reflect a scale, with representing 1 strongly disagree and 5

representing strongly agree. Please choose the option that best represents your view regarding the intention to adopting parcel locker services.

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

Relative Advantage

No.	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Sources
1.	I believe using parcel lockers service is the best way to receive parcels.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
2.	I believe using parcel lockers service improves my experience in receiving parcels.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
3.	I believe using parcel lockers service enables me to receive parcels more quickly.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
4.	I believe receiving packages through parcel lockers service would be better than home delivery.	1	2	3	4	5	Adapted from: Yuen et al. (2018)
5.	I believe receiving packages through parcel lockers service would have an added advantage.	1	2	3	4	5	Adapted from: Yuen et al. (2018)

Level of agreement

The following statements indicate the level of complexity towards the intention to adopting parcel locker services. The numbers 1 to 5 reflect a scale, with representing 1 strongly disagree and 5 representing strongly agree. Please choose the option that best represents your view regarding the intention to adopting parcel locker services.

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

Complexity

No.	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Sources

1.	I feel using parcel lockers service is complicated.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
2.	I feel using parcel lockers service is frustrating.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
3.	I feel parcel lockers service require a lot of effort and time.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
4.	I feel parcel lockers service are easy to use.	1	2	3	4	5	Adapted from: Yuen et al. (2018)
5.	I feel parcel lockers service is a waste of time.	1	2	3	4	5	Adapted from: Yuen et al. (2018)
6.	I feel parcel lockers service are inconvenient to use.	1	2	3	4	5	Adapted from: Yuen et al. (2018)

Section C: Mediating Variable

Level of agreement

The following statements indicate the level of attitude towards the intention to adopting parcel locker services. The numbers 1 to 5 reflect a scale, with representing 1 strongly disagree and 5 representing strongly agree. Please choose the option that best represents your view regarding the intention to adopting parcel locker services.

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

Attitude to use parcel locker service

No.	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Sources
1.	I think using parcel lockers is interesting.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
2.	I think I will use parcel lockers service frequently.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
3.	I think my attitude toward using parcel lockers is increasing.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
4.	I think receiving packages from parcel lockers is faster than courier service.	1	2	3	4	5	Adapted from: Thongkam et al. (2021)
5.	I think receiving packages from	1	2	3	4	5	Adapted from:

	parcel lockers service increase my convenience						Thongkam et al. (2021)
6.	I think receiving packages from parcel lockers service satisfy me	1	2	3	4	5	Adapted from: Thongkam et al. (2021)
7.	I think receiving packages from parcel lockers service is a good idea	1	2	3	4	5	Adapted from: Thongkam et al. (2021)

Section D: Dependent Variable

Level of agreement

The following statements indicate the level of intention to adopting parcel locker services. The numbers 1 to 5 reflect a scale, with representing 1 strongly disagree and 5 representing strongly agree. Please choose the option that best represents your view regarding the intention to adopting parcel locker services.

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

Intention to adopt parcel locker service

No.	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Sources
1.	I intend to adopt a parcel lockers service in the future.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
2.	I would recommend parcel lockers service to my friends.	1	2	3	4	5	Adapted from: Tsai & Tiwasing (2021)
3.	I am planning to use parcel lockers service frequently	1	2	3	4	5	Tsai & Tiwasing (2021)
4.	I would probably choose to deliver items to the parcel lockers service when shopping online.	1	2	3	4	5	Adapted from: An et al. (2022)
5.	I will use the parcel lockers service if the online retailer offers such an option.	1	2	3	4	5	Adapted from: An et al. (2022)

Appendix B

Descriptive and Normality Test

Descriptive and Normality Analysis

	Mean	Std. Deviation	Skewness	Kurtosis	Shapiro-Wilk	Sig.
Convenience	20.8841	2.78964	-.556	-.072	0.61	.012
Reliability	23.5725	3.73753	-.331	-.082	0.93	.008
Relative Advantage	19.3986	3.69956	-.875	1.048	0.84	.019
Complexity	16.9130	5.30181	.772	.027	0.68	.010
Consumers' Attitude Towards Parcel Locker Services	27.1957	4.87487	-.832	.871	0.73	.014
Intention to Adopt Parcel Locker Services	19.2826	3.91700	-1.078	1.456	0.82	.022

Appendix C

Factor Analysis

KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.877
Bartlett's Test of Sphericity	Approx. Chi-Square	3618.418
	df	561
	Sig.	.000

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %

1	13.262	39.006	39.006	9.681	28.474	28.474
2	4.253	12.510	51.515	4.128	12.140	40.614
3	2.444	7.189	58.704	2.992	8.799	49.412
4	1.567	4.609	63.313	2.877	8.461	57.874
5	1.079	3.173	66.487	2.285	6.720	64.593
6	1.037	3.051	69.537	1.681	4.944	69.537
7	.844	2.483	72.021			
-	-	-	-			
-	-	-	-			
33	.079	.232	99.861			
34	.047	.139	100.000			
.						

Extraction Method: Principal Component Analysis

Rotated Component Matrix

	1	2	3	4	5
Q10			.501		
Q11			.636		
Q12				.817	
Q13				.598	
Q14				.763	
Q15				.509	
Q16			.690		
Q17			.689		
Q18			.707		
Q19			.707		

Q20	.575				
Q21	.717				
Q22	.594				
Q23	.684				
Q24	.813				
Q25	.622				
Q26		.891			
Q27		.909			
Q28		.878			
Q29					.550
Q30		.892			
Q31		.887			
Q32	.519				
Q33	.803				
Q34	.786				
Q35	.725				
Q36	.636				
Q37	.833				
Q38	.627			.	
Q39	.671				.
Q40	.659				
Q41	.752				
Q42	.835				
Q43	.812				

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 7 iterations.

Appendix D

Demographic Profile of Respondents

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	84	60.9	60.9	60.9
	Male	54	39.1	39.1	100.0
	Total	138	100.0	100.0	

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	26 to 35 years	11	8.0	8.0	8.0
	36 to 45 years	14	10.1	10.1	18.1
	46 to 60 years	7	5.1	5.1	23.2
	Below 25 years	106	76.8	76.8	100.0
	Total	138	100.0	100.0	

Location(State)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Johor	9	6.5	6.5	6.5
	Kedah	3	2.2	2.2	8.7
	Melaka	1	.7	.7	9.4
	Negeri Sembilan	2	1.4	1.4	10.9
	Pahang	3	2.2	2.2	13.0
	Penang	6	4.3	4.3	17.4
	Perak	47	34.1	34.1	51.4
	Perlis	1	.7	.7	52.2
	Selangor	59	42.8	42.8	94.9
	Wilayah Persekutuan	7	5.1	5.1	100.0
	Total	138	100.0	100.0	

Number of packages received (per month)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	11 to 15 packages	3	2.2	2.2	2.2
	16 to 20 packages	5	3.6	3.6	5.8
	6 to 10 packages	26	18.8	18.8	24.6
	Above 21 packages	4	2.9	2.9	27.5
	Below 5 packages	100	72.5	72.5	100.0
	Total	138	100.0	100.0	

Education Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Foundation	1	.7	.7	.7
	Degree	87	63.0	63.0	63.8
	Diploma	28	20.3	20.3	84.1
	Foundation	4	2.9	2.9	87.0
	High school	10	7.2	7.2	94.2
	Master	7	5.1	5.1	99.3
	Phd	1	.7	.7	100.0
	Total	138	100.0	100.0	

Employment Status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business owner	4	2.9	2.9	2.9
	Freelancer	7	5.1	5.1	8.0
	Office worker	24	17.4	17.4	25.4
	Student	100	72.5	72.5	97.8
	Unemployed	3	2.2	2.2	100.0
	Total	138	100.0	100.0	

Approximate Package Weight					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 to 3 kg	51	37.0	37.0	37.0
	4 to 6 kg	9	6.5	6.5	43.5
	7 to 10 kg	3	2.2	2.2	45.7
	Above 11 kg	1	.7	.7	46.4
	Below 1kg	74	53.6	53.6	100.0

	Total	138	100.0	100.0	

Product Type					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Books/Magazines/News paper	1	.7	.7	.7
	Clothing/Accessories/Cosmetics	91	65.9	65.9	66.7
	Electronic gadget	21	15.2	15.2	81.9
	Fitness Supplements	1	.7	.7	82.6
	Food	1	.7	.7	83.3
	Grocery items	17	12.3	12.3	95.7
	Supplies of electronic goods & etc	1	.7	.7	96.4
	Toiletries	5	3.6	3.6	100.0
	Total	138	100.0	100.0	

Appendix E

Reliability Analysis

Convenience

Reliability Statistics	
Cronbach's Alpha	N of Items
.802	5

Item Statistics			
	Mean	Std. Deviation	N
Q10	3.99	.740	138
Q11	4.08	.829	138
Q12	4.28	.723	138
Q13	4.17	.744	138
Q14	4.36	.693	138

Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.838	6

Item Statistics			
	Mean	Std. Deviation	N
Q15	3.96	.713	138
Q16	3.85	.966	138
Q17	3.99	.730	138
Q18	3.95	.804	138
Q19	4.01	.730	138
Q20	3.82	1.027	138

Relative Advantage

Reliability Statistics	
Cronbach's Alpha	N of Items
.846	5

Item Statistics			
	Mean	Std. Deviation	N
Q21	3.83	.966	138
Q22	3.96	.800	138
Q23	3.87	.935	138
Q24	3.76	1.156	138
Q25	3.99	.801	138

Complexity

Reliability Statistics	
Cronbach's Alpha	N of Items
.885	6

Item Statistics			
	Mean	Std. Deviation	N
Q26	2.67	1.128	138
Q27	2.63	1.172	138
Q28	2.71	1.221	138
Q29	3.89	.780	138
Q30	2.49	1.167	138

Q31	2.51	1.128	138

Consumers' Attitude Towards Parcel Locker Service

Reliability Statistics	
Cronbach's Alpha	N of Items
.904	7

Item Statistics			
	Mean	Std. Deviation	N
Q32	4.07	.727	138
Q33	3.68	.996	138
Q34	3.86	.917	138
Q35	3.75	.905	138
Q36	3.91	.875	138
Q37	3.89	.910	138
Q38	4.04	.753	138

Intention to Adopt Parcel Locker Service

Reliability Statistics	
Cronbach's Alpha	N of Items
.891	5

Item Statistics			
	Mean	Std. Deviation	N
Q39	3.91	.900	138
Q40	3.93	.789	138
Q41	3.75	.989	138
Q42	3.86	1.022	138
Q43	3.84	.976	138

Appendix F

Pearson Correlation

Convenience

Descriptive Statistics			
	Mean	Std. Deviation	N
Convenience	20.8841	2.78964	138
Int_Adpt	19.2826	3.91700	138

Correlations

		Convenience	Int_Adpt
Convenience	Pearson Correlation	1	.456**
	Sig. (2-tailed)		.000
	N	138	138
Int_Adpt	Pearson Correlation	.456**	1
	Sig. (2-tailed)	.000	
	N	138	138
**. Correlation is significant at the 0.01 level (2-tailed).			

Reliability

Descriptive Statistics			
	Mean	Std. Deviation	N
Reliability	23.5725	3.73753	138
Int_Adpt	19.2826	3.91700	138

Correlations			
		Reliability	Int_Adpt
Reliability	Pearson Correlation	1	.611**
	Sig. (2-tailed)		.000
	N	138	138
Int_Adpt	Pearson Correlation	.611**	1
	Sig. (2-tailed)	.000	
	N	138	138
**. Correlation is significant at the 0.01 level (2-tailed).			

Relative Advantage

Descriptive Statistics			
	Mean	Std. Deviation	N
Relative_Advantage	19.3986	3.69956	138
Int_Adpt	19.2826	3.91700	138

Correlations			
		Relative_Advantage	Int_Adpt
Relative_Advantage	Pearson Correlation	1	.816**
	Sig. (2-tailed)		.000
	N	138	138
Int_Adpt	Pearson Correlation	.816**	1
	Sig. (2-tailed)	.000	

	N	138	138
**. Correlation is significant at the 0.01 level (2-tailed).			

Complexity

Descriptive Statistics			
	Mean	Std. Deviation	N
Complexity	16.9130	5.30181	138
Int_Adpt	19.2826	3.91700	138

Correlations			
		Complexity	Int_Adpt
Complexity	Pearson Correlation	1	.097
	Sig. (2-tailed)		.259
	N	138	138
Int_Adpt	Pearson Correlation	.097	1
	Sig. (2-tailed)	.259	
	N	138	138

Consumers' Attitude Towards Parcel Locker Service

Descriptive Statistics			
	Mean	Std. Deviation	N
Attitude	27.1957	4.87487	138
Int_Adpt	19.2826	3.91700	138

Correlations			
		Attitude	Int_Adpt
Attitude	Pearson Correlation	1	.883**
	Sig. (2-tailed)		.000
	N	138	138
Int_Adpt	Pearson Correlation	.883**	1
	Sig. (2-tailed)	.000	
	N	138	138
**. Correlation is significant at the 0.01 level (2-tailed).			

Appendix G1

Linear Regression Analysis (Hypothesis 1)

Relationship between Convenience and Consumers' Attitude Towards Parcel Locker Service

Descriptive Statistics

	Mean	Std. Deviation	N
Att_Avg	3.8851	.69641	138
Conv_Avg	4.1768	.55793	138

Correlations

		Att_Avg	Conv_Avg
Pearson Correlation	Att_Avg	1.000	.546
	Conv_Avg	.546	1.000
Sig. (1-tailed)	Att_Avg	.	.000
	Conv_Avg	.000	.
N	Att_Avg	138	138
	Conv_Avg	138	138

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.546[a]	.298	.293	.58561	.298	57.746	1	136	.000	1.611

a. Predictors: (Constant), Conv_Avg

b. Dependent Variable: Att_Avg

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.803	1	19.803	57.746	.000[b]
	Residual	46.640	136	.343		
	Total	66.443	137			

a. Dependent Variable: Att_Avg

b. Predictors: (Constant), Conv_Avg

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.039	.378		2.749	.007
	Conv_Avg	.681	.090	.546	7.599	.000

a. Dependent Variable: Att_Avg

Appendix G2

Linear Regression Analysis (Hypothesis 2)

Relationship between Reliability and Consumers' Attitude Towards Parcel Locker Service

Descriptive Statistics

	Mean	Std. Deviation	N
Att_Avg	3.8851	.69641	138
Reli_Avg	3.9287	.62292	138

Correlations

		Att_Avg	Reli_Avg
Pearson Correlation	Att_Avg	1.000	.672
	Reli_Avg	.672	1.000
Sig. (1-tailed)	Att_Avg	.	.000
	Reli_Avg	.000	.
N	Att_Avg	138	138
	Reli_Avg	138	138

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.672[a]	.451	.447	.51784	.451	111.777	1	136	.000	1.757

a. Predictors: (Constant), Reli_Avg

b. Dependent Variable: Att_Avg

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.974	1	29.974	111.777	.000[b]
	Residual	36.469	136	.268		
	Total	66.443	137			

a. Dependent Variable: Att_Avg

b. Predictors: (Constant), Reli_Avg

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	.935	.282		3.310	.001
	Reli_Avg	.751	.071	.672	10.572	.000

a. Dependent Variable: Att_Avg

Appendix G3

Linear Regression Analysis (Hypothesis 3)

Relationship between Relative Advantage and Consumers' Attitude Towards Parcel Locker Service

Descriptive Statistics			
	Mean	Std. Deviation	N
Att_Avg	3.8851	.69641	138
Relative_Avg	3.8797	.73991	138

Correlations			
		Att_Avg	Relative_Avg
Pearson Correlation	Att_Avg	1.000	.859
	Relative_Avg	.859	1.000
Sig. (1-tailed)	Att_Avg	.	.000
	Relative_Avg	.000	.
N	Att_Avg	138	138
	Relative_Avg	138	138

Model Summary[b]										
				Std. Error	Change Statistics					
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.859[a]	.738	.736	.35793	.738	382.633	1	136	.000	2.102

a. Predictors: (Constant), Relative_Avg

b. Dependent Variable: Att_Avg

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.020	1	49.020	382.633	.000[b]
	Residual	17.423	136	.128		
	Total	66.443	137			
a. Dependent Variable: Att_Avg						
b. Predictors: (Constant), Relative_Avg						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.749	.163		4.587	.000
	Relative_Avg	.808	.041	.859	19.561	.000

a. Dependent Variable: Att_Avg

Appendix G4

Linear Regression Analysis (Hypothesis 4)

Relationship between Complexity and Consumers' Attitude Towards Parcel Locker Service

Descriptive Statistics			
	Mean	Std. Deviation	N
Att_Avg	3.8851	.69641	138
Comp_Avg	2.8188	.88363	138

Correlations			
		Att_Avg	Comp_Avg
Pearson Correlation	Att_Avg	1.000	.059
	Comp_Avg	.059	1.000
Sig. (1-tailed)	Att_Avg	.	.244
	Comp_Avg	.244	.
N	Att_Avg	138	138
	Comp_Avg	138	138

Model Summary[b]										
				Std. Error	Change Statistics					
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.059[a]	.004	-.004	.69773	.004	.482	1	136	.489	1.454

a. Predictors: (Constant), Comp_Avg

b. Dependent Variable: Att_Avg

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.234	1	.234	.482	.489[b]
	Residual	66.209	136	.487		
	Total	66.443	137			

a. Dependent Variable: Att_Avg

b. Predictors: (Constant), Comp_Avg

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.753	.199		18.839	.000
	Comp_Avg	.047	.067	.059	.694	.489

a. Dependent Variable: Att_Avg

Appendix G5

Linear Regression Analysis (Hypothesis 9)

Relationship between Consumers' Attitude Towards Parcel Locker Service and Intention to Adopt Parcel Locker Service

Descriptive Statistics			
	Mean	Std. Deviation	N
Int_Avg	3.8565	.78340	138
Att_Avg	3.8851	.69641	138

Correlations			
		Int_Avg	Att_Avg
Pearson Correlation	Int_Avg	1.000	.883
	Att_Avg	.883	1.000
Sig. (1-tailed)	Int_Avg	.	.000
	Att_Avg	.000	.
N	Int_Avg	138	138
	Att_Avg	138	138

Model Summary[b]										
				Std. Error	Change Statistics					
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.883[a]	.780	.778	.36881	.780	482.148	1	136	.000	1.838

a. Predictors: (Constant), Att_Avg

b. Dependent Variable: Int_Avg

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	65.581	1	65.581	482.148	.000[b]
	Residual	18.498	136	.136		
	Total	84.079	137			

a. Dependent Variable: Int_Avg

b. Predictors: (Constant), Att_Avg

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.003	.179		-.018	.985
	Att_Avg	.993	.045	.883	21.958	.000

a. Dependent Variable: Int_Avg

Appendix G6

Mediation Analysis (Hypothesis 5)

Mediating Effect of Consumers' Attitude Towards Parcel Locker Service on Convenience and Intention to Adopt Parcel Locker Service

```
Model  : 4
    Y  : Int_Adpt
    X  : Conv
    M  : Attitude

Sample
Size:  138

OUTCOME VARIABLE:
 Attitude

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .5459      .2981    16.8040    57.7462     1.0000   136.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     7.2717     2.6450     2.7492      .0068     2.0410    12.5024
Conv          .9540      .1255     7.5991      .0000      .7058     1.2023

**************************************************************************
OUTCOME VARIABLE:
 Int_Adpt

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .8837      .7810     3.4104   240.6747     2.0000   135.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      .6336     1.2242      .5176      .6056    -1.7875     3.0548
Conv         -.0525      .0675     -.7773      .4383     -.1860      .0810
Attitude      .7260      .0386    18.7944      .0000      .6496      .8024

************************* TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
```

```
 Int_Adpt

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4559      .2079    12.2430    35.6886     1.0000   136.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     5.9131     2.2577     2.6191      .0098     1.4484    10.3778
Conv          .6402      .1072     5.9740      .0000      .4283      .8521


************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .6402      .1072     5.9740      .0000      .4283      .8521

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
     -.0525      .0675     -.7773      .4383     -.1860      .0810

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Attitude      .6926      .1118      .4890      .9260

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000
```

Appendix G7

Mediation Analysis (Hypothesis 6)

Mediating Effect of Consumers' Attitude Towards Parcel Locker Service on Reliability and Intention to Adopt Parcel Locker Service

```
Model  : 4
    Y  : Int_Adpt
    X  : Reli
    M  : Attitude

Sample
Size:  138

************************************************************************
OUTCOME VARIABLE:
 Attitude

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6717      .4511    13.1397   111.7772     1.0000   136.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     6.5452     1.9774     3.3099      .0012     2.6347    10.4558
Reli          .8760      .0829    10.5725      .0000      .7122     1.0399

************************************************************************
OUTCOME VARIABLE:
 Int_Adpt

Model Summary
          R       R-sq        MSE          F        df1        df2          p
```

```
      .8835      .7805     3.4170   240.0746     2.0000   135.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     -.3346     1.0482     -.3192      .7500    -2.4077     1.7385
Reli          .0333      .0570      .5832      .5607     -.0795      .1461
Attitude      .6925      .0437    15.8366      .0000      .6060      .7790

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Int_Adpt

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6106      .3728     9.6932    80.8503     1.0000   136.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant     4.1980     1.6984     2.4717      .0147      .8392     7.5567
Reli          .6399      .0712     8.9917      .0000      .4992      .7807


************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .6399      .0712     8.9917      .0000      .4992      .7807

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0333      .0570      .5832      .5607     -.0795      .1461

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Attitude      .6067      .0775      .4596      .7668

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000
```

Appendix G8

Mediation Analysis (Hypothesis 7)

Mediating Effect of Consumers' Attitude Towards Parcel Locker Service on Relative Advantage and Intention to Adopt Parcel Locker Service

```
Model  : 4
    Y  : Int_Adpt
    X  : Re_Ad
    M  : Attitude

Sample
Size:  138

************************************************************************
OUTCOME VARIABLE:
 Attitude

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .8589      .7378     6.2775   382.6328     1.0000   136.0000      .0000

Model
```

```
              coeff         se          t          p       LLCI       ULCI
constant     5.2401     1.1425     4.5866     .0000     2.9808     7.4995
Re_Ad        1.1318      .0579    19.5610     .0000     1.0174     1.2462

**************************************************************************
OUTCOME VARIABLE:
 Int_Adpt

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .8902      .7924     3.2318   257.7066     2.0000   135.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     -.4019      .8809     -.4563     .6489    -2.1440     1.3402
Re_Ad         .2307      .0811     2.8458     .0051      .0704      .3911
Attitude      .5592      .0615     9.0896     .0000      .4376      .6809

************************* TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Int_Adpt

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .8157      .6654     5.1713   270.4701     1.0000   136.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.5286     1.0370     2.4385     .0160      .4779     4.5792
Re_Ad         .8637      .0525    16.4460     .0000      .7598      .9675


************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .8637      .0525    16.4460     .0000      .7598      .9675

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .2307      .0811     2.8458     .0051      .0704      .3911

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Attitude     .6330      .0819      .4486      .7769

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000
```

Appendix G9

Mediation Analysis (Hypothesis 8)

Mediating Effect of Consumers' Attitude Towards Parcel Locker Service on Complexity and Intention to Adopt Parcel Locker Service

```
Model  : 4
    Y  : Int_Adpt
    X  : Comp
    M  : Attitude

Sample
Size:  138
```

```
**************************************************************************
OUTCOME VARIABLE:
 Attitude

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0594      .0035    23.8546      .4817     1.0000   136.0000      .4889

Model
             coeff         se          t          p       LLCI       ULCI
constant   26.2718     1.3946    18.8388      .0000    23.5140    29.0297
Comp         .0546      .0787      .6940      .4889     -.1010      .2103

**************************************************************************
OUTCOME VARIABLE:
 Int_Adpt

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .8843      .7820     3.3949   242.0765     2.0000   135.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant    -.5145      .9995     -.5147      .6076    -2.4912     1.4623
Comp         .0329      .0297     1.1050      .2711     -.0260      .0917
Attitude     .7075      .0323    21.8713      .0000      .6435      .7715

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Int_Adpt

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0968      .0094    15.3109     1.2863     1.0000   136.0000      .2587

Model
             coeff         se          t          p       LLCI       ULCI
constant   18.0731     1.1173    16.1764      .0000    15.8637    20.2826
Comp         .0715      .0631     1.1341      .2587     -.0532      .1962


************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0715      .0631     1.1341      .2587     -.0532      .1962

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0329      .0297     1.1050      .2711     -.0260      .0917

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Attitude      .0386      .0607     -.0906      .1488

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000
```

Appendix H

Pre-Test

Logistician 1

Pre-Test for Intention to Adopt Parcel Locker Services as a Last-Mile Delivery in Malaysia

Variable	Dimension	Questions	Comment
Independent	Convenience	1. I feel that using parcel locker service is easy.	-
		2. I feel that using parcel locker service does not require much effort.	-
		3. I feel that using parcel locker service allows me to collect parcels at my convenient time.	-
		4. I feel that parcel lockers near my residential area will ease my daily activities	-
		5. I feel that parcel lockers operation 24/7 allocate sufficient time for me to collect my parcels	-
	Reliability	6. I think the functions and services promised by the parcel locker service to customers can be completed in time.	-
		7. I think when I encounter problems in using	-

		parcel lockers, the service provider can provide immediate solutions.	
		8. I think parcel lockers can provide delivery within the promised time.	-
		9. I think the parcel lockers service provider is reliable and trustworthy.	-
		10. I think I can rely on parcel lockers service provider to provide accurate services	-
		11. I think that parcel lockers service are more reliable than the courier delivery services	-
	Relative Advantage	12. I believe using parcel lockers service is the best way to receive parcels.	-
		13. I believe using parcel lockers service improves my experience in receiving parcels.	-
		14. I believe using parcel lockers service enables me to receive	-

		parcels more quickly.	
		15. I believe receiving packages through parcel lockers service would be better than home delivery.	-
		16. I believe receiving packages through parcel lockers service would have an added advantage.	-
	Complexity	17. I feel using parcel lockers service is complicated.	-
		18. I feel using parcel lockers service is frustrating.	-
		19. I feel parcel lockers service require a lot of effort and time.	-
		20. I feel parcel lockers service are easy to use.	-
		21. I feel parcel lockers service is a waste of time.	-
		22. I feel parcel lockers service are inconvenient to use.	-
Mediator	Attitude to use parcel locker service	23. I think using parcel lockers is interesting.	-

		24. I think I will use parcel lockers service frequently.	-
		25. I think my attitude toward using parcel lockers is increasing.	-
		26. I think receiving packages from parcel lockers is faster than courier service.	-
		27. I think receiving packages from parcel lockers service increase my convenience	-
		28. I think receiving packages from parcel lockers service satisfy me	-
		29. I think receiving packages from parcel lockers service is a good idea	-
Dependent	Intention to adopt parcel locker service	30. I intend to adopt a parcel lockers service in the future.	-
		31. I would recommend parcel lockers service to my friends.	-
		32. I am planning to use parcel lockers service frequently	-

		33. I would probably choose to deliver items to the parcel lockers service when shopping online.	-
		34. I will use the parcel lockers service if the online retailer offers such an option.	-

Date: 14/10/2023

Signature: *Kalai Selvan*

Name: Kalai selvan A/L Arumugam

Company Name: Anushka Logistics

Logistician 2

Pre-Test for Intention to Adopt Parcel Locker Services as a Last-Mile Delivery in Malaysia

Variable	Dimension	Questions	Comment
Independent	Convenience	1. I feel that using parcel locker service is easy.	-
		2. I feel that using parcel locker service does not require much effort.	-
		3. I feel that using parcel locker service allows me to collect parcels at my convenient time.	-
		4. I feel that parcel lockers near my residential area will ease my daily activities	-
		5. I feel that parcel lockers operation 24/7 allocate sufficient time for me to collect my parcels	-
	Reliability	6. I think the functions and services promised by the parcel locker service to customers can be completed in time.	-
		7. I think when I encounter	-

		problems in using parcel lockers, the service provider can provide immediate solutions.	
		8. I think parcel lockers can provide delivery within the promised time.	-
		9. I think the parcel lockers service provider is reliable and trustworthy.	-
		10. I think I can rely on parcel lockers service provider to provide accurate services	-
		11. I think that parcel lockers service are more reliable than the courier delivery services	-
	Relative Advantage	12. I believe using parcel lockers service is the best way to receive parcels.	-
		13. I believe using parcel lockers service improves my experience in receiving parcels.	-
		14. I believe using parcel lockers service enables me to receive	-

		parcels more quickly.	
		15. I believe receiving packages through parcel lockers service would be better than home delivery.	-
		16. I believe receiving packages through parcel lockers service would have an added advantage.	-
	Complexity	17. I feel using parcel lockers service is complicated.	-
		18. I feel using parcel lockers service is frustrating.	-
		19. I feel parcel lockers service require a lot of effort and time.	-
		20. I feel parcel lockers service are easy to use.	-
		21. I feel parcel lockers service is a waste of time.	-
		22. I feel parcel lockers service are inconvenient to use.	-
Mediator	Attitude to use parcel locker service	23. I think using parcel lockers is interesting.	-

		24. I think I will use parcel lockers service frequently.	-
		25. I think my attitude toward using parcel lockers is increasing.	-
		26. I think receiving packages from parcel lockers is faster than courier service.	-
		27. I think receiving packages from parcel lockers service increase my convenience	-
		28. I think receiving packages from parcel lockers service satisfy me	-
		29. I think receiving packages from parcel lockers service is a good idea	-
Dependent	Intention to adopt parcel locker service	30. I intend to adopt a parcel lockers service in the future.	-
		31. I would recommend parcel lockers service to my friends.	-
		32. I am planning to use parcel lockers service frequently	-

		33. I would probably choose to deliver items to the parcel lockers service when shopping online.	-
		34. I will use the parcel lockers service if the online retailer offers such an option.	-

Date: 14/10/2023

Signature: *Sathivel*

Name: Sathivel Nalapan

Company Name: N Sivan Trading

Academician 1

Pre-Test for Intention to Adopt Parcel Locker Services as a Last-Mile Delivery in Malaysia

Variable	Dimension	Questions	Comment
Independent	Convenience	1. I feel that using parcel locker service is easy.	-
		2. I feel that using parcel locker service does not require much effort.	-
		3. I feel that using parcel locker service allows me to collect parcels at my convenient time.	-
		4. I feel that parcel lockers near my residential area will ease my daily activities	-
		5. I feel that parcel lockers operation 24/7 allocate sufficient time for me to collect my parcels	-
	Reliability	6. I think the functions and services promised by the parcel locker service to customers can be completed in time.	-
		7. I think when I encounter	-

		problems in using parcel lockers, the service provider can provide immediate solutions.	
		8. I think parcel lockers can provide delivery within the promised time.	-
		9. I think the parcel lockers service provider is reliable and trustworthy.	-
		10. I think I can rely on parcel lockers service provider to provide accurate services	-
		11. I think that parcel lockers service are more reliable than the courier delivery services	-
	Relative Advantage	12. I believe using parcel lockers service is the best way to receive parcels.	-
		13. I believe using parcel lockers service improves my experience in receiving parcels.	-
		14. I believe using parcel lockers service enables me to receive	-

		parcels more quickly.	
		15. I believe receiving packages through parcel lockers service would be better than home delivery.	-
		16. I believe receiving packages through parcel lockers service would have an added advantage.	-
	Complexity	17. I feel using parcel lockers service is complicated.	-
		18. I feel using parcel lockers service is frustrating.	-
		19. I feel parcel lockers service require a lot of effort and time.	-
		20. I feel parcel lockers service are easy to use.	-
		21. I feel parcel lockers service is a waste of time.	-
		22. I feel parcel lockers service are inconvenient to use.	-
Mediator	Attitude to use parcel locker service	23. I think using parcel lockers is interesting.	-

		24. I think I will use parcel lockers service frequently.	-
		25. I think my attitude toward using parcel lockers is increasing.	-
		26. I think receiving packages from parcel lockers is faster than courier service.	-
		27. I think receiving packages from parcel lockers service increase my convenience	-
		28. I think receiving packages from parcel lockers service satisfy me	-
		29. I think receiving packages from parcel lockers service is a good idea	-
Dependent	Intention to adopt parcel locker service	30. I intend to adopt a parcel lockers service in the future.	-
		31. I would recommend parcel lockers service to my friends.	-
		32. I am planning to use parcel lockers service frequently	-

		33. I would probably choose to deliver items to the parcel lockers service when shopping online.	-
		34. I will use the parcel lockers service if the online retailer offers such an option.	-

Date: 12/10/2023

Signature: *Mohan*

Name: Mr. Mohan

Lecturer at Universiti Tunku Abdul Rahman, Kampar Campus

Academician 2

Pre-Test for Intention to Adopt Parcel Locker Services as a Last-Mile Delivery in Malaysia

Variable	Dimension	Questions	Comment
Independent	Convenience	1. I feel that using parcel locker service is easy.	-
		2. I feel that using parcel locker service does not require much effort.	-
		3. I feel that using parcel locker service allows me to collect parcels at my convenient time.	-
		4. I feel that parcel lockers near my residential area will ease my daily activities	-
		5. I feel that parcel lockers operation 24/7 allocate sufficient time for me to collect my parcels	-
	Reliability	6. I think the functions and services promised by the parcel locker service to customers can be completed in time.	-
		7. I think when I encounter	-

		problems in using parcel lockers, the service provider can provide immediate solutions.	
		8. I think parcel lockers can provide delivery within the promised time.	-
		9. I think the parcel lockers service provider is reliable and trustworthy.	-
		10. I think I can rely on parcel lockers service provider to provide accurate services	-
		11. I think that parcel lockers service are more reliable than the courier delivery services	-
	Relative Advantage	12. I believe using parcel lockers service is the best way to receive parcels.	-
		13. I believe using parcel lockers service improves my experience in receiving parcels.	-
		14. I believe using parcel lockers service enables me to receive	-

		parcels more quickly.	
		15. I believe receiving packages through parcel lockers service would be better than home delivery.	-
		16. I believe receiving packages through parcel lockers service would have an added advantage.	-
	Complexity	17. I feel using parcel lockers service is complicated.	-
		18. I feel using parcel lockers service is frustrating.	-
		19. I feel parcel lockers service require a lot of effort and time.	-
		20. I feel parcel lockers service are easy to use.	-
		21. I feel parcel lockers service is a waste of time.	-
		22. I feel parcel lockers service are inconvenient to use.	-
Mediator	Attitude to use parcel locker service	23. I think using parcel lockers is interesting.	-

		24. I think I will use parcel lockers service frequently.	-
		25. I think my attitude toward using parcel lockers is increasing.	-
		26. I think receiving packages from parcel lockers is faster than courier service.	-
		27. I think receiving packages from parcel lockers service increase my convenience	-
		28. I think receiving packages from parcel lockers service satisfy me	-
		29. I think receiving packages from parcel lockers service is a good idea	-
Dependent	Intention to adopt parcel locker service	30. I intend to adopt a parcel lockers service in the future.	-
		31. I would recommend parcel lockers service to my friends.	-
		32. I am planning to use parcel lockers service frequently	-

		33. I would probably choose to deliver items to the parcel lockers service when shopping online.	-
		34. I will use the parcel lockers service if the online retailer offers such an option.	-

Date: 12/10/2023

Signature: *Khairul*

Name: Gs. Ts. Khairul Rizuan Bin Suliman

Lecturer at Universiti Tunku Abdul Rahman, Kampar Campus

Appendix I

Sobel Test Result – Mediation

Convenience

To conduct the Sobel test

Details can be found in Baron and Kenny (1986), Sobel (1982), Goodman (1960), and MacKinnon, Warsi, and Dwyer (1995). Insert the a, b, s_a, and s_b into the cells below and this program will calculate the critical ratio as a test of whether the indirect effect of the IV on the DV via the mediator is significantly different from zero.

Input:			Test statistic:	Std. Error:	*p*-value:
a	.9540	Sobel test:	7.0477428	0.09827317	0
b	.7260	Aroian test:	7.03919565	0.09839249	0
s_a	.1255	Goodman test:	7.05632117	0.0981537	0
s_b	.0386	Reset all	Calculate		

Reliability

To conduct the Sobel test

Details can be found in Baron and Kenny (1986), Sobel (1982), Goodman (1960), and MacKinnon, Warsi, and Dwyer (1995). Insert the *a*, *b*, s_a, and s_b into the cells below and this program will calculate the critical ratio as a test of whether the indirect effect of the IV on the DV via the mediator is significantly different from zero.

Input:			Test statistic:	Std. Error:	*p*-value:
a	.8760	Sobel test:	8.79159377	0.06900114	0
b	.6925	Aroian test:	8.77950171	0.06909618	0
s_a	.0829	Goodman test:	8.80373593	0.06890597	0
s_b	.0437	Reset all	Calculate		

Relative Advantage

To conduct the Sobel test

Details can be found in Baron and Kenny (1986), Sobel (1982), Goodman (1960), and MacKinnon, Warsi, and Dwyer (1995). Insert the *a*, *b*, s_a, and s_b into the cells below and this program will calculate the critical ratio as a test of whether the indirect effect of the IV on the DV via the mediator is significantly different from zero.

Input:			Test statistic:	Std. Error:	*p*-value:
a	1.1318	Sobel test:	8.2443946	0.07676762	0
b	.5592	Aroian test:	8.23553978	0.07685016	0
s_a	.0579	Goodman test:	8.25327805	0.07668499	0
s_b	.0615	Reset all	Calculate		

Complexity

To conduct the Sobel test

Details can be found in Baron and Kenny (1986), Sobel (1982), Goodman (1960), and MacKinnon, Warsi, and Dwyer (1995). Insert the *a*, *b*, s_a, and s_b into the cells below and this program will calculate the critical ratio as a test of whether the indirect effect of the IV on the DV via the mediator is significantly different from zero.

Input:			Test statistic:	Std. Error:	*p*-value:
a	.0546	Sobel test:	0.69342609	0.05570817	0.48804219
b	.7075	Aroian test:	0.6927053	0.05576614	0.48849451
s_a	.0787	Goodman test:	0.69414913	0.05565015	0.48758869
s_b	.0323	Reset all	Calculate		