



Factors Influencing E-Commerce Consumer's
Adoption Intention Towards Collection-And-
Delivery Points (CDPs) – The Case Of Vietnam

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College of Arts, Social Sciences and Humanities

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**FACTORS INFLUENCING E-COMMERCE CONSUMER'S ADOPTION
INTENTION TOWARDS COLLECTION-AND-DELIVERY POINTS
(CDPS) – THE CASE OF VIETNAM**

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ABSTRACT

The rise of global e-commerce has shaped business practices, contributing to an increase in the volume of parcel delivery services, especially in COVID-19, where many countries limit physical interactions. The continuous expansion of e-commerce drives the demand for home delivery for consumers' convenience, often because of the absence of physical stores. However, many parcels do not fit through mail or letterboxes or require a consignee signature, which implies that customers need to be at home when the parcel is delivered. One solution to the failed home-delivery problem is collection-and-delivery points (CDPs), or pick-up points where customers can collect and return their online orders.

The author has conducted a bibliometric analysis and literature review to identify the primary themes and emerging trends in the field of collection-and-delivery points (CDPs) over recent years. The study noticeably provides a new cultural lens for factors influencing consumers' adoption intentions towards CDPs by proposing a matrix in terms of individualist/collectivist societies and rational/irrational factors by reviewing past literature.

Academic research on consumers' behavioural intention to use logistics technologies has been conducted extensively. Given the potential of CDPs to optimize last-mile logistics, it is imperative to investigate factors influencing Vietnamese consumers' adoption intention towards CDPs. The author used a sample of Vietnamese consumers to test the research model. This research used a cross-sectional design. Data was collected via questionnaires. The collected data were analysed using Multiple Regression analysis, MANOVA analysis, Confirmatory Factor Analysis, Structural Equation Modelling, and Multi-group analysis methods.

The result shows that CDP adoption in Vietnam is driven by compatibility, trialability, observability, and social influence, with experience shaping perceptions more than income. Convenience and waiting-time reduction were not significant. MANOVA confirmed experience boosts adoption attitudes, highlighting trial opportunities over income segmentation for wider market reach.

Users often cannot verify the quality of CDP services before actually experiencing them, giving rise to the possibility of suboptimal decisions. In such situations, trust on users' intention to adopt CDP services has a significant impact on users' adoption intention toward CDP service. It has been recognized that trust has both cognitive and affective dimensions. Scholars have reported varying results regarding the relationships between emotional trust, cognitive trust, and adoption intention.

The previous discussions highlight conflicting results in the literature regarding adoption intentions toward CDPs. Possible reasons for these inconsistencies include a lack of

focus on the mediating role of emotional trust and the influence of cultural contexts. To partially close the above gaps, this study aims to investigate factors driving consumers' adoption intention toward CDPs, focusing on emotional trust and cultural context by developing a research model based on the framework of innovation diffusion theory and heuristics-systematic model.

The study provides a deeper understanding of antecedents of CDP adoption intention, confirming the moderating effect of CDP experience, the mediating role of emotional trust in CDP adoption intention and moderating roles of high-value orders and low order numbers on the relationship between cognitive trust and emotional trust among a collectivist culture such as Vietnam.

DECLARATION

I declare that the work in this thesis was conducted in accordance with the requirements of the University's Regulations and that it has not been submitted for any other academic award. In addition, I hereby confirm that, this thesis is solely my work, and all work of others cited in this thesis have been acknowledged.

Any ethical clearance for the research presented in this document has been approved. Approval has been sought and granted by the Human Ethics Committee of the University of Lincoln with the ethics reference UoL2023_15444 on 6 December 2023.

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LIST OF ABBREVIATIONS

ADT	Adoption Intention
AI	Artificial Intelligence
AVE	Average Variance Extracted
CDPs	Collection-and-Delivery Points
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
COD	Cash-on-Delivery
CON	Convenience
COT	Cognitive Trust
CPL	Complexity
CPT	Compatibility
CR	Composite Reliability
EFA	Exploratory Factor Analysis
EMT	Emotional Trust
HSM	Heuristic-Systematic Model
IDT	Innovation Diffusion Theory
KOC	Key Opinion Consumer
KOL	Key Opinion Leader
LSP	Logistics Service Provider
MANOVA	Multivariate Analysis of Variance
MSV	Maximum Shared Variance
OBS	Observability
RAD	Relative Advantage
RMSEA	Root Mean Square Error of Approximation
RNW	Reduced Need to Wait
SBE	Subjective Experience
SEM	Structural Equation Modelling
SLR	Systematic Literature Review
SMEs	Small and Medium Enterprises
SOI	Social Influence
SRMR	Standardized Root Mean Square Residual
SST	Self-Service Technology
TAM	Technology Acceptance Model
TLI	Tucker-Lewis Index
TPB	Theory of Planned Behaviour
TRI	Trialability
UTAUT	The Unified Theory of Acceptance and Use of Technology
VIF	Variance Inflation factor

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CHAPTER 1: INTRODUCTION

1.1. Research imperatives

The rapid expansion of e-commerce has significantly reshaped global business operations, driving an unprecedented increase in parcel delivery services. As online shopping continues to thrive, the demand for door-to-door delivery has grown to enhance consumer convenience (Morganti, Seidel, et al., 2014; Patowary et al., 2023). However, many parcels are too large for standard mailboxes or require a signature upon receipt, meaning that customers must be present at the time of delivery. A recurring challenge in last-mile logistics is that consumers are often absent when deliveries arrive, resulting in failed home deliveries (Deutsch & Golany, 2018; McLeod et al., 2006; Santana et al., 2022; Yuen et al., 2019; M. Zhou et al., 2020). These failed attempts lead to additional delivery attempts or package returns, increasing operational costs and fuel consumption. Studies estimate that the failure rate for home deliveries ranges from 15% to 60%, depending on geographical location and delivery policies (Rai et al., 2021).

One of the most promising solutions to mitigate failed deliveries is the implementation of Collection-and-Delivery Points (CDPs), also known as pickup points, where consumers can collect or return their online orders at designated locations. A recent survey indicated that 34% of Southeast Asian consumers are dissatisfied with their delivery experience, with over 90% of complaints related to late deliveries or poor communication regarding delivery status (Parcel Perform, 2019). In response to these inefficiencies, more than 80% of Southeast Asian consumers have started opting for alternative delivery methods, such as in-store pickups, smart lockers, and parcel collection points (Rakuten Insight, 2021). The growing awareness of sustainable last-mile delivery innovations, such as CDPs, has also attracted increasing interest from researchers and policymakers (Cano et al., 2022; He, 2020). Compared to traditional home deliveries, CDPs offer numerous advantages, including lower delivery costs (Francke & Visser, 2015), reduced environmental impact (Q. Chen et al., 2017), and improved efficiency in last-mile logistics (Agatz et al., 2011).

CDP services operate through a notification system, in which consumers receive alerts from logistics providers once their parcels are ready for pickup, allowing them to collect their packages at their convenience (Yuen et al., 2019). These collection points are typically classified into two categories: unattended and attended delivery points (Mommens et al., 2021). Unattended delivery points, such as smart lockers, enable consumers to collect packages independently, offering the added advantage of extended service hours for both delivery and

returns. Conversely, attended delivery points, often integrated into retail stores and convenience stores, require the presence of store staff or logistics personnel to facilitate the transaction.

Despite the many benefits of CDPs, adoption rates vary significantly across different regions. Research highlights a stark contrast between Asian and Western consumers in their perceptions and attitudes towards CDPs. While CDPs have become a well-established component of urban logistics in Europe, adoption remains relatively low in Asian markets (Mangiaracina et al., 2019). For instance, in Poland, CDPs are widely integrated into last-mile delivery networks, with 38.72 collection points per 10,000 inhabitants, making it one of the most extensive out-of-home (OOH) delivery networks in the world (Analysys Mason, 2023). Additionally, 20% of parcel volume in France is processed through pickup points (Morganti, Dablanc, et al., 2014), and in some European markets, nearly 60% of consumers prefer out-of-home delivery options over traditional home deliveries (Metapack, 2020).

In contrast, CDP adoption in Asia remains significantly lower. According to a survey by Parcelmonitor (2022), only 3.28% of parcels in Asia were shipped using out-of-home delivery, a stark contrast to Finland, where over 90% of business-to-consumer (B2C) deliveries utilize out-of-home solutions. This slow adoption suggests that Asian consumers may have different behavioural and trust-related concerns, making it essential to examine the factors influencing their adoption intention. Understanding these influences is crucial for enhancing CDP adoption rates in Asia, particularly in Vietnam, where the logistics sector is still evolving. By identifying the key drivers and barriers to CDP adoption, businesses and policymakers can develop effective strategies to promote this innovative delivery solution, ultimately improving logistics efficiency, reducing delivery costs, and enhancing consumer satisfaction.

1.2. Research gap

Cities worldwide are continuously exploring innovative solutions to tackle the challenges associated with urban last-mile distribution, prompting logistics companies to develop new distribution models that balance cost-effectiveness, customer satisfaction, and sustainability (Comi & Savchenko, 2021). Traditionally, logistics service providers have focused on optimizing transportation routes and selecting appropriate delivery vehicles to enhance efficiency from a business-centric perspective (Montoya-Torres et al., 2016; Velázquez-Martínez et al., 2016). Furthermore, advancements in facility placement, network design, and asset utilization have been prioritized to accelerate delivery processes (Fu & Saito, 2018). Several studies have also explored cost-saving strategies, such as reducing transportation expenses, minimizing operational costs, and maximizing the geographic coverage of logistics networks (Choque, 2018; Janjevic et al., 2019).

While these approaches have significantly improved delivery efficiency, they often overlook the importance of consumer behaviours and preferences in shaping effective last-mile solutions (Janjevic & Winkenbach, 2020). For instance, tactical and operational planning in logistics often relies on route optimization techniques (Muñoz-Villamizar et al., 2019). However, these methodologies fail to consider consumption patterns, customer behaviours, and delivery preferences, which are essential for developing sustainable and user-centric logistics models (Avila et al., 2020; Bravo & Vidal, 2013). Lim et al. (2018) also emphasize that many retailers rely on distribution tactics that lack consumer-driven insights, leading to scepticism among industry experts and the persistence of inefficient delivery models. Consequently, there is a need for further research into consumer behaviours as a key determinant of CDP adoption, particularly within a two-sided market framework, where both consumer preferences and logistics efficiency must be considered. Existing literature has not comprehensively clarified the role of consumer behaviours as a factor influencing CDP adoption in the context of a two-sided market. Further research is needed to fully understand the antecedents of consumers' adoption and use of CDP service.

Furthermore, prior literature review studies, such as Mangiaracina et al. (2019) have emphasized the need for further research on CDPs to improve industry understanding of their advantages for businesses and society. Limited recent research has thoroughly explored consumer behaviours toward CDPs from a cross-cultural standpoint. And existing systematic literature reviews have primarily concentrated on logistics and sustainability while overlooking consumer-related factors that impact CDP adoption. Thus, it is essential to conduct a comprehensive literature review and bibliometric analysis to explore consumer adoption of CDPs.

Academic research on consumer behavioural intentions regarding logistics technologies has gained significant attention in recent years (Cai et al., 2021). For example, researchers have applied the Theory of Planned Behaviour (TPB) to investigate adoption intentions related to drone-based deliveries (Ramadan et al., 2017), while Innovation Diffusion Theory (IDT) has been used to explain consumer acceptance of smart lockers (Wang et al., 2018; Yuen et al., 2019). Additionally, the Unified Theory of Acceptance and Use of Technology (UTAUT) has been utilized to explore self-service parcel services (M. Zhou et al., 2020). These studies generally assume that consumers are rational decision-makers, basing their behavioural choices on logical cost-benefit analyses and perceived usefulness.

However, existing literature has placed excessive emphasis on rational decision-making factors while overlooking irrational cognitive processes that influence consumer adoption behaviours (Cai et al., 2021). Psychological research suggests that decision-making is not

always a deliberate, effortful process, and that consumers often rely on heuristic-based shortcuts when evaluating new services (Chaiken, 1980). The dual-process theory of cognition proposes that human decision-making operates on two systems: System 1, which is fast, intuitive, and driven by heuristics, and System 2, which is slow, deliberate, and effortful (Kahneman, 2011). Social judgments, particularly in trust-based environments, frequently rely on heuristic cues rather than exhaustive rational evaluation (S. Chen & Chaiken, 1999).

Heuristic cues are stored in memory and retrieved when making judgments, influencing how consumers perceive new technologies. Social influence, for instance, is a powerful external heuristic cue, as peer recommendations and societal norms significantly impact technology adoption intentions (Gursoy et al., 2019; Venkatesh et al., 2003, 2012). Environmental factors, such as social influence, have also been shown to shape consumer trust in technological innovations, including CDP services (Hancock et al., 2011). Similarly, internal factors—such as subjective experience—play a role in shaping trust perceptions. Research by Schwarz et al. (1991) demonstrates that individuals infer judgmental implications based on the ease of recalling similar past experiences, leading to biased perceptions of service reliability. Additionally, familiarity with a service can be mistakenly associated with trust and quality, a phenomenon observed in consumer psychology studies (Jscoby et al., 1989). Subjective experience plays a crucial role in heuristic decision-making, influencing how consumers evaluate familiar vs. unfamiliar delivery methods. The recognition heuristic suggests that when faced with uncertainty, consumers tend to favour options they recognize and associate with past positive experiences (Gigerenzer & Todd, 1999; Rieskamp & Hoffrage, 2008). In markets where home delivery dominates, CDPs may be perceived as a risky or unfamiliar alternative, making consumers hesitant to adopt this service (S. Chen & Chaiken, 1999). Moreover, in decision-making scenarios, consumers often retrieve heuristic cues from memory based on speed of recall (Tversky & Kahneman, 1974). This suggests that subjective experience increases consumer confidence in judgments, even when rational evaluation is limited (Downing et al., 1992). However, the research on behaviours based on experience in the context of CDPs usage is limited. Subjective experiences are especially critical in guiding consumers' usage behaviour of CDP service given the wide acceptance of e-commerce.

To fulfil this research gap in the field of CDP usage behaviour, this study integrates the factors of social influence and subjective experience into the innovation diffusion theory to examine consumer's usage of CDPs. The synthesised model provides a more comprehensive framework in explaining the use behaviour, which considers both rational and irrational factors.

Trust is a critical factor in consumer adoption of new technologies, particularly in contexts where uncertainty and potential risks exist (Morgan & Hunt, 1994). It is typically

defined as a consumer's confidence in the reliability and integrity of a service provider (Moorman et al., 1993). Trust plays a pivotal role in CDP adoption, as consumers must be willing to rely on a system they have not yet fully experienced (Shi et al., 2021). Since CDPs often operate without direct human interaction, users cannot verify service quality before engaging with it, increasing the likelihood of hesitation or distrust (Gaudiello et al., 2016). In such scenarios, trust significantly influences adoption decisions, as consumers must assess whether the perceived risks outweigh the convenience and efficiency benefits of CDPs.

Existing research provides empirical evidence that both Cognitive Trust (COT) and Emotional Trust (EMT) impact behavioural intention. However, findings remain inconclusive and conflicting. Some studies confirm that Cognitive Trust and Emotional Trust positively influence adoption intentions (Kumra & Sharma, 2022; Muhammad et al., 2022; Wang et al., 2024), while others suggest that Emotional Trust has no significant impact on adoption behaviour (Dash, 2024). Additionally, researchers disagree on the relationship between Cognitive and Emotional Trust—some studies argue that Cognitive Trust enhances Emotional Trust (Huang et al., 2020; Kimiagari & Asadi Malafe, 2021; Punyatoya, 2018), while others fail to find a direct correlation (Wu & Neill, 2020). These discrepancies may stem from the lack of research on potential moderating variables, such as demographic differences and cultural contexts, which could influence how trust relationships develop. Furthermore, few studies have examined the mediating role of Emotional Trust in the relationship between Cognitive Trust and Behavioural Intention, leaving a critical gap in the literature.

The conflicting findings regarding trust and adoption intentions highlight the need for a more comprehensive examination of trust dynamics in CDP adoption. Potential reasons for these inconsistencies include neglecting the mediating role of Emotional Trust and failing to consider cultural influences. This study aims to address these gaps by investigating determinants of Vietnamese consumers' adoption of CDPs, with a particular focus on Trust and cultural context.

Despite the increasing relevance of CDPs in last-mile logistics, research on consumer behaviour and trust formation in CDP adoption remains underdeveloped. By integrating trust factors into Innovation Diffusion Theory and Heuristic-Systematic Model, this study aims to develop a more comprehensive framework for understanding Vietnamese consumers' adoption of CDPs. This synthesized model will provide valuable insights into both rational and irrational influences on decision-making, addressing a critical gap in logistics research.

1.3. Research aim and objectives.

The primary aim of this study is to investigate the factors influencing consumer adoption of Collection-and-Delivery Points (CDPs) in Vietnam, with an additional focus on the role of trust, particularly Emotional Trust (EMT). To achieve this aim, the study is guided by the following objectives:

- Research objective 1: To critically discuss past research about CDPs.
- Research objective 2: To identify future research about consumers' adoption intention towards CDPs.
- Research objective 3: To identify key factors influencing consumers' adoption intention towards CDPs.
- Research objective 4: To identify key factors influencing consumer trust in CDPs, including both Cognitive Trust (COT) and Emotional Trust (EMT).
- Research objective 5: To examine the mediating role of Emotional Trust (EMT) in shaping adoption intention.
- Research objective 6: To explore the moderating effects of consumer demographics and purchasing behaviours on trust formation and adoption.
- Research objective 7: To provide practical recommendations for logistics service providers and policymakers to enhance CDP adoption in Vietnam.

This thesis is organized into five chapters to fulfil the stated objectives:

Chapter 1: Introduction – Outlines the research rationale, identifies the research gap, defines objectives and scope, describes the methodology, and explains the thesis structure.

Chapter 2: Literature Review – Reviews existing studies on e-commerce, last-mile delivery, collection-and-delivery points (CDPs), and decision-making theories, addressing Research Objectives 1 and 2.

Chapter 3: Empirical Study 1 – Adoption intention towards collection-and-delivery points among Vietnamese consumers – Moderating effect of CDP experience, linked to Research Objective 3.

Chapter 4: Empirical Study 2 – Adoption intention towards collection-and-delivery points among Vietnamese consumers – The role of emotional trust, which addresses Research Objectives 4, 5, and 6.

Chapter 5: Conclusions, implications and limitations, addressing Research Objective 7.

Table 1.1: Mapping Research objectives to Chapters

Objectives \ Chapters	Chapters				
	Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5
Research objective 1: To critically discuss past research about CDPs		X			
Research objective 2: To identify future research about consumers' adoption intention towards CDPs		X			
Research objective 3: To identify key factors influencing consumers' adoption intention towards CDPs			X		
Research objective 4: To identify key factors influencing consumer trust in CDPs, including both Cognitive Trust (COT) and Emotional Trust (EMT).				X	
Research objective 5: To examine the mediating role of Emotional Trust (EMT) in shaping adoption intention.				X	
Research objective 6: To explore the moderating effects of consumer demographics and purchasing behaviours on trust formation and adoption.				X	
Research objective 7: To provide practical recommendations for logistics service providers and policymakers to enhance CDP adoption in Vietnam.					X

Sources: The author

1.4. Research scope

This study focuses on Vietnamese e-commerce consumers and their attitudes toward CDP adoption. The scope includes:

- Consumer perceptions of CDPs.
- Trust-related factors, including Cognitive Trust (COT) and Emotional Trust (EMT).
- Behavioural moderators, such as income level, experience, order frequency and order value, to assess variations in CDP adoption intention.

The findings aim to provide insights applicable to e-commerce platforms, logistics providers, and policymakers looking to optimize CDP adoption strategies in Vietnam and similar emerging markets.

1.5. Research methodology

Data collection is informed and preceded by a systematic review of the literature using SPAR-4-SLR protocol. And this study adopts various quantitative research approaches, utilizing Multiple Regression Analysis, Multivariate Analysis of Variance, Structural Equation Modelling (SEM) to test hypotheses and analyse consumer behaviour.

1.5.1. Data Collection

- Articles from the Web of Science (WOS) database
- A structured online survey was administered to Vietnamese e-commerce consumers. The questionnaire included validated scales measuring trust (COT & EMT), adoption intention (ADT), and influencing factors in the Innovation Diffusion Theory (IDT) and Heuristic-Systematic Model (HSM).

1.5.2. Data Analysis

- Systematic literature review including co-citation analysis, bibliographic coupling, and text co-occurrence analysis is conducted to explore consumer behavioural intentions regarding CDP adoption.
- Multiple Regression analysis is employed to investigate the relationship between consumers' adoption intention toward Collection-and-Delivery Points (CDPs) and its influencing factors.
- Multivariate Analysis of Variance (MANOVA) is conducted to examine whether there are significant differences in these determinants based on nonmetric categorical variables, such as income level and prior experience with CDPs.
- Confirmatory Factor Analysis (CFA) was conducted to validate the measurement model.
- Structural Equation Modelling (SEM) was used to examine direct, indirect, and moderating effects on adoption intention.
- Multigroup analysis assessed how consumer behaviours (e.g., order value, frequency) moderates trust formation.
- VOSviewer and the SPSS statistical software version 22.0 are used for these analyses.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

In recent years, the rapid expansion of e-commerce has reshaped global business operations, leading to a surge in demand for parcel delivery services. The increasing consumer preference for online shopping has heightened the need for reliable and efficient last-mile delivery solutions to enhance convenience (Morganti, Seidel, et al., 2014; Patowary et al., 2023). However, traditional home deliveries face several logistical challenges, including parcel size constraints that prevent delivery into standard mailboxes and the requirement for recipient signatures. These factors necessitate that consumers be available at the time of delivery, which is not always feasible (Deutsch & Golany, 2018; McLeod et al., 2006; Santana et al., 2022; Yuen et al., 2019; M. Zhou et al., 2020). Consequently, a significant portion of deliveries fail on the first attempt, leading to increased travel costs due to redelivery efforts or returns to the sender. Studies estimate that failed delivery rates range between 15% and 60%, depending on regional factors and varied delivery policies (Rai et al., 2021).

A proposed alternative to mitigate these issues is the implementation of Collection-and-Delivery Points (CDPs), commonly known as pickup points, which enable consumers to receive and return parcels at designated locations. Research suggests that a considerable proportion of consumers express dissatisfaction with existing home delivery services, particularly in regions where delivery inefficiencies persist. According to Parcel Perform (2019), 34% of Southeast Asian consumers are dissatisfied with delivery experiences, with over 90% of complaints linked to delayed shipments and inadequate communication regarding order status.

The growing consumer frustration with home deliveries has fuelled interest in alternative last-mile solutions. More than 80% of surveyed Southeast Asian consumers have opted for alternative delivery methods, such as in-store pickups, parcel lockers, and collection points (Rakuten Insight, 2021). Furthermore, sustainable innovations in last-mile logistics, including CDPs, have garnered significant academic interest due to their potential economic, environmental, and social benefits (Cano et al., 2022; He, 2020). Compared to home delivery models, CDPs provide substantial advantages such as cost savings for logistics providers (Francke & Visser, 2015), reduced environmental impact (Q. Chen et al., 2017), and lower opportunity costs associated with missed deliveries (Agatz et al., 2011).

Despite the potential advantages of CDPs, there is a notable disparity in their adoption across different global regions. Studies indicate that Western consumers, particularly in Europe, are more receptive to CDPs than their Asian counterparts. For instance, the adoption rate of out-of-home delivery in Asia remains relatively low, with only 3.28% of parcels shipped through

non-home delivery methods, compared to significantly higher adoption rates in the UK and Germany (Mangiaracina et al., 2019). In contrast, Finland has emerged as a leader in CDP adoption, with over 90% of business-to-consumer (B2C) deliveries utilizing out-of-home solutions (Parcelmonitor, 2022).

Given that CDPs offer compelling societal benefits and contribute to the enhancement of last-mile logistics, it is crucial to investigate the factors influencing consumer adoption of these solutions. Understanding these barriers and drivers can encourage broader CDP usage, particularly in regions where adoption remains low, such as Asia.

A systematic review of the literature highlights a growing scholarly interest in sustainable logistics and last-mile delivery, but limited research has been conducted on consumer adoption of CDPs. A review of critical studies indexed in the Web of Science (WoS) and the Social Science Citation Index revealed that previous reviews have primarily focused on operational and sustainability aspects of last-mile logistics. For example:

- Cano et al. (2022) analysed ninety-nine articles published between 2021 and 2022 from the Scopus database, focusing on research trends in sustainable logistics, including CDPs and parcel lockers.
- He (2020) conducted a systematic review of 164 papers (2013–2018) to examine urban freight network design and distribution innovations, identifying CDPs as a critical element in enhancing last-mile efficiency.
- Mangiaracina et al. (2019) focused on cost-efficiency solutions in last-mile logistics, emphasizing the need for further investigation into CDPs and parcel lockers due to the limited awareness of their benefits.

While existing literature predominantly focuses on the operational and sustainability aspects of CDPs, a critical gap remains in understanding consumer behaviours and adoption intention, particularly from a cultural perspective. Studies have largely overlooked how cultural differences influence CDP adoption, despite the evident regional variations in consumer attitudes toward delivery models. This raises an important research question: How do cultural factors influence consumer adoption of CDPs?

To bridge this gap, further research is needed to explore consumer-related factors affecting CDP adoption. This includes:

- Consumer perception and trust in alternative delivery solutions.
- Influence of cultural dimensions (e.g., individualism vs. collectivism) on last-mile preferences.
- Barriers to adoption, such as lack of awareness, accessibility concerns, or resistance to behavioural change.

Given the limitations in the current body of knowledge, this study aims to conduct a comprehensive literature review and bibliometric analysis to explore consumer adoption of CDPs. The research is structured around the following key questions:

- What do we already know about consumers' intention-related studies of CDPs?
- What should future research about CDPs be focused on?

The study is founded on three primary premises: (1) Previous review papers (e.g., Mangiaracina et al. (2019)) have recommended further investigation into CDPs to enhance industry awareness of their benefits to businesses and society; (2) Few recent studies comprehensively examine consumer behaviours toward CDPs from a cross-cultural perspective; (3) Existing systematic literature reviews have predominantly focused on logistics and sustainability but have neglected consumer-related factors that influence CDP adoption.

This study contributes to the academic literature by providing a structured synthesis of existing research on CDP adoption, including theoretical models, methodological approaches, and contextual factors. Moreover, it proposes a new framework outlining the impact of cultural dimensions on consumer intention toward CDPs, particularly contrasting individualist and collectivist societies.

From a managerial and policy perspective, the study provides actionable insights for logistics service providers and e-commerce companies to improve CDP adoption rates. Key recommendations include:

- Enhancing public awareness of CDP benefits through marketing campaigns.
- Incentivizing consumers to opt for CDPs by offering financial incentives, discounts, or loyalty rewards.
- Tailoring CDP designs based on regional consumer preferences and behavioural patterns.
- Integrating digital technologies, such as real-time tracking and AI-driven delivery notifications, to improve consumer convenience and engagement.

The rapid expansion of e-commerce has created significant challenges for last-mile delivery, necessitating alternative solutions such as Collection-and-Delivery Points (CDPs). However, regional disparities in CDP adoption highlight the need for further investigation into cultural factors influencing consumer behaviours. While previous research has predominantly focused on operational efficiencies and sustainability, this study shifts the focus to consumer intention and adoption, providing new insights from a cross-cultural perspective. By addressing these gaps, this research contributes to both theoretical discourse and practical industry applications, ultimately promoting a more sustainable and efficient last-mile delivery ecosystem.

2.2. Last-mile logistics in e-commerce: An overview

2.2.1. E-commerce

The definition of e-commerce (electronic commerce) has evolved over time, influenced by technological advancements and economic developments. The traditional definition of e-commerce (electronic commerce) refers to the buying and selling of goods and services over the internet using electronic means such as websites, mobile applications, and email communication. It involves online transactions between businesses, consumers, or government entities and is facilitated by electronic payment systems. Ngai & Wat (2002) provide a classification scheme for e-commerce research, identifying key categories such as business-to-business (B2B), business-to-consumer (B2C), and mobile commerce (m-commerce). They argue that e-commerce extends beyond transactional exchanges to include information dissemination, customer service, and supply chain integration. Bhat et al. (2025) analyse how evolving technologies shape the definition of e-commerce. They discuss how cloud computing, big data, and artificial intelligence (AI) redefine digital commerce by enabling personalized shopping experiences, dynamic pricing, and predictive analytics. Zennaro et al. (2022) examine e-commerce from a logistics standpoint, emphasizing that modern definitions should account for fulfilment strategies, last-mile delivery, and sustainability considerations. Their study suggests that e-commerce is not just about online transactions but also about optimizing supply chain efficiencies to meet consumer expectations. Qurtubi et al. (2022) provide a systematic literature review, assessing how e-commerce definitions have changed due to emerging trends like social commerce, live-stream shopping, and blockchain-based transactions. They highlight the growing role of user-generated content in shaping online shopping experiences. Haryanti & Subriadi (2020) discuss the role of adoption theories, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), in defining e-commerce. They argue that consumer trust, ease of use, and technological infrastructure influence how e-commerce is conceptualized in different regions. The definition of e-commerce has expanded from a basic transactional framework to a complex digital ecosystem that integrates marketing, logistics, data analytics, and emerging technologies.

E-commerce has undergone significant transformation since its inception, driven by advancements in digital technology, consumer behaviour changes, and globalization. Scholars have explored its various aspects, including business models, logistics, consumer trust, and emerging technologies. The emergence of various e-commerce business models, including business-to-business (B2B), business-to-consumer (B2C), and consumer-to-consumer (C2C) platforms, has reshaped global trade. Visser & Lanzendorf (2004) analyse the mobility effects

of B2C e-commerce, showing that increased online shopping reduces in-store visits. However, this perspective underestimates the logistical challenges of last-mile delivery and the sustainability concerns of rising e-commerce-driven transportation. Goyal et al. (2019) provide a forward-looking analysis of e-commerce trends but do not address ethical concerns such as data privacy, algorithmic bias, and the dominance of major players like Amazon and Alibaba. Consumer engagement in e-commerce is heavily influenced by personalization and digital marketing. Rosário & Raimundo (2021) examine consumer marketing strategies, arguing that digital advertising, influencer marketing, and AI-driven recommendations are central to e-commerce success. However, their research does not explore how data privacy regulations, such as GDPR, impact these marketing strategies. Haryanti & Subriadi (2020) apply the UTAUT framework to e-commerce adoption, explaining how factors like perceived usefulness and ease of use drive adoption. Yet, they do not assess cultural differences in digital adoption, which can vary significantly between markets. E-commerce logistics has evolved to address fulfilment challenges, warehouse automation, and last-mile delivery efficiency. Zennaro et al. (2022) provide a comprehensive analysis of supply chain adjustments in response to e-commerce demand. Their findings highlight that while e-commerce enables faster deliveries, it also increases carbon emissions and packaging waste. The study calls for sustainable logistics solutions but does not explore the role of emerging technologies like blockchain in supply chain transparency. Secure and efficient payment systems are critical for e-commerce growth. Fatonah et al. (2018) examine e-payment trends, highlighting the shift from traditional banking methods to digital wallets and cryptocurrencies. While the study acknowledges security concerns, it does not discuss the regulatory challenges of cross-border e-commerce transactions. Furthermore, cybersecurity risks, such as fraud and data breaches, require more in-depth analysis. The literature on e-commerce provides valuable insights into its adoption, business models, consumer behaviours, logistics, payments, and future trends. However, gaps remain, particularly in sustainability, regulatory challenges, cybersecurity threats, and emerging technologies.

2.2.2. Last-mile logistics for e-commerce

Last-mile logistics remains one of the most complex and costly aspects of e-commerce supply chains. It represents the final leg of delivery, from a distribution centre to the end customer, often accounting for more than 50% of total logistics costs (Zennaro et al., 2022). While e-commerce giants like Amazon and Alibaba have invested heavily in optimizing last-mile logistics, significant challenges remain in terms of efficiency, environmental sustainability, and technological disruptions.

The rapid expansion of e-commerce has led to increased consumer expectations for faster and cheaper deliveries. Studies highlight that companies struggle to balance cost efficiency with speed, as free and same-day deliveries impose immense financial strain on logistics providers (Zennaro et al., 2022). Retailers must absorb or pass on these costs to consumers, but the latter often resist additional fees, making profitability a challenge. While gig economy-driven delivery models (e.g., Uber Eats, Instacart, and Amazon Flex) have helped offset costs, they also raise concerns about labour rights, worker compensation, and sustainability. Future research should explore alternative cost-sharing models, such as micro-fees for same-day delivery or customer incentives for green delivery choices.

Last-mile delivery significantly contributes to carbon emissions due to increased vehicle congestion and inefficient routing. The rise of e-commerce has led to a surge in urban deliveries, exacerbating pollution and traffic congestion (Zennaro et al., 2022). Some companies have experimented with green delivery methods, such as electric vehicles (EVs), bicycle couriers, and consolidated delivery hubs. However, challenges persist, including: the high initial cost of EV fleets and insufficient charging infrastructure, the difficulty of implementing route optimization in dense urban areas with unpredictable traffic conditions, consumer resistance to slower but more sustainable delivery options. While research on green logistics has gained momentum, studies often focus on large corporations, overlooking how small and medium-sized enterprises (SMEs) can adopt eco-friendly last-mile solutions. Further research should examine policy interventions, such as carbon taxes on inefficient deliveries and subsidies for sustainable practices.

While urban areas benefit from well-developed infrastructure, last-mile logistics in rural regions remains inefficient and costly. Companies face challenges such as: Longer delivery distances and sparse populations, making economies of scale difficult; Poor Road infrastructure, leading to delays and higher vehicle maintenance costs; Limited availability of third-party logistics providers in remote locations. Some e-commerce firms address this issue by partnering with local retailers to use them as distribution hubs. However, the success of such models depends on logistics coordination and digital adoption by smaller retailers. Future research should examine the scalability of hybrid models that blend centralized and decentralized delivery strategies.

Technological advancements have significantly improved last-mile logistics, with AI-powered route optimization, real-time tracking, and autonomous delivery vehicles reshaping the landscape. However, many of these solutions are still in their experimental phases and face regulatory, technical, and consumer adoption barriers. Key technological trends include Drones and Autonomous Vehicles: While drone delivery promises rapid and efficient last-mile

solutions, airspace regulations, safety concerns, and limited payload capacity hinder widespread adoption. Amazon and Zipline have made progress in this area, but scalability remains a concern; AI and Machine Learning in Route Optimization: AI-driven logistics platforms help minimize delivery times and fuel consumption by analysing traffic patterns and weather conditions. However, these technologies often exclude SMEs that lack the capital to implement such solutions, leading to disparities in logistics efficiency; Smart Lockers and Pickup Points: To mitigate inefficiencies in direct-to-door delivery, companies like DHL and Amazon have introduced centralized pickup lockers. While this reduces failed deliveries and congestion, adoption is uneven, and there is a need for studies on consumer behaviours toward non-home deliveries. Future research should investigate the long-term scalability of these technologies and their impact on both customer satisfaction and cost reduction.

Last-mile logistics research often focuses on the broader delivery journey but overlooks the “last-meter” problem—ensuring that parcels reach consumers efficiently after arrival at their doorstep or pickup point. Failed deliveries due to customer absence, package theft (porch piracy), and incorrect address inputs result in significant losses. Despite advancements of technologies, consumer adoption remains inconsistent due to trust issues and logistical uncertainties. Research should explore psychological factors influencing consumer acceptance of alternative last-mile solutions and how to improve public perception.

The literature on last-mile logistics in e-commerce provides valuable insights into cost efficiency, sustainability, technology, and rural delivery challenges. However, gaps remain in understanding the long-term impact of emerging technologies, sustainable logistics, and consumer behaviours toward alternative delivery methods.

2.2. Literature review on collection-and-delivery points (CDPs)

2.2.1. Research background

2.2.1.1. Collection-and-delivery points

Last-mile logistics refers to the series of processes involved in transporting goods from a distribution hub to the final recipient. According to Yuen et al. (2018), one of the solutions aimed at optimizing last-mile delivery is the Collection-and-Delivery Point (CDP) system. This approach provides an alternative to traditional home delivery by enabling consumers to collect parcels at a designated location at their convenience. Yuen et al. (2019) further highlight that CDP users receive automated notifications from logistics providers once their packages are ready for pickup, reducing the need for repeated delivery attempts.

CDPs can be broadly classified into two categories:

1. **Unattended Delivery Points** – These include smart lockers, which operate without human assistance. They offer customers flexibility in pickup times, allowing collection at any time of the day, thereby addressing issues related to missed deliveries. Additionally, smart lockers streamline return processes by providing an automated and secure drop-off option for consumers (Mommens et al., 2021).
2. **Attended Delivery Points** – These are typically staffed locations, such as parcel counters in retail stores or convenience stores. Logistics providers integrate these collection points into existing businesses, enabling consumers to retrieve packages during regular store hours while benefiting from human assistance.

CDPs have become particularly prevalent in Europe, where they serve as a widely accepted alternative to home delivery. According to Analysys Mason's 2023 report on out-of-home delivery, Poland leads in CDP adoption, boasting 38.72 pickup points per 10,000 residents, making it the most densely connected out-of-home network in Europe. Additionally, France has seen significant growth in CDP usage, with approximately 20% of all parcel deliveries handled through collection points (Morganti, Dablanc, et al., 2014). Metapack (2020) reports that nearly 60% of European consumers prefer to shop online and pick up their items at a designated location rather than opt for home delivery.

Some European and North American cities have successfully integrated smart lockers into public transport hubs, enabling consumers to pick up packages at subway stations, office buildings, and shopping centres. These innovations have reduced congestion and emissions associated with traditional delivery models. CDPs contribute to lower logistics costs by minimizing redelivery attempts and consolidating deliveries to fewer locations, leading to reduced fuel consumption and environmental benefits (Q. Chen et al., 2017; Francke & Visser, 2015). While some consumers prefer doorstep delivery, CDPs provide enhanced security against theft and increased flexibility for those with unpredictable schedules, making them an attractive alternative for working professionals and urban dwellers.

However, CDP adoption in Asia remains limited compared to Europe. Mangiaracina et al. (2019) found that Asian consumers exhibit lower awareness and usage of CDPs, leading to lower integration of this delivery model in the region. A survey by Parcelmonitor (2022) indicates that only 3.28% of parcels in Asia are delivered via out-of-home solutions, which is significantly lower than adoption rates in developed European markets.

2.2.1.2. Cultural impact on consumers' behaviour

The adoption of new technologies, including logistics innovations like CDPs, is influenced not only by their functional advantages but also by broader socio-cultural factors

(Chiu & Hofer, 2015). As new delivery models emerge, cultural contexts shape the rate and extent of their adoption across different markets. The study of Self-Service Technologies (SSTs) highlights that cultural dimensions play a crucial role in determining how consumers respond to innovations in automated service models (Bagchi et al., 2004; Haapaniemi & Mäkinen, 2009; Triandis, 1989).

According to Hofstede et al. (2010), culture is defined as the collective mental programming that distinguishes one group from another. The most frequently examined cultural dimensions influencing technology adoption include:

- Individualism vs. Collectivism:
 - In individualistic societies (e.g., the United States, the UK, and Germany), consumers prioritize personal convenience and innovation over social expectations. As a result, individuals are more likely to experiment with modern technologies, including CDPs. Research suggests that higher individualism accelerates technology adoption, as people in these societies are more willing to try new solutions that improve efficiency and flexibility (Bagchi et al., 2004).
 - In contrast, collectivist cultures (e.g., China, Japan, and South Korea) emphasize social norms and group influence when making decisions. Consumers in these regions often rely on peer recommendations before adopting new technology (Hofstede et al., 2010). Therefore, CDP adoption may be slower in collectivist societies unless trusted social influencers or businesses endorse the service.
- Indulgence vs. Restraint:
 - The concept of indulgence refers to the extent to which individuals feel free to fulfil their desires and impulses. High-indulgence societies (e.g., the United States and Australia) are more inclined to seek convenience-driven solutions, making them more receptive to self-service technologies such as smart lockers and automated pickup points.
 - In contrast, restrained societies (e.g., China, South Korea, and Japan) operate within strong social norms, which often limit the rate of adoption of new services (Hofstede et al., 2010). These societies prioritize structured interactions, which may explain the lower popularity of CDPs compared to direct human-assisted services (e.g., home delivery).
- Technology Readiness and Infrastructure:
 - Some regions exhibit higher digital adoption rates, leading to faster acceptance of logistics automation. For instance, Nordic countries with well-developed

digital infrastructures have seen widespread integration of smart lockers and automated pickup systems (Parcelmonitor, 2022).

- In contrast, countries with fragmented logistics networks and low internet penetration (e.g., certain Southeast Asian nations) face barriers to CDP adoption, including lack of awareness, limited availability, and preference for cash-on-delivery services.

In some cultures, there is hesitancy toward unmanned services, such as smart lockers, due to concerns over security, reliability, and user experience. Government initiatives can accelerate or hinder the adoption of CDPs. Countries with strong e-commerce infrastructure policies (e.g., Singapore's Smart Nation initiative) have successfully promoted alternative last-mile delivery models. Younger consumers in Asia are highly influenced by digital marketing and social media trends. Promoting CDPs through influencer endorsements, gamification, and online incentives could increase adoption rates in collectivist societies.

Hofstede's model of cultural dimensions is one of the most widely cited frameworks for understanding cross-national cultural differences. Initially developed from survey data collected at IBM during the 1970s, the framework identifies six dimensions of culture: (1) power distance, (2) individualism versus collectivism, (3) masculinity versus femininity, (4) uncertainty avoidance, (5) long-term versus short-term orientation, and (6) indulgence versus restraint (Hofstede et al., 2010). These dimensions describe fundamental value orientations that shape behaviour, organisational practices, and consumer preferences across societies. For instance, power distance captures the extent to which hierarchical relationships are accepted, while individualism versus collectivism reflects the relative importance of personal autonomy versus group affiliation.

Despite its influence, Hofstede's framework has faced significant criticism. McSweeney (2002) argues that the model is methodologically flawed, as it is based on data from a single multinational corporation (IBM), raising questions about representativeness. He further critiques the assumption that nations are culturally homogeneous, ignoring within-country variations, subcultures, and the dynamic nature of culture. Similarly, Baskerville (2003) highlights the ecological fallacy in Hofstede's model, where national-level data is inappropriately assumed to represent individuals. Moreover, the model has been criticised for treating culture as static, despite evidence that cultural values evolve over time in response to globalisation and socio-economic change (Taras et al., 2010).

Nevertheless, despite these criticisms, Hofstede's dimensions remain highly influential in comparative research, particularly in international business, consumer behaviour, and cross-cultural management. One reason is their parsimony and accessibility: the model distils

complex cultural differences into a limited number of measurable dimensions, making it practical for researchers and practitioners. Moreover, the framework provides a common language for comparing countries, facilitating cross-national analyses and communication among scholars and managers. The use of Hofstede's dimensions to classify countries into groups is particularly valuable when seeking to identify clusters of nations with similar cultural orientations. Grouping countries on the basis of cultural similarities enables researchers to move beyond single-country analyses and examine patterns at a regional or cultural-cluster level.

To advance global CDP adoption, it is critical to examine the role of cultural dimensions such as individualism versus collectivism, indulgence versus restraint, alongside factors like digital readiness and trust in technology-enabled services. Hofstede's cultural framework provides a useful lens for this analysis, as it allows researchers and practitioners to classify countries into cultural clusters where consumer behaviours toward CDPs may share commonalities. Identifying these shared patterns can help scholars uncover the underlying psychological and cultural drivers of adoption intention, while also enabling logistics service providers to design tailored strategies. For example, in highly individualistic societies, marketing campaigns may highlight autonomy and flexibility, whereas in collectivist markets, service design could emphasise community convenience or family-oriented benefits.

By leveraging Hofstede's dimensions to group countries with similar cultural characteristics, it becomes possible to identify universal as well as context-specific influences on CDP adoption. This classification not only enriches consumer research by providing a structured basis for cross-national comparison but also equips logistics firms and policymakers with actionable insights for developing targeted interventions, such as customised delivery incentives, improved digital platforms, and trust-building measures. Consequently, a culturally informed approach holds the potential to accelerate CDP adoption globally, thereby enhancing efficiency, reducing last-mile delivery costs, and contributing to more sustainable urban logistics systems.

2.2.2. Research method

Systematic Literature Reviews (SLRs) have become an indispensable tool for synthesising existing research across disciplines, offering scholars a transparent, rigorous, and replicable method of evidence accumulation. Unlike traditional narrative reviews, which often suffer from subjectivity and lack of methodological clarity, SLRs provide a structured framework for identifying, evaluating, and integrating relevant studies (Tranfield et al., 2003).

Systematic literature reviews (SLRs) can be classified into five distinct categories, each serving a unique purpose in academic research: domain-based reviews, theory-based reviews,

method-based reviews, meta-analytical reviews, and meta-systematic reviews (Paul et al., 2021). Each type of review differs in its scope and methodological approach.

- Domain-based reviews focus on summarizing research within a specific field or industry, helping scholars understand developments in a particular subject area.
- Theory-based reviews examine how theoretical frameworks are applied and evolved across multiple studies.
- Method-based reviews assess the research methodologies used in previous studies, identifying best practices and limitations.
- Meta-analytical reviews involve statistical analysis of past empirical findings to derive broader insights.
- Meta-systematic reviews integrate multiple systematic reviews into a comprehensive synthesis of research across disciplines.

In their seminal contribution, Tranfield et al. (2003) were among the first to adapt systematic review methodology—originally developed within medical and health sciences—into the management and organisational research domain. They argued that management scholars could benefit from adopting a more scientific approach to evidence synthesis, one that reduces bias, enhances replicability, and ultimately strengthens the foundation for evidence-informed decision-making. Their framework emphasises three interrelated stages: planning the review, conducting the review, and reporting/disseminating findings. This structure ensures that the review process is not only comprehensive but also aligned with the specific objectives of management and business research. Building upon these foundations, [Page et al. \(2021\)](#) introduced an updated version of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 framework, which has become a global standard for reporting systematic reviews. While Tranfield et al. (2003) provide methodological guidance for how to conduct systematic reviews in management, PRISMA focuses on the transparency and completeness of reporting. The updated PRISMA checklist and flow diagram offer explicit guidance for documenting how studies are identified, screened, and selected for inclusion.

Nevertheless, PRISMA is not without limitations, particularly when applied to fields beyond its original design context. First, PRISMA is primarily concerned with what researchers should report rather than why certain methodological decisions are made. It provides guidance on documenting inclusion and exclusion criteria but does not sufficiently explain the rationales underpinning these decisions (Paul et al., 2021). This checklist orientation can lead to a “box-ticking” approach, where compliance with reporting standards is achieved without necessarily enhancing the conceptual or theoretical contribution of the review. Second, PRISMA’s origins in clinical sciences mean that its structure reflects the assumptions of evidence hierarchies and

quantitative synthesis typical of medicine and epidemiology. When applied to management or consumer research, where studies are often heterogeneous in design and oriented toward theory development rather than purely effect-size aggregation, PRISMA may offer limited guidance. For example, reviews in logistics and supply chain management often require integrating qualitative and conceptual studies, a task for which PRISMA provides little direction. Third, while PRISMA improves transparency, it remains less explicit in guiding the procedural stages of conducting a review. It focuses on documenting the process but provides fewer insights into when a systematic review is justified, how to assess the adequacy of the literature base, or how to organise and purify the dataset of studies before synthesis. Consequently, the framework may fall short in contexts where scholars must justify not only the methods but also the scholarly necessity of the review itself.

In response to these limitations, Paul et al. (2021) introduced the SPAR-4-SLR (Scientific Procedures and Rationales for Systematic Literature Reviews) protocol. SPAR-4-SLR retains the strengths of transparency and procedural clarity but places greater emphasis on the rationales behind review decisions. It structures the review process into three stages—*assembling, arranging, and assessing*—divided into six sub-stages (identification, acquisition, organisation, purification, evaluation, and reporting). Unlike PRISMA, which is primarily a reporting tool, SPAR-4-SLR offers detailed guidance on both the procedures of conducting a review and the rationales for each decision, using an interrogative framework (“what, why, when, where, who, and how”). This makes it particularly suited for management and consumer studies, where methodological diversity and theoretical framing are central to the contribution of systematic reviews. Furthermore, SPAR-4-SLR extends beyond procedural mechanics by offering criteria for determining when a systematic review is warranted. For example, the protocol advises that reviews should only be undertaken when a sufficient body of literature exists, when no recent high-quality reviews are available, and when the proposed review offers potential for theoretical or practical advancement. Such considerations are absent from PRISMA, yet are vital in avoiding duplication and ensuring that reviews meaningfully advance the field.

While PRISMA remains valuable for enhancing reporting transparency and is widely recognised by journal reviewers, its limitations in addressing the needs of management and logistics research suggest the need for a more comprehensive approach. SPAR-4-SLR fills this gap by embedding both scientific procedures and explicit rationales into the review process. In this study, we adopt a domain-based systematic review within the collection-and-delivery point (CDP) domain, following a structured and transparent methodology. Specifically, we employ the SPAR-4-SLR protocol (Paul et al., 2021), a rigorous framework designed to enhance the

clarity, reproducibility, and comprehensiveness of systematic literature reviews. Figure 2.1 provides a visual representation of this structured approach. By implementing this method, the systematic review is methodologically sound, objective, and contributes meaningful insights to the study of CDPs and last-mile delivery innovations. Moreover, the use of domain-based systematic reviews in e-commerce logistics has gained importance due to rapid technological advancements in last-mile delivery solutions. Given the global push for sustainable logistics, a well-executed systematic review can help policymakers, businesses, and researchers make informed decisions about the efficiency, cost-effectiveness, and environmental impact of CDPs.

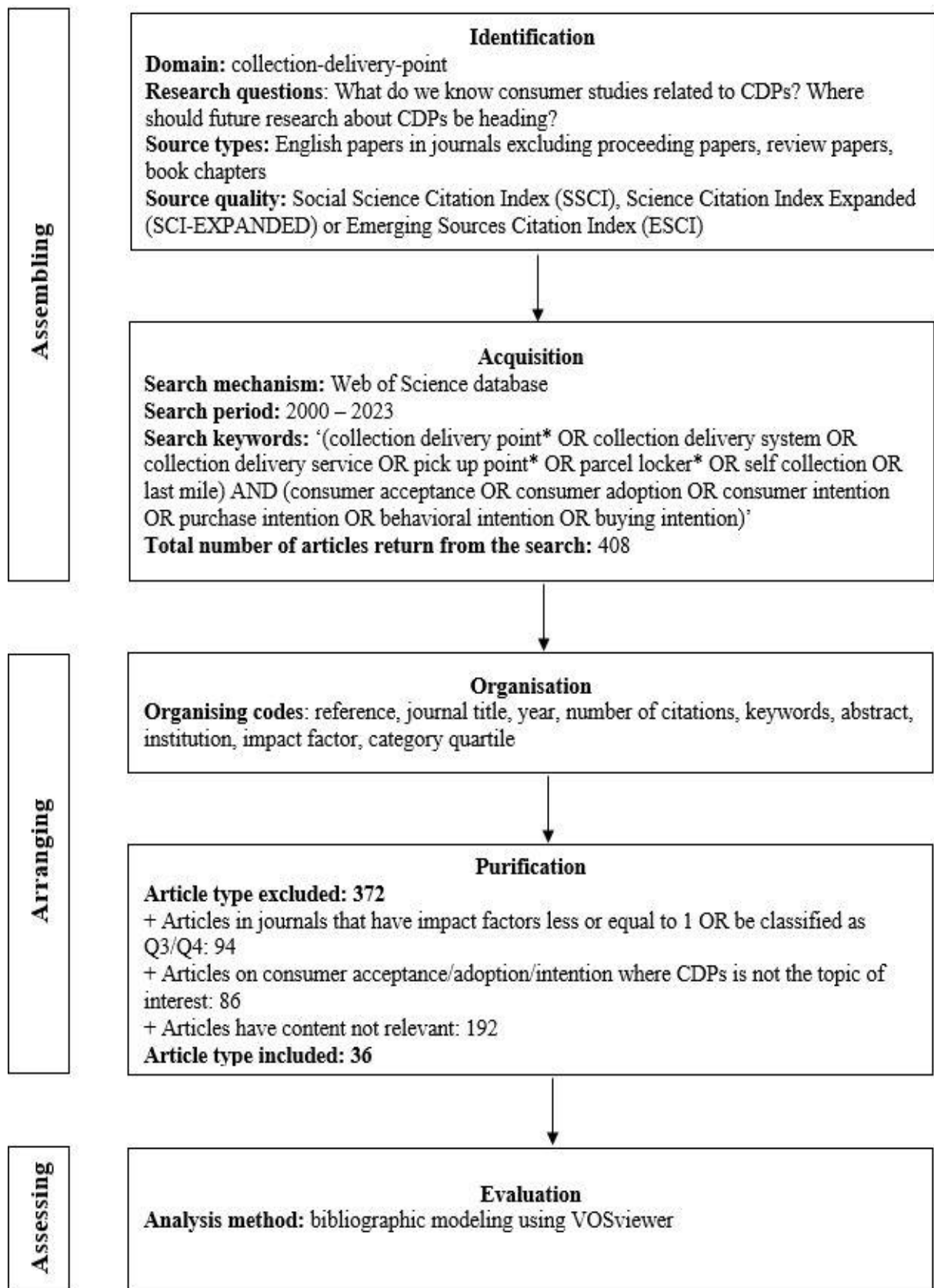


Figure 2.1: Stages of the reviewing process.

Source: The author

Assembling

This study conducts a domain-based systematic literature review focused on Collection-and-Delivery Points (CDPs), aiming to explore consumer behavioural intentions regarding their adoption. To ensure comprehensive coverage, the author performed a search in the Web of Science (WOS) database, which is widely recognized for its high-quality indexing of peer-reviewed journals. Unlike Google Scholar or Scopus, WOS provides more refined indexing, ensuring that only high-impact and rigorously peer-reviewed studies are included. Furthermore, it facilitates bibliometric analysis, enabling researchers to track citation patterns, research influence, and academic collaborations. The use of multiple journal quality lists was deemed inefficient, as WOS provides bibliometric details that enhance further quantitative analysis (Paul et al., 2021).

Given that CDPs emerged as an alternative to home delivery in the early 2000s (Ferne & McKinnon, 2004; McLeod et al., 2006), the author set the search period from 2000 to 2023 to capture relevant academic discussions. The search strategy employed Boolean operators to refine the results, ensuring the inclusion of studies that specifically examine factors influencing the adoption of CDPs. The following keyword string was used: ‘(collection delivery point* OR collection delivery system OR collection delivery service OR pick up point* OR parcel locker* OR self-collection OR last mile) AND (consumer acceptance OR consumer adoption OR consumer intention OR purchase intention OR behavioural intention OR buying intention)’

The initial search yielded 473 publications. To enhance relevance and quality, we applied several inclusion criteria:

- Only English-language journal articles indexed in the Social Science Citation Index (SSCI) were selected. Filtering articles by journal impact factor ensures that only methodologically robust and widely cited studies are analysed. Excluding low-impact and non-peer-reviewed sources reduces bias and enhances the credibility of the findings.
- Conference proceedings, review papers, and book chapters were excluded to maintain a focus on original empirical research.
- After these filters, 408 papers remained in the dataset.

Arranging

Following the assembling phase, the 408 selected studies were coded and categorized based on several key attributes:

- Reference details (authors, publication year, journal title).
- Bibliometric indicators (number of citations, journal impact factor, and category quartile ranking).

- Study focusses and content (keywords, abstract, research methodology, and institutional affiliation).

To ensure rigor and relevance, we applied additional selection criteria:

- Articles published in journals with an impact factor ≤ 1 or classified in the Q3/Q4 quartiles were excluded (94 papers removed).
- A title and abstract screening were conducted to eliminate studies unrelated to CDP adoption and consumer behaviour. This led to the removal of 278 papers, as they did not contribute to answering the study's research questions.

Ultimately, **thirty-six documents** met the final selection criteria and were deemed suitable for in-depth analysis.

Assessing

To structure the literature review effectively, we employed bibliometric modelling techniques using VOSviewer, a specialized software for visualizing and analysing academic networks. This tool provides objective, data-driven insights into emerging research trends, key authors, and conceptual linkages (Montoro-Pons et al., 2021).

Three key bibliometric techniques were utilized:

- Co-citation analysis: Examines how frequently two studies are cited together, identifying intellectual foundations and thematic clusters in the field.
- Bibliographic coupling: Groups studies that share similar references, enabling the detection of emerging research trends and theoretical frameworks.
- Text occurrence analysis: Maps the most frequently occurring keywords and phrases, revealing dominant research themes and potential gaps in existing literature (Jarneving, 2007).

Traditional literature reviews often rely on subjective interpretations, whereas bibliometric analysis provides quantifiable insights into research trends and knowledge gaps. Co-citation and bibliographic coupling allow for more comprehensive categorization of research topics, making it easier to identify underexplored areas in consumer adoption studies. By integrating these analytical approaches, we systematically categorize and interpret the thematic evolution of research on CDPs, offering a structured and insightful exploration of consumer adoption trends in last-mile logistics.

By employing a rigorous and systematic approach, this study ensures that the review of CDP adoption research is comprehensive, data-driven, and methodologically robust. The SPAR-4-SLR framework, combined with bibliometric analysis, enables a structured synthesis of relevant literature, ultimately contributing valuable insights to the field of e-commerce logistics and last-mile delivery innovations.

2.2.3. Descriptive analysis

The raw data extracted from thirty-six selected articles from the Web of Science (WOS) database was cleaned and processed for basic descriptive analysis. The dataset was examined from three distinct analytical perspectives:

- Basic Descriptive Statistics – This involved examining publication trends, authorship patterns, and citation metrics within the dataset.
- Sources of Papers – The journals and academic outlets where the selected studies were published were analysed to identify key publication venues in the field.
- Analysis of the Most Impactful Articles – Citation-based metrics were used to evaluate the academic influence of individual studies within the dataset.

Table 2.1 provides a summary of the dataset's key characteristics. The thirty-six selected studies were published between 2017 and 2023, indicating that academic interest in collection-and-delivery points (CDPs) has grown significantly in recent years. The trend aligns with technological advancements in e-commerce logistics, such as AI-driven delivery optimization, smart lockers, and urban sustainability initiatives. The dataset includes contributions from ninety authors, with only one single-authored paper, demonstrating the increasing collaborative nature of research in this domain.

Authorship Trends: The co-author index for multi-authored documents was 3.69, while the average number of authors per paper was slightly lower at 3.61. This suggests that most studies in this area involve multiple researchers, reflecting an interdisciplinary approach. The high co-author index suggests that research on CDPs and last-mile delivery often requires collaborative expertise, integrating supply chain management, consumer behaviour analysis, and logistics optimization.

Citation Metrics:

- The dataset contained a total of 2,643 cited references, showcasing the breadth of literature engagement in the reviewed studies.
- The selected articles received 881 citations across all databases, with 872 citations specifically from Web of Science Core databases.
- On average, each paper had been cited approximately twenty-four times, indicating moderate research impact in the field of e-commerce logistics and last-mile delivery. The citation rate of twenty-four per paper suggests that CDP research is gaining recognition, but it may still be considered an emerging field compared to broader logistics or e-commerce research.

The descriptive analysis of the dataset reveals that research on Collection-and-Delivery Points (CDPs) has expanded significantly in recent years, attracting contributions from a diverse group of scholars across multiple disciplines. The high rate of collaborative authorship and the growing number of citations suggest that CDPs are becoming an important research area in e-commerce and last-mile logistics. Moving forward, studies in this domain can benefit from greater interdisciplinary collaboration and expanded research methodologies to enhance their impact and practical relevance.

Table 2.1: Data set and descriptive statistics

Basic information		Authorship	
Timespan	2017–2023	Authors	90
Sources (Journals)	21	Average no. of co-authors per document	3.61
Documents	36	Average no. of authors per multi-authored paper	3.69
Cited Reference Count	2,643	Single-authored documents	1
Times Cited, All Databases	881	Average times cited, all databases per documents	24.47
Times Cited, WoS Core	872	Average times cited, WoS Core per documents	24.22

Source: The author

The publication sources of the selected studies are summarized in Table 2.2, providing insights into the key academic outlets contributing to research on Collection-and-Delivery Points (CDPs). *The Journal of Retailing and Consumer Services* emerged as the leading publication venue, hosting ten papers—the highest among all journals in the dataset.

Although studies on CDPs and last-mile logistics have been published across a variety of academic outlets, they predominantly fall within three major disciplinary categories:

1. Consumer Behaviour and Marketing Studies

- Research within this category focuses on consumer preferences, adoption behaviour, and decision-making processes in relation to CDPs and last-mile delivery innovations.
- Notable journals in this domain include:
 - *Humanities & Social Sciences Communications*
 - *Journal of Marketing Theory and Practice*

2. Internet, E-Commerce, and Digital Innovation

- This category encompasses studies analysing the role of digital platforms, technology adoption, and e-commerce logistics solutions.

- Key publication sources include:
 - *Electronic Commerce Research and Applications*
 - *Technology in Society*
 - *International Journal of Electronic Commerce*
 - *Internet Research*
3. Logistics, Transportation, and Supply Chain Management
- Research within this field focuses on logistics optimization, transport policies, and distribution management, particularly in the context of e-commerce last-mile logistics.
 - Leading journals in this domain include:
 - *International Journal of Logistics-Research and Applications*
 - *International Journal of Logistics Management*
 - *Case Studies on Transport Policy*
 - *International Journal of Physical Distribution & Logistics Management*
 - *International Journal of Retail & Distribution Management*
 - *Logistics-Basel*
 - *Transport Policy*
 - *Total Quality Management & Business Excellence*

The diverse range of publication outlets suggests that CDP-related research is inherently interdisciplinary, integrating consumer psychology, technological innovation, and logistics management. This diversity reflects the complex nature of last-mile logistics, which requires insights from multiple fields to address operational efficiency, sustainability, and consumer adoption challenges.

The Journal of Retailing and Consumer Services leading with ten published papers suggests that consumer-centric perspectives dominate academic discourse on CDPs. This aligns with growing interest in understanding consumer behaviour toward self-service technologies, delivery alternatives, and sustainability-driven logistics models.

The inclusion of Internet Research, Technology in Society, and International Journal of Electronic Commerce highlights the increasing role of digital transformation in logistics. Studies in these journals often explore AI-driven delivery systems, blockchain applications in logistics, and data-driven decision-making in e-commerce.

While research in consumer behaviour and logistics is well-represented, more studies are needed in digital innovation, particularly in AI-driven logistics, IoT-enabled parcel lockers, and mobile commerce adoption for CDPs. Collaboration across consumer psychology, logistics

management, and technology disciplines could yield comprehensive insights into future e-commerce logistics innovations.

Table 2.2: Sources of articles

No.	Sources	No. Articles
1	Journal of Retailing and Consumer Services	10
2	International Journal of Logistics-Research and Applications	3
3	Electronic Commerce Research and Applications	2
4	International Journal of Logistics Management	2
5	Sustainability	2
6	Technology in Society	2
7	Case Studies on Transport Policy	1
8	Cogent Business & Management	1
9	Economic Research-Ekonomska Istrazivanja	1
10	Humanities & Social Sciences Communications	1
11	International Journal of Electronic Commerce	1
12	International Journal of Environmental Research and Public Health	1
13	International Journal of Physical Distribution & Logistics Management	1
14	International Journal of Retail & Distribution Management	1
15	Internet Research	1
16	Journal of Marketing Theory and Practice	1
17	Logistics-Basel	1
18	Oeconomia Copernicana	1
19	Total Quality Management & Business Excellence	1
20	Transport Policy	1
21	Urbe-Revista Brasileira de Gestao Urbana	1

Source: The author

The most influential studies in the field of Collection-and-Delivery Points (CDPs) are summarized in Table 2.3, where citation counts are used as a measure of scientific impact. The number of citations reflects the academic recognition and influence of a research paper within the scholarly community. A key finding from this analysis is that all highly cited papers were published in the *Journal of Retailing and Consumer Services*, a high-impact journal specializing in consumer behaviour, retail management, and service innovation. This highlights the dominance of consumer-oriented research in the study of CDPs and last-mile delivery solutions.

Additionally, all of the top-cited studies focused on understanding consumer behaviour, specifically examining:

- Factors influencing consumer adoption of collection points in e-commerce logistics.
- Consumer preferences and attitudes toward last-mile delivery alternatives.
- The role of convenience, trust, and sustainability concerns in shaping consumer decisions.

The fact that all influential studies are consumer-focused suggests that the success of CDPs depends not just on logistical efficiency but on consumer acceptance and trust. Understanding customer expectations, pain points, and behavioural drivers is crucial for improving CDP adoption rates and designing more user-friendly last-mile delivery solutions.

Table 2.3: Most-cited papers

Reference	Title	Source	Citation
Yuen et al., 2019	The determinants of customers' intention to use smart lockers for last-mile deliveries	Journal of Retailing and Consumer Services	90
Zhou et al., 2020	Understanding consumers' behaviour to adopt self-service parcel services for last-mile delivery	Journal of Retailing and Consumer Services	67
Tsai & Tiwasing, 2021	Customers' intention to adopt smart lockers in last-mile delivery service: A multi-theory perspective	Journal of Retailing and Consumer Services	53
Tang et al., 2021	Consumer perceptions to support IoT based smart parcel locker logistics in China	Journal of Retailing and Consumer Services	36
Chen et al., 2020	The role of consumer participation readiness in automated parcel station usage intentions	Journal of Retailing and Consumer Services	26
Milioti et al., 2020	Modelling consumers' acceptance for the click and collect service	Journal of Retailing and Consumer Services	19

Source: The author

2.2.4. Bibliometric mapping analysis

A bibliographic database file of thirty-six articles was exported from the WOS database and put into the VOSviewer software to conduct three analyses: co-citation analysis,

bibliographic coupling analysis, and text co-occurrence analysis, and three network maps were created, respectively. These networks illustrated the links between the items, which could be publications or terms. Each link had a strength, which indicated the number of cited references two publications have in common or the number of publications in which two terms occurred together (van Eck & Waltman, 2023). As a result, each network contained sets of items called clusters, with links between them. The clustering technique used for these networks was association strength to normalise the strength of the links between items (van Eck & Waltman, 2009).

2.2.4.1. Co-citation analysis

Figure 2.2 presents the co-citation network, illustrating relationships between studies that have been cited together in the same academic papers. The network is organised into three distinct clusters, each representing a key research theme in the field of Collection-and-Delivery Points (CDPs). The size of each node in the network is proportional to its total link strength, which measures how frequently a particular study is co-cited with others. Larger nodes indicate higher centrality, meaning these studies serve as foundational works within their respective research clusters. The presence of a few dominant nodes in each cluster highlights the centrality of influential studies in shaping current research directions.

Cluster 1: Using consumer theories to explain consumer behaviour towards self-collection services. This cluster focuses on consumer behaviour theories that explain why and how individuals adopt self-collection services, such as parcel lockers and automated parcel stations. Research in this area seeks to understand the psychological, economic, and social factors influencing consumer decisions. This cluster underscores that consumer psychology and decision-making frameworks are crucial in shaping CDP adoption rates. Findings suggest that trust in technology, perceived convenience, and social influences play significant roles in whether consumers switch to self-collection services. Several well-established consumer behaviour theories are frequently applied in these studies:

- Innovation Diffusion Theory (Wang et al., 2018; Yuen et al., 2018)
 - Examines how new technologies (e.g., CDPs and parcel lockers) spread among consumers based on factors like relative advantage, compatibility, and ease of adoption.
 - Suggests that early adopters influence mainstream consumer acceptance over time.
- Resource Matching Theory (Yuen et al., 2019)

- Explains consumer adoption based on a balance between personal resources (e.g., time, effort) and the perceived benefits of CDPs, such as convenience and flexibility.
- Customer Value Creation Theory (*Vakulenko et al., 2018*)
 - Highlights the value-added aspects of CDPs, including cost savings, service reliability, and convenience, which enhance consumer experience and satisfaction.
- Attitude Theories (*Wang et al., 2018, 2019*)
 - Investigates how consumer attitudes and perceptions (e.g., perceived usefulness and trust) shape their likelihood of adopting self-collection services.

Cluster 2: Operations of pickup points and network development. This cluster focuses on the logistics and operational strategies required to establish an efficient network of CDPs and pickup points. Researchers in this domain explore how logistics providers can optimize the location, accessibility, and cost-effectiveness of CDPs to improve last-mile delivery efficiency. Research suggests that collaborations between e-commerce platforms and local businesses (e.g., supermarkets, convenience stores) could expand CDP networks cost-effectively. Technological innovations such as AI-driven demand forecasting and route optimization could further improve network efficiency. Key research findings include:

- Importance of Location Selection (*Iwan et al., 2016; Morganti, Dabanc, et al., 2014*)
 - Geographical accessibility is a major factor in the success of CDPs.
 - Strategic placement of parcel lockers and pickup points near high-traffic areas (e.g., transit hubs, shopping centres) enhances usability.
- Enhancing Customer Value and Convenience (*Collier & Kimes, 2013*)
 - Research emphasizes that consumer-centric design, such as user-friendly interfaces and extended operating hours, increases adoption rates.
 - Offering incentives (e.g., discounts for self-collection) could further drive consumer engagement.
- Reducing Operational Costs (*Punakivi et al., 2001*)
 - Logistics service providers can significantly lower costs by consolidating deliveries at CDPs instead of delivering parcels individually to homes.
 - This strategy also reduces carbon emissions, supporting sustainability goals in urban logistics.

Cluster 3: Methodological Rigor in Technology Adoption Research. A common thread uniting these studies on the third cluster is the centrality of convenience and cognitive–affective trade-offs in shaping consumer adoption of self-service technologies and last-mile solutions. Collier

and Kimes (2013) highlight convenience as a fundamental determinant in how consumers evaluate and adopt self-service technologies, suggesting that perceived effort reduction and time savings significantly enhance adoption likelihood. Building on this, Wang et al. (2019) and Yuen et al. (2019) extend the discussion to last-mile logistics, demonstrating that both cognitive factors (e.g., perceived usefulness, ease of use) and affective factors (e.g., trust, satisfaction) underpin consumer participation in collection-and-delivery points (CDPs) and smart lockers. Together, these findings underscore that adoption is not purely a rational calculation but an integrated evaluation of convenience, emotional reassurance, and perceived service quality. The dominant analytical approach in this field is structural equation modelling (SEM), which is widely used to assess relationships between consumer attitudes, behavioural intentions, and actual adoption of CDPs. Machine learning techniques are beginning to complement SEM models, enabling more precise predictions of consumer adoption patterns. The integration of real-world behavioural data (e.g., actual pickup rates from CDPs) with survey-based SEM models could enhance predictive accuracy.

- Use of Structural Equation Modelling (SEM) (*Collier & Kimes, 2013; Wang et al., 2019; Yuen et al., 2019*)
 - SEM is a powerful multivariate statistical technique used to model complex relationships between multiple variables.
 - It allows researchers to test how factors like perceived convenience, price sensitivity, and social norms influence CDP adoption.
- Challenges in SEM Analysis
 - Common Method Bias (*Podsakoff et al., 2003*)
 - Occurs when data collected from self-reported surveys introduces measurement errors, affecting the validity of findings.
 - Strategies such as multi-source data collection and longitudinal studies can help mitigate this issue.
 - Covariance Structure Analysis (*Hu & Bentler, 1999*)
 - Researchers emphasize the need for robust model validation techniques to ensure reliable and reproducible findings.

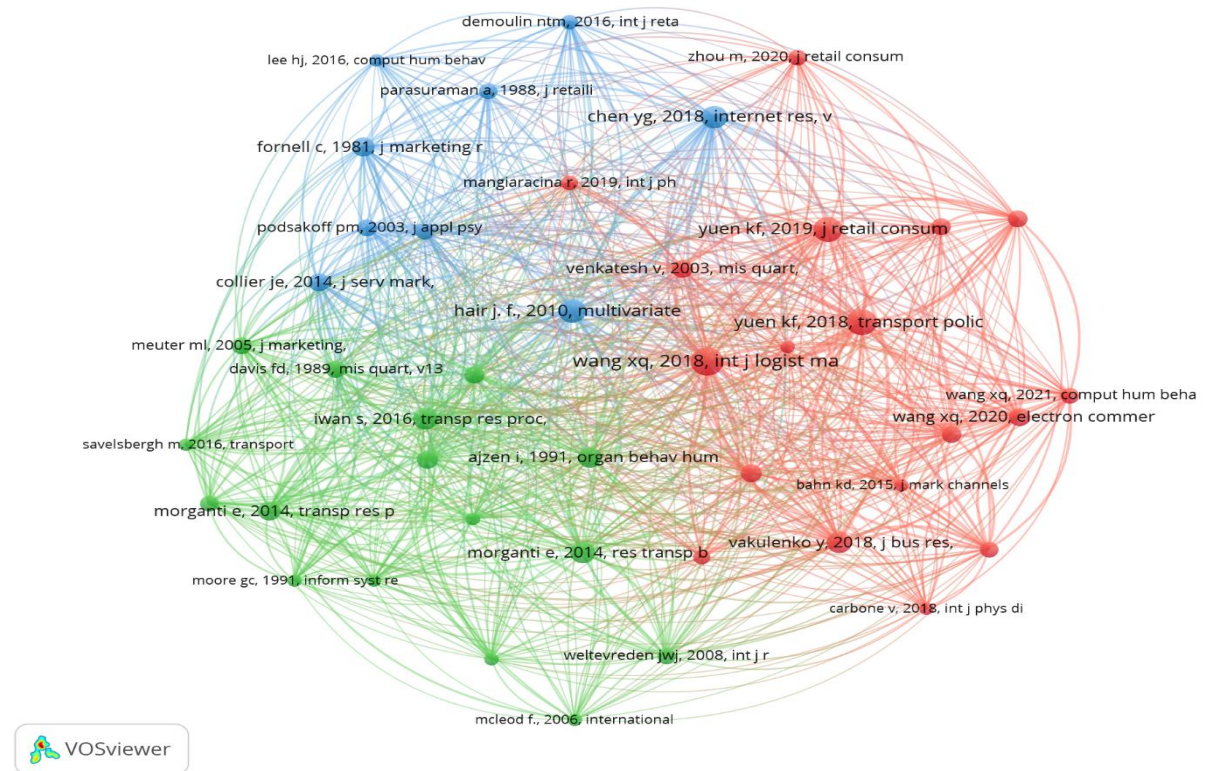


Figure 2.2: Co-citation network.

Table 2.4 provides a summary of the co-citation analysis, categorizing studies into three distinct research clusters based on their centrality and total link strength within the co-citation network. The table presents cluster names, key themes, and the most influential references, highlighting the intellectual foundations of Collection-and-Delivery Points (CDPs) research.

Table 2.4: Co-citation cluster description, themes, and focal references

Cluster name	Themes	Focal reference
Cluster 1	Using consumer theories to explain consumer behaviour towards self-collection services	(Vakulenko et al., 2018; Wang et al., 2018, 2019; Yuen et al., 2018, 2019)
Cluster 2	Operations of pickup points and network development	(Ajzen, 1991; Collier & Kimes, 2013; Iwan et al., 2016; Morganti et al., 2014; Punakivi et al., 2001; Weltevreden, 2008)
Cluster 3	Methodological Rigor in Technology Adoption Research	(Hair et al., 2010; Hu & Bentler, 1999; Podsakoff et al., 2003)

2.2.4.2. Bibliographic coupling analysis

To provide an overview of the research front in the field of Collection-and-Delivery Points (CDPs), bibliographic coupling analysis was conducted. Figure 2.3 illustrates the bibliographic coupling network, which consists of three research clusters. In this network, the size of each node corresponds to its total link strength, meaning that larger nodes represent studies that share numerous references with other papers, indicating their central role in shaping the field.

Cluster 1: Consumers' attitude towards collection-and-delivery points. This cluster examines consumer adoption of CDPs, focusing on psychological and behavioural factors that influence consumer decisions. This cluster suggests that educating consumers on the economic, social, and environmental benefits of CDPs could increase acceptance rates. Younger, tech-savvy consumers may be more inclined to adopt CDPs, making targeted digital marketing campaigns an effective promotional strategy. Research in this area is anchored in several consumer behaviour theories, such as:

- Innovation Diffusion Theory (IDT) – Explains how new services like CDPs gain acceptance based on their perceived advantages.
- Technology Acceptance Model (TAM) – Examines how perceived usefulness and ease of use influence adoption.

A recurring theme in this research is that consumer attitude is a key determinant of CDP adoption. Two major factors shaping consumer attitudes are:

- Perceived Relative Advantage (Y. Chen et al., 2018; Wang et al., 2018; Yuen et al., 2018; M. Zhou et al., 2020)
 - Consumers are more likely to adopt CDPs if they perceive them as more efficient, cost-effective, or convenient compared to traditional home delivery.
- Perceived Sustainability (Klein & Popp, 2022; Milioti et al., 2020)
 - If consumers recognize CDPs as environmentally friendly, they are more inclined to use them.
 - Sustainability marketing strategies could enhance consumer awareness and drive adoption.

Cluster 2: Parcel lockers as a self-service technology. This cluster explores parcel lockers as a growing form of self-service technology (SST) in last-mile logistics. The COVID-19 pandemic significantly accelerated the adoption of self-service solutions, as consumers sought contactless, efficient, and reliable delivery alternatives. Future research should explore long-term consumer behaviour changes post-pandemic, assessing whether higher adoption rates of self-service parcel lockers remain stable. AI-driven locker systems that personalize delivery

options could further enhance consumer experience and trust in CDPs. Several studies in this cluster highlight the technological advantages that drive consumer adoption of parcel lockers, using theories such as:

- Technology Service Convenience & Consumer Participation Readiness Theory (*C. Chen et al., 2020; Jiang et al., 2023; Yuen et al., 2019*)
 - Consumers adopt parcel lockers because of their time-saving benefits, ease of use, and ability to retrieve packages at their convenience.
- Technology Acceptance Model (TAM) & Unified Theory of Acceptance and Use of Technology (UTAUT) (*Cai et al., 2021*)
 - Factors such as perceived ease of use, reliability, and social influence determine how likely a consumer is to adopt parcel lockers.
- Impact of COVID-19 on Consumer Behaviour (*Wang et al., 2021, 2022*)
 - The pandemic increased reliance on self-service technologies, with technological innovativeness and health concerns emerging as major motivators for adopting parcel lockers.

Cluster 3: Co-creating logistics service value. This cluster shifts focus from consumers as passive beneficiaries of last-mile delivery innovations (as in Clusters 1 & 2) to active participants in logistics operations. Studies in this area explore how consumers co-create value in last-mile logistics, particularly in CDPs and parcel locker networks. User-generated feedback and peer recommendations significantly influence consumer perceptions of CDPs. Future studies should investigate how gamification and loyalty programs could incentivize active consumer participation in last-mile logistics. Using Structural Equation Modelling (SEM), researchers have identified three critical factors influencing consumer engagement in logistics service co-creation:

- Enjoyable Experiences (*Wang et al., 2019*)
 - Consumers are more willing to engage in CDP services when they perceive the process as convenient, stress-free, and enjoyable.
 - This suggests that logistics providers should optimize user interfaces, streamline package retrieval, and improve customer service interactions.
- Security Concerns (*Risher et al., 2020*)
 - Consumers value secure, tamper-proof delivery systems.
 - Smart lockers with advanced authentication mechanisms (e.g., biometric verification, QR codes) could enhance trust in CDPs.
- Perceived Fairness and Transparency (*Wang et al., 2021*)

- Fair pricing models and transparent fee structures encourage greater participation in CDP services.
- Consumers appreciate clear communication regarding delivery times, parcel storage durations, and retrieval policies.

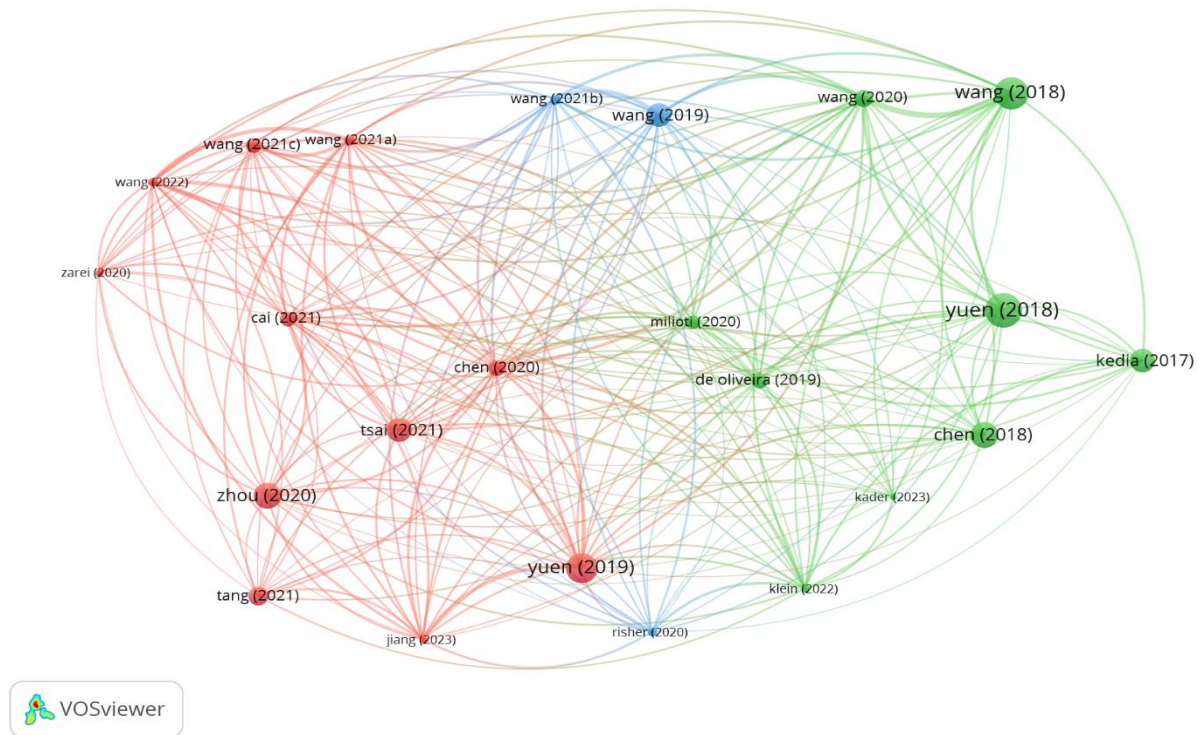


Figure 2.3: Bibliographic coupling network.

Table 2.5 presents a summary of the bibliographic coupling analysis, identifying three major research fronts within the field of Collection-and-Delivery Points (CDPs). These research fronts represent distinct but interconnected areas of academic inquiry, shaping current discussions on CDP adoption, technological advancements, and consumer engagement in logistics.

Table 2.5: Bibliographic coupling cluster description, themes, and focal references

Cluster name	Themes	Focal reference
Cluster 1	Consumers' attitude towards collection-and-delivery points	(Chen et al., 2018; Klein & Popp, 2022; Milioti et al., 2020; Wang et al., 2018, 2020, 2022)
Cluster 2	Parcel lockers as a self-service technology	(Cai et al., 2021; Chen et al., 2020; Jiang et al., 2023; Yuen et al., 2019;

		Tsai & Tiwasing, 2021; Wang et al., 2022; Wang, Wong, et al., 2021)
Cluster 3	Co-creating logistics service value.	(Risher et al., 2020; Wang et al., 2019; Wang, Yuen, et al., 2021)

2.2.4.3. Co-occurrence text analysis by cultural context

Table 2.6 categorizes fourteen countries based on the 36 studies analysed in the context of Collection-and-Delivery Points (CDPs) and their adoption by consumers. The classification is based on two cultural dimensions—individualism and indulgence, following Hofstede’s cultural framework.

- Individualism vs. Collectivism:
 - Countries with individualism scores above 50 are classified as Individualist Societies, where people prioritize personal convenience and independence.
 - Countries with scores below 50 are Collectivist Societies, where social norms and group expectations heavily influence decision-making.
- Indulgence vs. Restraint:
 - Countries scoring above 50 in indulgence are labelled Indulgent Societies, meaning they emphasize leisure, personal gratification, and flexibility.
 - Countries with low indulgence scores (below 50) are Restrained Societies, where behaviours are more controlled by social norms and long-term planning.

Table 2.6 shows two major groups of countries: Group 1 includes Greece, New Zealand, the UK, and the US, which are Individualist and Indulgent Societies; Group 2 includes Collectivist and Restrained Societies, consisting of China, Poland, Singapore, South Korea, Taiwan, Thailand, and Vietnam.

Table 2.6: Country groups by cultural dimensions

	Restrained	Indulgence
Individualist Societies	Germany, Spain	Greece, New Zealand, the UK, and the US (Group 1)
Collectivist Societies	China, Poland, Singapore, South Korea, Taiwan, Thailand, and Vietnam (Group 2)	Brazil

A term co-occurrence map is drawn for two groups of countries by using VOSviewer software. The objective is to find common factors influencing consumers’ adoption intentions towards collection-and-delivery points among countries with similar cultural contexts. Two

decisions are made to generate the co-occurrence of keyword networks. First, we chose keywords from titles and abstract fields as the number of documents was quite small to create a map. Secondly, after collecting the relevant keywords, only 60% of the most pertinent terms were chosen based on the software's recommendations to facilitate a manageable co-word analysis.

Figures 2.4 and 2.5 illustrate the text co-occurrence network for country Groups 1 and 2. The common influencing factors shared among countries in group 1, which are individualist and indulgent societies, are technology traits. In contrast, consumer behaviours towards CDPs in the country group 2, which are collectivist and restrained societies, are affected by various factors, including technology features, consumers' attitudes, and social factors (See Table 2.7).

Table 2.7: Country groups by common factors

Country group	Common factors influencing consumers' adoption intentions towards CDPs
Group 1	Technology traits
Group 2	Technology features, consumers' attitudes, and social factors

Source: The author

The dominant theme within country group 1 concerns logistics services technology and analysis based on technology acceptance models. Research on these strands, aligned with cluster 2 in the bibliographic decoupling analysis, usually uses theoretical models such as consumer participation readiness theory/resource matching theory (Chen et al., 2020; Jiang et al., 2023; Yuen et al., 2019), or TAM/UTAUT theory (Cai et al., 2021).

The focus of research among nations in Group 2 is to investigate customers' intentions towards CDPs from a different perspective (Figure 5). The first and major stream of research in green and red clusters focuses on technological aspects such as reliability when examining consumers' intentions towards smart lockers/self-delivery boxes. The second perspective in the yellow cluster illustrates the value of co-creation in last-mile logistics, where customers may consider the net value, they can receive. Another marginal perspective can be seen from the purple cluster, which shows consumers' intentions could be influenced by attitude, socialised factors, and situational factors.

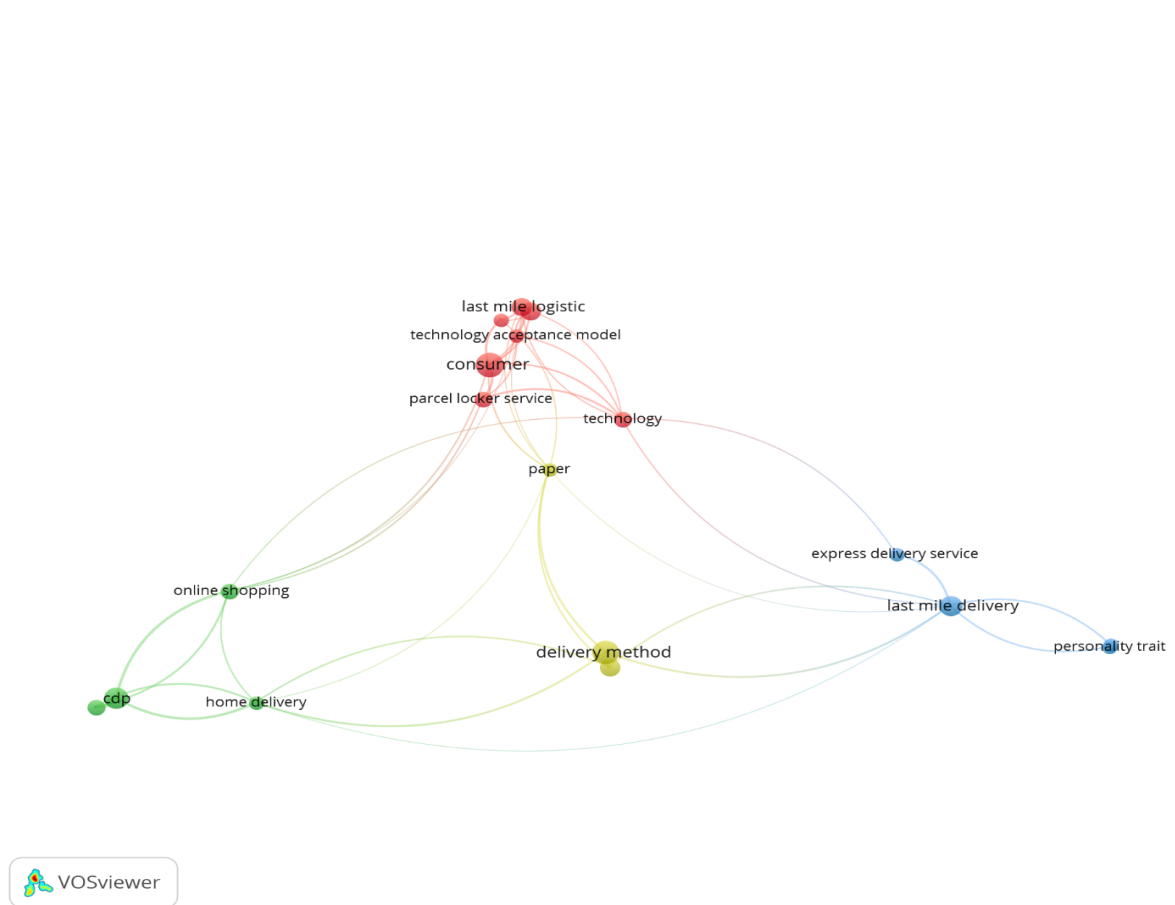


Figure 2.4: Co-occurrence text analysis network for country group 1.

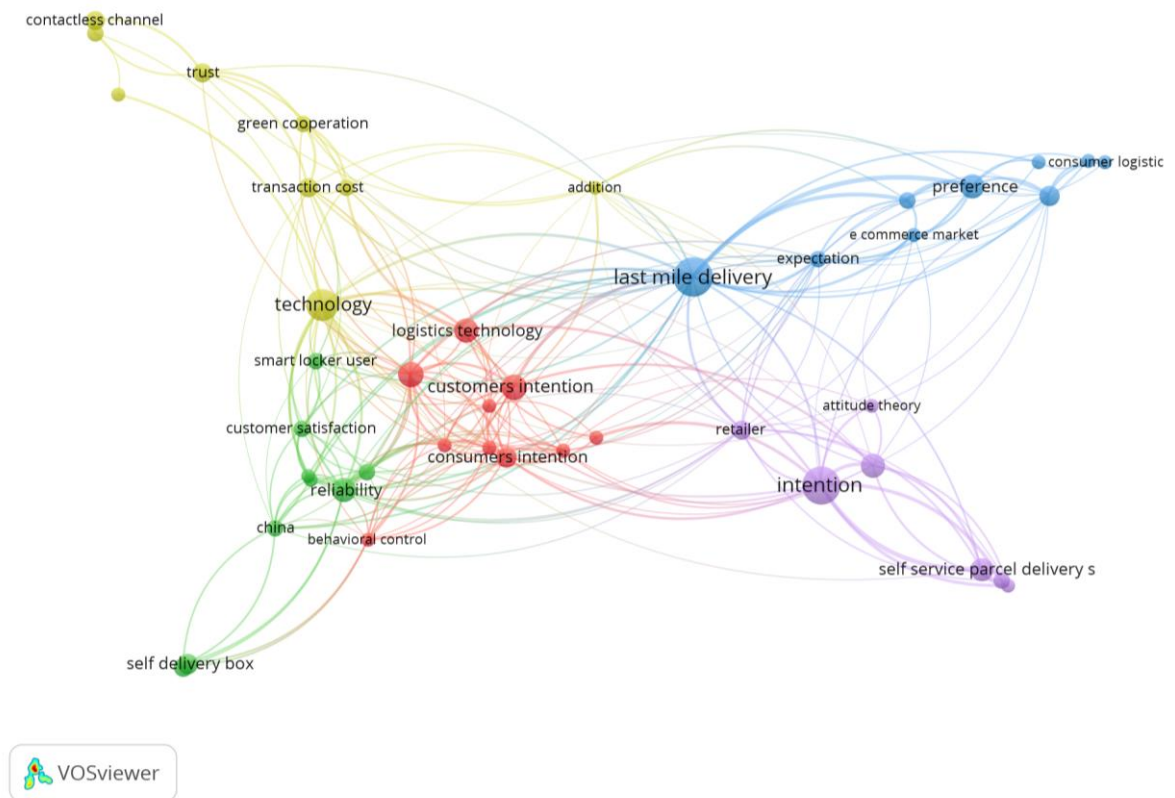


Figure 2.5: Co-occurrence text analysis network for country group 2.

The cultural classification of countries provides valuable insights into regional differences in consumer adoption of CDPs:

- In individualist and indulgent societies (Group 1), consumers prioritize efficiency, automation, and personal convenience.
 - Marketing strategies should emphasize cutting-edge technology, app integrations, and AI-powered logistics.
 - Personalized and on-demand CDP services could increase adoption rates.
- In collectivist and restrained societies (Group 2), social influence, trust, and perceived security play a more significant role.
 - Adoption can be enhanced through social proof, influencer endorsements, and government-backed logistics initiatives.
 - Education campaigns on CDP reliability and security could reduce scepticism.

Understanding cultural dimensions can help logistics providers tailor CDP models to different consumer markets. In addition, hybrid CDP solutions (combining self-service and human-assisted features) may work better in Group 2 nations where trust is a concern. Finally, further empirical research should explore how economic development and infrastructure interact with cultural factors in CDP adoption.

2.2.5. A matrix of factors influencing consumers' adoption intentions towards CDPs

Deprived of co-citation, bibliographic coupling, and co-occurrence text analysis, and combining them with literature on consumer studies, operations research, and national culture, this paper builds a matrix of factors influencing consumers' adoption intentions towards CDPs, shown in Figure 2.6.

This matrix is created based on two pillars: culture groups and types of factors. First, there is a big discrepancy between the adoption of CDP services in Western and Eastern countries. This could be explained by a factor that is out of the control of consumers and service providers. One possible factor is that, in addition to operations and consumer research, it is imperative to incorporate national culture research when investigating antecedents of behavioural intention towards CDPs. This will provide a comprehensive framework for understanding consumer behaviours in the field of CDPs. Two dimensions are mentioned in the text co-occurrence analysis: individualist/collectivist and indulgent/restrained. The latter dimension was added to Hofstede's 6D model based in part on research conducted by Michael Minkov (Hofstede et al., 2010). However, this dimension is essentially a variant of the individualist/collectivist dimension (Minkov & Kaasa, 2022). While a restrained society is set to align more with social norms, indulgent societies emphasise individual freedom and

happiness, which capture core values in the individualist/collectivist dimension (Minkov et al., 2013). Thus, the first pillar used in the matrix below is based on the collectivist/individualist dimension.

Second, factors should be divided into two types: rational and irrational factors. As can be seen in the sections on co-citation analysis and bibliographic coupling analysis, past scholars have focused on consumer theories, consumer attitudes, technology features, and co-creating value to explain the behavioural intention of using CDPs. However, these theories posit that individuals are rational beings who make behavioural decisions based on rational considerations. Incorporating irrational factors into the model enhances the comprehensiveness of the framework for explaining consumer behaviour.

Factors in the matrix for each culture group and each type of factor are collected from the analysis in the above sections. Specifically, the irrational factors for both culture groups are taken from national culture literature and cluster 3 of the bibliographic coupling analysis. Concerning rational factors, they are referenced in cluster 1 of co-citation analysis, clusters 1 and 2 of bibliographic coupling analysis, and text co-occurrence analysis. While individualist societies pay more attention to technology, the behaviours of consumers in these countries are usually explained in terms of technology service convenience with resource matching theory (Chen et al., 2020; Jiang et al., 2023; Yuen et al., 2019) or technology acceptance factors with TAM/UTAUT theory (Cai et al., 2021). Besides, the favourable attitude of consumers in collectivist societies is a key determinant of their adoption of CDP services, which are based on several consumer theories such as innovation diffusion theory and the technology acceptance model.

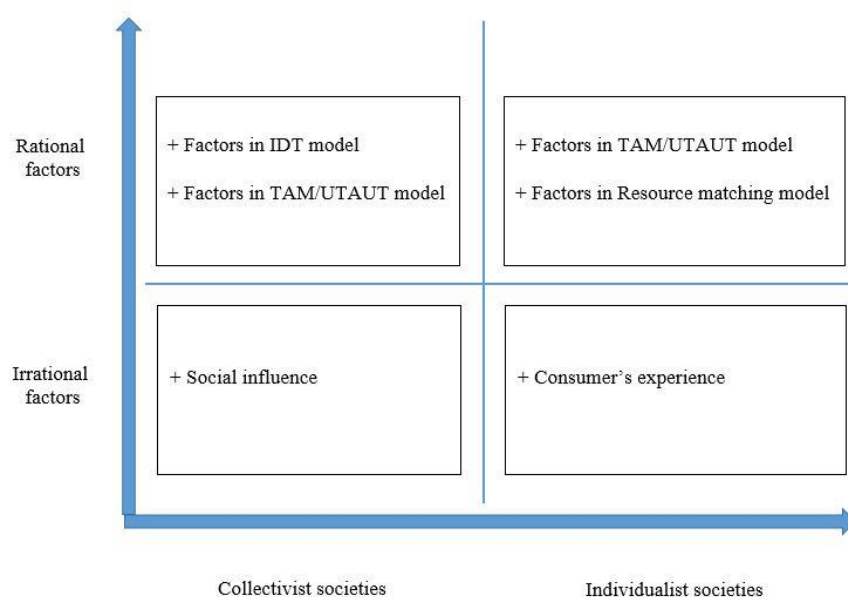


Figure 2.6: A matrix of factors influencing consumers' adoption intentions towards CDPs.

Source: The author

2.2.6. Theoretical implications

In this section, the theories, contexts, and methods (TCM) framework (Paul et al., 2021) is applied to reveal existing insights of CDPs. The framework should assist in unifying scattered knowledge and reducing the creation of isolated information.

2.2.6.1. Theories

This review highlights a remarkable diversity of theories used to examine consumer adoption intentions toward CDPs, as outlined in Table 2.8. A total of seventeen distinct theories were identified across thirty-six articles. The ratio of 2:1 article per theory indicates that while the theoretical landscape of CDP research is broad, it may lack deep scholarly exploration. Additionally, the wide range of theories suggests that researchers have numerous options for future studies. Notably, 88.89% of the reviewed articles are grounded in a theoretical framework, aligning with findings from the co-citation analysis, which shows that scholars frequently integrate theories into their empirical research to explain consumer behaviour.

Among the various theories, the Theory of Planned Behaviour (TPB) emerged as the most frequently applied, appearing in eight articles. Other top theories used to examine CDP adoption intention include the Innovation Diffusion Theory, Resource Matching Theory, Technology Acceptance Model (TAM), and the Unified Theory of Acceptance and Use of Technology (UTAUT). The remaining theories appear in fewer than three articles each.

While the availability of multiple theories offers flexibility, it may also lead to a paradox of choice for researchers, making it difficult to determine the most suitable theoretical framework. On one hand, the diversity of theories demonstrates that researchers have numerous established frameworks to draw upon when studying consumer behaviour. This variety allows scholars to approach the topic from multiple perspectives, enriching the field with different theoretical interpretations. However, the fragmentation of theories poses a significant challenge. With so many options, researchers might struggle to choose the most appropriate theoretical foundation, leading to potential inconsistencies in the literature. A lack of consensus on a dominant theory could slow down the development of a cohesive body of knowledge in the field.

A potential solution could involve integrating multiple theories to create a more comprehensive framework that provides deeper insights into the relationships between variables. Currently, 30.56% of the analysed articles adopt a multi-theory approach in their research. In addition, researchers should explore empirical validation of these theories in different contexts, industries, and user demographics. Future studies could focus on identifying

commonalities and contradictions across different theoretical models to refine existing frameworks. This approach could enhance the predictive power of theoretical models and provide more practical insights for businesses implementing CDPs.

Table 2.8: List of theories

Theory	N articles	% of articles
Innovation diffusion theory	5	13.89
Resource conservation theory	1	2.78
Technology acceptance model	4	11.11
Risk-attitude-norm-ability-self-regulation framework	1	2.78
Technology readiness theory	2	5.56
Unified theory of acceptance and use of technology	4	11.11
The theory of planned behaviour	8	22.22
Resource matching theory	5	13.89
E-consumers' preferences	1	2.78
Value co-creation theory	3	8.33
Protection motivation theory	2	5.56
Service quality theory	2	5.56
Contingency theory	1	2.78
Transaction cost theory	2	5.56
Trust theories	1	2.78
Psychological theory	2	5.56
Perceived value theory	1	2.78
Without theory	4	11.11
With theory	32	88.89
Use at least two theories	11	30.56

Source: The author

As highlighted in the co-citation and bibliographic coupling analyses, previous research has concentrated on consumer theory, i.e. innovation diffusion theory (Wang et al., 2018; Yuen et al., 2018), resource matching theory (Yuen et al., 2019), attitudes theories (Wang et al., 2018, 2019), technology features, and value co-creation (Vakulenko et al., 2018) to explain behavioural intentions towards using CDPs. These theories typically assume that individuals

are rational and make decisions based on logical considerations. Integrating irrational factors into the model can improve the framework's ability to fully explain consumer behaviour. Furthermore, an increasing number of articles (Ma et al., 2022; Wang et al., 2019) have applied psychological theory to build a holistic approach to understanding comprehensively consumer intention in their studies.

Additionally, combining several theories to develop a new framework can provide deeper insights into the relationships between variables. To be specific, Wang et al. (2019) utilize the theory of planned behaviour and social psychology theory to analyse consumer participation behaviour in co-creating logistics service value through self-collection at automated parcel stations. Building on the integrated insights of protection motivation theory and the technology acceptance model, Wang et al. (2021) investigate the factors driving consumers to switch to contactless channels such as parcel lockers. The study of Tsai & Tiwasing (2021) combines resource matching theory, innovation diffusion theory, and the theory of planned behaviour to elucidate Thai consumers' intentions to use smart lockers. It is evident that the popular theories identified in this review have been used in conjunction with other theories. However, in the text co-occurrence analysis, trust seems to impact consumers' intentions toward CDPs but has received limited attention from researchers. Trust has been recognized as both cognitive and affective dimensions (Dowell et al., 2015; Young & Daniel, 2003). In this respect, a new factor, such as trust, can play an important role in mediating behavioural intention towards CDPs for future research. To advance current consumer theories in the field of CDPs, future researchers are encouraged to investigate the following three research questions:

- How can rational consumer theories and irrational consumer theories combined to explain consumer's adoption intention toward CDPs?
- How can innovation diffusion theory and trust theory combined to explain consumer's adoption intention toward CDPs?

Recent studies have also contributed to expanding the theoretical base of CDP adoption. For example, Rose et al. (2025) draw on signalling theory to examine how information disclosure framing and consumer traits shape adoption decisions, showing that perceptions of transparency and trustworthiness can significantly influence behavioural intentions. Similarly, Li et al. (2024) extend signalling theory by investigating consumer switching intentions from courier stations, highlighting the role of perceived service reliability and social signals in adoption choices. Schmitz et al. (2025) use a behavioural lens to identify determinants of smart locker adoption in construction retail, while Mohri et al. (2025) incorporate behavioural analysis into crowd-shipping research, adding nuance to the role of parcel receivers in last-mile

delivery. Collectively, these studies demonstrate a growing movement beyond traditional rational-choice models toward theories that incorporate trust, signalling, and behavioural perspectives, thereby enriching the theoretical foundations of CDP research.

2.2.6.2. Context

This review explores four key contexts across thirty-six analysed articles: culture, CDP types, countries, and geographic areas (refer to Table 2.9). In terms of cultural focus, 72.22% of the studies examine collectivist societies, while 27.78% focus on individualist societies. Although this distribution appears imbalanced, the representation of countries across the two cultural groups remains fairly even, with research covering seven individualist countries and eight collectivist countries. Furthermore, the focus on collectivist societies suggests that social influence, trust, and community-driven decision-making play crucial roles in CDP adoption. In contrast, individualist cultures may prioritize convenience, efficiency, and personal control when adopting these platforms. Future research should explore comparative analyses to determine how cultural values shape adoption behaviour differently in these societies.

The countries with the highest number of studies include Singapore (12 studies), China (7 studies), and the United States (4 studies). However, there is a notable lack of research in many other countries, highlighting the need for future studies to broaden geographic representation. Countries with rapidly growing digital economies, such as India, Brazil, and various Asian and African nations, deserve more scholarly attention to understand regional adoption patterns and challenges.

Regarding CDP types, 61.1% of studies examine unattended CDPs, whereas attended CDPs receive comparatively little attention. This trend likely stems from the fact that many studies investigate both types, as well as the increasing adoption of advanced technological solutions, such as smart lockers, which drive the shift toward unattended CDPs.

Lastly, in terms of geographic distribution, most research has been conducted in urban areas, where e-commerce adoption is more advanced. In contrast, rural regions remain underrepresented, suggesting an opportunity for future research to explore CDP adoption in less developed areas.

Table 2.9: Contextual coverage

Context	N articles	% of articles
<i>Culture</i>		
Individualist societies	10	27.78
Collectivist societies	26	72.22

<i>Countries</i>		
Brazil	2	5.56
China	7	19.44
Egypt	1	2.78
Germany	1	2.78
Greece	1	2.78
New Zealand	1	2.78
Poland	1	2.78
Singapore	12	33.33
South Korea	1	2.78
Spain	1	2.78
Taiwan	1	2.78
Thailand	1	2.78
United Kingdom	1	2.78
United States	4	11.11
Vietnam	1	2.78
<i>Types of CDPs</i>		
Attended CDPs	1	2.78
Unattended CDPs	22	61.11
Mix	13	36.11
<i>Geographic area</i>		
Urban	25	69.44
Rural	0	0
Online	11	30.56

Source: The author

Several research implications can be drawn from the perspective of context. First, it is crucial to research national culture when exploring the factors influencing behavioural intention towards CDPs. More research should be conducted to investigate the antecedents of behavioural intention towards CDPs in different societies (individualist/collectivist). This could lead to comparative studies between Eastern and Western countries regarding the intention to adopt CDPs, potentially significantly contributing to the advancement of CDP services.

Second, location-related antecedents refer to the environment and context in which the CDPs are located. This study has revealed that research on CDPs in rural areas is limited. Additionally, a substantial portion of research has focused on online consumers without accounting for the environmental dynamics of their living conditions. (Asdecker, 2021; Risher et al., 2020). This factor could significantly impact consumers' adoption of CDPs.

Third, the severe global challenges facing civilization today, such as global warming, renewable energy issues, infectious diseases, and political polarization, are at risk of escalating in the future, which lead to significant changes in human society. Future research should consider the moderating effects of psychological constructs influenced by the externalities, such as emotions (e.g., panic, fear, gratitude, and empathy), on the relationships between antecedents and adoption intention. Additionally, it is important to investigate how shifts in consumption priorities and goals impact consumer behaviour in using CDP services. Therefore, we propose four new research questions concerning the context of CDPs:

- What are the differences in the antecedents of consumers' adoption intentions toward CDPs between Eastern and Western countries?
- What are the differences in the antecedents of consumers' adoption intentions toward CDPs between urban and rural areas?
- How do consumer-related attributes moderate the relationship between antecedents and consumers' adoption intentions toward CDPs?
- How do changes in consumption priorities and goals moderate the relationship between antecedents and consumers' adoption intentions toward CDPs?

Recent contributions illustrate how contextual diversity continues to shape adoption patterns. Montero-Vega et al. (2025) provide evidence that socio-demographic factors—such as age, income, and education—significantly influence consumer acceptance of last-mile technologies, pointing to the importance of tailoring CDP strategies to heterogeneous user groups. Encarnación & Amaya (2025) compare adoption drivers across urban and suburban settings, showing that environmental factors and accessibility directly affect consumer willingness to use parcel lockers. Similarly, Ma et al. (2024) highlight the spatial effects of locker network location, revealing how geographic distribution influences operational performance and consumer uptake. In Vietnam, Tsai et al., (2024) underscore how sustainability considerations intersect with cultural values in shaping acceptance of automated delivery stations, while (Jang et al., (2024) Jang et al. (2021) demonstrate how COVID-19 altered behavioural adoption patterns, amplifying concerns about safety and convenience. Together, these findings emphasize that context-specific factors—including demographics, geography,

cultural norms, and external shocks—remain central to understanding CDP adoption, highlighting the necessity of comparative and longitudinal studies across diverse markets.

2.2.6.3. Methods

An overwhelming 91.67% of the articles analysed in this study utilized quantitative research methods, with structural equation modelling (SEM) appearing in twenty-two studies as the most commonly used technique. SEM is favoured due to its ability to analyse multiple relationships simultaneously, making it a powerful tool for investigating complex interactions. This finding aligns with the co-citation analysis, particularly in Cluster 3, which focuses on data analysis and structural equation modelling. The dominance of quantitative research in this field underscores the preference for empirical, data-driven analysis in studying consumer adoption of CDPs. Structural equation modelling (SEM), in particular, is well-suited for testing theoretical models and examining the relationships between multiple variables, making it an ideal choice for studies aiming to validate hypotheses and measure adoption determinants.

In contrast, only 8.33% of the articles employed qualitative research methods, which included deductive category development, conventional qualitative content analysis, and synthesis techniques. This highlights a notable imbalance between quantitative and qualitative approaches in the existing research landscape. While quantitative methods are effective for statistical validation, qualitative approaches offer a deeper understanding of consumer attitudes, motivations, and contextual factors that influence CDP adoption. Methods such as in-depth interviews, case studies, and ethnographic research could provide richer insights into why and how consumers adopt CDPs, complementing existing quantitative findings.

Table 2.10: Research approach

Research Approach	N articles	% articles
<i>Qualitative</i>	3	8.33
Deductive category development	1	2.78
Conventional qualitative content analysis	1	2.78
Synthesis	1	2.78
<i>Quantitative</i>	33	91.67
Binary logistic regression	2	5.56
Conjoint analysis	1	2.78

Genetic Algorithm (GA)-based structure learning and Copula modelling	1	2.78
Hierarchical regression analysis	3	8.33
Multinomial regression analysis	2	5.56
Network Analysis	1	2.78
Structural equation modelling	22	61.11
Stated choice experiment	1	2.78

Source: The author

It is uncommon for studies to use secondary data when investigating consumer behaviour toward CDPs. Out of thirty-six analysed articles, thirty-five rely on primary data, with online surveys being the dominant method (33 articles). Other primary data sources, such as focus groups and interviews, are used in only one study each. This indicates a lack of diversity in qualitative data collection methods, which could otherwise contribute to a more in-depth understanding of consumer behaviour.

The underutilization of secondary data is an unusual trend, considering that big data analytics, social media insights, and consumer transaction records can offer valuable behavioural patterns beyond self-reported survey responses. Secondary data sources, such as industry reports, company records, and publicly available datasets, could strengthen CDP research by providing longitudinal insights and real-world adoption trends.

Additionally, the limited use of qualitative methods (only one study each using focus groups and interviews) suggests that researchers may be overlooking rich, narrative-driven insights that qualitative research can provide. Consumer decision-making, emotional responses, and trust factors—key elements influencing CDP adoption—are often better understood through in-depth interviews, ethnographic studies, and case studies rather than structured surveys alone.

Table 2.11: Research data

Research data	N articles	% articles
<i>Primary</i>	35	97.22
Focus group	1	2.78
Interview	1	2.78

Survey	33	91.67
Secondary	1	2.78

Source: The author

Based on our review, new methods are needed to provide researchers with additional tools for gaining deeper and more rigorous insights into collection-and-delivery points. Scholars generally favour quantitative methods, while qualitative studies have been relatively overlooked. As emerging issues like consumer psychology increasingly influence research in consumer studies, there is a growing need for interpretive methodologies that offer a deeper understanding of the subject. For example, interviews could greatly improve our insight into consumers' mental states, while experiments could help reveal differences between various external conditions (Alamineh, 2022). For this line of research, employing multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) in combination with experimental designs could be beneficial. Concerning quantitative study, the rise of big data has led to a growing popularity of sentiment analytics, which involves using natural language processing and machine learning to systematically extract and analyse subjective information from large volumes of text (Fu et al., 2019). Leveraging big data and sentiment analytics to investigate research topics like pre- and post-pandemic delivery service norms, consumer attitudes toward CDPs, and the influence of online reviews on CDP performance could be a promising direction for future research. Thus, we propose two research questions that could enhance methodological rigor:

- How to elicit deeper understanding in terms of both cognitive and affective dimension of consumers' attitudes towards CDPs?
- How can big data and machine learning techniques be applied in simulated experiments to study the use of CDPs?

Recent studies illustrate a modest but growing diversification in methodological approaches. For instance, Ngan et al. (2025) use SEM to unravel behavioural determinants of smart locker adoption in Vietnam, reinforcing the field's reliance on quantitative modelling but also offering fine-grained insights into cultural and psychological factors. Liu & Hassini (2025) adopt a survey-based approach to test readiness for mobile city bus lockers, extending CDP research into innovative delivery solutions. Meanwhile, Neto & Vieira (2023) Neto and Vieira (2022) investigate pick-up point adoption in a developing country, relying on primary survey data but situating it within underexplored regional contexts. More novel approaches include Liu et al. (2024), who apply gamification affordance theory to analyse consumer participation in green last-mile initiatives, blending behavioural experimentation with quantitative modelling.

While these methods remain largely within the quantitative tradition, their application across diverse delivery formats and conceptual lenses signals a gradual broadening of methodological practices. Expanding this trajectory with qualitative methods, mixed approaches, and big data analytics could significantly deepen understanding of both cognitive and affective drivers of CDP adoption.

Table 12 below summarizes future directions that have been discussed in this section.

Table 2.12: Future directions

Theme	Research questions
Theories	• How can rational consumer theories and irrational consumer theories combined to explain consumer's adoption intention toward CDPs? • How can innovation diffusion theory and trust theory combined to explain consumer's adoption intention toward CDPs?
Context	• What are the differences in the antecedents of consumers' adoption intentions toward CDPs between Eastern and Western countries? • What are the differences in the antecedents of consumers' adoption intentions toward CDPs between urban and rural areas? • How do consumer-related attributes moderate the relationship between antecedents and consumers' adoption intentions toward CDPs? • How do changes in consumption priorities and goals moderate the relationship between antecedents and consumers' adoption intentions toward CDPs?
Method	• How to elicit deeper understanding in terms of both cognitive and affective dimension of consumers' attitudes towards CDPs? • How can big data and machine learning techniques be applied in simulated experiments to study the use of CDPs?

2.2.7. Practical implications

For logistics service providers (LSPs), the proposed matrix serves as a valuable framework for gaining a comprehensive understanding of the factors influencing consumer adoption of Customer Data Platforms (CDPs). By identifying key determinants relevant to their target audience, LSPs can develop tailored strategies that effectively address customer needs. Araújo et al. (2020) emphasize that aligning logistics services with consumer expectations is a significant driver of innovation in last-mile delivery. The matrix framework allows LSPs to

systematically identify, analyse, and address factors influencing consumer adoption of CDPs. Conducting empirical research on different market segments can help companies prioritize key adoption drivers for various customer groups. Understanding cultural dynamics (individualist vs. collectivist societies) can help LSPs customize their CDP strategies for different regions.

When designing CDP-related logistics solutions, suppliers must first determine the societal context of their target customers. Using the proposed matrix, they can outline potential influencing factors and then apply an empirical model tailored to their specific customer base to identify the most crucial determinants of CDP adoption. Once these key demand-side factors are established, achieving equilibrium between supply and demand can lead to cost-efficient operations and enhanced customer satisfaction. Relevant supply-side factors can be extracted from Cluster 2 of the co-citation analysis and Cluster 1 of the bibliographic coupling analysis, both of which focus on location and sustainability. LSPs can refine their models by incorporating both demand-side insights and supply-side considerations, such as cost-effective location-based operations and sustainable logistics practices.

Moreover, the consumer-technology relationship remains a central theme in CDP research. A valuable addition to this field could involve leveraging the influence of key opinion leaders (KOLs) and key opinion consumers (KOCs). These individuals, through content creation on online platforms, can facilitate value co-creation and accelerate the diffusion of CDP innovations, particularly in collectivist societies, where social influence plays a significant role in consumer decision-making. Businesses can engage influencers and online communities to co-create value and drive CDP adoption through peer recommendations.

2.2.8. Limitations of the study

This study acknowledges certain limitations concerning cultural influence. Hofstede's national culture framework is based on six value dimensions, which can create ambiguity when researchers attempt to correlate specific cultural traits with individual behaviours in particular contexts. As a result, further research is needed to examine the relationship between national culture and individual adoption behaviour of logistics technology in last-mile delivery systems, such as CDPs.

Additionally, national culture is inherently tied to individuals who are raised within a particular country. As the demographic diversity of a nation increases, the influence of national culture also expands. This growing complexity presents challenges for behavioural studies at the micro level, as individual characteristics become more heterogeneous, making it difficult to establish universal cultural patterns in consumer adoption behaviour. The increasing heterogeneity within national populations suggests that individual identity, generational

differences, and regional subcultures may have stronger effects on CDP adoption than broad national cultural norms. Researchers should consider micro-level cultural influences, such as personal values, industry-specific cultures, and online communities, rather than relying solely on nation-level indicators.

When studying logistics technology adoption, researchers should examine how cultural dimensions interact with other behavioural factors, such as technological literacy, trust in automation, and digital exposure. Behavioural models should integrate both cultural and psychological factors to create a more comprehensive framework for understanding CDP adoption in different markets.

2.2.10. Conclusions

This study presents a comprehensive literature review on consumer adoption intentions toward Collection-and-Delivery Points (CDPs), offering a novel perspective by integrating national culture into the analysis. By incorporating cultural dimensions into the analysis, this study addresses an important gap in logistics and consumer behaviour research. The study employs bibliometric methods to systematically analyse existing research, providing in-depth insights through a combination of co-citation analysis, bibliographic coupling, and co-occurrence text analysis. This approach allows for a detailed exploration of the intellectual framework within the field, capturing both historical developments (through co-citation analysis) and emerging trends (via bibliographic coupling and text analysis).

A key contribution of this study is the development of a matrix identifying factors that influence CDP adoption intentions in both individualist and collectivist societies. This matrix serves as a valuable tool for researchers and practitioners, guiding decision-making processes in the design and implementation of CDP systems. The proposed matrix enables logistics service providers (LSPs) and policymakers to design CDP systems that align with cultural expectations and consumer preferences. Researchers can use the findings to develop more targeted theoretical models that integrate both cultural and behavioural factors.

Overall, this study consolidates existing knowledge on consumer adoption of CDPs, covering theoretical frameworks, contextual influences, and research methodologies, while also proposing future research directions to advance the field

2.3. Theoretical foundation

Understanding consumer adoption intention towards a logistics technology like CDPs is a complex process that involves both technological innovation characteristics and cognitive information processing mechanisms. Two well-established theories—Innovation Diffusion

Theory (IDT) and the Heuristic-Systematic Model (HSM)—offer valuable but distinct perspectives:

- IDT (Rogers, 1983) explains how innovations spread within a population, focusing on factors such as relative advantage, compatibility, complexity, trialability, and observability.
- HSM (Chaiken, 1980, 1987) examines how individuals process information when making decisions, distinguishing between heuristic (fast, intuitive) and systematic (deliberate, analytical) processing.

IDT explains why people adopt an innovation but lacks insight into how they process information when making adoption decisions. Consumers do not simply evaluate innovations based on objective characteristics; their cognitive processing styles (heuristic vs. systematic thinking) influence how they interpret technology features. For example, a consumer might heuristically adopt a new CDP service because a trusted influencer endorses it (low-effort thinking) or might systematically evaluate its security, privacy, and usability before adopting it (high-effort thinking).

HSM focuses on information processing strategies but does not account for the specific characteristics of the innovation being adopted. The factors outlined in IDT (e.g., relative advantage, compatibility, and complexity) can be integrated into systematic processing pathways, influencing consumers who carefully evaluate the innovation before adoption.

Several studies have implicitly or explicitly combined elements of IDT and HSM. For example, T. Zhou (2012) found that in mobile banking adoption, consumers who relied on heuristics (e.g., social influence) adopted faster than those who systematically evaluated security and usability. Park & Kim (2003) showed that in e-commerce adoption, relative advantage (IDT) interacted with cognitive processing styles (HSM)—those who systematically processed information demanded more proof of security, while heuristic thinkers adopted based on brand trust. These studies suggest that both innovation attributes and cognitive processing strategies play crucial roles in shaping consumer adoption intention.

Integrating Innovation Diffusion Theory (IDT) with the Heuristic-Systematic Model (HSM) provides a comprehensive framework for understanding consumer adoption intention. IDT explains the innovation attributes that influence adoption, while HSM accounts for how consumers process information about the innovation. By combining these perspectives, researchers and practitioners can develop more accurate adoption models, design effective marketing strategies, and enhance technology acceptance across different consumer segments.

2.3.1. The innovation diffusion theory (IDT)

The Innovation Diffusion Theory (IDT), proposed by Rogers (1983), is one of the most influential frameworks for understanding how innovations spread within a social system. The theory explains how, why, and at what rate new technologies, ideas, or products are adopted by individuals or organisations. IDT identifies five key attributes that influence adoption:

- Relative Advantage – The perceived superiority of the innovation over existing solutions.
- Compatibility – The extent to which the innovation aligns with users' values, experiences, and needs.
- Complexity – How difficult the innovation is to understand or use.
- Trialability – The ability to experiment with the innovation before full adoption.
- Observability – The visibility of benefits resulting from the innovation.

Furthermore, Rogers categorizes adopters into five groups based on their adoption timing:

- Innovators (2.5%) – Risk-takers who embrace new ideas early.
- Early Adopters (13.5%) – Opinion leaders who influence others.
- Early Majority (34%) – Thoughtful adopters who follow early adopters.
- Late Majority (34%) – Sceptics who adopt only after the majority has done so.
- Laggards (16%) – Traditionalists who resist change.

While IDT remains a foundational theory in innovation research, it is not without limitations. The following paragraphs critically evaluate the strengths and weaknesses of IDT, exploring empirical applications, and criticisms.

One of IDT's key strengths is its broad applicability across various fields, including: Technology adoption (e.g., smartphones, AI, fintech); Healthcare innovations (e.g., electronic health records, vaccines); Marketing strategies (e.g., social media platforms, e-commerce trends); Education technology (e.g., e-learning tools, online courses). For example, (Tornatzky & Klein (1982) found that relative advantage, compatibility, and complexity are the most consistent predictors of adoption across multiple studies, reinforcing IDT's validity in technology diffusion research. In addition, IDT helps organisations strategize marketing campaigns and policy interventions by identifying key adoption drivers. Businesses use early adopters as influencers to promote innovation while policymakers design public awareness campaigns to accelerate technology acceptance (e.g., promoting COVID-19 vaccines). Companies leverage trialability (e.g., free trials, beta testing) to increase adoption rates. Furthermore, IDT recognizes that social networks and word-of-mouth communication play a

critical role in adoption. Studies have shown that peer influence is more powerful than mass advertising in spreading innovations (Valente, 1996). Social media platforms have amplified the observability effect, making innovation adoption faster in digital markets.

However, there are some criticisms and limitations associated with IDT. First, IDT assumes that adoption decisions are largely made by individuals based on rational evaluations. In many cases, organisational policies, government regulations, and economic conditions strongly influence adoption, limiting individual choice. In corporate settings, employees may be forced to adopt an innovation (e.g., enterprise software) rather than freely choosing it. Second, IDT focuses on rational factors (e.g., advantage, compatibility) but ignores emotional influences, cognitive biases, and trust issues. Studies in behavioural economics (Thaler & Sunstein, 2008) show that consumers do not always behave rationally when adopting innovations. Specifically, fear of privacy invasion prevents many users from adopting AI-driven customer service tools, even if they offer efficiency advantages. Third, IDT mainly focuses on initial adoption rather than long-term use, abandonment, or diffusion failure. Other models, such as the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT), address post-adoption engagement and continued usage. Many consumers adopt fitness apps but stop using them after a short period due to low engagement, a phenomenon not fully explained by IDT. Fourth, the five adopter categories assume that individuals follow a linear adoption process. In reality, people may move between categories based on changing circumstances or peer influence. A late adopter may suddenly become an early adopter in a different technological domain (e.g., hesitant about smartwatches but quick to adopt AI chatbots).

Researchers have modified and expanded IDT to address its limitations. Davis (1989) proposed the Technology Acceptance Model (TAM), integrating perceived usefulness and ease of use, which are more precise predictors of technology adoption. Venkatesh et al. (2003) developed UTAUT, incorporating social influence, facilitating conditions, and behavioural intent, providing a more comprehensive adoption model. Rogers (2003) revised IDT, acknowledging that re-invention and adaptation of innovations can influence adoption rates.

These extensions suggest that while IDT provides a strong foundation, it benefits from integration with psychological, behavioural, and contextual factors.

2.3.2. The heuristics-systematic model (HSM)

The Heuristic-Systematic Model (HSM), developed by Chaiken (1980, 1987), is a dual-process theory that explains how people process information and make decisions. The model suggests that individuals adopt one of two cognitive processing routes:

- Heuristic Processing – A low-effort, quick, and intuitive approach based on simple decision rules (e.g., "trust experts" or "popular products must be good").
- Systematic Processing – A deliberate, analytical, and effortful approach where individuals critically evaluate all available information before making a decision.

HSM is widely used in persuasion, consumer behaviour, technology adoption, and health communication studies. However, despite its strengths, the model has several limitations, including an overemphasis on rational cognition, underestimation of affective influences, and difficulty in distinguishing between the two processing modes.

Regarding strengths of the model, HSM has been successfully applied in various domains, including: Consumer behaviour – How customers make purchasing decisions based on brand reputation (heuristic) vs. detailed product comparisons (systematic) (Maheswaran & Chaiken, 1991); Technology adoption – How users adopt innovations based on social influence (heuristic) vs. feature analysis (systematic) (Sussman & Siegal, 2003); Health communication – How individuals process public health messages using expert recommendations (heuristic) vs. deep analysis of scientific data (systematic) (Bohner et al., 2008). The model's flexibility makes it valuable for understanding real-world decision-making across multiple disciplines. Unlike earlier models that assumed people either thought rationally or intuitively, HSM acknowledges that: people use both heuristic and systematic processing simultaneously (parallel processing), cognitive effort varies depending on motivation, ability, and context, situational and individual differences determine whether people rely on quick heuristics or deeper analysis. This dual-processing framework provides a more realistic depiction of human decision-making compared to single-process models. Third, HSM proposes that people engage in just enough cognitive effort to feel confident in their decisions. If heuristic cues provide sufficient confidence, people avoid deeper analysis. If confidence is low, they engage in systematic thinking until they feel comfortable with their judgment. This principle explains why people sometimes process information deeply (e.g., evaluating financial investments) and sometimes rely on shortcuts (e.g., buying a product because of a celebrity endorsement).

On the other hand, HSM receives some criticisms and limitations. First, the model assumes a clear distinction between heuristic and systematic processing, but real-world decision-making is often more fluid and dynamic. Some studies suggest that heuristic and systematic processing may operate on a continuum rather than as separate modes (Eagly & Chaiken, 1993). A consumer may begin with heuristic thinking (choosing a well-known brand) but later engage in systematic processing when comparing features. Second, HSM primarily focuses on cognitive processing but neglects emotions and affective responses that significantly shape decision-making. Other models, such as the Elaboration Likelihood Model (ELM) (Petty

& Cacioppo, 1986), integrate emotional and motivational factors more explicitly. In brand loyalty, emotional attachment often overrides both heuristic and systematic evaluation (Pham, 2007). Third, it is challenging to measure whether someone is using heuristic or systematic processing, as both can occur simultaneously. Researchers often rely on self-reported cognitive effort, but this method has validity issues (Gilovich et al., 2002). A voter may claim to have analysed candidates' policies (systematic processing) but was actually influenced by party affiliation (heuristic processing). Fourth, HSM focuses on how people process information before making a decision but does not explain post-decision behaviours, such as: Consumer regret or reinforcement after making a purchase, Technology desorption due to unmet expectations, Behavioural persistence (e.g., continuing to use a fitness app).

Researchers have refined and expanded HSM in several ways. Chaiken updated HSM to acknowledge that motivation, social context, and time pressure influence processing mode selection. Sussman & Siegal (2003) applied HSM to technology adoption, finding that expert endorsements (heuristics) often override rational evaluations of system quality. Bohner et al. (2008) explored health communication, showing that systematic processing is more effective in changing long-term health behaviours. These studies support HSM's validity but also suggest that it benefits from integration with other psychological models.

The Heuristic-Systematic Model (HSM) remains a powerful framework for understanding information processing and decision-making. Its dual-processing structure provides a nuanced explanation of how people make choices, whether through quick heuristics or detailed analysis. However, its limitations—such as the oversimplification of cognitive processes, lack of emotional considerations, and empirical challenges in measuring processing modes—suggest that the model should be refined and integrated with complementary theories.

2.4. Vietnam: The research context

Vietnam's e-commerce sector has experienced remarkable growth in 2024, fuelled by rising digital adoption, increased online shopping, and strong investments in digital platforms. The market is one of the fastest-growing in Southeast Asia, surpassing \$25 billion in 2024, marking a 20% year-over-year (YoY) growth (VIR, 2025).

Vietnam's top e-commerce platforms include:

- Shopee – The market leader with strong cross-border sales and promotions.
- TikTok Shop – Fast-growing due to influencer-driven sales.
- Lazada & Tiki – Competing through localized strategies and improved logistics.
- Sendo & other local platforms – Serving niche markets with specialized products.

Top platforms like TikTok Shop and Shopee saw 151% and 66% revenue growth, respectively (B-Company, 2025).

Vietnam's total retail and consumer services market reached VND 6.39 quadrillion (\$251.5 billion) in 2024, a 9% YoY increase (VnEconomy, 2025) in which electronics, fashion, and beauty are among the top-selling categories. The Vietnamese government is promoting e-commerce expansion via digitalization policies. Cashless payment adoption is increasing, with mobile wallets and e-banking driving financial inclusion.

GDP per capita of Vietnam in 2023 reached 101.9 million VND/person, equivalent to 4,284.5 USD (General Statistics Office, 2024). The majority of Vietnamese consumers (84%) spent less than 10mil VND (around 400 USD) per year on online orders, and 88% of consumers purchased less than 30 online products/services per year (Vietnam E-commerce and Digital Economy Agency, 2023).

Vietnam's e-commerce market has faced various challenges. The first issue is related to logistics & last-mile delivery. Rapid growth has strained logistics infrastructure, causing delivery delays in peak seasons. In Vietnam, home delivery is predominant, accounting for more than 95% of B2C e-commerce transactions (An Thi Thanh Nhan, 2021). However, the delivery success rate for online orders in Vietnam is quite low, mainly due to the absence of a Postal Code system. Delivery challenges arise when addresses are unclear, such as in hamlets, villages, and communes, and when no phone or house numbers are provided. Investment in smart lockers, collection points, and warehouse automation is increasing to solve these issues. Second is payment security and consumer trust. Despite cashless growth, Cash-on-Delivery (COD) remains dominant (over 60%), leading to higher return rates. Fraud concerns affect consumer trust in digital payments. Third is regulatory challenges. New tax regulations on cross-border sellers may impact pricing strategies. Data privacy laws are tightening, requiring compliance from platforms.

Vietnam's e-commerce market in 2024 has surpassed expectations, driven by rising consumer demand, mobile commerce, and digital transformation. While challenges remain in logistics, payment security, and regulation, the market is poised for continued expansion. The future of Vietnam's e-commerce sector will be shaped by AI-driven shopping, social commerce, improved logistics, and cross-border trade, making it one of Southeast Asia's most dynamic digital economies.

Last-mile logistics—the final step in the e-commerce supply chain where goods are delivered to consumers—has become a key challenge and competitive differentiator in Vietnam's fast-growing e-commerce sector. With Vietnam's e-commerce market surpassing

\$25 billion in 2024, the demand for efficient and reliable last-mile delivery solutions has intensified.

However, urban congestion, infrastructure limitations, cash-on-delivery (COD) dependence, and rising consumer expectations present major challenges. The sector is evolving with innovations in smart logistics, AI-powered route optimization, and alternative delivery models like smart lockers and collection points.

Regarding challenges related last-mile logistics for e-commerce in Vietnam, one of the biggest challenges is urban congestion and poor infrastructure, particularly in major cities like Hanoi and Ho Chi Minh City. Traffic congestion significantly slows delivery times, leading to inefficiencies and increased costs. Additionally, in rural areas, incomplete address systems, poor road conditions, and limited logistics infrastructure make deliveries even more challenging. The lack of a standardized postal addressing system further complicates navigation, causing delays and delivery failures. These issues result in higher fuel consumption, increased labour costs, and lower delivery efficiency, impacting both businesses and consumers.

Another pressing challenge is Vietnam's high reliance on Cash-on-Delivery (COD), which accounts for over 60% of e-commerce transactions. While COD provides convenience for consumers who prefer to inspect goods before paying, it creates financial and operational burdens for logistics providers. COD increases return rates, as customers may refuse delivery upon inspection, leading to costly reverse logistics operations. Moreover, handling cash slows down delivery times and increases the risk of fraud, theft, and human error in payment processing. While digital payment adoption is growing, COD remains a major hurdle for logistics efficiency.

The fragmented nature of Vietnam's logistics sector adds another layer of complexity. The market consists of multiple local and international logistics players (e.g., Grab, J&T Express, Viettel Post, Shopee Express, AhaMove), each with varying levels of service quality. Many logistics providers struggle with high operating costs, inefficient route planning, and lack of delivery coordination, leading to delays, failed deliveries, and poor customer experiences. Additionally, the increasing demand for same-day and next-day delivery puts pressure on logistics networks, making it difficult to balance cost efficiency with speed.

Lastly, labour shortages and workforce instability pose a challenge for last-mile delivery operations. The rising demand for delivery riders has created a labour crunch, especially during peak shopping seasons like Tet (Lunar New Year) and Singles' Day (11.11 Sale). Delivery personnel face low wages, long working hours, and hazardous working conditions, leading to high turnover rates. This labour instability forces logistics firms to constantly hire and train new riders, which adds to operational costs and reduces service reliability.

As Vietnam's e-commerce sector expands rapidly, logistics providers are adopting innovative solutions to overcome last-mile delivery challenges discussed above. One of the most promising innovations is the introduction of smart lockers and collection points to streamline last-mile delivery. Companies like Vietnam Post, Shopee, and Grab are expanding self-service pick-up locations, allowing consumers to collect packages at their convenience instead of waiting for home deliveries. This reduces failed delivery attempts, minimizes traffic congestion, and improves efficiency for logistics providers. By increasing the availability of pick-up points in residential areas, shopping malls, and office buildings, logistics firms can lower operational costs while enhancing customer experience.

Another transformative solution is the use of Artificial Intelligence (AI) and route optimization software to improve delivery efficiency. AI-powered predictive analytics help logistics companies plan delivery routes by analysing traffic patterns, weather conditions, and customer availability in real-time. Machine learning algorithms also enable dynamic rerouting, ensuring that drivers take the most efficient paths to minimize delivery times and fuel costs. Additionally, some logistics firms are experimenting with autonomous delivery vehicles and drones, which could revolutionize last-mile logistics in Vietnam's urban areas in the future.

The shift toward digital payment and e-wallet integration is another major innovation aimed at reducing Vietnam's reliance on cash-on-delivery (COD). E-commerce platforms and logistics companies are partnering with fintech providers such as Momo, ZaloPay, and VNPAY to encourage customers to use digital payments. Many platforms now offer discounts and incentives for prepaid orders, reducing COD transactions and improving cash flow for businesses. Additionally, the integration of blockchain technology in logistics is being explored to enhance payment security and transparency, further boosting consumer trust in online transactions.

To tackle speed and efficiency challenges, many companies are investing in micro-fulfilment centres and urban warehouses to bring products closer to consumers. By strategically placing small-scale distribution hubs within cities, e-commerce players like Lazada, Tiki, and Shopee can reduce delivery times for same-day and next-day shipping. This decentralized logistics model not only speeds up fulfilment but also lowers transportation costs by reducing the distance between distribution centres and end customers.

Lastly, green and sustainable logistics solutions are gaining traction as Vietnam moves towards eco-friendly delivery models. Companies are increasingly adopting electric bikes (e-bikes) and low-emission delivery vehicles to reduce their carbon footprint. Some logistics providers are also introducing recyclable and biodegradable packaging to minimize waste.

These sustainability efforts align with government initiatives to promote green urban mobility and help logistics firms comply with environmental regulations while reducing costs.

In conclusion, Vietnam's last-mile logistics sector is undergoing a major transformation driven by smart technologies, alternative delivery models, digital payment integration, micro-fulfilment centres, and sustainable practices. As consumer expectations for speed, convenience, and eco-friendly solutions continue to rise, logistics providers must continue investing in innovation to remain competitive. Collaborations between e-commerce platforms, logistics firms, and fintech providers will be crucial in building a more efficient, cost-effective, and sustainable last-mile delivery network in Vietnam.

Chapter Summary

This chapter presents a comprehensive literature review on last-mile logistics in e-commerce, focusing on Collection-and-Delivery Points (CDPs) as an alternative to traditional home deliveries. It explores the evolution of e-commerce, challenges in last-mile logistics, and consumer adoption of CDPs, integrating theoretical frameworks and empirical insights to provide a structured synthesis of existing research.

The first section provides an overview of e-commerce logistics, highlighting how digital transformation, changing consumer behaviour, and technological innovations have reshaped the industry. Studies categorize e-commerce into various business models, including B2B, B2C, and m-commerce, emphasizing their impact on logistics. Consumer expectations for faster deliveries have pressured logistics providers to optimize last-mile solutions while addressing cost and sustainability concerns. AI-driven personalization, digital marketing, and automated fulfilment strategies have further transformed e-commerce logistics, but challenges remain in balancing efficiency with environmental responsibility.

Last-mile logistics represents one of the most expensive and complex components of the e-commerce supply chain. Research highlights the difficulties companies face in maintaining cost efficiency while meeting consumer demands for rapid and free deliveries. The rise of gig-economy delivery models, such as Amazon Flex and Uber Eats, has introduced flexibility but also raised concerns regarding labour rights and sustainability. Additionally, the surge in urban deliveries has exacerbated congestion and pollution, prompting companies to explore green logistics solutions, such as electric vehicles, bicycle couriers, and centralized pickup hubs. However, rural regions continue to experience inefficiencies due to longer delivery distances and a lack of logistics infrastructure. Emerging technologies, including AI-powered route optimization, drone deliveries, and smart lockers, offer promising solutions, yet scalability and regulatory challenges persist.

To mitigate last-mile inefficiencies, CDPs have emerged as an alternative to home delivery. These designated pickup points allow consumers to collect parcels at their convenience, reducing failed deliveries and minimizing transportation costs. Studies suggest that CDPs improve delivery efficiency and sustainability, as they consolidate multiple deliveries at fewer locations. However, adoption varies across regions, with Europe leading in CDP integration while Asia lags due to lower consumer awareness and trust in self-service technologies. Cultural factors play a significant role in adoption patterns, as individualist societies (e.g., the U.S. and U.K.) prioritize convenience and automation, whereas collectivist societies (e.g., China and Singapore) rely more on social influence and trust in traditional delivery models.

The chapter employs a systematic literature review, using bibliometric analysis tools such as VOSviewer to map research trends, co-citation patterns, and emerging discussions. The analysis identifies three main research clusters: consumer behaviour towards CDPs, logistics network optimization, and the application of structural equation modelling (SEM) in adoption studies. A significant contribution of this study is the development of a matrix that identifies the key factors influencing CDP adoption in both individualist and collectivist societies. This matrix serves as a valuable resource for researchers and industry professionals, assisting in the strategic planning and implementation of CDP systems. It provides logistics service providers (LSPs) and policymakers with insights on designing CDP solutions that align with cultural norms and consumer expectations. Additionally, researchers can leverage these findings to refine theoretical models that incorporate both cultural and behavioural aspects of consumer decision-making.

The theoretical foundation of CDP adoption is explored through the integration of the Innovation Diffusion Theory (IDT) and the Heuristic-Systematic Model (HSM). IDT explains the characteristics influencing adoption, such as relative advantage and compatibility, while HSM examines how consumers process information about CDPs. Some consumers adopt CDPs based on heuristic thinking (e.g., peer recommendations), whereas others engage in systematic evaluations, considering factors such as security, usability, and cost. The study suggests that integrating these two frameworks can provide a more comprehensive understanding of consumer decision-making in logistics technology adoption.

From a practical perspective, logistics service providers (LSPs) can leverage insights from consumer behaviour studies to develop tailored CDP strategies. Marketing campaigns emphasizing technological convenience may be effective in individualist societies, while social proof and influencer endorsements could enhance adoption in collectivist regions. Hybrid CDP models that combine self-service with human-assisted features may also address trust concerns, encouraging broader acceptance. Additionally, policymakers can promote CDP adoption through incentives, infrastructure investment, and awareness campaigns on sustainability benefits.

Despite its contributions, the study acknowledges certain limitations. The reliance on Hofstede's cultural-dimension framework may oversimplify consumer behaviour, as individual preferences and generational shifts also influence adoption patterns. Furthermore, existing research focuses primarily on urban environments, with limited studies examining CDP adoption in rural regions. Future research should explore the long-term impact of CDPs on logistics efficiency, environmental sustainability, and consumer trust. Additionally, integrating

big data analytics and machine learning into logistics research could enhance predictive models for adoption trends.

In conclusion, this chapter consolidates key academic discussions on last-mile logistics, CDP adoption, and consumer behaviour. By integrating theoretical frameworks with empirical findings, it provides a structured synthesis of body of knowledge on last-mile logistics, especially collection-and-delivery points.

CHAPTER 3: EMPIRICAL STUDY 1: ADOPTION INTENTION TOWARDS COLLECTION-AND-DELIVERY POINTS AMONG VIETNAMESE CONSUMERS – MODERATING EFFECT OF CDP EXPERIENCE

3.1. Justification for the empirical study 1

The rapid expansion of e-commerce in Vietnam has intensified challenges associated with last-mile delivery, including high logistics costs, delivery inefficiencies, and increasing environmental concerns (Morganti, Seidel, et al., 2014; Zennaro et al., 2022). Traditional home delivery models face substantial issues, such as failed delivery attempts due to recipient unavailability and growing urban congestion, which exacerbates delays and operational inefficiencies (Patowary et al., 2023). Studies suggest that failed delivery rates in urban areas range from 15% to 60%, leading to increased redelivery costs and carbon emissions (Rai et al., 2021).

Collection-and-Delivery Points (CDPs) have emerged as a promising solution, offering more efficient and flexible last-mile delivery alternatives (Deutsch & Golany, 2018). CDPs allow consumers to retrieve parcels at designated locations, reducing delivery failures and improving operational efficiency (McLeod et al., 2006). While widely adopted in Europe, with countries like Finland reporting over 90% utilization in B2C deliveries (Parcelmonitor, 2022), CDP adoption remains low in Southeast Asia, particularly in Vietnam (Mangiaracina et al., 2019). Given the potential of CDPs to optimize last-mile logistics, it is imperative to investigate why Vietnamese consumers exhibit hesitation towards this delivery model.

Consumer behaviour towards CDPs is significantly influenced by cultural dimensions, which vary across regions. According to Hofstede's cultural framework, Vietnam is characterized by high collectivism and restraint, which shape consumer attitudes towards new service models (Hofstede et al., 2010). In collectivist societies, consumers often rely on social proof and trust in community endorsements before adopting innovations (Chiu & Hofer, 2015) (Chiu & Hofer, 2015). This contrasts with individualistic cultures like the United States or Germany, where convenience and efficiency are primary motivators for CDP adoption (Bagchi et al., 2004).

Empirical studies indicate that while CDPs are perceived as secure and cost-effective, their adoption is hindered by lack of consumer awareness, accessibility concerns, and resistance to behavioural change (Francke & Visser, 2015). Vietnamese consumers may have lower trust in unattended delivery solutions, such as smart lockers, due to concerns about parcel security and retrieval convenience (Santana et al., 2022). Moreover, cultural attitudes toward self-service technologies suggest that face-to-face interactions with delivery personnel remain

preferable in some Asian markets (Mangiaracina et al., 2019). Without empirical research examining these behavioural barriers, it remains unclear how CDPs can be effectively positioned within Vietnam's e-commerce ecosystem.

Vietnam's digital transformation is accelerating, driven by increasing internet penetration and the rise of digital payments. Reports indicate that Vietnam's e-commerce market is projected to reach \$39 billion by 2025, with mobile commerce accounting for a significant share of transactions (Google, Temasek and Bain & Company, 2020). Despite this growth, digital adoption remains uneven, with infrastructure limitations and consumer scepticism affecting logistics innovations (He, 2020). Research suggests that the adoption of self-service logistics, such as CDPs, is positively correlated with technology readiness and digital literacy (Wang et al., 2018).

The Unified Theory of Acceptance and Use of Technology (UTAUT) has been widely applied in technology adoption studies, emphasizing perceived usefulness, ease of use, and trust as key determinants of acceptance (Venkatesh et al., 2003). While studies in developed markets suggest that consumers readily adopt CDPs due to technological convenience (Yuen et al., 2019), Vietnam's unique socio-economic context requires further empirical validation. It is essential to explore whether technological factors, such as mobile tracking, automated parcel notifications, and AI-driven delivery systems, can enhance consumer trust and drive CDP adoption in Vietnam.

From a managerial perspective, logistics service providers (LSPs) and e-commerce platforms need data-driven strategies to enhance CDP adoption. Previous studies highlight that financial incentives, such as discounts for using CDPs or loyalty rewards, can drive consumer participation (Rakuten Insight, 2021). Additionally, marketing campaigns emphasizing convenience, security, and sustainability could improve consumer perceptions of CDPs (Morganti, Dablanc, et al., 2014).

From a policy standpoint, government support can play a crucial role in fostering CDP adoption. In countries with high CDP penetration, such as Poland and France, regulatory policies incentivizing out-of-home delivery have facilitated widespread adoption (Metapack, 2020). In Vietnam, integrating CDPs into urban planning, developing public-private partnerships for smart locker installations, and providing consumer education on alternative delivery solutions could accelerate adoption. However, empirical research is needed to identify the most effective policy mechanisms for promoting CDPs in Vietnam's logistics sector.

A review of the literature indicates that while extensive research has been conducted on last-mile logistics and CDP efficiency, there is a critical gap in studies examining consumer behaviour towards CDPs in Southeast Asia, particularly in Vietnam. Previous reviews, such as

those by Cano et al. (2022) and He (2020), focus predominantly on operational and sustainability aspects, neglecting cultural and behavioural dimensions. Moreover, bibliometric analyses reveal that empirical studies on CDP adoption disproportionately focus on Western markets, limiting the generalizability of findings to Asian contexts (Mangiaracina et al., 2019).

This study seeks to bridge these gaps by conducting an empirical investigation into the factors shaping Vietnamese consumers' adoption intention towards CDPs. By integrating theories such as IDT and HSM, this research will provide a comprehensive understanding of the psychological, technological, and cultural determinants of CDP adoption in Vietnam.

An empirical study on the adoption intention towards CDPs among Vietnamese consumers is both timely and necessary. The study is justified by the need to address critical last-mile logistics challenges, examine the cultural and behavioural determinants of adoption, assess Vietnam's technological readiness, and explore the sustainability implications of CDP usage. Furthermore, the research will provide actionable insights for businesses and policymakers seeking to optimize last-mile logistics and enhance consumer trust in alternative delivery solutions.

Given the existing gaps in academic literature, this study will contribute to both theoretical discourse and practical applications, offering a structured analysis of CDP adoption in Vietnam's e-commerce sector. By identifying key drivers, the findings will support the development of targeted strategies that promote CDP adoption, ultimately improving last-mile delivery efficiency and sustainability in Vietnam.

3.2. Hypotheses development

The adoption of CDPs as an alternative last-mile delivery solution is influenced by various theoretical perspectives. This study draws from the Innovation Diffusion Theory (IDT) (Rogers, 1983) and the Heuristic-Systematic Model (HSM) (Chaiken, 1980) to explore the factors shaping consumers' adoption intentions. While IDT emphasizes the perceived attributes of an innovation, HSM examines how individuals process information to form judgments and decisions. Additionally, demographic factors such as age, income, and shopping behaviours further influence consumers' delivery preferences. By integrating these theoretical approaches, this study provides a comprehensive understanding of how consumers evaluate and decide on adopting CDPs.

3.2.1. Antecedents from the innovation diffusion theory

Relative advantage refers to the extent to which consumers perceive an innovation as superior to existing alternatives (Rogers, 1983). Consumers are more likely to adopt CDPs if

they believe that this service offers economic benefits, time-saving advantages, and greater flexibility compared to traditional home delivery.

One of the primary advantages of CDPs is cost-effectiveness. Home deliveries often come with added fees, whereas CDPs can provide lower-cost or even free delivery options by enabling logistics providers to consolidate shipments and reduce the number of failed deliveries (Iwan et al., 2016; Oliveira et al., 2017; Venkatesh et al., 2012). Consumers who prioritize affordability may find CDPs more attractive than home delivery.

Another important aspect is time efficiency. Unlike home deliveries, which require consumers to be present at a specific time, CDPs allow customers to retrieve parcels at their convenience, reducing the opportunity costs associated with waiting for couriers (da Silva et al., 2019; Yuen et al., 2018). This aspect is particularly relevant for consumers with busy work schedules, as they can collect parcels on their way home or during lunch breaks.

Additionally, convenience is a key factor driving CDP adoption. Strategically located CDPs—such as those in shopping centres, convenience stores, or transportation hubs—can easily integrate into consumers' daily routines (Y.-T. Tsai & Tiwasing, 2021; Yuen et al., 2018). However, the effectiveness of this advantage depends on infrastructure development and service accessibility, as CDPs located far from consumers' frequented areas may diminish their perceived convenience.

Thus, the following hypotheses are proposed:

H1: Price value (PVA) is positively related to CDPs adoption intention (ADT)

H2: Reduced need to wait (RNW) is positively related to CDPs adoption intention (ADT)

H3: Convenience (CON) is positively related to CDPs adoption intention (ADT)

Compatibility measures how well an innovation aligns with consumers' values, experiences, and lifestyle needs (Rogers, 1983). Consumers who perceive CDPs as compatible with their routines and preferences are more likely to adopt this alternative last-mile delivery solution.

For example, busy urban professionals may find CDPs highly compatible with their schedules, as they can pick up parcels at their convenience without the need for extra trips (Wang et al., 2018). Moreover, eco-conscious consumers may prefer CDPs due to their lower carbon footprint, as consolidated deliveries reduce vehicle emissions and packaging waste compared to traditional home deliveries (Yuen et al., 2018).

Another factor influencing compatibility is location accessibility. If CDPs are positioned near consumers' regular activity zones—such as their workplace, grocery stores, or residential complexes—the service becomes a natural extension of their lifestyle (Yuen et al., 2018).

However, inconveniently located CDPs may deter adoption, particularly in areas where transportation and mobility are barriers to access.

Thus, the following hypothesis is proposed:

H4: Compatibility (CPT) is positively related to CDPs adoption intention (ADT)

Complexity refers to the extent to which an innovation is perceived as difficult to understand or use (Rogers, 1983). The more complex a service appears, the lower the likelihood of adoption.

In the case of CDPs, complexity arises when consumers must navigate security measures such as barcode scanning, password entry, or PIN verification to retrieve their parcels (Yuen et al., 2018). While these security features enhance reliability, they may also create psychological barriers for less tech-savvy consumers. Research indicates that perceived complexity negatively affects adoption unless mitigated by user education, clear instructions, or marketing efforts (Dutton et al., 1987).

Thus, the following hypothesis is proposed:

H5: Complexity (CPL) is negatively related to CDPs adoption intention (ADT)

Trialability reflects the extent to which consumers can experiment with an innovation before fully committing to its adoption (Rogers, 1983). Innovations that allow users to test the service with minimal risk are more likely to be accepted.

For CDPs, initial trial experiences can reduce uncertainty and lead to positive surprises (Strömberg et al., 2016; Wang et al., 2018). For example, logistics providers may offer free trials or limited-time incentives to encourage first-time users to experience the convenience of CDPs, thereby fostering a more favourable perception of the service.

Thus, the following hypothesis is proposed:

H6: Trialability (TRI) is positively related to CDPs adoption intention (ADT)

Observability refers to the extent to which consumers can see or hear about an innovation's benefits from others (Rogers, 1983). If CDPs are highly visible—through advertisements, word-of-mouth recommendations, or social proof—consumers are more likely to develop positive attitudes toward the service.

Research suggests that learning from peers' experiences, online reviews, and direct exposure to the service can increase adoption rates (Yuen et al., 2018). When consumers observe others using CDPs seamlessly, their confidence in the service grows, reducing hesitation toward adoption.

Thus, the following hypothesis is proposed:

H7: Observability (OBS) is positively related to CDPs adoption intention (ADT)

3.2.2. Antecedents from the heuristics-systematic model

While Innovation Diffusion Theory (IDT) explains how consumers evaluate the characteristics of CDPs, it does not fully address the cognitive processes and decision-making mechanisms behind adoption. To bridge this gap, the Heuristic-Systematic Model (HSM) (Chaiken, 1980) is introduced to examine how individuals process information and form judgments regarding CDPs.

HSM proposes that people rely on two distinct cognitive processing routes when making decisions:

- Systematic Processing – A deliberate, effortful process where consumers carefully evaluate information before forming an opinion. This route is often used when consumers lack familiarity with a service or when the perceived risk is high (S. Chen & Chaiken, 1999).
- Heuristic Processing – A mental shortcut where individuals rely on simple cues or previous experiences to make quick judgments (S. Chen & Chaiken, 1999). This route is dominant in situations where time constraints exist, expert recommendations are available, or social influences guide decision-making.

The following sections explore the antecedents of CDP adoption based on subjective experiences and social influence derived from the HSM.

Subjective experience refers to how individuals associate past encounters with a service and use these experiences as heuristic cues when making decisions (Jacoby et al., 1989; Schwarz et al., 1991). In the case of CDPs, familiarity with self-service technologies—such as ATMs, self-checkout kiosks, and digital lockers—may increase consumers' confidence in using CDPs.

Consumers who have previously interacted with similar automated systems are more likely to view CDPs as intuitive and reliable. On the other hand, those who have limited exposure to self-service solutions may perceive CDPs as complex or unfamiliar, leading to hesitation in adoption. Studies have shown that in low-recognition environments, consumers tend to favour familiar options over new or experimental services (Todd & Gigerenzer, 2012).

Additionally, perceived ease of use influences subjective experience. When users find CDP services straightforward and seamless—such as scanning a QR code to retrieve a parcel—they develop positive associations that enhance adoption intention. However, technical failures, security concerns, or poor user experience can lead to negative perceptions, reducing the likelihood of adoption. Thus, the following hypothesis is proposed:

H8: Subjective experience (SBE) is positively related to CDPs adoption intention (ADT)

Social influence plays a crucial role in shaping consumer attitudes and perceptions toward new technologies (Venkatesh et al., 2012). When individuals observe that their peers, family members, or social circles are using a service, they develop a sense of trust and legitimacy in the innovation. HSM suggests that people rely on social heuristics, such as "if many people use it, it must be good" or "experts can be trusted" when making decisions (Chaiken & Maheswaran, 1994). This influence is particularly strong when consumers have limited prior experience with a service and seek external validation before forming an opinion (Cheung et al., 2014).

In the case of CDPs, positive word-of-mouth recommendations, influencer endorsements, and widespread usage within a community can significantly boost adoption rates (Gursoy et al., 2019). If friends, family, or colleagues regularly use CDPs and express satisfaction, potential adopters are more likely to follow suit.

Conversely, negative social feedback—such as complaints about security concerns, lost parcels, or poor customer service—can create hesitation and resistance toward adoption. Moreover, cultural factors influence social heuristics. In collectivist societies, such as Vietnam, consumers are more likely to follow group norms and peer recommendations compared to individualist cultures where personal choice is prioritized (Hofstede et al., 2010).

Thus, the following hypothesis is proposed:

H9: Social influence (SOI) is positively related to CDPs adoption intention (ADT)

3.2.3. Demographic characteristics and antecedents toward CDP

Beyond technological attributes and cognitive processing, demographic factors also play a significant role in shaping last-mile delivery preferences. Research suggests that higher-income individuals, and frequent online shoppers are more receptive to alternative delivery solutions such as CDPs (Wang et al., 2020).

Higher-income consumers may be more inclined to adopt CDPs due to their emphasis on efficiency, flexibility, and premium service options. Research suggests that wealthier consumers are less sensitive to delivery costs and prioritize speed and convenience over price considerations (Mangiaracina et al., 2019). Conversely, lower-income consumers may exhibit higher price sensitivity, preferring home delivery when free shipping is available. However, when CDPs offer discounted or zero-cost delivery options, adoption rates among this group can increase.

Consumers who shop online frequently are more familiar with e-commerce logistics and alternative delivery methods (Wang et al., 2018; Yuen et al., 2018). Regular online shoppers are also more likely to experiment with new delivery solutions, particularly if they encounter

failed home deliveries or experience frustration with rigid delivery schedules. By contrast, occasional e-commerce users may prefer traditional home deliveries due to familiarity and habit, making them slower adopters of CDPs.

Thus, the following hypotheses are proposed:

H10: Antecedents toward CDP are significantly different across CDP experience groups.

H11: Antecedents toward CDP are significantly different across income groups.

3.3. Research methodology

3.3.1. Measures and questionnaire development

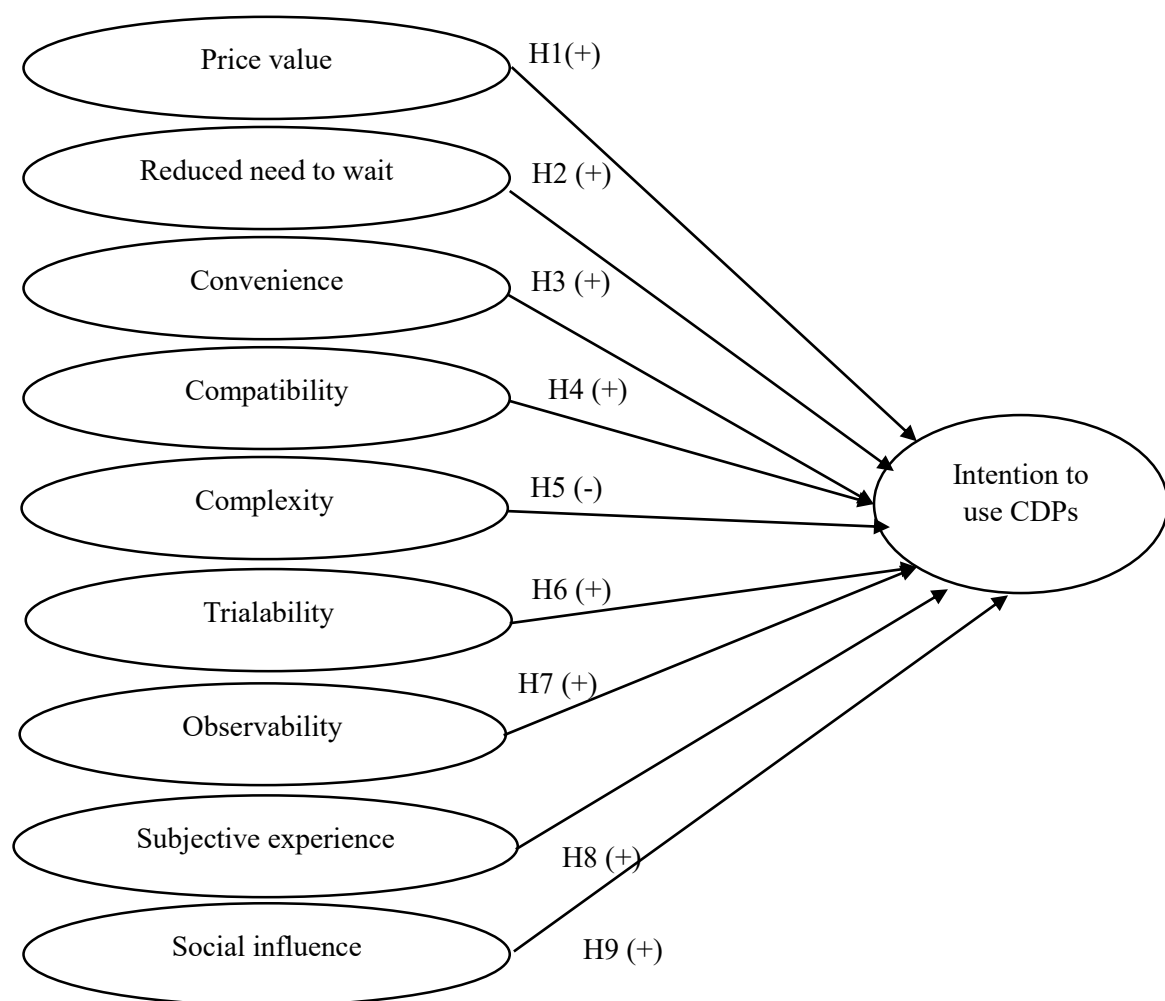


Figure 3.1: The research model and hypotheses.

Source(s): Adapted from the Innovation Diffusion theory and Heuristic-Systematic model

This study examines various factors influencing the intention to use collection-and-delivery points (CDPs). The research framework, depicted in Figure 3.1, incorporates multiple hypotheses (H1–H9), which explore key variables, including price value, compatibility,

complexity, trialability, observability, subjective experience, and social influence, as well as the convenience and reduced need to wait when using CDPs.

The measurement indicators for these variables were adapted from previous studies, ensuring their validity and reliability. Price value (PVA), social influence (SOI), and adoption intention (ADT) were assessed using three items each, derived from Venkatesh et al. (2012). Reduced need to wait (RNW) was measured through three items modified from da Silva et al. (2019). Meanwhile, constructs such as convenience (CON), compatibility (CPT), complexity (CPL), trialability (TRI), and observability (OBS) were adopted from Tsai & Tiwasing (2021) and comprised four to five items each. Subjective experience (SBE), based on the recognition heuristic (Goldstein & Gigerenzer, 2002) and judgment under uncertainty (Tversky & Kahneman, 1974), was measured through three items related to knowledge, experience, and memory of CDPs. All scale items were assessed using a five-point Likert scale.

Table 3.1: Measurement of variables in the empirical study 1

Constructs	Item NO.	Items	Reference
Price value (PVA)	PVA1	CDPs service is reasonably priced.	(Venkatesh et al., 2012)
	PVA2	CDPs service is a good value for the money	
	PVA3	At the current price, CDPs service provides a good value	
Reduced need to wait (RNW)	RNW1	Using CDPs service let me know the delivery time	(da Silva et al., 2019)
	RNW2	Using CDPs service reduces a need to wait at selected place of delivery for at least one shift of the day (morning, afternoon, or night)	
	RNW3	Using CDPs service reduces a need to wait at selected place of delivery throughout a whole day	
Convenience (CON)	CON1	Using CDPs service is easy	(Tsai & Tiwasing, 2021; Yuen et al., 2019)
	CON2	Using CDPs service does not require much effort	

	CON3	Using CDPs service allows me to collect parcels at my convenient time	
	CON4	Collection points are located close to my residence or daily activities	
Compatibility (CPT)	CPT1	Using CDPs service is compatible with my lifestyle	(Tsai & Tiwasing, 2021; Wang et al., 2018)
	CPT2	Using CDPs service is compatible with my needs	
	CPT3	Using CDPs service is compatible with my current situation	
	CPT4	Using CDPs service would be compatible with the way I like to receive parcels	
Complexity (CPL)	CPL1	Using CDPs service would be difficult	(Tsai & Tiwasing, 2021; Wang et al., 2018)
	CPL2	CDPs service would be difficult to learn how to use*	
	CPL3	Using CDPs service would be frustrating	
	CPL4	CDPs service would be cumbersome to use	
	CPL5	Using CDPs service would require a lot of efforts	
Trialability (TRI)	TRI1	It is easy to try out CDPs service	(Tsai & Tiwasing, 2021; Wang et al., 2018)
	TRI2	I know where I can go to try out various functions of CDPs service	
	TRI3	I am permitted to try out with CDPs service for long enough period	
	TRI4	I am able to experiment with CDPs service facilities when necessary	

	TRI5	CDPs service is accessible adequately to allow me test various functions it offers	
Observability (OBS)	OBS1	I would have no difficulty telling others how I collect my parcels from CDPs service	(Tsai & Tiwasing, 2021)
	OBS2	I could communicate to others how I collect my parcels from CDPs service	
	OBS3	I would have no difficulty explaining why using CDPs service is or is not beneficial	
	OBS4	The process of CDPs service is apparent to me	
Subjective experience (SBE)	SBE1	- Do you have knowledge of CDPs service? (Never heard – Heard with no further information – Heard with little information – Experienced with further information – Experienced with all sorts of information)	(Goldstein & Gigerenzer, 2002; Tversky & Kahneman, 1974)
	SBE2	- How many instances can you remember of having experience with CDPs service? (Not at all – extremely small numbers – small numbers – large numbers – extremely large numbers)	
	SBE3	- How easy do you recall these instances? (Extremely easy – Easy – Intermediate – Difficult – Extremely Difficult)	
Social Influence (SOI)	SOI1	People who are important to me think that I should use CDPs service	(Venkatesh et al., 2012)

	SOI2	People who influence my behaviour think that I should use CDPs service	
	SOI3	People whose opinions that I value prefer that I use CDPs service	
Adoption intention (ADT)	ADT1	I intend to use CDPs service in the future	(Venkatesh et al., 2012)
	ADT2	I will always try to use CDPs service in my daily life	
	ADT3	I plan to continue to use CDPs service frequently	

The questionnaire was designed to include all scale items measuring the variables in the study. Additionally, demographic questions covering gender, age, education, income, and online purchasing behaviour were included at the beginning of the survey. The questionnaire was initially developed in English, translated into Vietnamese, and reviewed by two academic experts through a back-and-forth translation process. A pilot test was conducted with ten young online consumers to refine content clarity and format. The final questionnaire was created using Online Survey and received ethical approval from the University of Lincoln (Reference: UoL2023_15444).

3.3.2. Sample and data collection.

The survey targeted online consumers aged 18 and above in Hanoi, Vietnam. Due to the large population, non-probability sampling was used, specifically convenience and snowball sampling. The survey was distributed via Facebook, Vietnam's most popular social platform, with respondents encouraged to share it within their networks.

A total of 440 valid responses were collected for final analysis. The sample primarily comprised young consumers, with 85.5% aged between 18–25, 10% between 26–35, 3.9% between 36–49, and 0.7% aged above 50. In terms of income, 40% of respondents earned more than VND 5 million per month (approximately USD 200), while nearly 23% earned more than VND 10 million per month (approximately USD 400). Most respondents (75%) reported placing online orders valued between VND 100,000 and 500,000 (approximately USD 5–20).

According to Hair et al. (2010), the sample size should be at least five times the number of survey items. With fifty-two questions in the questionnaire, the sample size of 440 was deemed sufficient. Regarding delivery preferences, 97.5% of respondents had used home

delivery, while 24.3% had used CDPs, and 40% had opted for the "Buy Online, Pick Up in Store" (BOPIS) service.

3.3.3. Variables

The study employed a five-point Likert scale to measure variables, with composite scores for each variable calculated by averaging the respective item responses. Table 3.2 presents the descriptive statistics for both dependent and independent variables.

The dependent variable, adoption intention (ADT), represents consumers' willingness to use CDPs. The independent variables were derived from two theoretical frameworks. Seven variables—price value (PVA), reduced need to wait (RNW), convenience (CON), compatibility (CPT), complexity (CPL), trialability (TRI), and observability (OBS)—were based on the Innovation Diffusion Theory. Meanwhile, subjective experience (SBE) and social influence (SOI) were rooted in the Systematic-Heuristic Theory. Notably, the mean value for SBE was below 3, indicating that CDP services were not widely recognized among consumers in the sample.

Control variables were also incorporated into the model. Consumers with a monthly disposable income above VND 10 million were categorized into a high-income group (coded as 2), while others were classified as low-income (coded as 1). The number of online orders per month was classified as high (greater than ten orders) or low, with high order-frequency coded as 2 and low frequency as 1. Similarly, online orders valued at VND 500,000 or more were considered high-value orders (coded as 2), while lower-value orders were assigned a value of 1. Additionally, consumers with prior experience using CDPs were assigned a value of 1, while those without experience were coded as 0.

Table 3.2: Statistical summary

	Explanation	N	Minimum	Maximum	Mean	Std. Deviation
PVA	Price value of CDP service	440	1.00	5.00	3.6227	.78977
RNW	Reduced need to wait when using CDP service	440	1.00	5.00	3.8386	.80146
CON	Convenience of using CDP service	440	1.00	5.00	3.7455	.78550
CPT	Compatibility of CDP service	440	1.00	5.00	3.6273	.82096
CPL	Complexity of CDP service	440	1.00	5.00	2.7795	.89993
TRI	Trialability of CDP service	440	1.00	5.00	3.6318	.75662
OBS	Observation of CDP service	440	1.00	5.00	3.6608	.76018

SBE	Subjective experience of consumers using CDP service	440	1.00	5.00	2.5682	.92418
SOI	Social influence of using CDP service	440	1.00	5.00	3.2955	.81001
ADT	Adoption intention to use CDP service	440	1.00	5.00	3.6561	.74579
CDPExp	CDP experience of consumers	440	.00	1.00	.2432	.42949
Incomelevel	Monthly income level of consumers	440	1.00	2.00	1.2273	.41955
OrderNo	The number of online orders a consumer places each month	440	1.00	2.00	1.0886	.28454
OrderValue	Average value of an online order	440	1.00	2.00	1.1068	.30923
AgeGroup	Age group of consumers	440	1	4	1.20	.527

Source(s): Author's own creation.

Table 3.2 provides a statistical summary of the study's key variables. Among the independent variables, the highest mean score was observed for the reduced need to wait (3.83), suggesting that respondents found CDPs effective in minimizing waiting times. Conversely, complexity (CPL) had the lowest mean score (2.78), indicating that many consumers perceived CDPs as relatively difficult to use. Subjective experience (SBE) had a notably low mean of 2.56, reinforcing the finding that CDPs were not yet widely adopted by the respondents.

3.4. Findings

In this study, multiple regression analysis is employed to investigate the relationship between consumers' adoption intention toward Collection-and-Delivery Points (CDPs) and its influencing factors. This statistical technique helps determine how strongly each independent variable contributes to the prediction of adoption intention. Additionally, a Multivariate Analysis of Variance (MANOVA) is conducted to examine whether there are significant differences in these determinants based on nonmetric categorical variables, such as income level and prior experience with CDPs. The SPSS statistical software version 22.0 is used for these analyses.

The multiple regression analysis is specifically applied to test Hypotheses 1 through 9, which explore the impact of various independent variables (e.g., price value, convenience, complexity, trialability, and social influence) on adoption intention. Meanwhile, MANOVA is used to address Hypotheses 10 and 11, focusing on differences in consumer perceptions and behaviours based on demographic and experiential factors. This dual approach ensures a

comprehensive understanding of how different factors interact to shape consumers' likelihood of using CDPs.

3.4.1. Cronbach's alpha

Before proceeding with hypothesis testing, it is essential to assess the reliability of the measurement scales used in the study. Reliability refers to the internal consistency of a scale, ensuring that the items measuring each construct produce stable and consistent results. In this study, Cronbach's alpha coefficient is used as a standard measure of scale reliability.

Cronbach's alpha was calculated for each construct to verify whether the scales met the recommended reliability threshold of 0.7 or higher, as suggested by Hair et al. (2010). To improve reliability, one item from the Subjective Experience (SBE) scale was removed, while the number of items in other constructs remained unchanged. The Cronbach's alpha values ranged from 0.755 (for SBE) to 0.933 (for CPL), indicating a high level of internal consistency across the constructs. This confirms that the measurement scales used in the questionnaire are statistically reliable and suitable for further analysis.

Table 3.3: Cronbach alpha

Constructs	Measurement items	Cronbach alpha
Price value (PVA)	CDPs service is reasonably priced	0.87
	CDPs service is a good value for the money	
	At the current price, CDPs service provides a good value	
Reduced need to wait (RNW)	Using CDPs service let me know the delivery time	0.848
	Using CDPs service reduces a need to wait at a selected place of delivery for at least one shift of the day (morning, afternoon, or night)	
	Using CDPs service reduces a need to wait at selected place of delivery throughout a whole day	
Convenience (CON)	Using CDPs service is easy	0.845
	Using CDPs service does not require much effort	
	Using CDPs service allows me to collect parcels at my convenient time	
	Collection points are located close to my residence or daily activities	
Compatibility (CPT)	Using CDPs service is compatible with my lifestyle	0.922
	Using CDPs service is compatible with my needs	

	Using CDPs service is compatible with my current situation	
	Using CDPs service would be compatible with the way I like to receive	
Complexity (CPL)	Using CDPs service would be difficult	0.933
	CDPs service would be difficult to learn how to use	
	Using CDPs service would be frustrating	
	CDPs service would be cumbersome to use	
	Using CDPs service would require a lot of efforts	
Trialability (TRI)	It is easy to try out CDPs service	0.91
	I know where I can go to try out various functions of CDPs service	
	I am permitted to try out with CDPs service for long enough period	
	I am able to experiment with CDPs service facilities when necessary	
	CDPs service is accessible adequately to allow me test various functions it offers	
Observability (OBS)	I would have no difficulty telling others how I collect my parcels from CDPs service	0.903
	I could communicate to others how I collect my parcels from CDPs service	
	I would have no difficulty explaining why using CDPs service is or is not beneficial	
	The process of CDPs service is apparent to me	
Subjective experience (SBE)	Do you have knowledge of CDPs service	0.755
	How many instances can you remember of having experience with CDPs service	
Social influence (SOI)	People who are important to me think that I should use CDPs service	0.922
	People who influence my behaviour think that I should use CDPs service	
	People whose opinions that I value prefer that I use CDPs service	
	I intend to use CDPs service in the future	0.853

Adoption intention (ADT)	I will always try to use CDPs service in my daily life	
	I plan to continue to use CDPs service frequently	

Source(s): The author.

3.4.2. Outliers

To ensure the accuracy and validity of the dataset, outlier detection was performed using Mahalanobis Distance (D^2). This statistical measure identifies observations that deviate significantly from the overall pattern in a multidimensional space. By calculating Mahalanobis D^2 , the study determines how far each observation is from the centre of the dataset.

During this process, thirteen observations were identified as outliers, as their significance levels were found to be below 0.001 (Hair et al., 2010). These cases were removed from the dataset to prevent them from distorting the results of the analysis. The elimination of outliers helps improve the accuracy and robustness of the statistical models, ensuring that the findings are more representative of the target population.

3.4.3. Multiple regression and hypotheses testing

3.4.3.1. Assumption tests

Before conducting regression analysis, it is essential to test whether the metric variables meet statistical assumptions, such as normality, linearity, and homoscedasticity. These assumptions help ensure the validity and reliability of the results.

To assess normality, the Kolmogorov-Smirnov test was applied to all metric variables. The results, as shown in Table 3.3, indicate that all variables exhibit deviations from normality (p-values < 0.001). However, since the sample size is substantial ($N = 427$), the Central Limit Theorem (CLT) suggests that non-normality is unlikely to significantly impact regression estimates. Large samples (above 200) generally reduce the negative effects of non-normality in parametric tests.

Table 3.4: Distributional Characteristics, Testing for Normality

Variable	Skewness		Kurtosis		Tests of Normality Kolmogorov-Smirnov	
	Statistic	z value	Statistic	z value	Statistic	Significance
PVA	-0.729	0.118	1.982	0.236	0.139	<0.001
RNW	-1.057	0.118	2.546	0.236	0.183	<0.001
CON	-0.787	0.118	2.097	0.236	0.130	<0.001
CPT	-0.578	0.118	0.902	0.236	0.132	<0.001

CPL	0.408	0.118	0.041	0.236	0.130	<0.001
TRI	-0.695	0.118	1.810	0.236	0.134	<0.001
OBS	-0.649	0.118	2.004	0.236	0.151	<0.001
SBE	0.305	0.118	-0.177	0.236	0.118	<0.001
SOI	-0.124	0.118	0.436	0.236	0.178	<0.001

Source(s): Author's own creation.

Figure 3.2 presents the scatterplots for all dependent and independent variables. No combination seems to exhibit a nonlinear relationship.

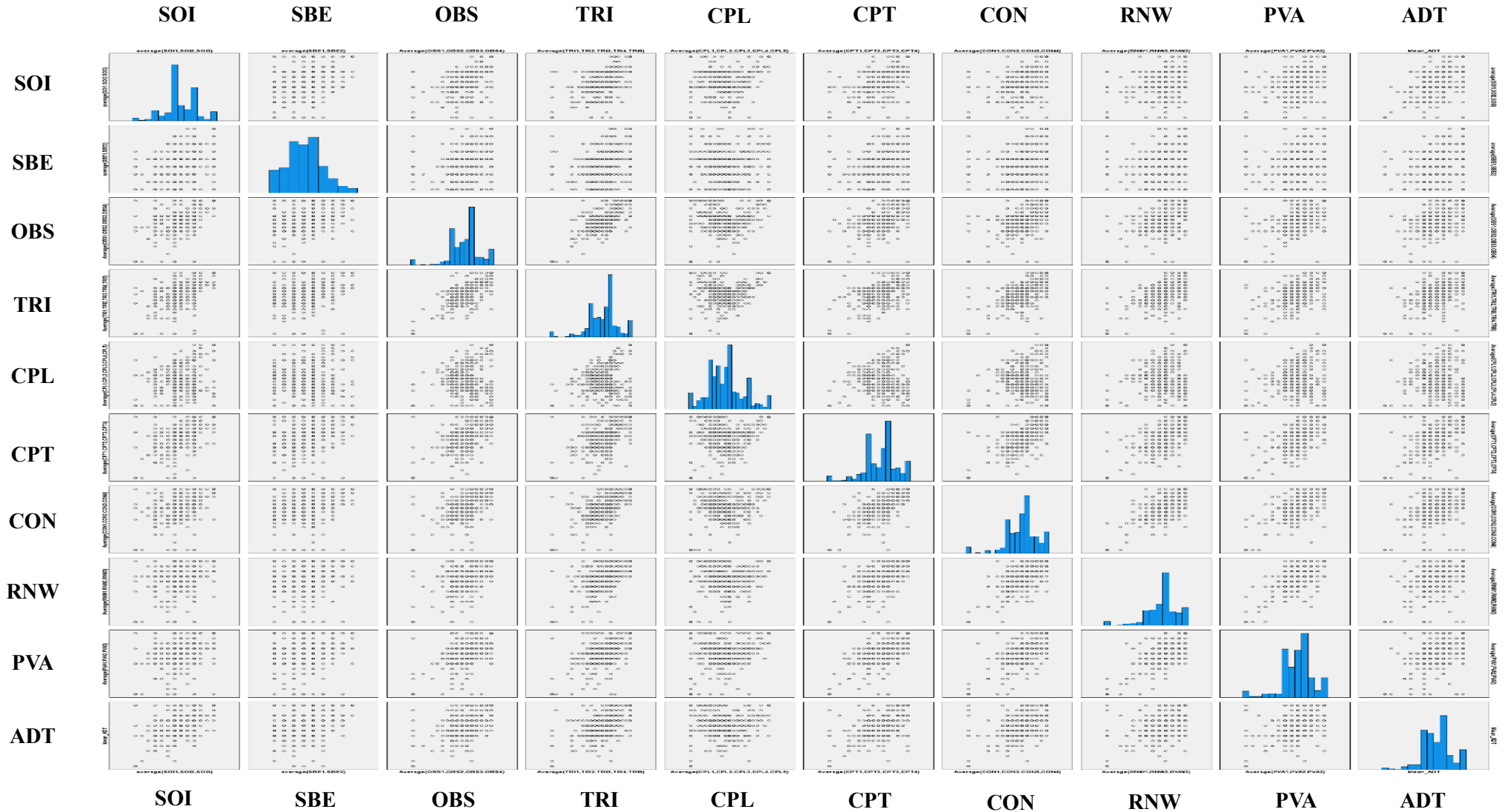


Figure 3.2: Scatterplot matrix of variables.

Source(s): Author's own creation.

The Levene test is used to assess homoscedasticity on a univariate basis where the variance of metric variables is compared across levels of four nonmetric variables (Incomelevel, OrderNo, OrderValue, and AgeGroup). Among nine variables, only SBE, CPL and OBS have minor problems with heteroscedasticity. However, in no instance do any of the metric variables have more than two problematic nonmetric variables. The relative lack of any consistent patterns across nonmetric variables suggests that heteroscedasticity problems will be minimal.

Table 3.5: Testing for Homoscedasticity

Metric variable	Nonmetric variable							
	Incomelevel		OrderNo		OrderValue		AgeGroup	
	Levene Statistic	Sig.	Levene Statistic	Sig.	Levene Statistic	Sig.	Levene Statistic	Sig.
PVA	2.677	0.103	0.279	0.598	0.345	0.557	0.476	0.699
RNW	0.737	0.391	1.408	0.236	0.031	0.860	1.832	0.141
CON	0.004	0.947	0.655	0.419	0.087	0.768	2.254	0.082
CPT	2.247	0.135	0.376	0.540	0.025	0.874	0.453	0.715
CPL	0.085	0.770	0.238	0.626	6.776	0.010	2.512	0.058
TRI	0.051	0.821	0.883	0.348	0.661	0.417	0.779	0.506
OBS	0.407	0.524	0.012	0.913	0.004	0.951	4.402	0.005
SBE	5.346	0.021	9.657	0.002	0.110	0.740	2.137	0.095
SOI	0.145	0.703	0.013	0.909	0.150	0.698	0.258	0.856

Source(s): Author's own creation.

3.4.3.2. Multiple regression results using a confirmatory estimation approach.

The regression model with nine independent variables explains nearly 56 percent of the variance of adoption intention towards CDPs (ADT).

Table 3.6: Multiple regression results using a confirmatory estimation approach.

Confirmatory Specification with 9 variables			
Multiple R		0.746	
Coefficient of Determination (R ²)		0.557	
Adjusted R ²		0.547	
Standard error of the estimate		0.49416	
Variables Entered into the Regression Model			
	Regression Coefficients	Statistical Significance	Collinearity Statistics

Variables	Unstanda rdized B	Std. Error	Standardized Beta	t	Sig.	Tolerance	VIF
Constant	.659	.151		4.367	<.001		
PVA	.135	.054	.136	2.515	.012	.366	2.733
RNW	.097	.052	.099	1.850	.065	.368	2.714
CON	-.061	.062	-.060	-.976	.330	.278	3.602
CPT	.198	.054	.214	3.638	<.001	.309	3.241
CPL	-.070	.029	-.085	-2.427	.016	.858	1.165
TRI	.158	.059	.155	2.674	.008	.315	3.171
OBS	.143	.056	.140	2.556	.011	.356	2.811
SBE	.046	.029	.057	1.589	.113	.812	1.231
SOI	.189	.042	.206	4.512	<.001	.512	1.952
Dependent Variable: ADT							

Source(s): Author's own creation.

The six regression coefficients, plus the constant, are all significant at the 0.05 level, in which CPT and SOI are significant at the 0.01 level. All of the significant coefficients except one have positive values. Of particular note is the reversed sign for CPL, suggesting that an increase in the complexity of using CDPs has a negative impact on the adoption intention of consumers. These results confirm hypotheses H1, H4, H5, H6, H7, H9 and reject hypotheses H2, H3, and H8.

Tolerance values for the variables in the model range from 0.858 (CPL) to 0.278 (CON), while the VIF values range from 1.231 to 3.602 (a VIF less than 5 illustrates a low correlation of that predictor with other predictors). None of these values indicate levels of multicollinearity.

3.4.3.3. Stepwise multiple regression results

The stepwise estimation procedure is designed to develop a regression model with the fewest number of statistically independent variables and maximum predictive accuracy, Table 3.6 provides a step-by-step summary detailing the measures of overall fit for the regression model in predicting the consumers' adoption intention of using CDPs.

Table 3.7: Model summary of Stepwise multiple regression model

Step	Overall Model Fit				R ² Change Statistics				
	R	R ²	Adjusted R ²	Std. Error of the Estimate	R ² Change	F Change	df1	df2	Sig. F Change

1	.652 ^a	.426	.424	.55710	.426	314.906	1	425	<.001
2	.703 ^b	.494	.492	.52334	.069	57.598	1	424	<.001
3	.721 ^c	.520	.516	.51056	.026	22.485	1	423	<.001
4	.730 ^d	.533	.529	.50413	.013	11.866	1	422	<.001
5	.736 ^e	.542	.537	.49981	.009	8.317	1	421	.004
6	.742 ^f	.550	.543	.49608	.008	7.360	1	420	.007
a. Predictors: (Constant), CPT									
b. Predictors: (Constant), CPT, TRI									
c. Predictors: (Constant), CPT, TRI, SOI									
d. Predictors: (Constant), CPT, TRI, SOI, PVA									
e. Predictors: (Constant), CPT, TRI, SOI, PVA, CPL									
f. Predictors: (Constant), CPT, TRI, SOI, PVA, CPL, OBS									
g. Dependent Variable: ADT									

Source(s): Author's own creation.

Each of the first three variables added to the equation made substantial contributions to the overall model fit, with substantive increases in the R^2 and adjusted R^2 while also decreasing the standard error of the estimate. With only the first three variables, 51.6% of the variation in ADT is explained. Three additional variables are added to arrive at the final model, but these variables, although statistically significant, make much smaller contribution. The stepwise procedure highlights the importance of the first three variables in assessing overall model fit. Compared with the confirmatory approach, the R^2 in the stepwise model is slightly smaller by 0.7%.

Aligning with the result of the confirmatory model, six variables (PVA, CPT, CPL, TRI, OBS, and SOI) are statistically significant (Table 3.7). It is worth noting that all these six regression coefficients are significant at the 0.01 level in model 6. Thus, hypotheses H1, H4, H5, H6, H7, H9 are supported and hypotheses H2, H3, and H8 are rejected.

Table 3.8: Variables entered into the stepwise multiple regression.

Model	Variables	Regression Coefficients			Statistical Significance		Collinearity Statistics	
		Unstandardized B	Std. Error	Standardized Beta	t	Sig.	Tolerance	VIF
1	Constant	1.458	.127		11.493	<.001		
	CPT	.604	.034	.652	17.746	<.001	1.000	1.000
2	Constant	.943	.137		6.879	<.001		

	CPT	.390	.043	.421	9.146	<.001	.562	1.778
	TRI	.355	.047	.349	7.589	<.001	.562	1.778
3	Constant	.851	.135		6.295	<.001		
	CPT	.309	.045	.334	6.880	<.001	.482	2.076
	TRI	.281	.048	.277	5.830	<.001	.504	1.985
	SOI	.199	.042	.216	4.742	<.001	.545	1.834
4	Constant	.716	.139		5.150	<.001		
	CPT	.243	.048	.262	5.025	<.001	.406	2.465
	TRI	.219	.051	.216	4.310	<.001	.441	2.267
	SOI	.196	.041	.213	4.724	<.001	.545	1.835
	PVA	.168	.049	.168	3.445	<.001	.464	2.154
5	Constant	.817	.142		5.743	<.001		
	CPT	.234	.048	.252	4.860	<.001	.404	2.477
	TRI	.241	.051	.237	4.722	<.001	.432	2.317
	SOI	.207	.041	.225	5.018	<.001	.540	1.852
	PVA	.182	.049	.182	3.748	<.001	.459	2.176
	CPL	-.083	.029	-.101	-2.884	.004	.887	1.128
6	Constant	.737	.144		5.107	<.001		
	CPT	.211	.048	.228	4.360	<.001	.392	2.551
	TRI	.166	.057	.164	2.895	.004	.334	2.994
	SOI	.192	.041	.209	4.644	<.001	.530	1.886
	PVA	.160	.049	.160	3.268	.001	.447	2.239
	CPL	-.080	.029	-.097	-2.796	.005	.885	1.129
	OBS	.151	.056	.148	2.713	.007	.361	2.771
Dependent Variable: ADT								

Source(s): Author's own creation.

It is noteworthy that in the stepwise regression model 6, multicollinearity is held at the acceptable level, and the results are even better than the confirmatory model. Specifically, the highest tolerance value is 0.885 (CPL) and the lowest is 0.334 (TRI), while all the VIF values are less than 3.

3.4.3.4. Multiple regression results including nonmetric independent variables.

The addition of nonmetric independent variables could possibly improve prediction and explanation of the model. The variables of Incomelevel, OrderNo, OrderValue, and AgeGroup

are included in the confirmatory model. Table 3.8 presents the results of the confirmatory estimation including nonmetric independent variables.

Table 3.9: The confirmatory estimation including nonmetric independent variables.

Confirmatory Specification with 13 variables							
Multiple R				0.746			
Coefficient of Determination (R ²)				0.557			
Adjusted R ²				0.543			
Standard error of the estimate				0.49621			
Variables Entered into the Regression Model							
	Regression Coefficients			Statistical Significance		Collinearity Statistics	
Variables	Unstanda rdized B	Std. Error	Standardized Beta	t	Sig.	Tolerance	VIF
Constant	.599	.189		3.174	.002	.599	.189
PVA	.137	.054	.137	2.534	.012	.137	.054
RNW	.096	.053	.099	1.833	.067	.096	.053
CON	-.059	.063	-.058	-.936	.350	-.059	.063
CPT	.198	.055	.214	3.615	<.001	.198	.055
CPL	-.072	.030	-.087	-2.434	.015	-.072	.030
TRI	.157	.059	.155	2.657	.008	.157	.059
OBS	.142	.056	.139	2.521	.012	.142	.056
SBE	.043	.029	.054	1.480	.140	.043	.029
SOI	.187	.042	.204	4.445	<.001	.187	.042
Incomele vel	.002	.080	.001	.025	.980	.002	.080
OrderVal ue	.062	.088	.026	.707	.480	.062	.088
OrderNo	.008	.088	.003	.092	.927	.008	.088
AgeGrou p	-.011	.066	-.008	-.169	.866	-.011	.066
Dependent Variable: ADT							

Source(s): Author's own creation.

Examination of the overall fit statistics indicates no improvement, will all of the measures (R^2 , Adjusted R^2 , Standard error of the estimate) remain unchanged compared with the confirmatory model.

Regarding the regression coefficients, six of the thirteen variables have statistically significant parameters including PVA, CPT, CPL, TRI, OBS, SOI, which supports the hypotheses H1, H4, H5, H6, H7, H9, while the remaining hypotheses are not supported. The coefficients of nonmetric variables (Incomelevel, OrderValue, OrderNo, and Agegroup) are quite smaller than the others but are not significant at the 0.05 level or even 0.1 level. It can be concluded that adding nonmetric variables does not improve the explanation of the original model.

However, it is important to note that all three approaches (confirmatory, stepwise, and addition of nonmetric variables) confirm the significant impact of six variables (PVA, CPT, CPL, TRI, OBS, SOI) on the consumers' adoption intention to use CDPs.

3.4.4. MANOVA analysis and hypotheses testing

Multivariate analysis of variance (MANOVA) affords researchers with the ability to assess differences across one or more nonmetric independent variables for a set of metric dependent variables. It provides a means for determining the extent to which groups of respondents differ in terms of the dependent measures. As discussed in the literature review section, determinants of CDP adoption intention may be different across groups of CDP experience and income level. In the following sections, the research will examine two characteristics (CDP experience and Income level) for their impact on a set of factors influencing adoption intention to use CDPs (PVA, CPT, CPL, TRI, OBS, SOI). This section explores three MANOVA models:

- Effect of Income Level on CDP Adoption Determinants
- Effect of CDP Experience on CDP Adoption Determinants
- Interaction Effect Between Income Level and CDP Experience

3.4.4.1. MANOVA analysis with Income level

Table 3.9 provides a summary of the group profiles on each of six variables (PVA, CPT, CPL, TRI, OBS, SOI) across two groups of income level. Based on the dataset, 330 respondents have low income and ninety-seven people are categorised into high income group. It can be seen that the mean of all variables for low-income group is higher than numbers for high income group.

Table 3.10: Descriptive Statistics of PVA, CPT, CPL, TRI, OBS, SOI for groups of Income level

	1 "low income" 2 "high income"	Mean	Std. Deviation	N
PVA	1.00	3.66	.73	330
	2.00	3.59	.77	97
	Total	3.65	.74	427
CPT	1.00	3.67	.77	330
	2.00	3.54	.85	97
	Total	3.64	.79	427
CPL	1.00	2.82	.90	330
	2.00	2.75	.86	97
	Total	2.81	.89	427
TRI	1.00	3.66	.73	330
	2.00	3.61	.70	97
	Total	3.65	.72	427
OBS	1.00	3.69	.72	330
	2.00	3.65	.72	97
	Total	3.68	.72	427
SOI	1.00	3.31	.80	330
	2.00	3.23	.79	97
	Total	3.30	.80	427

Source(s): Author's own creation.

Homoscedasticity: As shown in Table 3.10, univariate tests (Levene's test) for all six variables are nonsignificant and the Box's M test for equality of covariance matrices between groups also shows a nonsignificant value (0.503), indicating no significant difference between the two groups on the six dependent variables collectively.

Correlation and Normality of Dependent variables: the Bartlett's test for sphericity in the Table 3.10 presents a significant intercorrelation collectively. And the assumption of normality for the dependent variables was already examined in section 3.4.3.1 and found to be acceptable.

Table 3.11: Multivariate and Univariate measures for testing of Income level

Multivariate Test of Homoscedasticity				
Box's Test of Equality of Covariance				
Box's M	20.785			
F	0.966			
df1	21			
df2	118263.386			

Sig.	0.503			
<i>Computed using alpha = .05</i>				
Univariate Tests of Homoscedasticity				
Levene's Test of Equality of Error Variances				
Dependent Variable	F	df1	df2	Sig.
PVA	2.677	1	425	0.103
CPT	2.247	1	425	0.135
CPL	0.085	1	425	0.770
TRI	0.051	1	425	0.821
OBS	0.407	1	425	0.524
SOI	0.145	1	425	0.518
Test for Correlation Among the Dependent Variables				
Bartlett's Test of Sphericity				
Likelihood Ratio				
Approx. Chi-Square	1242.166			
df	15			
Sig.	<0.001			

Source(s): Author's own creation.

Table 3.11 contains the four most commonly used multivariate tests and each of these indicates that the set of dependent variables have non-significant difference between the two groups of income level. The observed powers of all tests do not reach the desired level of 0.8. We can also see that all of the individual tests are non-significant.

Table 3.12: Multivariate and Univariate tests for group differences across groups of income level

Multivariate Tests							
Statistical Test	Value	F	df	Error df	Sig.	Partial Eta squared	Observed Power^g
Pillai's Criterion	.007	.485	6.000	420.000	.820	.007	.197

Wilks' Lambda	.993	.485	6.000	420.000	.820	.007	.197
Hotelling's T²	.007	.485	6.000	420.000	.820	.007	.197
Roy's greatest characteristic root	.007	.485	6.000	420.000	.820	.007	.197
Univariate Tests (Between-Subjects Effects)							
Dependent variable	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta squared	Observed Power^g
PVA	.422 ^a	1	.422	.779	.378	.002	.142
CPT	1.338 ^b	1	1.338	2.137	.144	.005	.308
CPL	.375 ^c	1	.375	.473	.492	.001	.105
TRI	.152 ^d	1	.152	.289	.591	.001	.084
OBS	.112 ^e	1	.112	.217	.642	.001	.075
SOI	.485 ^f	1	.485	.761	.384	.002	.140
<i>a. R Squared = .002 (Adjusted R Squared = -.001)</i> <i>b. R Squared = .005 (Adjusted R Squared = .003)</i> <i>c. R Squared = .001 (Adjusted R Squared = -.001)</i> <i>d. R Squared = .001 (Adjusted R Squared = -.002)</i> <i>e. R Squared = .001 (Adjusted R Squared = -.002)</i> <i>f. R Squared = .002 (Adjusted R Squared = -.001)</i> <i>g. Computed using alpha = .05</i>							

Source(s): Author's own creation.

3.4.4.2. MANOVA analysis with CDP experience

Table 3.12 provides a summary of the group profiles on each of six variables (PVA, CPT, CPL, TRI, OBS, SOI) across two groups of CDP experience. Based on the dataset, 322 respondents have no experience, and 105 people have used the CDP service. It can be seen that the mean of all variables for consumers having CDP experience is higher than numbers for those without CDP experience except CPL in a reverse direction.

Table 3.13: Descriptive Statistics of PVA, CPT, CPL, TRI, OBS, SOI for groups of CDP experience

	CDPExp	Mean	Std. Deviation	N
PVA	.00	3.63	.75	322
	1.00	3.69	.68	105
	Total	3.65	.74	427
CPT	.00	3.60	.80	322
	1.00	3.77	.75	105
	Total	3.64	.79	427
CPL	.00	2.85	.89	322
	1.00	2.66	.88	105
	Total	2.81	.89	427
TRI	.00	3.62	.74	322
	1.00	3.74	.67	105
	Total	3.65	.72	427
OBS	.00	3.63	.72	322
	1.00	3.81	.69	105
	Total	3.68	.72	427
SOI	.00	3.27	.80	322
	1.00	3.38	.81	105
	Total	3.30	.80	427

Source(s): Author's own creation.

Homoscedasticity: As shown in Table 3.13, univariate tests (Levene's test) for five variables (PVA, CPL, TRI, OBS, SOI) are nonsignificant and the Box's M test for equality of covariance matrices between groups also shows a nonsignificant value (0.729), indicating no significant difference between the two groups on the six dependent variables collectively.

Correlation and Normality of Dependent variables: the Bartlett's test for sphericity in the Table 3.13 presents a significant intercorrelation collectively. And the assumption of normality for the dependent variables was already examined in section 3.4.3.1 and found to be acceptable.

Table 3.14: Multivariate and Univariate measures for testing of CDP experience

Multivariate Test of Homoscedasticity				
Box's Test of Equality of Covariance				
Box's M	17.078			

F	0.795			
df1	21			
df2	143245.721			
Sig.	0.729			
Univariate Tests of Homoscedasticity				
Levene's Test of Equality of Error Variances				
Dependent Variable	F	df1	df2	Sig.
PVA	2.992	1	425	.084
CPT	4.325	1	425	.038
CPL	.000	1	425	.994
TRI	2.605	1	425	.975
OBS	1.791	1	425	.181
SOI	.028	1	425	.868
Test for Correlation Among the Dependent Variables				
Bartlett's Test of Sphericity				
Likelihood Ratio				
Approx. Chi-Square	1242.166			
df	15			
Sig.	<0.001			

Source(s): Author's own creation.

Table 3.14 contains the four most commonly used multivariate tests and each of these indicates that the set of dependent variables have a significant difference between the two groups of CDP experience. The observed power of all tests is acceptable (close to the level of 0.8). However, only one variable (OBS) is found significant in univariate tests for each dependent variable. These results illustrate that the score for OBS of consumers with CDP experience is statistically higher than those having no CDP experience (3.81 versus 3.63).

Table 3.15: Multivariate and Univariate tests for group differences across groups of CDP experience

Multivariate Tests							
Statistical Test	Value	F	df	Error df	Sig.	Partial Eta squared	Observed Power^a

Pillai's Criterion	.029	2.067	6.000	420.000	.050	.029	.747
Wilks' Lambda	.971	2.067	6.000	420.000	.050	.029	.747
Hotelling's T²	.030	2.067	6.000	420.000	.050	.029	.747
Roy's greatest characteristic root	.030	2.067	6.000	420.000	.050	.029	.747
Univariate Tests (Between-Subjects Effects)							
Dependent variable	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta squared	Observed Power^g
PVA	.261 ^a	1	.261	.482	.488	.001	.106
CPT	2.257 ^b	1	2.257	3.617	.058	.008	.475
CPL	2.744 ^c	1	2.744	3.487	.063	.008	.461
TRI	1.031 ^d	1	1.031	1.975	.161	.005	.289
OBS	2.452 ^e	1	2.452	4.787	.029	.011	.588
SOI	.934 ^f	1	.934	1.467	.227	.003	.227
<i>a. R Squared = .001 (Adjusted R Squared = -.001)</i> <i>b. R Squared = .008 (Adjusted R Squared = .006)</i> <i>c. R Squared = .008 (Adjusted R Squared = .006)</i> <i>d. R Squared = .005 (Adjusted R Squared = .002)</i> <i>e. R Squared = .011 (Adjusted R Squared = .009)</i> <i>f. R Squared = .003 (Adjusted R Squared = .001)</i> <i>g. Computed using alpha = .05</i>							

Source(s): Author's own creation.

3.4.4.3. MANOVA analysis with combination of Income level and CDP experience

This analysis is termed a 2x2 design because it includes two levels of income level (low and high) and two levels of CDP experience (no experience and experienced). The sample of 427 respondents are split across four groups. The sample sizes in all cells provide enough statistical power to identify with at least 28 observations per cell and 253 at the highest number.

Table 3.16: Descriptive Statistics of PVA, CPT, CPL, TRI, OBS, SOI for groups of Income level and CDP experience

	CDPExp	1 "low income" 2 "high income"	Mean	Std. Deviation	N
PVA	0.00	1.00	3.67	0.74	253
		2.00	3.5	0.79	69
		Total	3.63	0.75	322
	1.00	1.00	3.65	0.67	77
		2.00	3.8	0.69	28
		Total	3.69	0.68	105
	Total	1.00	3.66	0.73	330
		2.00	3.59	0.77	97
		Total	3.65	0.74	427
CPT	0.00	1.00	3.65	0.79	253
		2.00	3.41	0.81	69
		Total	3.60	0.80	322
	1.00	1.00	3.74	0.7	77
		2.00	3.84	0.88	28
		Total	3.77	0.75	105
	Total	1.00	3.67	0.77	330
		2.00	3.54	0.85	97
		Total	3.64	0.79	427
CPL	0.00	1.00	2.87	0.90	253
		2.00	2.77	0.84	69
		Total	2.85	0.89	322
	1.00	1.00	2.65	0.86	77
		2.00	2.71	0.94	28
		Total	2.66	0.88	105
	Total	1.00	2.82	0.90	330

TRI	0.00	2.00	2.75	0.86	97
		Total	2.81	0.89	427
	1.00	1.00	3.64	0.74	253
		2.00	3.55	0.73	69
		Total	3.62	0.74	322
	Total	1.00	3.72	0.69	77
		2.00	3.76	0.63	28
		Total	3.74	0.67	105
OBS	0.00	1.00	3.66	0.73	253
		2.00	3.53	0.71	69
		Total	3.63	0.72	322
	1.00	1.00	3.76	0.70	77
		2.00	3.95	0.66	28
		Total	3.81	0.69	105
	Total	1.00	3.69	0.72	330
		2.00	3.65	0.72	97
		Total	3.68	0.72	427
SOI	0.00	1.00	3.31	0.80	253
		2.00	3.11	0.75	69
		Total	3.27	0.8	322
	1.00	1.00	3.32	0.8	77
		2.00	3.54	0.81	28
		Total	3.38	0.81	105
	Total	1.00	3.31	0.80	330
		2.00	3.23	0.79	97
		Total	3.30	0.80	427

Source(s): Author's own creation.

Four groups are involved in testing the assumption of homoscedasticity (Table 3.16). The multivariate test (Box's M) has a non-significant value (0.663), allowing to accept the null hypothesis of homogeneity of variance-covariance matrices at 0.05 level. The univariate tests for the six dependent variables separately are also all non-significant. With the multivariate and

univariate tests showing non-significant, the assumption of homoscedasticity has been fully met.

Table 3.17: Multivariate and Univariate measures for testing of Income level and CDP experience

Multivariate Test of Homoscedasticity				
Box's Test of Equality of Covariance				
Box's M	60.717			
F	0.917			
df1	63			
df2	37583.416			
Sig.	0.663			
Univariate Tests of Homoscedasticity				
Levene's Test of Equality of Error Variances				
Dependent Variable	F	df1	df2	Sig.
PVA	1.692	3	423	.168
CPT	2.090	3	423	.101
CPL	0.095	3	423	.963
TRI	0.881	3	423	.451
OBS	0.796	3	423	.497
SOI	0.795	3	423	.497

Source(s): Author's own creation.

Testing interaction effect: The MANOVA model for a factorial design test not only for the main effects of both independent variables (income level and CDP experience) but also their interaction or joint effect on the dependent variables. The first step is to examine the interaction effect and determine whether it is statistically significant. Table 3.17 shows that all four tests demonstrate no interaction effect between CDP experience and Income level for all six dependent variables.

Table 3.18: Multivariate for group differences across groups of Income level and CDP experience

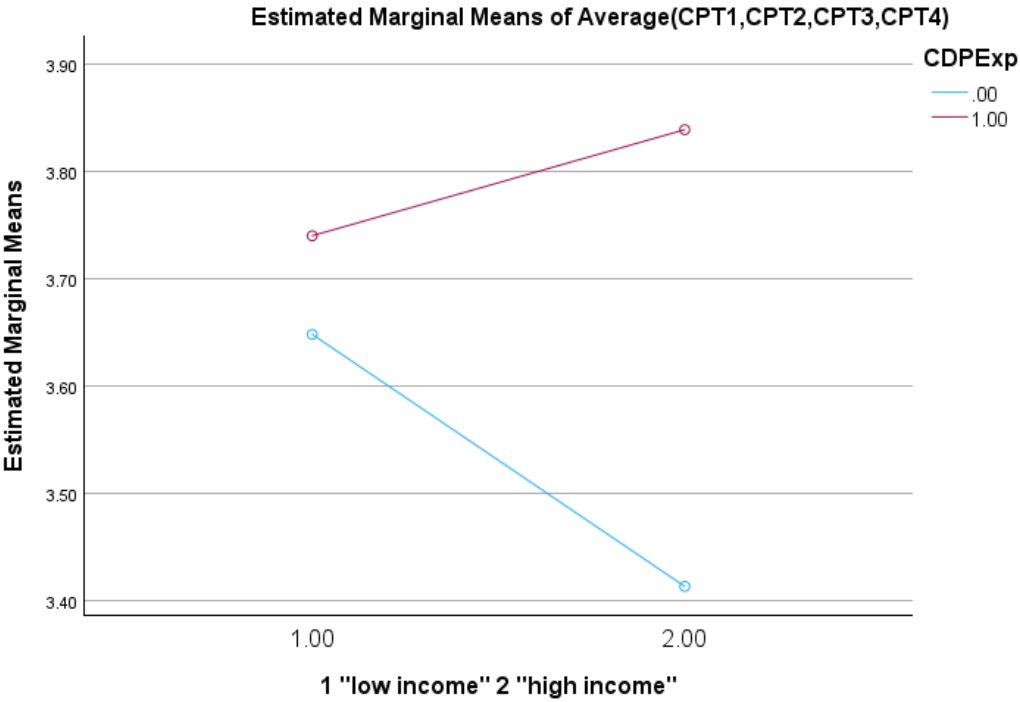
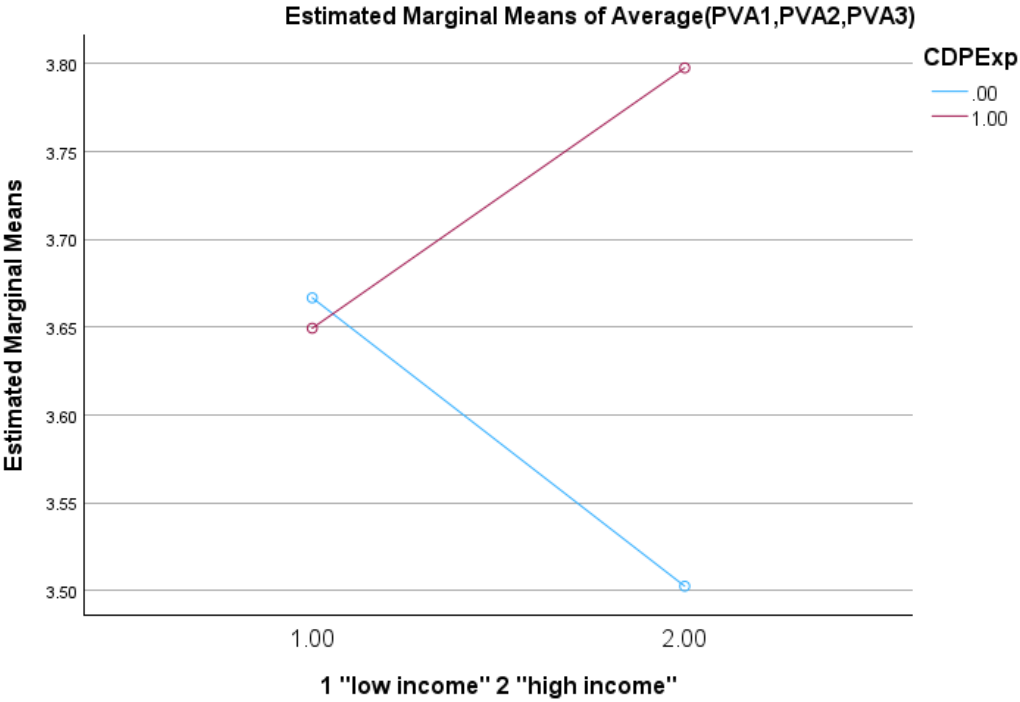
Multivariate Tests								
Effect	Statistical Test	Value	F	df	Error df	Sig.	Partial Eta squared	Observed Power^a

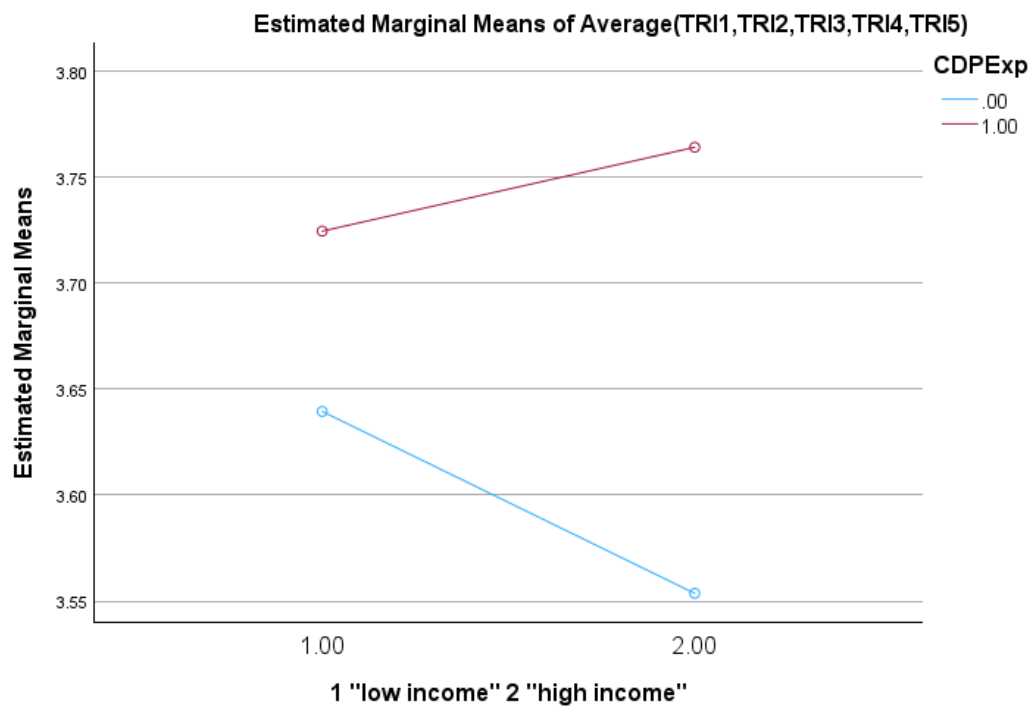
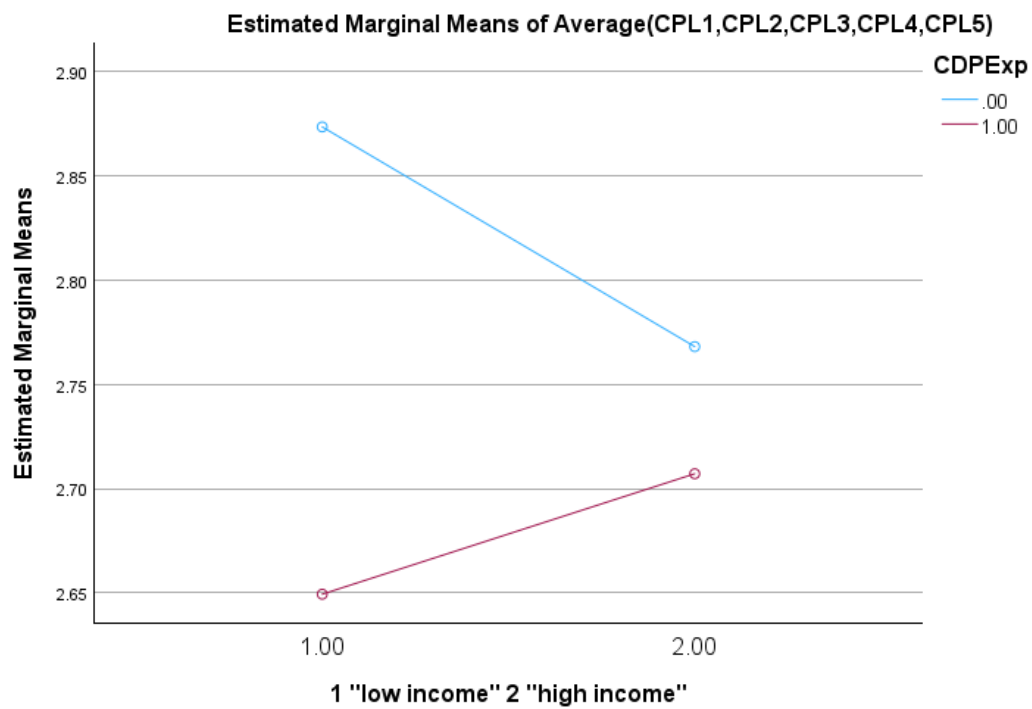
CDP Experience	Pillai's Criterion	.033	2.360	6.000	418.000	.030	.033	.811
	Wilks' Lambda	.967	2.360	6.000	418.000	.030	.033	.811
	Hotelling's T²	.034	2.360	6.000	418.000	.030	.033	.811
	Roy's greatest characteristic root	.034	2.360	6.000	418.000	.030	.033	.811
Incomelevel	Pillai's Criterion	.004	.285	6.000	418.000	.944	.004	.129
	Wilks' Lambda	.996	.285	6.000	418.000	.944	.004	.129
	Hotelling's T²	.004	.285	6.000	418.000	.944	.004	.129
	Roy's greatest characteristic root	.004	.285	6.000	418.000	.944	.004	.129
CDP Experience * Income level	Pillai's Criterion	.018	1.278	6.000	418.000	.266	.018	.503
	Wilks' Lambda	.982	1.278	6.000	418.000	.266	.018	.503
	Hotelling's T²	.018	1.278	6.000	418.000	.266	.018	.503
	Roy's greatest characteristic root	.018	1.278	6.000	418.000	.266	.018	.503
<i>a. Computed using alpha = .05</i>								

Source(s): Author's own creation.

Ordinal confirmation: an ordinal interaction occurs when group differences are always the same direction while a disordinal interaction happens when differences between levels

switch. Figure 2.3 presents ordinal interaction of CPT, CPL, TRI, OBS, SOI and disordinal interaction of PVA. Thus, estimating the significance of the main effects for differences across groups on CPT, CPL, TRI, OBS, SOI can proceed, and tests for differences on PVA should not be performed.





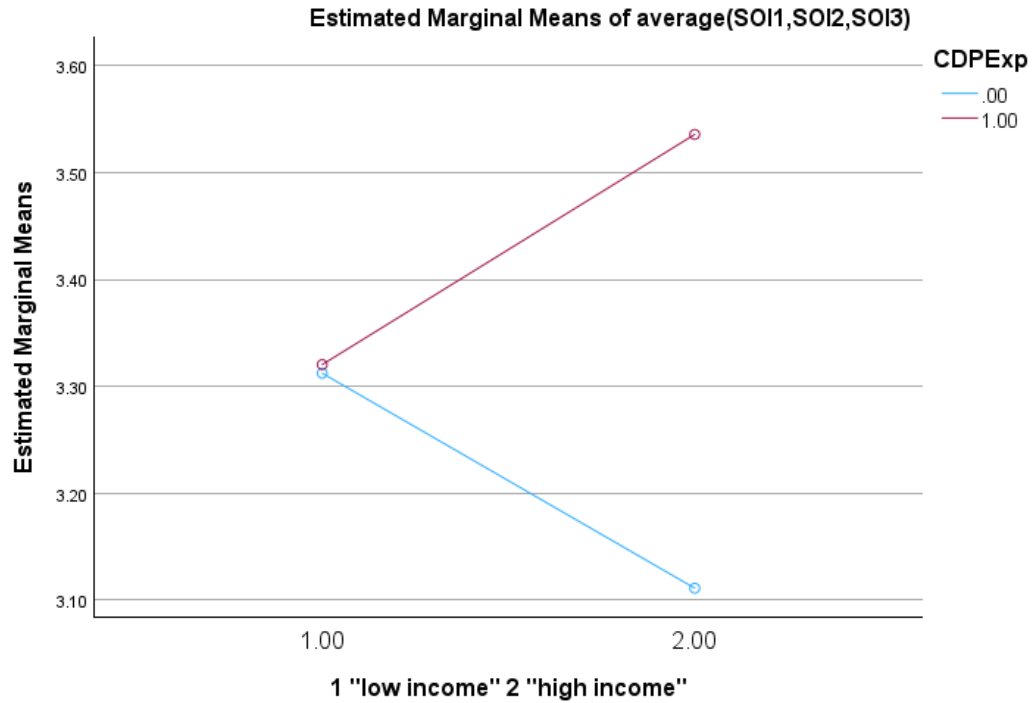
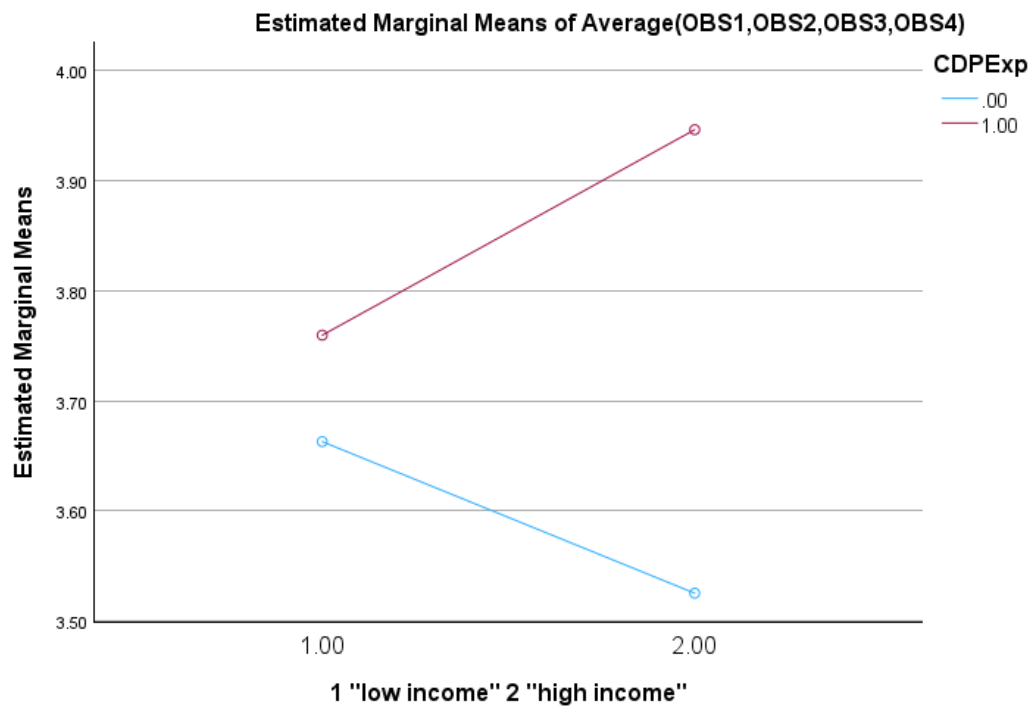


Figure 3.3: Graphical display of interaction effect of CDP experience and by Income level.

Source(s): Author's own creation.

Estimating the main effects: Interpretation of a factorial design in MANOVA is a combination of judgments drawn from statistical tests and examination of the basic data. Table 3.18 contains the MANOVA results for the main effects of CDP experience and Income level in addition to the tests for the interaction effect. As the results discussed in section 3.4.4.1 and 3.4.4.2, only CDP experience has a significant impact (main effect) on the six dependent variables. Since the interaction effect is not statistically significant, but the ordinal interaction is still found in Figure 3.3. Thus, main effect of CDP experience and Income level will be examined separately.

Main effect of Income level:

- Examination of the basic data: We can see those overall mean scores for PVA, CPT, TRI, OBS, and SOI decrease from low-income group to high-income group while the mean score for complexity of CDP services decreases from 2.82 for high-income consumers to 2.75 for low-income consumers.
- Statistical tests: Table 3.18 shows that none of dependent variable provides statistical significance for the effect of Income level.

Main effect of CDP experience:

- Examination of the basic data: We can see that overall mean scores for PVA, CPT, TRI, OBS, and SOI increase from consumers having no CDP experience to those experienced CDPs while the mean score for complexity of CDP services decrease from 2.85 for no-experience customers to 2.66 for experienced customers.
- Statistical tests: Table 3.18 shows that three dependent variables (CPT, OBS, SOI) provide statistical significance for the effect of CDP experience. Specifically, Table 3.19 presents that mean scores of CPT, OBS, SOI for the experienced group are statistically higher than by 0.259, 0.259, 0.216 respectively compared to the non-experience group.

Table 3.19: Univariate tests for group differences across groups of CDP experience and Income level

Univariate Tests (Between-Subjects Effects)								
Effect	Dependent variable	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta squared	Observed Power^g
Overall	PVA	2.175 ^a	3	.725	1.343	.260	.009	.358
	CPT	5.457 ^b	3	1.819	2.937	.033	.020	.697
	CPL	3.415 ^c	3	1.138	1.443	.230	.010	.382
	TRI	1.463 ^d	3	.488	.932	.425	.007	.255
	OBS	4.196 ^e	3	1.399	2.739	.043	.019	.663
	SOI	4.080 ^f	3	1.360	2.150	.093	.015	.547
CDP Experience	PVA	1.150	1	1.150	2.130	.145	.005	.307
	CPT	4.000	1	4.000	6.459	.011	.015	.718
	CPL	1.211	1	1.211	1.534	.216	.004	.235
	TRI	1.303	1	1.303	2.489	.115	.006	.350
	OBS	3.992	1	3.992	7.820	.005	.018	.797
	SOI	2.788	1	2.788	4.408	.036	.010	.554
Income level	PVA	.004	1	.004	.007	.933	.000	.051
	CPT	.276	1	.276	.446	.505	.001	.102
	CPL	.034	1	.034	.043	.836	.000	.055
	TRI	.032	1	.032	.061	.805	.000	.057
	OBS	.036	1	.036	.070	.791	.000	.058
	SOI	.003	1	.003	.005	.945	.000	.051
CDP Experience * Income level	PVA	1.832	1	1.455	2.694	.101	.006	.374
	CPT	1.558	1	1.663	2.686	.102	.006	.373
	CPL	.619	1	.397	.503	.479	.001	.109
	TRI	.138	1	.235	.448	.504	.001	.102
	OBS	1.591	1	1.567	3.069	.081	.007	.416
	SOI	3.278	1	2.584	4.085	.044	.010	.523
<i>a. R Squared = .009 (Adjusted R Squared = .002)</i> <i>b. R Squared = .020 (Adjusted R Squared = .013)</i> <i>c. R Squared = .010 (Adjusted R Squared = .003)</i> <i>d. R Squared = .007 (Adjusted R Squared = .000)</i>								

e. *R Squared* = .019 (*Adjusted R Squared* = .012)

f. *R Squared* = .015 (*Adjusted R Squared* = .008)

g. *Computed using alpha* = .05

Source(s): Author's own creation.

Table 3.20: Pairwise comparison for the effect of CDP experience

Dependent Variable	(I) CDPExp	(J) CDPExp	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
						Lower Bound	Upper Bound
PVA	.00	1.00	-.139	.095	.145	-.326	.048
	1.00	.00	.139	.095	.145	-.048	.326
CPT	.00	1.00	-.259*	.102	.011	-.460	-.059
	1.00	.00	.259*	.102	.011	.059	.460
CPL	.00	1.00	.143	.115	.216	-.084	.369
	1.00	.00	-.143	.115	.216	-.369	.084
TRI	.00	1.00	-.148	.094	.115	-.332	.036
	1.00	.00	.148	.094	.115	-.036	.332
OBS	.00	1.00	-.259*	.093	.005	-.441	-.077
	1.00	.00	.259*	.093	.005	.077	.441
SOI	.00	1.00	-.216*	.103	.036	-.419	-.014
	1.00	.00	.216*	.103	.036	.014	.419
Based on estimated marginal means							
*. The mean difference is significant at the .05 level.							
b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).							

Source(s): Author's own creation.

These results partly support hypothesis H10 and reject hypothesis H11.

3.5. Discussion

The study formulated eleven hypotheses (H1–H11) based on insights from IDT and HSM. These hypotheses were tested using statistical models to determine which factors significantly influenced consumers' adoption intention (ADT) of CDPs. While the findings generally align with IDT and HSM, some surprising results challenge traditional assumptions regarding the role of convenience, waiting time, and income level in the adoption process.

The results provide strong support for six hypotheses, suggesting that certain characteristics of CDPs—price value (PVA), compatibility (CPT), complexity (CPL), trialability (TRI), observability (OBS), and social influence (SOI)—play a crucial role in influencing consumer adoption behaviour.

The strongest predictor of CDP adoption is compatibility (H4: CPT $\rightarrow$ ADT, $\beta = 0.214$, $p < 0.001$), which aligns with Rogers' (1983) Innovation Diffusion Theory. Consumers are more likely to adopt CDPs when they fit seamlessly into their daily routines. This result supports prior research on self-service technologies (Wang et al., 2018), which found that consumers are more likely to adopt an innovation if it integrates smoothly into their existing habits. For example, urban professionals who have flexible work hours may find CDPs particularly convenient, as they can collect their parcels at any time without the constraints of home delivery schedules.

Another significant predictor is trialability (H6: TRI $\rightarrow$ ADT, $\beta = 0.155$, $p = 0.008$), which indicates that consumers prefer to test a service before fully committing to it. This aligns with previous studies (Strömberg et al., 2016) that found that providing consumers with opportunities to experiment with an innovation reduces uncertainty and fosters greater confidence in adoption. Logistics providers can leverage this insight by offering first-time user discounts or free trials, allowing consumers to experience the benefits of CDPs firsthand.

Observability (H7: OBS $\rightarrow$ ADT, $\beta = 0.140$, $p = 0.011$) is also confirmed, reinforcing the idea that when consumers see others using CDPs, they are more likely to adopt the service themselves. This finding is consistent with prior research on technology adoption (Yuen et al., 2018), which found that visibility and social proof significantly influence the diffusion of innovations. For CDPs, this suggests that advertising campaigns showcasing real-life consumer experiences and success stories can enhance adoption rates.

A particularly interesting finding is the confirmation of social influence (H9: SOI $\rightarrow$ ADT, $\beta = 0.206$, $p < 0.001$) as a key driver of adoption. This result strongly supports the Heuristic-Systematic Model (HSM) (Chaiken, 1980), which suggests that individuals rely on social heuristics when making decisions about new technologies. Consumers may be more likely to adopt CDPs if they observe their peers using and endorsing the service. This finding aligns with Venkatesh et al. (2012), who argued that social influence plays a critical role in technology acceptance, particularly in collectivist cultures where peer recommendations hold significant weight.

Another critical factor is price value (H1: PVA $\rightarrow$ ADT, $\beta = 0.136$, $p = 0.012$), which supports prior research on cost-sensitive consumer behaviour (Oliveira et al., 2017). Consumers tend to prefer CDPs when they perceive the service as cost-effective compared to traditional home delivery. Given the rise of e-commerce and increasing delivery costs, pricing strategies that emphasize the affordability of CDPs could significantly boost adoption rates.

Interestingly, complexity (H5: CPL $\rightarrow$ ADT, $\beta = -0.085$, $p = 0.016$) is found to have a negative effect on adoption, confirming that perceived difficulties in using CDPs deter potential

adopters. This finding aligns with prior studies (Dutton et al., 1987) that show consumers are less likely to adopt technologies that require a steep learning curve. This suggests that logistics companies must ensure CDPs are user-friendly, provide clear instructions, and minimize technical barriers to adoption.

Three hypotheses were not supported by the empirical findings, challenging traditional perspectives on innovation adoption.

First, reduced need to wait (H2: RNW $\rightarrow$ ADT, $p = 0.065$) was not a significant predictor, contradicting da Silva et al. (2019), who suggested that minimizing waiting time enhances adoption. This result suggests that while CDPs eliminate the need for consumers to wait at home for deliveries, this advantage alone is not compelling enough to drive adoption. Consumers might already perceive existing delivery services as efficient or may prioritize other factors, such as price and social influence, over time savings. Similarly, convenience (H3: CON $\rightarrow$ ADT, $p = 0.330$) was also found to be insignificant, which contradicts Tsai & Tiwasing (2021) Tsai & Tiwasing (2021), who found that convenience is a major determinant of alternative delivery solutions. This unexpected result suggests that consumers may not perceive CDPs as significantly more convenient than home delivery. This could be due to issues such as location accessibility—if CDPs are not strategically placed near consumers' frequent destinations, they may not be seen as a truly convenient alternative.

Another surprising result is the rejection of subjective experience (H8: SBE $\rightarrow$ ADT, $p = 0.113$). This finding contradicts Todd & Gigerenzer (2012), who argued that familiarity with similar self-service technologies (e.g., ATMs, self-checkout kiosks) leads to higher adoption rates. The lack of significance suggests that previous experience with self-service systems does not necessarily translate into ease of CDP adoption, possibly because CDPs involve different user interactions and security features.

A Multivariate Analysis of Variance (MANOVA) was conducted to assess how CDP experience and income level influence adoption determinants.

The results confirmed that CDP experience significantly affects perceptions of compatibility, observability, and social influence, reinforcing the idea that prior exposure to CDPs enhances positive perceptions. Consumers who had used CDPs before were more likely to perceive them as user-friendly and socially acceptable.

Conversely, income level had no significant effect on adoption determinants, suggesting that CDP adoption is not financially driven. This aligns with research by Tsai & Tiwasing (2021), which found that consumer behaviour in last-mile logistics is shaped more by experience and social influence than by income level.

3.6. Conclusions, implications, and limitations

3.6.1. Conclusions

The study provides compelling empirical insights into the factors shaping Vietnamese consumers' adoption of Collection-and-Delivery Points (CDPs). By integrating Innovation Diffusion Theory (IDT) and the Heuristic-Systematic Model (HSM), the findings highlight that compatibility (CPT), trialability (TRI), observability (OBS), social influence (SOI), price value (PVA), and complexity (CPL) significantly impact consumer adoption intentions. The strongest predictor, compatibility, suggests that CDPs are more likely to be adopted when they seamlessly fit into consumers' daily routines, supporting prior research on technology diffusion.

The role of trialability confirms that consumers are more likely to adopt a service if they have the opportunity to experiment with it before committing. This finding highlights the importance of first-use discounts or trial experiences to increase adoption. Similarly, observability suggests that when consumers witness their peers using CDPs, they feel more confident about trying the service themselves, aligning with studies on social proof in technology adoption. The study further confirms the importance of social influence, indicating that peer recommendations play a critical role, particularly in collectivist cultures like Vietnam, where decision-making is often shaped by community endorsements.

Interestingly, the findings challenge traditional assumptions regarding convenience (CON), reduced waiting time (RNW), and subjective experience (SBE). These factors, which were expected to be significant drivers, did not emerge as influential predictors of CDP adoption. The lack of impact of waiting time reduction suggests that while CDPs eliminate the need for consumers to be home during deliveries, this alone is not a compelling enough reason for adoption. Similarly, the non-significance of convenience contradicts prior research that found convenience to be a major factor in delivery choices. This suggests that consumers may not perceive CDPs as significantly more convenient than home delivery, possibly due to accessibility issues or logistical challenges in Vietnam.

From the perspective of Innovation Diffusion Theory, the findings also illustrate how consumers in Vietnam act not merely as rational individuals but as rational groups embedded within a broader social context. While traditional models often assume adoption decisions are based on objective cost-benefit evaluations, this study highlights that perceptions of compatibility, observability, and social influence strongly shape adoption intentions. In collectivist cultures, "rationality" extends beyond individual utility to encompass group norms, peer validation, and social trust. Thus, adoption of CDPs is not only a matter of functional

efficiency but also a reflection of how well the innovation aligns with shared values, routines, and collective judgments of appropriateness.

Multivariate Analysis of Variance (MANOVA) was employed in this study to examine how two categorical independent variables—income level (low-income vs. high-income groups) and CDP experience (experienced vs. non-experienced users)—influenced multiple dependent variables simultaneously. Unlike a traditional ANOVA, which examines the impact of categorical variables on a single dependent variable, MANOVA allows researchers to analyse the combined effect of independent variables on multiple related outcome measures. This approach was particularly useful in the study because it enabled an evaluation of whether different consumer groups perceive CDP adoption factors differently. The dependent variables assessed included price value (PVA), compatibility (CPT), complexity (CPL), trialability (TRI), observability (OBS), and social influence (SOI).

Given that CDP adoption is a multifaceted process influenced by economic, social, and psychological factors, using MANOVA provided a more comprehensive picture of how these determinants interact. By considering multiple variables at once, the analysis accounted for potential correlations among adoption factors, reducing the likelihood of Type I errors, which occur when false positives are detected in statistical significance testing. This ensured that the findings were more robust and reliable. The MANOVA results revealed two important insights: CDP experience significantly influences consumer adoption perceptions, while income level has no significant effect on any of the adoption determinants.

First, consumers with prior CDP experience were significantly more likely to perceive the service as compatible (CPT), observable (OBS), and socially accepted (SOI). This suggests that exposure to CDPs enhances positive attitudes toward the service. The fact that prior experience improved perceptions of compatibility indicates that the more familiar consumers become with CDPs, the more they recognize how well these services integrate into their daily routines. Similarly, increased observability and social influence suggest that those who have used CDPs before are more likely to recommend them to others or perceive them as a widely accepted delivery option. These results emphasize the importance of providing trial experiences, first-time user discounts, and referral programs to encourage broader adoption.

Second, the lack of significance of income level in influencing adoption determinants contradicts earlier studies that suggested wealthier consumers are more likely to embrace premium logistics solutions. This finding suggests that CDPs are not necessarily a luxury or an alternative for high-income consumers but a viable solution across different economic groups. The accessibility and cost-effectiveness of CDPs may make them equally appealing to both low-income and high-income consumers, thereby broadening their potential market reach.

Businesses should shift their marketing focus away from income-based segmentation and instead prioritize factors like convenience, ease of use, and social acceptance to drive adoption.

A further analysis of interaction effects between income and CDP experience found no significant relationship, meaning that prior experience with CDPs influences adoption intentions consistently across income groups. This reinforces the idea that familiarity with CDPs is a stronger predictor of adoption than financial status. In other words, regardless of whether consumers belong to a high- or low-income bracket, their perceptions of CDPs improve when they have previously used the service. This underscores the need for businesses to invest in educational campaigns and promotional trials to encourage first-time use.

3.6.2. Implications

The study's findings carry important implications for businesses, consumer behaviour, and policymaking.

From a managerial perspective, logistics service providers (LSPs) and e-commerce platforms must prioritize enhancing compatibility by strategically locating CDPs in high-traffic areas, such as workplaces, residential zones, and public transportation hubs. Since trialability emerged as a strong predictor, companies should implement first-use incentives, free trials, and promotional campaigns to encourage initial adoption. The role of observability and social influence highlights the potential of word-of-mouth marketing and influencer endorsements in boosting adoption rates. Businesses should leverage peer recommendations and showcase success stories through targeted advertisements to create a sense of trust and legitimacy surrounding CDPs.

Moreover, as complexity negatively affects adoption, companies must prioritize user-friendly interfaces and customer support to address perceived barriers. This can include simplified CDP retrieval processes, multilingual customer assistance, and step-by-step mobile app guides to ensure ease of use for first-time users. Additionally, given the surprising finding that convenience was not a major determinant, logistics providers must rethink how they position CDPs as a convenient alternative to home delivery. This could involve optimizing accessibility and integrating CDP locations into consumers' everyday routines.

One of the most significant takeaways is that experience with CDPs is more influential than economic status in shaping consumer adoption. This suggests that companies should prioritize exposure-based marketing techniques, such as providing free trials, implementing first-use incentives, and incorporating CDPs into common retail locations to increase visibility. When consumers physically interact with CDPs, their willingness to adopt them increases, reducing any initial hesitancy.

From a consumer behaviour standpoint, the study suggests that adoption is not purely driven by economic factors such as income level but rather by perceived social and functional benefits. Since social influence plays a crucial role, peer-driven marketing strategies such as referral programs and community-based endorsements could effectively boost trust in CDPs. Additionally, the lack of impact of subjective experience suggests that previous interactions with self-service technologies (e.g., ATMs or self-checkout kiosks) do not necessarily translate into CDP adoption. This highlights the need for specific educational campaigns tailored to CDP usage rather than assuming that familiarity with automation is sufficient.

From a policy perspective, governments and urban planners must recognize that CDPs are not just a business innovation but a key component of sustainable last-mile logistics. Policymakers should promote the integration of CDPs into urban infrastructure, providing incentives for logistics companies to expand their CDP networks. Additionally, public-private partnerships could facilitate the installation of smart lockers in government buildings, transit stations, and community centres to increase accessibility. Environmental sustainability should also be emphasized, as CDPs can reduce carbon emissions by consolidating last-mile deliveries. Public awareness campaigns can further educate consumers on the benefits of CDPs for reducing delivery failures and traffic congestion.

3.6.3. Limitations

Despite its valuable contributions, the study has several limitations that warrant further investigation.

First, the sample representation is limited primarily to young, urban consumers in Hanoi, which may not fully reflect the perspectives of rural populations and older demographics. Since infrastructure, accessibility, and digital literacy levels vary between urban and rural areas, future research should explore regional differences in CDP adoption behaviour. A more representative sample covering different geographic and socioeconomic groups would improve the generalizability of findings.

Second, the study's focus on Vietnam means that its findings are culturally specific, limiting applicability to other regions. Vietnam's collectivist culture and reliance on social influence may differ from individualistic societies where consumers prioritize convenience and efficiency over peer recommendations. Cross-cultural comparisons could provide deeper insights into how cultural dimensions shape CDP adoption.

Additionally, while the study tested demographic factors such as income level, order value, and order frequency, other psychographic factors such as risk perception, environmental consciousness, and technological readiness could further influence adoption decisions. Future

research should incorporate qualitative methods (e.g., in-depth interviews) to gain richer insights into consumer motivations and hesitations.

Another limitation is that the study relied on self-reported survey data, which may be subject to biases such as social desirability and recall inaccuracies. Future studies could use experimental or observational methods, such as tracking actual CDP usage behaviour or conducting field experiments, to measure adoption patterns more accurately.

Furthermore, while the study identified key determinants of CDP adoption, it did not explore long-term adoption trends. Given that CDPs are still relatively new in Vietnam, a longitudinal study tracking changes in consumer attitudes over time would provide valuable insights into how familiarity and market saturation affect adoption behaviour.

Finally, infrastructure constraints were not deeply examined. While the study found that convenience was not a major factor, this could be due to accessibility limitations, security concerns, or inadequate CDP distribution. Future research should investigate logistical barriers and assess how improvements in smart locker technology, mobile app integration, and urban planning initiatives could enhance adoption rates.

Chapter Summary

The study explores the factors influencing Vietnamese consumers' adoption of Collection-and-Delivery Points (CDPs) as an alternative last-mile delivery solution. With the rapid growth of e-commerce in Vietnam, challenges such as failed deliveries, high logistics costs, and environmental concerns have become more prominent. CDPs offer a cost-effective and flexible alternative by allowing consumers to collect their parcels at designated locations rather than relying on home delivery. However, despite their success in Europe, CDPs have faced low adoption rates in Southeast Asia, particularly in Vietnam. This study aims to identify the key factors that shape consumer attitudes toward CDPs, integrating the Innovation Diffusion Theory (IDT) and the Heuristic-Systematic Model (HSM) to provide a comprehensive analysis.

Vietnam's e-commerce sector has expanded significantly, yet logistical inefficiencies and consumer hesitation hinder the adoption of alternative delivery models like CDPs. The study is justified by the need to optimize last-mile logistics and understand the behavioural barriers preventing CDP adoption. Research suggests that Vietnamese consumers may be hesitant due to concerns about security, accessibility, and the preference for traditional home delivery services. Additionally, cultural factors—such as Vietnam's collectivist society—play a role in shaping how consumers perceive social influence and peer recommendations in decision-making.

To investigate these factors, the study develops a research model incorporating variables derived from IDT and HSM. The key factors examined include price value (PVA), convenience (CON), reduced need to wait (RNW), compatibility (CPT), complexity (CPL), trialability (TRI), observability (OBS), subjective experience (SBE), and social influence (SOI). These variables were selected based on their theoretical relevance in predicting technology adoption and consumer behaviour.

A structured questionnaire was developed and distributed through an online survey, targeting consumers aged 18 and above in Hanoi. The study employed non-probability sampling methods, using convenience and snowball sampling to gather responses. A total of 440 valid responses were collected, with most respondents belonging to the 18-25 age group, reflecting the youth-driven nature of Vietnam's digital economy. The study used multiple regression analysis to assess the relationships between variables and adoption intention. Additionally, Multivariate Analysis of Variance (MANOVA) was conducted to examine how income levels and prior CDP experience influence consumer perceptions.

The findings reveal that six key factors significantly impact CDP adoption: compatibility (CPT), trialability (TRI), observability (OBS), social influence (SOI), price value (PVA), and complexity (CPL). Among these, compatibility emerged as the strongest predictor,

suggesting that consumers are more likely to adopt CDPs when the service seamlessly integrates into their daily routines. Trialability also plays a crucial role, as consumers prefer to test the service before fully committing. Similarly, observability and social influence reinforce the idea that peer recommendations and visibility increase adoption rates.

Interestingly, three factors—convenience (CON), reduced need to wait (RNW), and subjective experience (SBE)—did not significantly impact adoption. This contradicts traditional assumptions that convenience is a primary driver of last-mile delivery choices. The findings suggest that consumers may not perceive CDPs as significantly more convenient than home delivery, possibly due to accessibility concerns. Additionally, the fact that reduced waiting time did not influence adoption implies that consumers prioritize other factors, such as cost and peer influence, over time savings.

To further analyse adoption patterns, MANOVA tests were conducted to examine how income levels and prior experience with CDPs influence consumer perceptions. The results reveal that prior CDP experience significantly enhances adoption intention, particularly by strengthening perceptions of compatibility, observability, and social influence. This suggests that consumers who have previously used CDPs develop more positive attitudes toward the service, reinforcing the importance of first-use incentives and trial promotions.

In contrast, income level was found to have no significant impact on adoption intention, challenging previous studies that suggested higher-income consumers are more likely to embrace premium logistics solutions. This finding indicates that CDPs are appealing to a broad consumer base, regardless of economic status. The study also found no significant interaction effects between income and CDP experience, meaning that prior experience remains a stronger predictor of adoption than financial status.

The findings align with IDT and HSM, confirming that price value, compatibility, complexity, trialability, observability, and social influence are crucial drivers of CDP adoption. However, the lack of significance for convenience, reduced waiting time, and subjective experience suggests that CDP providers must rethink their marketing strategies. Location optimization is critical, as CDPs will only be seen as convenient if they are strategically placed near consumers' daily routes. Additionally, companies must leverage social proof by promoting CDPs through peer recommendations and influencer marketing.

This study highlights the importance of experience over economic status in shaping CDP adoption. Consumers who have used CDPs before tending to develop positive perceptions of the service, reinforcing the need for trial-based marketing strategies. From a policy perspective, government incentives and public-private partnerships could further promote CDP integration into urban infrastructure, enhancing accessibility and sustainability.

The findings also have managerial implications. Logistics service providers (LSPs) should focus on enhancing compatibility by placing CDPs in high-traffic areas and integrating them into shopping malls, residential complexes, and transportation hubs. Since trialability emerged as a strong predictor, companies should introduce first-use discounts, free trials, and referral programs to encourage adoption. Furthermore, to address concerns about complexity, service providers should ensure that CDPs are user-friendly, with intuitive interfaces and clear instructions.

Despite its contributions, the study has several limitations. The sample is heavily skewed towards young urban consumers, limiting its generalizability to rural populations and older demographics. Additionally, since the study is specific to Vietnam, cross-cultural research could provide deeper insights into how different economic and cultural contexts shape CDP adoption. Future studies should also explore additional psychographic factors, such as risk perception, environmental consciousness, and technological readiness, to develop a more comprehensive understanding of last-mile delivery preferences.

In conclusion, this study provides valuable insights into the behavioural, psychological, and technological factors influencing CDP adoption in Vietnam. By identifying the key drivers and barriers, the findings offer actionable recommendations for businesses, policymakers, and logistics providers seeking to optimize last-mile delivery solutions in emerging e-commerce markets.

CHAPTER 4: EMPIRICAL STUDY 2: ADOPTION INTENTION TOWARDS COLLECTION-AND-DELIVERY POINTS AMONG VIETNAMESE CONSUMERS – THE ROLE OF EMOTIONAL TRUST

4.1. Justification for the empirical study 2

The rise of global e-commerce has shaped business practices, contributing to an increase in the volume of parcel delivery services, especially in COVID-19, where many countries limit physical interactions. According to UNCTAD (2021), the growth of e-commerce in terms of sales increased dramatically during the period from 2019 to 2020, from 15.8 percent to 23.3 percent in the UK, from 20.7 percent to 24.9 percent in China, from 11 percent to 14 percent in the US, from 6.3 percent to 9.4 percent in Australia, and from 5.9 percent to 11.7 percent in Singapore. The continuous expansion of e-commerce drives the demand for home delivery for consumers' convenience, often because of the absence of physical stores. However, many parcels do not fit through mail or letterboxes or require a consignee signature, which implies that customers need to be at home when the parcel is delivered. Often, consumers are not at home when a package is delivered (Deutsch & Golany, 2018; McLeod et al., 2006; Santana et al., 2022), which leads to increased delivery costs as the packages need to be redelivered or returned to the sender. The home delivery failure rates typically vary between 15% and 60% depending on the area and policies of logistics service providers (Rai et al., 2021). One solution to the failed home-delivery problem is collection-and-delivery points (CDPs), or pick-up points where customers can collect and return their online orders. While CDPs take many forms, they are generally classified as unattended or attended delivery points (Mommens et al., 2021). Unattended delivery solutions, called locker points, provide automated delivery or return services with extended service hour advantages. Attended delivery points, also called service points, are either retail stores or self-operated locations by logistics service providers (LSPs) or shared spaces at convenience stores and other small shops. In Europe, pick-up points (PPs) and automated parcel stations (APS) equipped with lockers have rapidly become popular alternatives to home delivery; for example, this method of delivery accounts for about 20% of parcel deliveries to French households (Morganti, Dablanc, et al., 2014), and according to Metapack (2020), 59% of consumers are using click-and-collect services. There are numerous benefits associated with adopting CDPs over home deliveries, including cost savings (Franke & Visser, 2015), societal and environmental improvement (Q. Chen et al., 2017), and consumer opportunity cost reduction (Agatz et al., 2011).

Academic research on consumers' behavioural intention to use logistics technologies has been conducted extensively (Cai et al., 2021). For example, Ramadan et al. (2017) used the

theory of planned behaviour (TPB) to understand adoption attention to use delivery by drones, Wang et al. (2018) and Yuen et al. (2019) used the innovation diffusion theory (IDT) to explain why e-consumers accept smart lockers while Zhou et al. (2020) used the Unified Theory of Acceptance and Use of Technology (UTAUT) to understand consumers' behaviour in adopting self-service parcel services. The assumption used in these theories is that people are rational beings whose behavioural decisions are made based on rational considerations. The extant literature has put much emphasis on the rational factors affecting the consumer's intention adoption, whereas the irrational factors have been largely ignored (Cai et al., 2021). Making a decision based on non-content cues is less effortful than analysing persuasive argumentation. Chaiken (1980) suggests that perceivers will employ a simple strategy when economic concerns outweigh reliability.

Trust is a well-established factor in e-commerce adoption, influencing online payment security, digital service usage, and consumer loyalty (McKnight et al., 2002). However, in the context of last-mile delivery innovations, trust plays an even more pivotal role because it involves physical interactions with goods rather than just digital transactions (Yuen et al., 2019). Studies suggest that Vietnamese consumers exhibit lower trust in unattended delivery solutions, such as smart lockers, due to concerns about parcel security, reliability, and theft risks (Santana et al., 2022).

Trust is defined as existing when one party has confidence in an exchange partner's reliability and integrity (Morgan & Hunt, 1994). Behavioural intention is a critical facet of trust's conceptualization because "If one believes that a partner is trustworthy without being willing to rely on that partner, trust is limited" (Moorman et al., 1993). Trust is one of the critical factors that can influence users' adoption intention of CDPs service where there is uncertainty and potential risk, and it is strongly linked to persuasiveness in social interaction contexts (Shi et al., 2021; Touré-Tillery & McGill, 2015). Users often cannot verify the quality of CDP services before actually experiencing them, giving rise to the possibility of suboptimal decisions (Gaudiello et al., 2016). In such situations, trust on users' intention to adopt CDP services has a significant impact on users' adoption intention toward CDP service. It has been recognized that trust has both cognitive and affective dimensions (Dowell et al., 2015; McAllister, 1995; Young & Daniel, 2003). Cognitive trust refers to the cognition of a partner's rational reasoning and evaluation and has three elements: integrity trust, which refers to a partner keeping their word or promises as well as fulfilling contracts (Sako, 1992); competency trust, which refers to the ability of a partner to carry out tasks or activities which are relevant to their role within the partnership to a certain standard of competency (Mayer et al., 1995; Sako, 1992), benevolence trust (goodwill) which is the degree to which one partner believes another will look after their

interests without a formal request (Roy et al., 2004). Affective trust involves emotional bonds related to care and concern for the other party (Massey & Dawes, 2007). It has two elements: relational trust, which is related to the norm of reciprocity, and the ‘leap of faith’ aspect of affective trust (McAllister, 1995); intuitive trust, which refers to a subjective judgment based on mood and feelings about another person’s character (Morrow et al., 2004).

The current literature provides empirical evidence regarding the effects of cognitive trust and emotional trust on behavioural intention. However, scholars have reported varying results regarding the relationships between emotional trust, cognitive trust, and adoption intention. Specifically, on the one hand, many studies confirmed a positive effect of cognitive trust/affective trust on behavioural intention (Kumra & Sharma, 2022; Muhammad et al., 2022; Wang et al., 2024). On the other hand, Dash (2024) found that emotional trust had no significant effect on consumers’ intention. Moreover, there is conflicting evidence on the relationship between cognitive trust and emotional trust. While Huang et al. (2020); Kimiagari & Asadi Malafe (2021); Punyatoya (2018) advocated the significant impact of cognitive trust on affective trust, the study of Wu & Neill (2020) did not support a relationship between them. These discrepancies may be due to the studies not examining potential moderating variables, such as demographic factors, which could influence the relationship between cognitive and emotional trust. Furthermore, these studies also did not address the mediating role of emotional trust on the relationship between cognitive trust and behavioural intention.

In addition, there is a notable variation in the use of CDPs across different regions, with existing research highlighting a contrast between Asian and Western consumers in their attitudes towards CDPs. Specifically, CDP adoption is considerably lower in Asia compared to countries like the UK or Germany (Mangiaracina et al., 2019). For example, Parcel Monitor's survey reveals that just 3.28% of parcels in Asia are delivered using out-of-home methods. This figure is relatively low compared to more developed markets, such as Finland, where over 90% of B2C parcels are now delivered out-of-home (Parcelmonitor, 2022). The differences probably stem from development levels and cultural differences. For example, while improvement in technology can increase the purchase intention among Western consumers (Hegner et al., 2019), Chinese consumers are more likely to be influenced by personal affection (Wu & Neill, 2020). Furthermore, researchers in the field of self-service technology (SST) have affirmed that national culture significantly influences how consumers respond to self-service technologies (Bagchi et al., 2004; Haapaniemi & Mäkinen, 2009; Triandis, 1989). However, research on CDPs service has received little attention in the context of emerging countries, especially in Asia (Y.-T. Tsai & Tiwasing, 2021). Therefore, it is meaningful to examine the adoption

intention toward CDPs in the context of Vietnam, a collectivist society according to classification by Hofstede et al. (2010).

Cultural differences further influence trust in self-service logistics. According to Hofstede's cultural framework, Vietnam is characterized by high collectivism and restraint, meaning that consumers prioritize social validation and rely on peer recommendations before adopting new services (Hofstede et al., 2010). Unlike Western consumers who value efficiency and automation, Vietnamese consumers tend to favour face-to-face interactions with delivery personnel (Bagchi et al., 2004). This explains why traditional home delivery services remain dominant despite the inefficiencies they pose. The study is timely and necessary in assessing whether emotional trust can serve as a bridge between consumer hesitancy and CDP adoption.

The previous discussions highlighted conflicting results in the literature regarding adoption intentions toward CDPs. Possible reasons for these inconsistencies include a lack of focus on the mediating role of emotional trust and the influence of cultural contexts. To partially close the above gaps, this study aims to investigate factors driving Vietnamese consumers' adoption intention toward CDPs, focusing on emotional trust and cultural context by developing a research model based on the framework of innovation diffusion theory and heuristics-systematic model.

From a managerial perspective, logistics service providers (LSPs) and e-commerce platforms must understand that building consumer trust is essential for increasing CDP adoption. In European markets, trust-building strategies such as offering financial incentives, improving location accessibility, and integrating real-time tracking systems have helped drive CDP usage (Francke & Visser, 2015). However, in Vietnam, where trust in technology remains inconsistent, similar strategies may not be sufficient. Instead, businesses must focus on enhancing emotional reassurance through secure parcel retrieval systems, AI-powered customer support, and social proof mechanisms (Metapack, 2020).

From a policy standpoint, governments in high CDP penetration markets—such as Poland and France—have introduced regulatory policies and financial incentives to encourage out-of-home delivery adoption (Metapack, 2020). In Vietnam, no such regulatory support exists, leaving CDP adoption entirely dependent on private sector initiatives. If policymakers incentivize logistics innovation by integrating CDPs into urban planning and smart city initiatives, adoption rates could significantly improve. Additionally, public-private partnerships could be used to install CDPs in high-traffic areas, such as universities, office complexes, and shopping centres, making them more accessible and convenient.

Theoretically, our research offers a fresh perspective on the irrational factors affecting consumers' willingness to adopt CDPs by incorporating emotional trust into the heuristics-

systematic model and the innovation diffusion theory. This approach introduces a new dimension to existing knowledge largely focused on rational factors like the theory of planned behaviour (TPB) or the Unified Theory of Acceptance and Use of Technology (UTAUT). Additionally, our study emphasizes the role of emotional trust and cultural influences in shaping consumer behaviour towards CDPs. Practically, it suggests that to enhance customer adoption of CDPs, companies should leverage social influence, implement targeted marketing strategies for different customer segments, and expand the network coverage of CDPs.

4.2. Theoretical background and conceptual framework

4.2.1. Theoretical background

This study stands out by analysing the factors that affect consumers' decisions to use CDP services using the innovation diffusion theory (IDT) and the heuristic-systematic model (HSM) frameworks.

Innovation diffusion theory explains how, why, and at what rate modern technologies are disseminated. It describes the process through which individuals decide whether to adopt a new product, service, or idea. Rogers (1983) outlines a five-stage decision-making process: Knowledge, Persuasion, Decision, Implementation, and Confirmation. The Persuasion stage is particularly significant, as it involves individuals assessing an innovation based on its five key attributes: Relative Advantage, Complexity, Compatibility, Observability, and Trialability. The adoption rate is influenced by these attributes as perceived by the members of the social system. These attributes form the foundation of our model.

We also adopt the heuristic-systematic model to investigate users' processing of the objective properties and the experience properties they bring regarding CDP service. HSM is widely applied to examine user's information processing and decision-making (Shi et al., 2021). The HSM posits two routes. The first route is systematic information processing, which requires the recipient to spend cognitive effort evaluating pieces of information (Chaiken, 1980). The second route is heuristic processing, when judgments are formed based on easily processed judgment-relevant cues (e.g., message length, source credibility, own experience). In the HSM model, the first route is closely related to cognitive trust. In contrast, the second route is somehow relevant to the judgmental task at hand, associated with emotional trust. Therefore, this study incorporates the theory of innovation diffusion (IDT), the heuristic-systematic model (HSM), and an important irrational factor, trust, into the conceptual framework to investigate antecedents of CDPs adoption intention.

4.2.2. Factors affecting cognitive trust.

This section develops five hypotheses reflecting antecedents of cognitive trust based on the innovation diffusion theory and related literature.

Innovation is defined as an idea, practice, or object that is perceived as new by an individual or other unit of adoption (Rogers, 1983). It includes all sets of products and services that are new or old but present an unfamiliar use for the user when he uses it or simply when a user perceives it to be new in terms of use; it becomes an innovation. CDP service for e-commerce orders can be viewed as a technological innovation because most Vietnamese consumers still use traditional home delivery. They are not familiar with parcel lockers or pickup points as alternative options. In our sample, only 24.3% of consumers have experienced the CDPs service. Rogers (1983) suggested that adopting an innovation is influenced by the receiver's perceptions of an innovations' attributes, which include relative advantage, compatibility, complexity, trialability, and observability.

Relative advantage is the degree to which an innovation is perceived as better than the entity or process it supersedes. The degree of relative advantage is often expressed in economic profitability, in status giving, or in other ways (Rogers, 1983). Consumers may perceive CDP services to be more advantageous than home deliveries for their economic value (e.g. reasonable prices (Iwan et al., 2016; Oliveira et al., 2017; Venkatesh et al., 2012), lower need to wait (da Silva et al., 2019; Yuen et al., 2018), or other aspects of convenience (da Silva et al., 2019; Y.-T. Tsai & Tiwasing, 2021; Yuen et al., 2018)). Therefore, we propose:

H1: Relative advantage (RAD) is positively related to Cognitive trust (COT)

Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters (Rogers, 1983). With regard to lifestyle, busy working professionals may perceive CDPs service as highly compatible with their lifestyle as they can conveniently collect the parcel from collection points on their way home without engaging in any extra trip (Wang et al., 2018). As for values, individuals who possess pro-environmental attitudes may have a greater tendency to use CDP services as they are known to be the greener alternative to home deliveries, and using the services aligns with their values of environmental protection. Similarly, CDP services suit individual needs if there are short distances of collection points from the locations of an individual's core daily activities (Yuen et al., 2018). Thus, the hypothesis H2 is proposed as below:

H2: Compatibility (CPT) is positively related to Cognitive trust (COT)

Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use (Rogers, 1983). For CDP services, complexity arises when users interact with the system for parcel collection. To ensure security, an identity check is designed into the

system by scanning barcodes and keying in passwords and parcel series numbers, which adds to the complexity of parcel retrieval. While some consumers may perceive the extra efforts as only marginal, others may feel it burdensome, thus forming an unfavourable attitude toward the CDP service (Yuen et al., 2018). The perception of complexity has a negative impact on innovation diffusion unless it is corrected by interpersonal communications or marketing efforts (Dutton et al., 1987). Thus, hypothesis H3 is proposed as below:

H3: Complexity (CPL) is negatively related to Cognitive trust (COT)

Trialability is the degree to which an innovation may be experimented with on a limited basis. An innovation that is trialable is less uncertain for the adopter (Rogers, 1983). The trials provide a safe environment for experimenting with the new behaviour, and the consumers can gain a taste of new behaviour that they are curious about (Strömberg et al., 2016). The unanticipated trial experiences may lead to positive surprises that contribute to the formation of a favourable attitude toward the adoption (Wang et al., 2018). Thus, hypothesis H4 is proposed as below:

H4: Trialability (TRI) is positively related to Cognitive trust (COT)

Observability is the degree to which the results of an innovation are visible to others. The results of some ideas are easily observed and communicated to others, whereas some innovations are difficult to describe to others (Rogers, 1983). When the procedures of performing CDP services can be easily learned from observing other users, explained to other users, or when the benefits of performing collection points are bought-in to by consumers, it is expected that consumers will form a positive attitude toward the use of the CDPs service (Yuen et al., 2018). Thus, hypothesis H5 is proposed as below:

H5: Observability (OBS) is positively related to Cognitive trust (COT)

4.2.3. Factors affecting emotional trust.

This section focuses on developing hypotheses explaining emotional trust based on the HSM model and relevant literature.

The first route in the HSM model is systematic information processing, which requires the information recipient to spend cognitive effort in evaluating pieces of information (Chaiken, 1980). This route is closely related to cognitive trust, significantly influencing the users' adoption intention.

The second route of heuristics processing, judgment-relevant heuristics must be stored in memory (i.e., available), and within a given judgmental setting, they must be somehow retrieved from memory and thus ready to be used (i.e., accessible), and finally somehow relevant to the judgmental task at hand (i.e., applicable) (S. Chen & Chaiken, 1999). Externally

provided information and subjective experiences may serve as heuristic-cue information and trigger the retrieval and use of a heuristic stored in memory (S. Chen & Chaiken, 1999).

People somehow associate their subjective experiences with specific judgmental implications regarding internal factors. Schwarz et al. (1991) concluded that the ease of producing instances of assertive behaviour implied that there were many such instances, and therefore that they were relatively assertive persons. According to the study of Jacoby et al. (1989), participants must have somehow associated familiarity with fame, perhaps by calling upon the explanation that the familiarity of the names was a product of their fame. Subjective experience may serve as heuristic-cue information, triggering the activation and use of stored heuristics that pertain distinctly to them. Individuals may use their adaptive toolbox, especially simple strategies to make decisions (Todd & Gigerenzer, 2012), and there is a strategy that uses recognition to make decisions from memory about the environment. The recognition heuristic is defined as if one object is recognized and the other is not, it is inferred that the recognized object has a higher value according to the given criterion (Todd & Gigerenzer, 2012). In this context, among CDP services and traditional home delivery, the option consumers can recognize immediately may form a positive attitude toward using such service. The recognition heuristic is used to make inferences under uncertainty, rather than when there is certain knowledge (Gigerenzer & Todd, 1999; Rieskamp & Hoffrage, 2008); it is used for inference from memory, not from givens; and it is likely to be used in situations where recognition validity is substantial, not small (Todd & Gigerenzer, 2012). In an environment where home delivery is a dominant service for online orders, consumers are uncertain when choosing an unpopular and innovative alternative such as CDP services. Furthermore, perceivers may attribute the ease of retrieving a heuristic to the applicability of the heuristic to the judgmental task at hand (S. Chen & Chaiken, 1999). Specifically, alternatives are graded in memory and are measured by the order or speed with which they come to mind (Tversky & Kahneman, 1974). Thus, the subjective experience will likely increase the confidence with which perceivers hold the judgment implied by the heuristic (Downing et al., 1992). Therefore, we propose:

H6: Subjective experience (SBE) is positively related to Emotional trust (EMT)

Social influence can be an external heuristic as it has been reported to have significant impact on technology adoption intention (Gursoy et al., 2019; Venkatesh et al., 2003, 2012). Furthermore, environmental factors such as social influence significantly influence user's trust toward the technology innovation (i.e., CDP services) (Hancock et al., 2011). Heuristic processing implies that people have formed or changed their attitudes by invoking heuristics such as "experts can be trusted", "majority opinion is correct" (Chaiken & Maheswaran, 1994). Social influence is the extent to which users perceive that important others (e.g., family and

friends) believe they should use CDPs service (Venkatesh et al., 2012). Gursoy et al. (2019) confirm that social influence can enhance users' recognition of the popularity of the service and increase their confidence to use. In online shopping, social influence can be considered as an important heuristic cue that increases users' positive attitude toward product/service evaluations (Cheung et al., 2014). Thus, if important people in social context widely use and recommend the CDPs service, users will have more positive emotions toward using the CDPs service. Therefore, we propose:

H7: Social influence (SOI) is positively related to Emotional trust (EMT)

4.2.4. Trust as an irrational factor influencing consumers' intention toward CDPs.

According to McAllister (1995), cognitive trust influences affective trust, especially in the early stage of trust formation. He explains the reason behind the relationship is that people will invest further in affective relationship only after their baseline expectations for peer reliability and dependability are met. In the online context, previous research also shows that cognitive trust is formed before affective trust and has a positive effect on affective trust formation (Akrouit & Diallo, 2017). Therefore, we propose:

H8: Cognitive trust (COT) is positively related to Emotional trust (EMT)

Regarding CDP services, users may need to spend considerable cognitive effort to evaluate the validity and potential risks of adopting these services. If the logistics provider can deliver the CDP services as they advertise and provide high-quality service to act in the customers' best interest, they can gain cognitive trust from the users, thus they are likely to adopt CDP services. Emotional trust is treated with more irrationality and high levels of emotions, which may result in a positive attitude toward adopting a new technology innovation such as CDP services (Gursoy et al., 2019). Therefore, we propose:

H9: Cognitive trust (COT) is positively related to CDPs adoption intention (ADT)

H10: Emotional trust (EMT) is positively related to CDPs adoption intention (ADT).

The above-proposed research hypotheses are summarized in Figure 4.1.

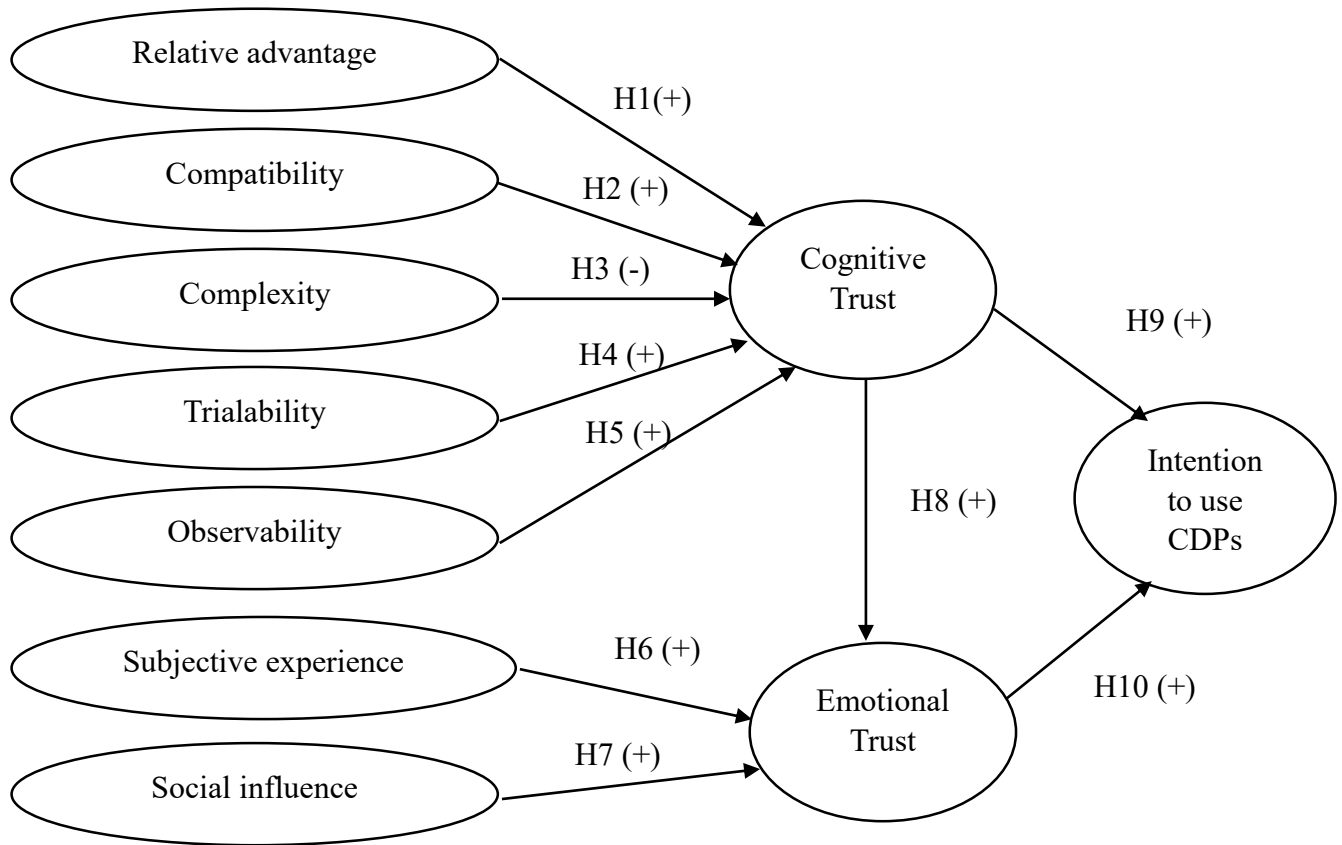


Figure 4.1: The research model and hypotheses.

Source(s): Adapted from the Innovation Diffusion theory, Heuristic-Systematic model and Trust theory

4.3. Research methodology

4.3.1. Measures and questionnaire development

Indicators of variables in Figure 4.1 were modified from previous studies. Measures of ADT with three items, COT with five items, and EMT with three items were adapted from the studies of Venkatesh et al. (2012), Johnson & Grayson (2005), and Komiak & Benbasat (2006) respectively. Relative Advantage (RAD) is one of the most critical constructs in Rogers' (2003) Innovation Diffusion Theory. In the context of logistics and last-mile delivery innovations such as Collection-and-Delivery Points (CDPs), the perception of advantage is often tied to tangible service outcomes that directly affect consumers' decision-making. To operationalize RAD in this study, three dimensions were adopted: Price Value (PVA), Reduced Need to Wait (RNW), and Convenience (CON). This approach draws on prior empirical studies (Venkatesh et al., 2012; da Silva et al., 2019; Tsai & Tiwasing, 2021), which emphasize that adoption likelihood increases when innovations deliver cost savings, time efficiency, and ease of use. However, this

operationalization also introduces certain limitations. Relative Advantage in Rogers' (2003) framework is a broad construct that encompasses not only functional and economic benefits but also symbolic, social, and psychological dimensions. By focusing narrowly on price value, reduced need to wait, and convenience, the study emphasizes utilitarian benefits while potentially overlooking other forms of advantage that might influence adoption. For instance, CDPs could be perceived as more reliable and secure than home delivery, offering consumers confidence that packages will not be missed or misplaced. They may also be associated with environmental sustainability by reducing repeated delivery attempts, which aligns with growing consumer interest in eco-friendly logistics solutions (Mangiaracina et al., 2019). Furthermore, in collectivist cultures such as Vietnam, relative advantage may also include social approval or symbolic modernity, where adoption signals alignment with progressive or community-oriented practices. Therefore, while the chosen dimensions of relative advantage provide strong explanatory power in capturing immediate consumer priorities in Vietnam's e-commerce logistics sector, they also constrain the scope of RAD to primarily practical outcomes.

While RAD was measured by ten items adjusted from studies of Venkatesh et al. (2012), da Silva et al. (2019), and Tsai & Tiwasing (2021), the scales measuring CPT, CPL, TRI, and OBS were adopted from Tsai & Tiwasing (2021), including four items, 5 items, five items, and four items respectively. Derived from the recognition heuristic (Goldstein & Gigerenzer, 2002) and judgement under uncertainty (Tversky & Kahneman, 1974), SBE was measured by three items: knowledge, experience, and memory about collection-and-delivery points. Lastly, the scale measuring SOI were taken from Venkatesh et al. (2012). All the scale items are scored on a five-point Likert-type format (See Table 4.1).

Table 4.1: Measurement of variables in the empirical study 2

Constructs	Item NO.	Items	Reference
Relative advantage			
Price value (PVA)	PVA1	CDPs service is reasonably priced.	(Venkatesh et al., 2012)
	PVA2	CDPs service is a good value for the money	
	PVA3	At the current price, CDPs service provides a good value	
Reduced need to wait (RNW)	RNW1	Using CDPs service let me know the delivery time	(da Silva et al., 2019)

	RNW2	Using CDPs service reduces a need to wait at selected place of delivery for at least one shift of the day (morning, afternoon, or night)	
	RNW3	Using CDPs service reduces a need to wait at selected place of delivery throughout a whole day	
Convenience (CON)	CON1	Using CDPs service is easy	(Tsai & Tiwasing, 2021; Yuen et al., 2019)
	CON2	Using CDPs service does not require much effort	
	CON3	Using CDPs service allows me to collect parcels at my convenient time	
	CON4	Collection points are located close to my residence or daily activities	
Compatibility (CPT)	CPT1	Using CDPs service is compatible with my lifestyle	(Tsai & Tiwasing, 2021; Wang et al., 2018)
	CPT2	Using CDPs service is compatible with my needs	
	CPT3	Using CDPs service is compatible with my current situation	
	CPT4	Using CDPs service would be compatible with the way I like to receive parcels	
Complexity (CPL)	CPL1	Using CDPs service would be difficult	(Tsai & Tiwasing, 2021; Wang et al., 2018)
	CPL2	CDPs service would be difficult to learn how to use*	
	CPL3	Using CDPs service would be frustrating	
	CPL4	CDPs service would be cumbersome to use	

	CPL5	Using CDPs service would require a lot of efforts	
Trialability (TRI)	TRI1	It is easy to try out CDPs service	(Tsai & Tiwasing, 2021; Wang et al., 2018)
	TRI2	I know where I can go to try out various functions of CDPs service	
	TRI3	I am permitted to try out with CDPs service for long enough period	
	TRI4	I am able to experiment with CDPs service facilities when necessary	
	TRI5	CDPs service is accessible adequately to allow me test various functions it offers	
Observability (OBS)	OBS1	I would have no difficulty telling others how I collect my parcels from CDPs service	(Tsai & Tiwasing, 2021)
	OBS2	I could communicate to others how I collect my parcels from CDPs service	
	OBS3	I would have no difficulty explaining why using CDPs service is or is not beneficial	
	OBS4	The process of CDPs service is apparent to me	
Subjective experience (SBE)	SBE1	- Do you have knowledge of CDPs service? (Never heard – Heard with no further information – Heard with little information – Experienced with further information – Experienced will all sorts of information)	(Goldstein & Gigerenzer, 2002; Tversky & Kahneman, 1974)
	SBE2	- How many instances can you remember of having experience	

		with CDPs service? (Not at all – extremely small numbers – small numbers – large numbers – extremely large numbers)	
	SBE3	- How easy do you recall these instances? (Extremely easy – Easy – Intermediate – Difficult – Extremely Difficult)	
Social Influence (SOI)	SOI1	People who are important to me think that I should use CDPs service	(Venkatesh et al., 2012)
	SOI2	People who influence my behaviour think that I should use CDPs service	
	SOI3	People whose opinions that I value prefer that I use CDPs service	
Cognitive trust (COT)	COT1	I have no reservations about choosing CDPs service	(Johnson & Grayson, 2005)
	COT2	I have good reason to doubt CDPs service	
	COT3	I can rely on the CDPs service to get my parcel delivered	
	COT4	I have to be cautious about using CDPs service	
	COT5	I cannot confidently depend on CDPs service to get my parcel delivered	
Emotional trust (EMT)	EMT1	I feel secure about relying on the CDPs service	(Komiak & Benbasat, 2006)
	EMT2	I feel comfortable about relying on the CDPs service	
	EMT3	I feel content about relying on the CDPs service	

Adoption intention (ADT)	ADT1	I intend to use CDPs service in the future	(Venkatesh et al., 2012)
	ADT2	I will always try to use CDPs service in my daily life	
	ADT3	I plan to continue to use CDPs service frequently	

4.3.2. Sample and data collection.

The questionnaire and data collection were same as the questionnaire developed in Chapter 3. In this study, 440 valid responses were collected for final analysis. Respondents were mainly young consumers, with 85.5% aged from 18-25, 10% aged 26-35, 3.9% aged 36-49, and 0.7% aged over 50. Concerning income, 40 percent of consumers earned more than VND 5 million per month (approximately USD200), and nearly 23 percent had more than VND 10 million per month (approximately USD400). The majority of respondents (75%) in our sample placed an online order with a value ranging from 100 to 500 thousand VND (approximately USD5 – USD20). According to Hair et al. (2010), the sample size is at least five times the number of items in the study. The number of questions in the survey was fifty-two, therefore the sample size of 440 is sufficient. Regarding delivery services that consumers have experienced, 97.5% of respondents have used home delivery, while the figures for collection-and-delivery points (CDPs), Buy online and pick up in store (BOPIS) are 24.3% and 40% respectively.

4.4. Findings

4.4.1. Scale validity and reliability.

The study's measurement model was evaluated using Confirmatory Factor Analysis (CFA), reliability testing (Cronbach's alpha, Composite Reliability, and AVE), and discriminant validity assessment (Fornell-Larcker criterion). These statistical procedures were conducted to ensure the validity, reliability, and overall fit of the model, making the research findings more robust and generalizable. A critical discussion of each key aspect is provided below.

4.4.1.1. Confirmatory factor analysis

CFA is an essential step in structural equation modelling (SEM) because it verifies the relationships between observed variables (items) and their underlying latent constructs (factors) (Hair et al., 2010). It ensures that the measurement model is statistically valid before proceeding with hypothesis testing in the structural model. In this study, CFA was performed using

AMOS24 software to assess the factor loadings, model fit indices, and measurement refinement.

The initial measurement model included all ten latent variables indicated in Figure 4.1. During the process of conducting CFA, some items (CON2, CON4, CPT4, TRI4, TRI5, SBE3, COT2, COT5, EMT3) were dropped because of the high modification indices and undesirable values of standardized residuals associated with them (i.e. the values were larger than 2.5) (Hair et al., 2010). In the final model, RAD was measured by eight items, each of the three latent variables of CPT, TRI, and COT was measured by 3 items, each of two constructs of SBE and EMT was measured by two items, while each of the variables of CPL, OBS, SOI, and ADT remained measured by five items, four items, three items, and 3 items respectively.

The removal of weak indicators strengthens construct validity but also introduces potential limitations. Retaining fewer items per construct (e.g., only two items for SBE and EMT) might reduce the scale's ability to capture the full complexity of the constructs (Gerbing & Anderson, 1988). Future research could explore alternative measurement items to ensure a more comprehensive representation of subjective experience and emotional trust.

The results of CFA, using AMOS24 software, demonstrated a satisfactory level of fit: $\chi^2(549) = 1197.934$; $CMIN/df = 2.182$, $p < 0.001$; $CFI = 0.946$, $TLI = 0.938$; $SRMR = 0.039$, and $RMSEA = 0.052$. These results confirm that the measurement model fits the data well, meaning that the theoretical constructs are adequately represented by the observed indicators.

Table 4.2: Model fit measures of the measurement model

Measure	Estimate	Threshold	Interpretation
CMIN	1197.934	--	--
DF	549.000	--	--
CMIN/DF	2.182	Between 1 and 3	Excellent
CFI	0.946	>0.95	Acceptable
SRMR	0.039	<0.08	Excellent
RMSEA	0.052	<0.06	Excellent
PClose	0.215	>0.05	Excellent

Source(s): Author's own creation.

Common Method Bias (CMB) occurs when survey responses are influenced by systematic errors, leading to inflated relationships between constructs. To check for this issue, an Exploratory Factor Analysis (EFA) was conducted on the 33 remaining items, using Harman's one-factor test (Podsakoff et al., 2003). The total variance explained by a single factor

was 39.6%, well below the 50% threshold, confirming that CMB was not a significant concern in this study.

4.4.1.2. Cronbach's alpha and other reliability tests

Reliability analysis ensures that measurement items consistently capture the intended construct (Fornell & Larcker, 1981). Three key indicators—Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE)—were assessed.

Cronbach's alpha was calculated for each scale, ranging from 0.755 (for SBE) to 0.933 (for CPL) (Table 4.3). These results demonstrated a satisfactory level of reliability with coefficient alphas exceeding the cutoff value of 0.70 (Hair et al., 2010).

In addition, we also reassessed the scale reliability after confirmatory analyses following the recommendation by Gerbing & Anderson (1988). The estimated loadings for each indicator were examined, and composite reliability (CR) and average variance extracted measure (AVE) (Fornell & Larcker, 1981). The results showed that all factor loadings were significant at $p < 0.001$. All the CRs and AVEs were above the cutoff values of 0.70 and 0.50 respectively (Hair et al., 2010). The lowest CR of 0.757 and the lowest AVE of 0.587 were associated with SBE and COT, respectively. The final measurement model testing is presented in Table 4.3.

4.4.1.3. Discriminant validity test

Discriminant validity ensures that each construct is distinct from other variables in the model. The author ran discriminant validity test using Fornell–Larcker criterion (Fornell & Larcker, 1981; Hair et al., 2010). Specifically, the discriminant validity is established if the AVE of each construct is larger than the maximum shared variance (MSV). As indicated in Table 4.3, the results confirmed the discriminant validity of all the constructs in the model, meaning that each construct is uniquely capturing its intended concept. This strengthens the theoretical soundness of the measurement model and indicates no issues with multicollinearity.

Table 4.3: Measurement model results

Constructs	Measurement items^a	Standardized factor loadings
Relative advantage (RAD) $\alpha = 0.921$	CDPs service is reasonably priced	0.743
	CDPs service is a good value for the money	0.767
	At the current price, CDPs service provides a good value	0.829
	Using CDPs service let me know the delivery time	0.776

$CR^b = 0.922$ $AVE^c = 0.595$ $MSV^d = 0.593$	Using CDPs service reduces a need to wait at a selected place of delivery for at least one shift of the day (morning, afternoon, or night)	0.775
	Using CDPs service reduces a need to wait at selected place of delivery throughout a whole day	0.772
	Using CDPs service is easy	0.757
	Using CDPs service allows me to collect parcels at my convenient time	0.751
Compatibility (CPT) $\alpha = 0.923$ $CR^b = 0.925$ $AVE^c = 0.803$ $MSV^d = 0.593$	Using CDPs service is compatible with my lifestyle	0.870
	Using CDPs service is compatible with my needs	0.927
	Using CDPs service is compatible with my current situation	0.892
	Using CDPs service would be difficult	0.823
Complexity (CPL) $\alpha = 0.933$ $CR^b = 0.933$ $AVE^c = 0.737$ $MSV^d = 0.109$	CDPs service would be difficult to learn how to use	0.868
	Using CDPs service would be frustrating	0.901
	CDPs service would be cumbersome to use	0.873
	Using CDPs service would require a lot of efforts	0.825
Trialability (TRI) $\alpha = 0.855$ $CR^b = 0.859$ $AVE^c = 0.67$ $MSV^d = 0.654$	It is easy to try out CDPs service	0.766
	I know where I can go to try out various functions of CDPs service	0.835
	I am permitted to try out with CDPs service for long enough period	0.851
Observability (OBS) $\alpha = 0.903$ $CR^b = 0.902$ $AVE^c = 0.698$ $MSV^d = 0.654$	I would have no difficulty telling others how I collect my parcels from CDPs service	0.801
	I could communicate to others how I collect my parcels from CDPs service	0.851
	I would have no difficulty explaining why using CDPs service is or is not beneficial	0.828
	The process of CDPs service is apparent to me	0.862
	Do you have knowledge of CDPs service	0.813

Subjective experience (SBE) $\alpha = 0.755$ $CR^b = 0.757$ $AVE^c = 0.609$ $MSV^d = 0.184$	How many instances can you remember of having experience with CDPs service	0.746
	People who are important to me think that I should use CDPs service	0.876
	People who influence my behaviour think that I should use CDPs service	0.905
	People whose opinions that I value prefer that I use CDPs service	0.900
Cognitive trust (COT) $\alpha = 0.805$ $CR^b = 0.808$ $AVE^c = 0.587$ $MSV^d = 0.585$	I have no reservations about choosing CDPs service	0.823
	I can rely on the CDPs service to get my parcel delivered	0.822
	I have to be cautious about using CDPs service	0.639
Emotional trust (EMT) $\alpha = 0.857$ $CR^b = 0.858$ $AVE^c = 0.751$ $MSV^d = 0.656$	I feel secure about relying on the CDPs service	0.856
	I feel comfortable about relying on the CDPs service	0.878
Adoption intention (ADT) $\alpha = 0.853$ $CR^b = 0.859$ $AVE^c = 0.672$ $MSV^d = 0.656$	I intend to use CDPs service in the future	0.718
	I will always try to use CDPs service in my daily life	0.854
	I plan to continue to use CDPs service frequently	0.878
Notes: ^a Items remaining after CFA, ^b Composite reliability, ^c Average variance extracted, ^d Maximum shared variance		

Source(s): Author's own creation.

Overall, the confirmatory factor analysis, reliability tests, and validity checks confirm that the measurement model is statistically sound. While some constructs have fewer measurement items, and minor refinements could enhance fit, the model provides a solid foundation for hypothesis testing in the structural model. The study's rigorous validation process enhances confidence in the findings, ensuring that conclusions drawn about CDP adoption intentions among Vietnamese consumers are based on reliable and valid empirical data.

4.4.2. The structural equation model and hypothesis testing

The results of the structural equation modelling (SEM) analysis provided strong empirical support for the research model, demonstrating a good level of fit and confirming the significance of key relationships related to adoption intention (ADT) toward Collection-and-Delivery Points (CDPs) among Vietnamese consumers. The model's explanatory power for ADT was 0.718, indicating that 71.8% of the variance in adoption intention was explained by the identified antecedents. This suggests that the model provides a robust theoretical and empirical framework for understanding consumer decision-making in last-mile logistics innovations. However, while nine out of ten hypotheses were supported, one path (Complexity → Cognitive Trust) was not statistically significant, highlighting important theoretical and practical implications.

The results of the structural equation analysis (Table 4.4) indicated that the model achieved a proficient level of fit: $\chi^2 (563) = 1269.317$; $CMIN/df = 2.255$, $p < 0.001$; $CFI = 0.941$, $TLI = 0.935$; $SRMR = 0.045$, and $RMSEA = 0.053$. The explanatory power for ADT was 0.718. These showed evidence that the model explained significantly with regard to antecedents of ADT toward CDPs service.

Table 4.4: Model fit measures of the structural model

Measure	Estimate	Threshold	Interpretation
CMIN	1269.317	--	--
DF	563.000	--	--
CMIN/DF	2.255	Between 1 and 3	Excellent
CFI	0.941	>0.95	Acceptable
SRMR	0.045	<0.08	Excellent
RMSEA	0.053	<0.06	Excellent
PClose	0.072	>0.05	Excellent

Source(s): Author's own creation.

These results confirm that the model was well-calibrated to the data, with low residual error and strong explanatory power (Hair et al., 2010). The model explained 71.8% of the variance in adoption intention (ADT), which is considered high explanatory power in behavioural research (Fornell & Larcker, 1981). This indicates that the selected predictors—cognitive trust (COT) and emotional trust (EMT), as well as their antecedents—are strong determinants of adoption intention toward CDPs.

Ten hypotheses were tested in this study, and nine received support from the data (Table 4.5). The results showed that cognitive trust and emotional trust positively related to adoption intention toward CDPs service as expected. Specifically, EMT was a significant predictor of ADT (0.610), supporting H10. COT was found to have a positive effect on ADT (0.288), thus H9 received support from the data. In addition, the findings also provided support for H8 confirming that COT was positively related to EMT (0.543). While SOI significantly affected EMT (0.220), confirming H7, and SBE significantly affected EMT (0.115), confirming H6, OBS, TRI, CPT, RAD had a positive relationship with COT, lending support for H5, H4, H2, H1 respectively. However, unlike our expectation, the path from CPL to COT was not statistically significant although it was negative as predicted (-0.049). The results of hypothesis testing were summarized in Table 4.5.

Table 4.5: Estimates of structural equation coefficients

Hypotheses	Structural paths			t-value	Standard errors	Standardized estimates	Comments
H1	COT	<---	RAD	2.218	0.073	0.171*	Supported
H2	COT	<---	CPT	3.134	0.055	0.220**	Supported
H3	COT	<---	CPL	-1.187	0.030	-0.049	Not Supported
H4	COT	<---	TRI	2.978	0.088	0.267**	Supported
H5	COT	<---	OBS	2.623	0.075	0.227**	Supported
H6	EMT	<---	SBE	2.438	0.040	0.115*	Supported
H7	EMT	<---	SOI	6.725	0.043	0.331***	Supported
H8	EMT	<---	COT	10.127	0.057	0.543***	Supported
H9	ADT	<---	COT	4.248	0.065	0.288***	Supported
H10	ADT	<---	EMT	8.311	0.066	0.610***	Supported
Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$							

Source(s): Author's own creation.

4.4.3. The mediating role of emotional trust

This section aimed to investigate the impact of key antecedents on the intention to adopt collection-and-delivery points (CDPs) among Vietnamese consumers, with a particular focus on the role of emotional trust (EMT) as a mediating factor between cognitive trust (COT) and adoption intention (ADT). The findings provided strong empirical evidence for the mediation effect of EMT, indicating that while cognitive trust directly influences adoption, its impact is significantly amplified through emotional trust.

The mediation analysis was conducted by comparing two models: the original model (Figure 4.1), which included the COT → EMT path, and a revised model (Figure 4.2), where this path was removed.

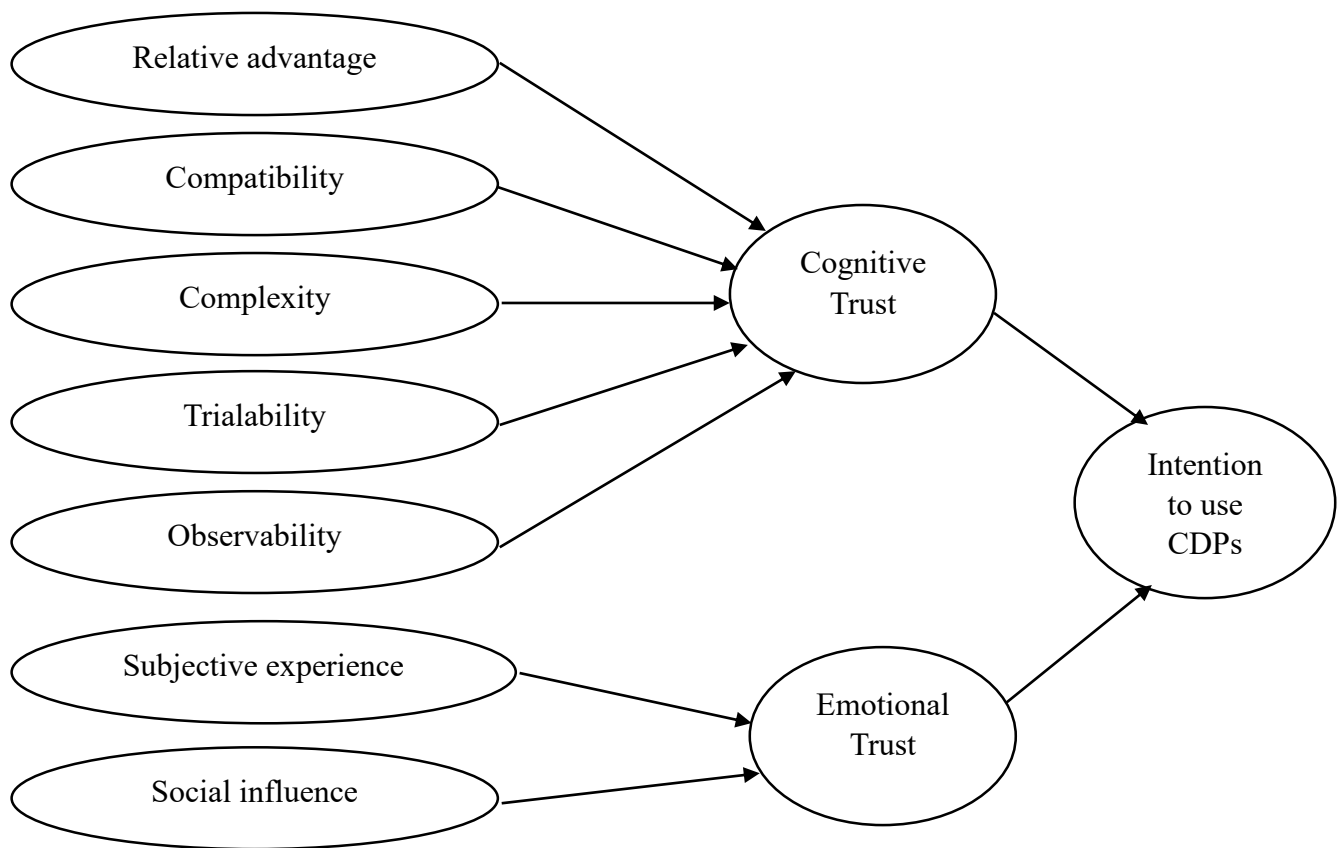


Figure 4.2: The revised research model.

Source(s): Author's own creation.

The comparison results were illustrated in Table 4.6, indicating that the original model outperformed the revised model in terms of model fit, further supporting the mediation hypothesis. Specifically, the increase in chi-square ($\Delta\chi^2 = 94.341$, $p < 0.001$) and deterioration in RMSEA and CFI in the revised model suggest that removing the direct path from COT to EMT weakens the overall explanatory power of the model. This highlights the importance of

considering both cognitive and emotional dimensions of trust in influencing consumer adoption behaviours.

Table 4.6: Testing for the mediation effect of EMT

Model Element	The original model	The revised model
<i>Model fit</i>		
Chi-square	1269.317	1363.658
Df	563	564
P	0.000	0.000
RMSEA	0.053	0.057
CFI	0.941	0.934
<i>Standardized parameter estimates</i>		
COT -> EMT	0.543 ^{***}	Not estimated
COT -> ADT	0.288 ^{***}	0.372 ^{***}
EMT -> ADT	0.610 ^{***}	0.623 ^{***}
Note: ^{***} $p < 0.001$, ^{**} $p < 0.01$, [*] $p < 0.05$		

Source(s): Author's own creation.

The results in Table 4.7 further support the mediation effect of EMT, as seen in the breakdown of direct and indirect effects of COT on ADT. In the original model, the total effect of COT on ADT was 0.619, which was largely mediated by EMT (0.331). In the revised model, the direct effect of COT on ADT increased from 0.288 to 0.372, but the total effect decreased significantly (from 0.619 to 0.372), indicating that removing the COT → EMT path eliminated a crucial indirect effect (0.331). This result confirms that while cognitive trust directly impacts adoption intention, its influence is much stronger when it fosters emotional trust first, reinforcing the need for businesses to focus on trust-building strategies that engage both cognitive and emotional responses.

Table 4.7: Assessing Direct and Indirect effects.

Effects ^e of COT->ADT	The original model	The revised model
Total effects	0.619	0.372
Direct	0.288	0.372
Indirect	0.331	0.000
^e Values in the table represent standardized effects		

Source(s): Author's own creation.

Multigroup analysis (MGA) was conducted to examine the moderating effects of order value and online order frequency on the relationship between cognitive trust (COT) and emotional trust (EMT) in the adoption of Collection-and-Delivery Points (CDPs). The results provided important insights into how consumer behaviour varies based on spending habits and purchasing frequency. The findings indicate that:

- Consumers with high-value orders (over 500,000 VND or 200 USD) exhibit a stronger relationship between cognitive trust and emotional trust than low-value order consumers.
- Consumers with lower order frequency (fewer than 6 orders per month) exhibit a stronger COT → EMT relationship than those with a high order frequency.

Before conducting multigroup comparisons, measurement invariance testing was performed to confirm that the constructs were measured equivalently across groups. Two types of invariances were tested:

- Configural Invariance: Ensures that the same factorial structure exists across both groups (tested using an unconstrained model).
- Metric Invariance: Ensures that factor loadings are equivalent between groups, allowing valid comparison of path estimates (tested using a constrained model).

This rigorous validation process strengthens the reliability of the multigroup analysis and ensures that differences observed in path coefficients are due to genuine behavioural variations rather than measurement inconsistencies (Hair et al., 2010).

First, we divided the initial sample into two groups: the high-value order group consisted of consumers purchasing orders with an average value over 500,000 VND (200 USD), and the low-value order group included the remaining ones with an average order value of less than 500,000 VND. Table 4.8 showed acceptable fit indices in unconstrained group model, confirming configural invariance, and insignificant difference between groups in constrained group model with $\Delta\chi^2=18.282$ and $p=0.865$, confirming metric invariance. Looking at the standardized parameter estimates for both unconstrained and constrained models, the study found that the COT→EMT relationship is significant in both groups, and the relationship was much stronger for the high-value order group, which was confirmed by the significant chi-square difference test for the moderator of order value ($p=0.001$).

Table 4.8: Measurement invariance tests for high-order value versus low order value

Model characteristic	Unconstrained group model	Constrained group model (COT-EMT)	Model differences
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	(Totally free for each group)	equal across groups)	
<i>Model fit</i>			
Chi-square	2386.208	2404.490	18.282
df	1072	1098	26
p	0.000	0.000	0.865
CFI	0.900	0.900	
RMSEA	0.053	0.052	
<i>Path estimate</i> ($P_{COT,EMT}$)	1.075*** (high-value order)	0.910*** (high-value order)	
	0.505*** (low-value order)	0.592*** (low-value order)	
CMIN			11.810
df			1
p			0.001
<i>Note:</i> *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$			

Source(s): Author's own creation.

Second, we divided the initial sample into 2 groups: the high order number group consisted of consumers purchasing at least six orders per month and the low order number group included the remaining ones with order number less than 6. Table 4.9 showed acceptable fit indices in unconstrained group model, confirming configural invariance, and insignificant difference between groups in constrained group model with $\Delta\chi^2=21.478$ and $p=0.717$, confirming metric invariance. Looking at the standardized parameter estimates for both unconstrained and constrained models, the study found that the COT->EMT relationship is significant in both groups, and the relationship was much stronger for low order number group, which was confirmed by the significant chi-square difference test for the moderator of order number ($p=0.001$).

Table 4.9: Measurement invariance tests for high order number versus low order number

Model characteristic	Unconstrained group model (Totally free for each group)	Constrained group model (COT-EMT equal across groups)	Model differences
<i>Model fit</i>			
Chi-square	2091.334	2112.812	21.478

df	1098	1124	26
p	0.000	0.000	0.717
CFI	0.920	0.921	
RMSEA	0.045	0.045	
<i>Path estimate</i> ($P_{COT,EMT}$)	0.278** (high order number)	0.545*** (high order number)	
	0.684*** (low order number)	0.607*** (low order number)	
CMIN			14.557
df			1
p			0.000
Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$			

Source(s): Author's own creation.

4.5. Discussion

The study sought to examine the antecedents influencing Cognitive Trust (COT) and Emotional Trust (EMT) in the adoption of Collection-and-Delivery Points (CDPs) among Vietnamese consumers, applying Innovation Diffusion Theory (IDT) and the Heuristic-Systematic Model (HSM) as theoretical foundations. The structural equation modelling (SEM) analysis validated the research model with a strong explanatory power ($R^2 = 0.718$), confirming the robustness of the proposed hypotheses while revealing new insights into trust formation and adoption behaviours in last-mile logistics.

The findings confirmed that Relative Advantage (H1, $\beta = 0.171$, $p < 0.05$), Compatibility (H2, $\beta = 0.220$, $p < 0.01$), Trialability (H4, $\beta = 0.267$, $p < 0.01$), and Observability (H5, $\beta = 0.227$, $p < 0.01$) positively influence COT, aligning with IDT's core premise that perceived innovation characteristics shape adoption behaviours (Rogers, 1983). These results highlight that consumers are more likely to trust CDPs when they perceive them as beneficial, easy to try, and widely observable in society.

However, Complexity (H3, $\beta = -0.049$, $p > 0.05$) was not a significant predictor of COT, contradicting prior studies which suggested that technological complexity is a key barrier to adoption (Venkatesh et al., 2003). This finding suggests that Vietnamese consumers may not perceive CDPs as overly complicated, possibly due to their increasing familiarity with self-service technologies in e-commerce logistics. Future research should explore whether this result holds in different cultural contexts where technology adoption rates may vary.

Four out of five constructs in the IDT model were positively related to COT. This was similar to the findings of E. Kim et al. (2017); Tsai & Tiwasing (2021); Wang et al. (2018); Yuen et al. (2018). Trialability had the strongest effect on cognitive trust among the four.

The study found that Subjective Experience (H6, $\beta = 0.115$, $p < 0.05$) and Social Influence (H7, $\beta = 0.331$, $p < 0.001$) positively impact EMT, reinforcing HSM's dual-processing framework (Chaiken, 1980). In the study, SOI, rather than SBE, was proved to have stronger effect and positive predictor of EMT. This is probably because of the unpopularity of CDPs among Vietnamese consumers. This outcome was consistent with the findings of previous studies (Cai et al., 2021; K. Kim et al., 2020; M. Zhou et al., 2020). Consumers appear to develop emotional confidence in CDPs based on their personal experiences and the opinions of significant others. This suggests that businesses should leverage word-of-mouth marketing and peer recommendations to enhance EMT, as consumers in collectivist cultures like Vietnam rely more on social validation than on individual evaluations (Hofstede et al., 2010).

Among direct paths to adoption intention toward CDPs, the path from EMT to ADT was the most salient and, thus EMT was found to be the most influential predictor of ADT. The strong EMT $\rightarrow$ ADT pathway reinforces the notion that logistics providers must prioritize emotional reassurance strategies, such as transparent communication, user-friendly interfaces, and trust-enhancing branding efforts. This is aligned with the finding of Cai et al. (2021) when the irrational factor had a significant impact on the behavioural intention of CDPs. This suggests that consumers rely more on emotional security than on rational assessments when deciding to adopt CDPs, consistent with Gefen et al.'s (2003) findings in e-commerce trust research. This study also provided empirical evidence on the direct impact of cognitive trust (COT) on ADT toward collection-and-delivery points among Vietnamese consumers.

The results showed that emotional trust was a pivotal psychological variable mediating the relationship between cognitive trust and CDPs adoption intention. The moderating analysis in terms of order value and order number illustrated some interesting insights. When the number of online orders placed was high, the effect of cognitive trust on emotional trust was less than in case of low order number. As consumers develop a habit of using a certain and repetitive method of delivery when the order number increases, the impact of cognitive processing on adoption intention would reduce (Cai et al., 2021). Furthermore, when purchased items were expensive, deliberate evaluation was required before making decisions. Therefore, cognitive trust has a strong influence on emotional trust in this case.

As our expectation, the findings supported the significantly positive impact of social influence on emotional trust. According to Hofstede et al. (2010), Vietnam is a collectivist society where consumers perceive favourable social influence from their family, friends,

colleagues and surroundings toward CDPs adoption intention. These findings are consistent with the study of McAllister, (1995) which affirmed that affective-based trust, for instance, is stronger than cognitive-based trust in more intimate relations (i.e., family and friends).

The study provides strong empirical validation of IDT and HSM, demonstrating that trust is central to CDP adoption. The findings confirm that Relative Advantage, Compatibility, Trialability, and Observability drive trust formation, while Emotional Trust plays the strongest role in adoption decisions. By integrating these findings, businesses and policymakers can design more effective last-mile delivery solutions, enhance consumer trust, and drive widespread CDP adoption.

4.6. Research implications

The study investigating the adoption of Collection-and-Delivery Points (CDPs) among Vietnamese consumers provides valuable theoretical and practical contributions. Using Innovation Diffusion Theory (IDT) and the Heuristic-Systematic Model (HSM) as theoretical foundations, the findings reinforce the central role of trust in last-mile delivery adoption.

4.6.1. Theoretical implications

Past research mainly focused on the influence of rational factors on behavioural intention while ignoring the effect of irrational factors. By integrating trust into innovation diffusion theory and the heuristic-systematic model, this research proposes a model synthesizing rational and irrational aspects. Our findings suggest that trust is an important antecedent of consumers' adoption intention of CDPs. With regard to the role of emotional trust, the findings provided empirical evidence for supporting the positively significant impact of emotional trust and its strong mediating role on the relationship between cognitive trust and intention to adopt CDPs, especially in the cases of high-value orders and low order numbers. In this study, social influence was found to have a considerable impact on emotional trust, which seemed to be compatible within a collectivist society like Vietnam.

The study extends existing technology adoption frameworks by demonstrating the dominant role of Emotional Trust (EMT) over Cognitive Trust (COT) in influencing adoption intention (ADT). While traditional models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) emphasize perceived usefulness and ease of use, this research highlights that in last-mile logistics services, emotional reassurance plays a more significant role than rational assessments. The results confirm that EMT exerts a stronger influence on ADT ($\beta = 0.610$) than COT ($\beta = 0.288$), indicating that consumers are more likely to adopt CDPs when they feel emotionally secure about the service rather than solely relying on cognitive evaluations of reliability and security.

Additionally, the findings validate IDT's premise that perceived innovation characteristics drive adoption. The significant influence of Relative Advantage (RAD), Compatibility (CPT), Trialability (TRI), and Observability (OBS) on COT supports Rogers' (1983) diffusion model, reinforcing that consumers are more likely to trust and adopt a service when it aligns with their needs, is easy to try, and is socially visible. Interestingly, Complexity (CPL) did not significantly impact COT, contradicting prior research suggesting that technological complexity hinders adoption (Venkatesh et al., 2003). This finding suggests that Vietnamese consumers do not perceive CDPs as complex, possibly due to increasing exposure to self-service logistics technologies.

The study also confirms HSM's dual-processing framework, which suggests that consumers rely on systematic processing (COT) when evaluating unfamiliar services but shift to heuristic processing (EMT) when trust is reinforced through social influence and positive experiences (Chaiken, 1980). The strong influence of Social Influence (SOI) on EMT ($\beta = 0.331, p < 0.001$) further supports that trust formation in collectivist cultures like Vietnam is heavily influenced by peer recommendations, social norms, and community validation (Hofstede et al., 2010).

Furthermore, to the best of the author's knowledge, this research is the first empirical study to investigate cases in which cognitive trust affects emotional trust toward CDPs' adoption intention. In cases of high-value orders and low order numbers, consumers evaluate information systematically before affecting their beliefs in CDPs. To this end, our study provides a comprehensive explanation for consumers' behavioural intention of CDPs.

4.6.2. Practical implications

The findings offer strategic guidance for logistics service providers, e-commerce platforms, and policymakers aiming to enhance CDP adoption rates in Vietnam.

Since EMT has a stronger effect on ADT than COT, logistics providers should implement trust-enhancing strategies that appeal to consumer emotions.

- *Strengthen security features:* Providing real-time tracking, biometric verification, and tamper-proof lockers can reassure users and increase perceived reliability.
- *Leverage social proof:* Encouraging customer testimonials, influencer endorsements, and peer recommendations can build emotional trust. Introducing marketing campaigns with the adoption of CDPs by key opinion leaders/key opinion consumers could be beneficial to service providers. These individuals can generate content to foster co-creation value on online social platforms and

diffuse the innovativeness of CDPs, especially in the context of collectivist societies.

- *Improve user experience*: Offering personalized customer support, first-use incentives, and seamless mobile app interfaces can enhance consumer confidence in CDPs.

Vietnamese consumers exhibit lower trust in unattended delivery solutions due to concerns about security, reliability, and theft risks. To address these barriers:

- Government incentives (e.g., subsidies, tax reductions) should encourage businesses to deploy CDPs in high-traffic, secure locations (e.g., shopping malls, offices, universities). The research findings also suggest that consumers' behavioural intentions to use CDPs are affected by relative advantage, compatibility, trialability, and observability. Accordingly, retailers and logistics service providers should develop strategies to increase the availability of CDP service. This could lead to improvement in convenience, opportunity to experience CDPs, and observability of the service and benefit online consumers.
- Educational campaigns should promote the safety and efficiency of CDPs, reinforcing positive adoption attitudes.
- Retailer partnerships can integrate CDP collection services into mainstream e-commerce platforms, increasing visibility and normalization.

Differentiated marketing strategies for different customer segments. The study shows a positive relationship between cognitive trust and emotional trust towards CDP adoption intention. And it becomes even stronger in cases of high-value orders and low order number. Therefore, retailers and logistics service providers should identify types and characteristics of their customers before developing appropriate marketing strategies to encourage them to use the CDPs service:

- High-value buyers ($\geq 500,000$ VND) rely more on COT than EMT, indicating that premium security assurances (e.g., insured deliveries, VIP customer support) are critical for this segment.
- Low-frequency buyers (≤ 6 orders/month) require stronger trust signals to adopt CDPs, suggesting the need for first-time user promotions and guided onboarding experiences.

4.7. Conclusions and limitations

This study explores the factors influencing Vietnamese consumers' intention to adopt CDP services. Our findings indicate that emotional trust has the strongest direct effect on

adoption intention toward CDPs. Additionally, we found empirical evidence supporting the direct impact of cognitive trust. Emotional trust emerged as a crucial psychological factor mediating the relationship between cognitive trust and the intention to adopt CDPs, particularly for high-value orders and infrequent purchases. Moreover, four constructs from the Innovation Diffusion Theory (relative advantage, compatibility, trialability, and observability) positively influenced cognitive trust. Meanwhile, two constructs from the heuristic-systematic model (subjective experience and social influence) were positively associated with emotional trust, which in turn affected the intention to adopt CDPs.

This study offers valuable insights into consumer behaviour regarding CDP services in a developing country but has some limitations that should be considered. It was conducted in Hanoi, Vietnam, where CDPs are still in an early stage of adoption and among a specific demographic profile of residents. While the findings may be applicable to similar large cities with comparable characteristics, caution should be exercised when generalizing the results. Consumer behaviour might vary in other developing countries and regions due to differences in demographic profiles and development levels. The study was conducted solely in Vietnam, meaning findings may not generalize to Western markets where trust perceptions differ. Additionally, subjective Experience (SBE) and emotional Trust (EMT) were measured using only two items, which may limit construct validity. Future studies should expand measurement items to ensure a more comprehensive representation of these constructs. Psychological factors such as perceived risk, habit formation, and technology readiness were not examined but may influence CDP adoption. Regulatory support and industry standards were not considered, despite their potential role in shaping consumer trust. Finally, the sample size of this study was relatively small. Specifically, the sample primarily consisted of young urban consumers (85.5% aged 18–25), limiting applicability to older demographics and rural areas. A larger sample could enable more detailed subgroup analysis and more accurate conclusions. Future research could advance the current body of knowledge in the following ways: Perform a cross-region analysis to assess CDP implementation in both urban and rural areas, comparing results to evaluate the generalizability of the current findings; and conduct a cross-cultural analysis to investigate CDP implementation in different national cultures and compare results to test the applicability of the findings across various cultural contexts.

4.8. Future research directions

While this study provides significant insights into the adoption of Collection-and-Delivery Points (CDPs) among Vietnamese consumers, several areas remain unexplored, offering opportunities for future research. Given the critical role of trust—both cognitive and

emotional—in last-mile logistics adoption, further investigations should expand on trust evolution over time, cross-cultural adoption patterns, risk perception, and regulatory influence. Addressing these gaps will enhance the theoretical robustness of trust-based adoption models and provide actionable insights for businesses and policymakers.

4.8.1. Longitudinal Research on Trust Evolution

One of the key limitations of this study is its cross-sectional design, which captures consumer trust and adoption intention at a single point in time. However, trust is not static—it evolves as consumers gain experience with CDPs, encounter service disruptions, or receive social validation from peers. Future research should employ longitudinal studies to examine how Cognitive Trust (COT) and Emotional Trust (EMT) develop over multiple interactions. This would allow researchers to assess:

- Whether Cognitive Trust declines while Emotional Trust strengthens over time as consumers become more familiar with CDPs.
- How negative experiences (e.g., failed deliveries, security breaches) impact long-term trust and whether consumers can regain trust after service failures.
- The role of habit formation in trust evolution—whether repeated CDP usage reduces reliance on emotional reassurance and shifts decision-making toward convenience and efficiency.

Such insights would help logistics providers refine customer retention strategies, ensuring that trust-building efforts remain effective beyond the initial adoption phase.

4.8.2. Cross-Cultural Comparisons in Trust Formation

This study was conducted solely in Vietnam, where cultural factors such as collectivism and high uncertainty avoidance shape trust formation. However, in individualistic cultures like the U.S. or the U.K., consumers may prioritize Cognitive Trust (COT) over Emotional Trust (EMT), basing adoption decisions on service reliability, security assurances, and past experiences rather than peer influence or emotional comfort.

Future research should compare CDP adoption across diverse cultural contexts to explore:

- Whether Western consumers exhibit a stronger reliance on Cognitive Trust, while Asian consumers prioritize Emotional Trust as a primary adoption driver.
- How social influence varies across cultures—whether peer recommendations hold the same weight in individualistic vs. collectivist societies.

- The impact of regulatory environments on trust formation—do countries with well-established consumer protection laws exhibit higher baseline trust in logistics innovations?

Conducting multi-country comparative studies would provide a more universal understanding of trust dynamics, helping global e-commerce and logistics providers tailor their marketing and service design strategies to different regions.

4.8.3. The Role of Perceived Risk in Trust Formation

While this study confirmed that Cognitive and Emotional Trust significantly influence adoption intention (ADT), it did not explicitly examine how perceived risk moderates this relationship. Consumers who view CDPs as prone to security breaches, package theft, or service failures may be less likely to develop trust, regardless of CDP benefits. Future research should incorporate Perceived Risk (PR) as a moderating variable, exploring:

- How risk perception influences the balance between Cognitive and Emotional Trust—does higher perceived risk amplify the need for social validation (EMT), or does it increase reliance on formal security assurances (COT)?
- Whether risk tolerance varies by consumer segment—do high-frequency online shoppers exhibit lower sensitivity to CDP risks than occasional buyers?
- How risk mitigation strategies (e.g., insurance policies, 24/7 customer support, AI-based security monitoring) impact trust formation and adoption.

A deeper understanding of risk dynamics would help logistics providers design targeted interventions to alleviate consumer concerns, thereby increasing CDP adoption rates.

4.8.4. Examining the Impact of Government Regulations and Industry Standards

This study primarily examined consumer-driven trust formation, but institutional factors such as regulatory policies and industry standards also play a crucial role in shaping logistics service adoption. Governments in countries like France and China have actively promoted CDP networks through subsidies, land-use policies, and sustainability incentives, leading to higher adoption rates (Y. Liu et al., 2024; Morganti, Dabanc, et al., 2014). However, in emerging markets like Vietnam, where CDPs remain a relatively new concept, the lack of clear regulations may hinder trust formation. Future research should explore:

- The impact of regulatory interventions on trust—does government endorsement of CDPs increase consumer confidence, similar to publicly funded transportation systems?
- How industry standards influence trust formation—do standardized security protocols, third-party auditing, and consumer protection policies enhance Cognitive Trust?

- Comparing government vs. private-sector trust-building approaches—are consumers more likely to trust CDPs promoted by state-backed initiatives, or do private logistics firms hold greater credibility?

Addressing these questions would provide policy recommendations for governments and strategic insights for businesses, ensuring that regulatory frameworks support—not hinder—CDP adoption.

Chapter Summary

This chapter examines the adoption of Collection-and-Delivery Points (CDPs) among Vietnamese consumers, focusing on the role of Cognitive Trust (COT) and Emotional Trust (EMT) in influencing adoption intention. Using Innovation Diffusion Theory (IDT) and the Heuristic-Systematic Model (HSM) as theoretical foundations, the study investigates the factors driving trust formation and how these trust dimensions mediate the adoption decision-making process.

The rise of e-commerce has increased demand for last-mile delivery solutions, yet home delivery failures remain a significant issue. In response, CDPs have emerged as an alternative, offering convenience, cost-effectiveness, and improved delivery efficiency. While CDPs are widely adopted in Western markets, their adoption in Vietnam remains low due to cultural and psychological barriers, particularly trust concerns. Existing literature has predominantly focused on rational factors (e.g., price, convenience, perceived usefulness) in technology adoption, largely overlooking irrational factors like trust and emotional security. Given that trust plays a critical role in last-mile logistics, this study aims to bridge this gap by investigating how Cognitive Trust (COT) and Emotional Trust (EMT) shape CDP adoption behaviour.

The study employs a quantitative research design using survey data from 440 respondents. The questionnaire was adapted from established scales, measuring Relative Advantage (RAD), Compatibility (CPT), Complexity (CPL), Trialability (TRI), and Observability (OBS) as antecedents of COT, while Subjective Experience (SBE) and Social Influence (SOI) influenced EMT. The dependent variable was Adoption Intention (ADT). The study used Structural Equation Modelling (SEM) to test hypotheses and examine direct, indirect, and moderating effects.

The study confirmed that trust significantly influences CDP adoption, with EMT playing a stronger role than COT. Specifically, the results revealed that:

- Relative Advantage (RAD), Compatibility (CPT), Trialability (TRI), and Observability (OBS) positively influence COT, aligning with IDT's core premise that perceived innovation characteristics drive adoption.
- Complexity (CPL) does not significantly affect COT, contradicting previous research suggesting that technological complexity is a barrier to adoption.
- Social Influence (SOI) and Subjective Experience (SBE) positively impact EMT, reinforcing the HSM framework, which posits that consumers rely on heuristic processing (peer recommendations, social validation) when adopting new services.

- EMT has a stronger effect on ADT ($\beta = 0.610$) than COT ($\beta = 0.288$), meaning consumers rely more on emotional security than rational assessments when adopting CDPs.
- Multigroup analysis shows that high-value order consumers and infrequent shoppers rely more on COT.

The study extends IDT and HSM by integrating trust as an irrational factor, highlighting that emotional reassurance is more critical than perceived usefulness in logistics adoption. This challenges existing models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which emphasize rational decision-making.

For logistics providers and policymakers, the findings suggest that enhancing EMT and COT is key to driving CDP adoption. Strategies should include:

- Strengthening security features (e.g., biometric authentication, tamper-proof lockers).
- Leveraging social influence (e.g., peer endorsements, influencer marketing).
- Enhancing service visibility (e.g., integrating CDPs into mainstream e-commerce platforms).
- Segmented marketing strategies (e.g., premium security for high-value order consumers, first-time incentives for low-frequency buyers).

The study was conducted in Vietnam, meaning findings may not generalize to Western markets with different trust perceptions. Additionally, trust evolution over time, perceived risk, and regulatory influence were not examined. Future research should explore:

- Longitudinal studies on trust development to assess whether COT declines while EMT strengthens over time.
- Cross-cultural comparisons to determine whether Western consumers rely more on COT than EMT.
- The role of perceived risk in moderating the COT $\rightarrow$ EMT $\rightarrow$ ADT relationship.
- Regulatory interventions to evaluate how government policies influence trust formation.

This study provides empirical evidence that trust—particularly Emotional Trust—is the strongest predictor of CDP adoption in Vietnam. It underscores the need for logistics providers to focus on emotional reassurance strategies rather than purely functional benefits. By addressing trust concerns through improved security, customer engagement, and regulatory support, businesses and policymakers can accelerate CDP adoption, enhance last-mile logistics efficiency, and support e-commerce growth.

CHAPTER 5: CONCLUSION, IMPLICATIONS AND LIMITATIONS

5.1. Conclusions

This study examined determinants of Vietnamese consumers' adoption intention toward Collection-and-Delivery Points (CDPs). Given the increasing demand for efficient last-mile delivery solutions, CDPs have been identified as a promising alternative to traditional home delivery. However, despite their numerous benefits, CDP adoption in Vietnam remains limited, necessitating an in-depth exploration of the psychological, social, and behavioural factors that drive or hinder adoption. To address this research gap, this study has achieved the following objectives:

5.1.1. Critically discuss past research about CDPs

Research on Collection-and-Delivery Points (CDPs) has evolved significantly, focusing on their role in improving last-mile logistics, reducing delivery failures, and enhancing cost efficiency. As e-commerce continues to grow, the increasing volume of online orders has created significant challenges for logistics providers, particularly in urban areas with high population densities. Failed home deliveries contribute to inefficiencies, increased fuel consumption, and higher operational costs, making CDPs a practical alternative for managing last-mile logistics. However, despite their advantages, CDPs have experienced varying levels of adoption worldwide, with significantly lower adoption rates in Asia compared to Europe and North America.

While past research has explored logistical efficiency, environmental sustainability, and technological advancements in CDPs, fewer studies have examined consumer behaviour and trust-related factors influencing CDP adoption. Scholars have emphasized that consumer perceptions of convenience, security, and social influence play a crucial role in determining whether CDPs are widely accepted. However, past research has largely overlooked cultural differences, emotional trust, and psychological barriers in adoption decisions. As CDPs continue to gain attention as a sustainable last-mile delivery solution, it is essential to critically evaluate the strengths, gaps, and future research directions in CDP literature.

The primary motivation behind CDP implementation is to address inefficiencies in home delivery services. Research by Morganti et al. (2014), Deutsch & Golany (2018), and Patowary et al. (2023) highlights how missed deliveries contribute to higher operational costs, environmental concerns, and delivery delays. Studies estimate that failed home delivery rates range between 15% and 60%, depending on location, delivery policies, and consumer availability (Rai et al., 2021). This has led logistics companies to explore alternative delivery

solutions, such as CDPs, parcel lockers, and in-store pickup options, to improve service reliability and cost efficiency. CDPs have been shown to offer multiple benefits, including reducing the number of redelivery attempts, lowering transportation emissions, and enhancing delivery flexibility for consumers (Agatz et al., 2011; Francke & Visser, 2015; Chen et al., 2017). From a sustainability perspective, research suggests that CDPs reduce congestion and carbon footprint, as multiple packages can be delivered to a single pickup point instead of individual households (Q. Chen et al., 2017). Despite these advantages, adoption rates vary significantly across different regions, raising important questions about the factors influencing consumer preferences for CDPs.

Past research has established that consumer behaviour is a key determinant in the success of CDP adoption, but the factors influencing these behaviours are still not fully understood. Studies have found that convenience, and perceived security are among the most critical elements shaping consumer attitudes toward CDPs. Yuen et al. (2019) and Zhou et al. (2020) found that consumers are more likely to use CDPs if they perceive them as secure, reliable, and easy to use. However, past research has also revealed barriers to adoption, including concerns over parcel security, difficulty in accessing CDPs, and unfamiliarity with the service. Some consumers prefer home delivery due to the perceived risk of theft or loss when using unattended CDP locations. Others may be deterred by the inconvenience of traveling to a CDP, particularly if it is located far from their home or workplace. While studies highlight the potential benefits of CDPs, they also emphasize the importance of understanding consumer trust and risk perception, factors that have been underexplored in existing literature.

An important yet understudied aspect of CDP research is the influence of cultural factors on adoption behaviours. Studies suggest that consumer attitudes toward CDPs differ significantly between Western and Asian markets. In Europe and North America, where consumers are more accustomed to technology-driven delivery solutions, CDPs have been widely accepted and integrated into last-mile logistics strategies (Mangiaracina et al., 2019). For example, Finland has achieved more than 90% out-of-home (OOH) delivery adoption, while France and Germany also report high usage of parcel lockers and pickup points. In contrast, Asian markets, including Vietnam, China, and South Korea, show lower CDP adoption rates, with consumers exhibiting a preference for direct home deliveries (Parcelmonitor, 2022). The reluctance to use CDPs in these regions can be attributed to several cultural and behavioural factors. Hofstede's cultural dimension theory (2010) suggests that collectivist societies, such as those in Asia, place greater emphasis on social influence and trust in familiar systems. Consumers in these markets may be less willing to adopt self-service solutions like CDPs, as they rely more on interpersonal interactions and community-based recommendations.

Additionally, perceptions of service quality and security concerns differ across cultures. While Western consumers prioritize efficiency and technological convenience, Asian consumers often express scepticism toward unattended parcel storage solutions. This cultural disparity highlights a significant research gap, as most CDP adoption models fail to account for regional and cultural variations in consumer behaviour.

Several theoretical frameworks have been applied to explain consumer adoption of CDPs, each offering different perspectives on decision-making processes. The Innovation Diffusion Theory (IDT) posits that consumers adopt new services based on relative advantage, compatibility, complexity, trialability, and observability (Rogers, 1983; Wang et al., 2018). This model has been widely used in technology adoption studies, including CDP research, but it primarily focuses on rational decision-making processes and does not fully account for emotional and trust-related factors. The Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) have also been applied to CDP adoption studies, focusing on perceived usefulness, ease of use, and social influence (Cai et al., 2021; Venkatesh et al., 2003). While these models provide valuable insights into rational adoption behaviours, they often overlook the psychological and emotional aspects of consumer trust. More recent studies have begun exploring trust-based theories in CDP research. Cognitive Trust (COT) refers to rational evaluations of security and efficiency, whereas Emotional Trust (EMT) is based on subjective experiences and feelings of reassurance (Shi et al., 2021; Chen & Chaiken, 1999). However, the literature on trust in CDP adoption remains limited, and future research should investigate how trust dynamics influence adoption decisions, particularly in culturally diverse markets.

Past research on CDPs has primarily focused on logistical efficiency, operational cost savings, and environmental sustainability, while consumer behavioural factors, trust dynamics, and cultural influences remain underexplored. To develop a more comprehensive understanding of CDP adoption, future studies must integrate trust-based models, cultural considerations, and emerging technologies. By addressing these research gaps, scholars and industry stakeholders can develop effective strategies to increase CDP adoption, enhance last-mile logistics, and improve consumer satisfaction worldwide.

5.1.2. Identify future research about consumers' adoption intention towards CDPs

The extensive literature on Collection-and-Delivery Points (CDPs) highlights their potential in improving last-mile delivery efficiency, reducing logistics costs, and enhancing sustainability. However, critical gaps remain in understanding consumer behaviour, technology advancements, and cross-cultural adoption patterns. Based on the refined literature review,

future research should focus on the following key areas to advance knowledge on CDP adoption and implementation.

5.1.2.1. Expanding Research on Consumer Behaviour and Trust Factors

While consumer attitudes toward Collection-and-Delivery Points (CDPs) have been widely examined, much of the existing research has concentrated on rational factors such as cost savings and convenience. These utilitarian dimensions are undoubtedly important; however, consumer adoption decisions are also shaped by psychological and emotional considerations, including trust, risk perception, and social influence. Ignoring these softer dimensions risks oversimplifying the adoption process and overlooking key drivers of consumer behaviour, particularly in cultural contexts where emotions and social cues play a central role.

One important area for future research concerns the distinction between emotional trust and cognitive trust. Consumers evaluate CDPs not only on functional criteria such as service reliability and technological performance but also on how safe, familiar, and socially recognized the service feels. Emotional trust, rooted in reassurance and personal comfort, may be just as influential as rational assessments of efficiency. Further studies that integrate trust-based models could provide deeper insight into how these two forms of trust interact to shape adoption decisions.

Another area requiring greater attention is perceived risk and consumer hesitation. Some consumers are reluctant to use CDPs because of concerns about parcel security, the possibility of loss or theft, or damage during storage. Such perceptions can significantly suppress adoption rates, even if objective service quality is high. Future research should therefore explore the extent to which perceived risks deter adoption and investigate how technological solutions—such as real-time tracking systems, secure authentication mechanisms, and insurance guarantees—can mitigate these concerns and restore consumer confidence.

Finally, social influence and peer recommendations remain critical determinants of consumer behaviour, particularly in collectivist societies such as Vietnam, China, or Thailand. In these contexts, individuals tend to place greater weight on community validation and peer experiences compared to consumers in more individualist societies like the UK, Germany, or the US. This suggests that cultural factors play a central role in shaping adoption patterns. Future research should therefore examine how social norms, community endorsement, and cultural values interact with innovation diffusion processes, providing a more comprehensive understanding of the social dynamics that underpin CDP adoption.

5.1.2.2. Cross-Cultural Studies on CDP Adoption

A significant gap in the literature on Collection-and-Delivery Point (CDP) adoption is the lack of cross-cultural comparative studies. Although research has highlighted regional variations in consumer attitudes, very few studies have systematically compared adoption patterns between Western and Asian markets. This limits our understanding of how cultural, economic, and infrastructural differences shape consumer behaviour and leaves open important questions about why adoption rates vary so widely across contexts.

One area that warrants deeper investigation is the question of why Western consumers adopt CDPs more readily than Asian consumers. While CDPs are already widely integrated into delivery systems in Europe and North America, adoption across many Asian markets remains relatively low. Future research should examine the cultural, economic, and infrastructural factors that may explain these disparities. Issues such as urban density, logistics infrastructure, and cultural attitudes toward unattended deliveries are all likely to influence uptake differently across regions.

Another promising line of inquiry is the impact of cultural orientations such as individualism and collectivism on CDP adoption. Drawing on Hofstede's Cultural Dimensions, prior research suggests that collectivist societies in Asia place stronger emphasis on social validation and community endorsement, whereas individualist societies in Europe and the US tend to value efficiency and independence in decision-making. These cultural differences could shape both adoption behaviour and the effectiveness of marketing strategies. Future studies should therefore explore how cultural orientations mediate trust, convenience, and social influence in CDP usage.

Finally, there is a need for research on localized strategies tailored to different consumer markets. A standardized approach to promoting CDPs may not be effective across cultures. In individualist societies, marketing campaigns might be more persuasive if they emphasize efficiency, speed, and autonomy. By contrast, in collectivist societies, messages that stress trust, security, and community validation may resonate more strongly with consumers. Comparative studies in this area would not only enrich theoretical understanding but also provide practical insights for businesses seeking to expand CDP adoption across diverse cultural markets.

5.1.2.3. The Role of Emerging Technologies in CDP Implementation

As e-commerce continues to expand, technological advancements are playing an increasingly significant role in shaping last-mile logistics. While existing research has examined the basic functions of Collection-and-Delivery Points (CDPs), there is still limited understanding of how emerging technologies can strengthen adoption and consumer trust.

Exploring the intersection of digital innovation and logistics services presents an important avenue for future research, as technological solutions may address many of the barriers currently hindering widespread CDP usage.

One promising direction involves the integration of Artificial Intelligence (AI) into CDP services. AI has the potential to optimize the placement of CDP locations, predict consumer delivery preferences, and personalize service options to align with individual needs. AI-driven recommendation systems could, for example, suggest the most convenient pick-up points based on a consumer's daily travel patterns. Future studies should therefore investigate how personalization powered by AI may increase adoption rates by making CDPs feel more responsive, efficient, and user-friendly.

Another important technological development is the application of blockchain for secure parcel handling. Many consumers remain hesitant to use CDPs due to concerns about theft, fraud, or loss of packages. Blockchain technology offers a decentralized and tamper-proof method of tracking parcels, authenticating transactions, and preventing fraud. By providing an immutable record of parcel movements, blockchain could significantly reduce trust barriers associated with unattended delivery services. Future research should examine the feasibility of blockchain-enabled CDPs, including potential challenges such as cost, scalability, and regulatory acceptance.

Finally, the use of Internet of Things (IoT) technologies could transform CDPs into smart, connected systems. IoT-enabled lockers would allow for real-time parcel monitoring, providing consumers with instant updates on the status of their deliveries. These systems could also incorporate additional features, such as temperature regulation for perishable items or biometric authentication for secure retrieval. Automated notifications and remote monitoring capabilities would further enhance transparency and trust. More research is needed to assess how IoT integration impacts both CDP operational efficiency and consumer perceptions of reliability.

5.1.2.4. Government Policies and CDP Adoption Strategies

Government regulations and urban planning decisions play a critical role in shaping last-mile delivery innovations, yet their influence on the adoption of Collection-and-Delivery Points (CDPs) has received limited attention in the existing literature. While much of the research has focused on consumer behaviour and technological advancements, the role of public policy in fostering CDP networks remains underexplored. Future studies should address this gap by examining how regulatory frameworks, planning strategies, and sustainability agendas affect CDP development and consumer adoption.

One important area of investigation concerns the role of government incentives in promoting CDPs. In several countries, including France and China, public authorities have introduced subsidies and financial incentives to encourage CDP expansion. These initiatives suggest that supportive government policies can accelerate adoption by lowering operational costs for logistics providers and increasing consumer exposure to CDP services. Future research should therefore analyse the extent to which such policy interventions influence adoption rates across different cultural and economic contexts.

Another dimension involves urban planning and CDP network design. As cities grow denser and delivery demands increase, integrating CDPs into existing public infrastructure could improve accessibility and convenience. Locating CDPs in high-traffic areas such as train stations, shopping malls, and office buildings may help overcome consumer hesitation by embedding these services into everyday routines. Future research should investigate how urban planning decisions influence not only the spatial distribution of CDPs but also consumer adoption and long-term sustainability of such networks.

Finally, the rise of environmental concerns highlights the importance of sustainability policies and their impact on CDP adoption. Governments worldwide are implementing carbon reduction strategies and promoting eco-friendly logistics solutions. CDPs have the potential to reduce failed deliveries, lower emissions, and ease traffic congestion, aligning with broader green logistics initiatives. Future studies should examine how sustainability regulations—such as carbon taxes, emission reduction targets, or incentives for green infrastructure—affect both consumer preferences and the willingness of logistics providers to invest in CDP systems.

5.1.2.5. Longitudinal Studies on Consumer Adoption Trends

Most existing research on Collection-and-Delivery Points (CDPs) relies heavily on cross-sectional surveys, which capture consumer attitudes at a single point in time. While useful for providing a snapshot of adoption drivers and barriers, such approaches fail to account for how consumer preferences evolve in response to technological innovations, societal changes, and shifting market conditions. Since logistics and e-commerce are rapidly transforming, future studies should adopt more dynamic research designs that capture the temporal nature of consumer decision-making.

One promising approach is to conduct longitudinal studies on CDP usage behaviour. Tracking consumer attitudes and behaviours over several years would provide valuable insights into how and why adoption patterns change. For instance, repeat exposure to CDPs may increase perceptions of trust and compatibility, while negative experiences could erode long-

term adoption. Longitudinal research would thus shed light on the durability of consumer acceptance and the factors that sustain or undermine continued use.

Another important area for exploration is the impact of market changes on CDP preferences. Economic crises, technological advancements, and policy reforms all have the potential to reshape consumer adoption behaviour. For example, recessions may increase price sensitivity, making cost-saving logistics options more attractive, while the introduction of AI-driven smart lockers could shift consumer expectations about security and convenience. Future research should analyse how such macro-level changes interact with individual consumer decision-making in the context of CDPs.

Finally, the post-pandemic consumer landscape warrants particular attention. The COVID-19 pandemic accelerated the adoption of contactless delivery solutions, including smart lockers and CDPs, as consumers sought safer, low-contact alternatives to home delivery. However, it remains unclear whether these behavioural shifts are long-lasting or temporary responses to health concerns. Future studies should investigate whether consumers continue to prefer CDPs in the post-pandemic era, and how businesses can sustain this momentum through trust-building, service innovation, and targeted marketing strategies

5.1.2.6. Hybrid CDP Models: Combining Self-Service and Human Assistance

Most existing research tends to classify Collection-and-Delivery Points (CDPs) into two categories: attended models staffed by humans and unattended models such as automated lockers. However, hybrid CDP models that integrate both human assistance and self-service technologies may offer a more versatile solution to adoption challenges. These models could address trust concerns while maintaining the efficiency benefits of automation, making them attractive to a wider range of consumers. Future research should therefore pay closer attention to how hybrid models can be designed, implemented, and evaluated in diverse market contexts.

One area worth exploring is how hybrid CDP models influence consumer preferences. The combination of human support for tasks such as parcel verification and problem resolution, alongside automated lockers for quick and convenient retrieval, may appeal to both security-conscious and efficiency-driven consumers. Studying the feasibility and consumer acceptance of these hybrid designs could provide new insights into how CDPs can be scaled more effectively.

Future research should also focus on consumer segmentation for hybrid CDPs. While some consumers—particularly younger, tech-savvy individuals—may prefer fully automated systems, others may value the reassurance of human interaction. Identifying demographic,

cultural, or behavioural segments that are more inclined toward hybrid models would allow logistics providers to tailor their strategies and allocate resources more effectively.

At the same time, researchers must also assess the operational challenges of hybrid CDP models. While they hold potential to balance trust and efficiency, these systems also introduce complexity in terms of staffing, technology integration, and ongoing maintenance. Questions of cost-effectiveness and scalability remain unanswered, making this an important area for further empirical investigation.

Beyond the question of hybrid models, several broader research gaps persist in the study of CDP adoption. Future studies should explore the interplay of consumer trust factors, cultural differences, technological innovations, and public policy frameworks that shape adoption outcomes. In addition, longitudinal research and hybrid CDP experimentation could provide a deeper understanding of how adoption evolves over time. Addressing these gaps will enable scholars and practitioners to build more comprehensive models that not only enhance CDP adoption but also improve last-mile logistics and contribute to a more sustainable and efficient delivery ecosystem worldwide.

5.1.3. Identify key factors influencing consumers' adoption intention towards CDPs.

The key factors influencing consumers' adoption intention towards Collection-and-Delivery Points (CDPs) can be categorized into several dimensions, drawing from both theoretical frameworks such as the Innovation Diffusion Theory (IDT) and the Heuristic-Systematic Model (HSM) (Rogers, 1983; Chaiken, 1980).

5.1.3.1. Technological and Service-Related Factors

One of the primary drivers of CDP adoption is **relative advantage**, which refers to the perceived benefits of using CDPs compared to traditional home delivery. Consumers are more likely to adopt CDPs if they view them as more cost-effective, convenient, and efficient in managing parcel delivery schedules. Research suggests that CDPs reduce the number of failed deliveries, offering financial and time-saving benefits to both consumers and logistics providers (Iwan et al., 2016; Oliveira et al., 2017).

Compatibility is another significant factor, as consumers tend to adopt innovations that align with their existing habits and lifestyle preferences. For instance, urban professionals who have busy schedules may find CDPs particularly beneficial because they allow parcel retrieval at a convenient time and location, minimizing disruptions to daily routines (Wang et al., 2018).

However, **perceived complexity** can act as a barrier to adoption. If the process of using CDPs—such as scanning QR codes or accessing smart lockers—is perceived as difficult, consumers may hesitate to switch from traditional home deliveries (Yuen et al., 2018). Research

has shown that consumer education and clear instructions can mitigate these concerns and enhance the perceived ease of use (Dutton et al., 1987).

5.1.3.2. Experiential Factors

Trialability, or the ability of consumers to test CDP services before committing to regular use, plays a crucial role in adoption. Studies indicate that consumers who have a chance to experiment with CDPs, such as through promotional trials or free usage periods, develop a more favourable perception of the service (Strömberg et al., 2016; Wang et al., 2018).

Another influential factor is **observability**, which refers to the extent to which consumers can see others using and benefiting from CDPs. If CDPs become a visible and common service, consumers are more likely to perceive them as trustworthy and efficient (Yuen et al., 2018). Social proof, such as reviews and recommendations from peers, can also enhance adoption rates (Gursoy et al., 2019).

Subjective experience is particularly relevant in decision-making, as familiarity with self-service technologies can influence consumers' willingness to adopt CDPs. Research suggests that individuals who have prior experience with similar automation technologies, such as self-checkout kiosks, are more inclined to trust and use CDPs (Jacoby et al., 1989; Schwarz et al., 1991).

5.1.3.3. Social Influence and Trust

Social factors significantly impact consumer adoption intentions. **Social influence**, as explained by the Heuristic-Systematic Model (HSM), plays a key role in shaping consumer behaviour. People often rely on heuristics such as "if many people use it, it must be good," particularly when making decisions about unfamiliar services (Chaiken & Maheswaran, 1994). Positive word-of-mouth, influencer endorsements, and social media exposure can strengthen trust in CDPs and drive adoption (Venkatesh et al., 2012).

Cognitive and emotional trust are also crucial in the adoption process. Cognitive trust is based on the perceived reliability and functionality of CDPs, while emotional trust relates to consumers' comfort and sense of security when using the service. Research suggests that emotional trust mediates the relationship between cognitive trust and adoption intention, meaning that even if a consumer recognizes the logical benefits of CDPs, they may still hesitate if they do not feel emotionally secure about the service (Shi et al., 2021; Touré-Tillery & McGill, 2015).

5.1.3.4. Demographic and Economic Factors

Prior **experience with CDPs** plays a crucial role in increasing adoption intention by enhancing perceptions of **compatibility, observability, and social influence**. Consumers who

have previously used CDPs tend to develop more favourable attitudes toward the service, highlighting the effectiveness of first-use incentives and trial promotions in encouraging adoption.

Contrary to previous research suggesting that higher-income consumers are more inclined to adopt premium logistics solutions, this study found that income level does not significantly influence CDP adoption. This suggests that CDPs appeal to a diverse range of consumers, regardless of economic background. Additionally, the study found no significant interaction between income and CDP experience, reinforcing that prior usage is a stronger predictor of adoption than financial status.

In summary, multiple factors influence consumers' adoption of CDPs, including technological benefits, social influence, experiential aspects, and trust. Addressing barriers such as complexity and lack of trialability while leveraging social proof and improving consumer awareness can significantly enhance adoption rates in markets where CDPs are still underutilized, such as Vietnam. Future research should further investigate the interplay between these factors across diverse cultural contexts to develop more effective strategies for increasing CDP adoption.

5.1.4. Identify key factors influencing consumer trust in CDPs, including both Cognitive Trust (COT) and Emotional Trust (EMT).

The key factors influencing consumer trust in Collection-and-Delivery Points (CDPs) can be categorized into Cognitive Trust (COT) and Emotional Trust (EMT), both of which play crucial roles in shaping adoption intentions. Cognitive trust is based on rational assessments of reliability and security, whereas emotional trust is influenced by subjective experiences and feelings of comfort. The findings from Chapter 4 indicate that both dimensions of trust significantly impact consumer behaviour, but their effects vary based on contextual and demographic factors.

5.1.4.1. Cognitive Trust (COT) and Its Influencing Factors

Cognitive trust is primarily shaped by rational evaluations of CDP services, including their perceived reliability, efficiency, and functionality. Several factors contribute to the development of cognitive trust:

Relative Advantage (RAD): Consumers are more likely to trust CDPs when they perceive them as offering superior benefits compared to traditional home delivery. These benefits include cost savings, reduced waiting times, and better service flexibility. Prior studies suggest that when an innovation provides tangible advantages, users are more willing to trust and adopt it (Rogers, 1983).

Compatibility (CPT): Cognitive trust is also influenced by how well CDPs fit into consumers' lifestyles and routines. For instance, busy professionals who frequently shop online may find CDPs highly compatible with their needs, increasing their trust in the system (Wang et al., 2018). Consumers with pro-environmental values may also perceive CDPs as a sustainable alternative, further strengthening cognitive trust (Yuen et al., 2018).

Trialability (TRI): The ability to test CDP services before fully committing to them reduces uncertainty and fosters cognitive trust. Research suggests that when users can experiment with a new service in a risk-free manner, they are more likely to develop trust and positive attitudes toward it (Strömberg et al., 2016).

Observability (OBS): When consumers see others using CDPs and benefiting from them, their cognitive trust is reinforced. This aligns with social proof theory, which suggests that visible adoption enhances perceived reliability and credibility (Yuen et al., 2018).

Complexity (CPL): Interestingly, complexity was found to have **no significant effect** on cognitive trust in the study. This contradicts earlier research that suggests complex technologies create adoption barriers (Venkatesh et al., 2003). The study suggests that Vietnamese consumers do not perceive CDPs as particularly complicated, possibly due to their familiarity with self-service technologies.

5.1.4.2. Emotional Trust (EMT) and Its Influencing Factors

While cognitive trust is built on logic and evaluation, emotional trust is shaped by subjective experiences and social influence. Emotional trust plays a crucial role in encouraging adoption, particularly in collectivist cultures like Vietnam, where peer validation and feelings of security strongly influence decision-making.

Social Influence (SOI): One of the strongest predictors of emotional trust is the perception that important people (e.g., family, friends, influencers) endorse CDPs. Studies show that collectivist societies rely heavily on social recommendations when deciding to adopt a new service (Venkatesh et al., 2012). This explains why social influence had a significant positive effect on emotional trust in the study.

Subjective Experience (SBE): Prior experience with CDPs enhances emotional trust, as familiarity reduces uncertainty and anxiety. Consumers who have used similar logistics solutions in the past (e.g., self-checkout kiosks, parcel lockers) are more likely to feel comfortable using CDPs (Jacoby et al., 1989).

The study highlights that trust formation in CDP adoption is multifaceted, involving both rational evaluations (COT) and emotional security (EMT). Cognitive trust is driven by perceived advantages, compatibility, and trialability, while emotional trust is influenced by

social validation and past experiences. Emotional trust plays a stronger role in adoption decisions, emphasizing the need for logistics providers to build trust-enhancing strategies that appeal to both logic and emotion. Future research could explore how regulatory policies and industry standards influence trust formation across different cultural contexts.

5.1.5. Examine the mediating role of Emotional Trust (EMT) in shaping adoption intention.

Past research suggests that Cognitive Trust in CDPs is built on service quality, technological efficiency, and security assurances. Consumers evaluate whether CDPs provide secure, timely, and cost-effective parcel collection before deciding to use them. However, the study found that Cognitive Trust alone does not directly translate into adoption intention. Instead, its effect is significantly mediated by Emotional Trust, meaning that rational evaluation must be accompanied by emotional reassurance for consumers to commit to CDP adoption.

For example, even if a consumer believes that CDPs are well-monitored, secure, and convenient, they might still hesitate to use them if they feel uncomfortable, unfamiliar, or emotionally uneasy about picking up their parcels from an unattended location. This reinforces the idea that practical advantages do not guarantee adoption unless consumers also develop an emotional connection to the service.

One of the strongest predictors of Emotional Trust in CDPs is Social Influence (SOI), meaning that when consumers see their friends, family, or community using CDPs, they feel more emotionally secure about the service. The study found that social validation significantly impacts trust formation, particularly in collectivist cultures like Vietnam, where consumer decisions are often shaped by peer recommendations and communal trust networks. If friends and family members endorse CDPs, consumers are more likely to feel safe and reassured, strengthening Emotional Trust. If CDPs are perceived as socially accepted and widely used, hesitant consumers may overcome their initial fears and be more willing to try them.

This supports Heuristic-Systematic Model (HSM) principles, which suggest that consumers rely on social cues to form quick judgments about unfamiliar services (Chaiken & Maheswaran, 1994). Emotional Trust acts as a bridge between social influence and adoption intention, ensuring that positive recommendations translate into actual behavioural commitment.

Another key determinant of Emotional Trust is Subjective Experience (SBE)—or the extent to which consumers have previous exposure to CDPs or similar automated logistics solutions. The study found that consumers with prior CDP experience tend to develop higher Emotional Trust, making them more likely to continue using the service.

This finding aligns with familiarity bias theory, which suggests that people tend to trust services they have previously encountered, even if no rational reason exists for their preference (Jacoby et al., 1989; Schwarz et al., 1991). For example: A consumer who has used self-service parcel lockers before will likely trust CDPs more easily than someone who has never encountered them. A first-time user may experience anxiety about collecting their parcel from an unfamiliar location, but once they successfully retrieve their package, their emotional confidence in CDPs increases.

These findings emphasize the importance of trial-based promotions, such as free first-time use incentives, to help consumers build emotional familiarity with CDPs.

The study's results suggest that Emotional Trust has a stronger direct effect on adoption intention than Cognitive Trust. This means that while consumers may recognize the logical advantages of CDPs, their final decision to adopt the service is primarily driven by how emotionally comfortable and reassured they feel. Consumers with high Emotional Trust in CDPs are significantly more likely to adopt and continue using them, even if they initially had doubts about security or efficiency. Conversely, consumers with high Cognitive Trust but low Emotional Trust may hesitate to adopt CDPs, despite recognizing their benefits.

This finding aligns with behavioural psychology research, which suggests that decision-making is often driven by emotions rather than pure logic (Kahneman, 2011).

5.1.6. Explore the moderating effects of consumer demographics and purchasing behaviour on trust formation and adoption.

Purchasing behaviour, particularly order value and online shopping frequency, has a significant moderating effect on trust formation. The study's multigroup analysis reveals that:

5.1.6.1. High-Value Orders Strengthen Cognitive Trust (COT)

Consumers making high-value purchases ($\geq 500,000$ VND or 200 USD) tend to rely more on cognitive trust before adopting CDPs. Given the financial risk associated with expensive orders, these consumers demand more tangible assurances such as security features, transaction reliability, and regulatory backing. The study confirms that the relationship between COT and EMT is stronger in this consumer group, as they systematically evaluate CDP services before forming an emotional trust.

For these consumers, promotional strategies emphasizing insured deliveries, secure storage, and traceable transactions can enhance trust.

5.1.6.2. Low-Frequency Shoppers Rely on Cognitive Trust (EMT)

Consumers who shop online infrequently (≤ 6 orders per month) exhibit a stronger reliance on cognitive trust when deciding whether to adopt CDPs. Their adoption of CDPs is

more influenced by perceived benefits and transaction efficiency rather than emotional reassurance. As consumers grow accustomed to using a specific and repeated delivery method with an increasing number of orders, the influence of cognitive processing on their intention to adopt that method tends to diminish.

5.2. Implications

5.2.1. Implications for Future Research on Consumer Behaviour from the Cultural Perspective

This study highlights that consumer adoption of Collection-and-Delivery Points (CDPs) in Vietnam is shaped not only by functional and economic evaluations but also by emotional reassurance, peer influence, and cultural context. From a cultural perspective, Hofstede's (1980, 2001) framework on collectivism provides a useful starting point, since it explains why peer validation and social influence are so influential in Vietnam. However, several scholars (McSweeney, 2002; Baskerville, 2003; Taras et al., 2010) have critiqued Hofstede's model for being overly static, deterministic, and generalized at the national level. They argue that cultures are not homogeneous and evolve over time, and thus individual behaviour cannot always be explained by broad country-level cultural dimensions.

Future research on consumer behaviour should therefore adopt multi-level approaches that account for variation across demographic groups, regions, and subcultures. For example, urban consumers in Hanoi or Ho Chi Minh City may be more accustomed to digital innovations than rural populations, and generational differences may influence how younger versus older consumers perceive the risks and advantages of CDPs. This suggests that examining intra-cultural heterogeneity is crucial for understanding adoption patterns more accurately.

Additionally, this study demonstrates that trust is not solely cognitive but also emotional and heuristic-driven. Consumers rely on familiarity, peer endorsement, and social cues to form perceptions of CDPs, which suggests that traditional models like TAM and UTAUT may be insufficient when applied in collectivist or emerging market contexts. Future research could integrate insights from behavioural economics (e.g., Kahneman & Tversky's heuristics and biases theory) and cultural psychology to capture how emotional and social processes interact with cultural norms in shaping trust. Longitudinal studies would be particularly valuable, as they could track how trust evolves over repeated service encounters, revealing whether initial scepticism diminishes with familiarity or whether negative experiences erode consumer confidence over time.

By moving beyond static cultural models and integrating dynamic, multi-level, and psychological perspectives, future research can generate a more nuanced understanding of how cultural context interacts with consumer behaviour in the diffusion of logistics innovations.

5.2.2. Implications for Businesses

For logistics service providers (LSPs) and e-commerce platforms, the findings emphasize that building trust requires more than improving efficiency or lowering costs. In Vietnam's collectivist environment, adoption decisions are strongly shaped by emotional reassurance and social validation. Businesses must therefore move beyond rational appeals and invest in strategies that signal reliability, security, and community acceptance.

One implication is that trust-building mechanisms should be embedded into service design and marketing. For example, real-time parcel tracking, secure retrieval technologies, and visible safety guarantees can reduce consumer anxiety about unattended deliveries. Social proof is equally important: displaying customer testimonials, leveraging influencer endorsements, and offering referral incentives can enhance perceptions of legitimacy by tapping into peer validation. Gamified loyalty programs that reward frequent CDP users with discounts or status-based benefits could foster emotional engagement and repeat adoption.

Another implication is the potential of hybrid CDP models. While automated lockers improve efficiency, some consumers may remain hesitant due to concerns about security or unfamiliarity. Combining automated systems with staffed retrieval points could reassure consumers who prefer human interaction, thereby widening adoption across segments. Businesses should also recognize that income segmentation is less relevant than experiential familiarity—meaning strategies that focus on trialability (e.g., first-use discounts, free trials, referral bonuses) are likely to be more effective than premium positioning based on financial status.

Finally, digital innovation offers opportunities to enhance trust and differentiation. Integrating AI, IoT, and blockchain technologies can strengthen perceptions of transparency and reliability. For example, AI-driven predictive notifications could keep consumers informed about parcel arrivals, while biometric authentication could enhance security, particularly for high-value deliveries. These innovations, combined with culturally sensitive marketing, can position CDPs not only as efficient but also as trustworthy, modern, and socially endorsed solutions.

5.2.3. Policy Implications

The findings also carry significant implications for policymakers and urban planners. In Vietnam, unlike in some Western economies, there is currently no strong regulatory framework

or policy support for CDP adoption. Yet, given the potential of CDPs to improve delivery efficiency, reduce congestion, and lower emissions, government intervention could play a pivotal role in scaling their adoption.

First, policymakers should consider incentivizing CDP expansion through subsidies, tax breaks, or public–private partnerships. Mandating the inclusion of CDPs in new residential and commercial developments could normalize their presence as part of urban infrastructure. Integrating CDPs with existing public transport hubs such as metro stations or bus stops would also improve accessibility, making them a natural component of daily mobility.

Second, regulatory frameworks should focus on standardization and consumer protection. By enforcing minimum-security requirements, insurance coverage, and refund guarantees, governments can directly address trust-related barriers. Clear regulations could also prevent service fragmentation by setting industry-wide standards for CDP operations, thereby improving consumer confidence and ensuring fair competition.

Third, CDPs align closely with sustainability and environmental policy goals. Failed home deliveries significantly increase carbon emissions and traffic congestion. Encouraging consolidated deliveries to CDPs could reduce the number of delivery attempts, cut fuel usage, and ease pressure on urban transport systems. Policymakers could integrate CDPs into green logistics strategies, positioning them as part of broader efforts to achieve climate commitments and sustainable urban development.

In summary, government support in the form of infrastructure integration, regulatory standards, and environmental incentives could accelerate CDP adoption, complement business-led initiatives, and create a more resilient and sustainable logistics ecosystem.

5.3. Limitations

While this study provides valuable insights into consumer trust and adoption of Collection-and-Delivery Points (CDPs), several limitations must be acknowledged. These limitations highlight areas where further research is needed to strengthen the theoretical and practical understanding of trust formation and adoption behaviours in last-mile logistics.

5.3.1. Limited Generalizability to Other Markets

A key limitation of this study lies in its cultural and geographic specificity, as it was conducted exclusively in Vietnam. Vietnam is characterized by a collectivist culture, where community norms, peer validation, and social influence strongly shape consumer decision-making. This cultural orientation helps explain why Emotional Trust (EMT) emerged as more influential than Cognitive Trust (COT) in CDP adoption, as consumers are likely to rely on reassurance from peers and emotional signals of safety and acceptance before embracing new

services. However, this dynamic may not hold in more individualistic societies, such as the United States, Canada, or Western European countries, where consumers tend to emphasize efficiency, technological reliability, and convenience over social validation. This suggests that the generalisability of the findings is limited, and that future research must consider cultural variation when studying technology adoption.

Another important factor concerns the level of consumer familiarity with self-service technologies in Vietnam. While such systems are relatively new and not yet mainstream, consumers in Western markets are generally more accustomed to automated services, such as self-checkout counters, smart lockers, and digital kiosks. This difference in technological exposure may also explain why Emotional Trust plays a stronger role in Vietnam. In contrast, in societies where self-service technologies are normalized, Emotional Trust may be less relevant, and adoption may instead be driven more by functional considerations like security, speed, and reliability. Future research should therefore conduct cross-cultural comparative studies to explore whether these patterns hold across countries with differing levels of technological maturity.

Sampling-related issues may also limit generalisability. The participants in this study were drawn from Vietnamese consumers who may share specific socioeconomic and infrastructural contexts that influence their perceptions of CDPs. For example, accessibility to CDPs in Vietnam may be shaped by urban planning challenges, uneven infrastructure development, and differences in income distribution, which could affect how consumers perceive compatibility and convenience. As a result, findings from this sample may not fully capture adoption behaviours in contexts with more developed logistics infrastructure or more evenly distributed access to technology. Future research should diversify sampling strategies by including participants from rural versus urban areas, different income groups, and varied levels of digital literacy to better understand the heterogeneity of adoption behaviour even within Vietnam.

Taken together, these cultural and sampling considerations underscore the need for broader and more comparative approaches in future CDP research. Investigating adoption patterns across cultures that differ on dimensions such as individualism versus collectivism or uncertainty avoidance would provide deeper insights into the universality—or cultural specificity—of factors like Emotional Trust. Similarly, expanding research to include multiple socioeconomic and infrastructural contexts could enrich our understanding of how consumer trust and preferences are shaped by both culture and material conditions.

5.3.2. Demographic Bias in Sample Selection

A further limitation of the present study concerns the demographic composition of the sample, which was disproportionately weighted toward younger consumers aged 18–25, who comprised 85.5% of respondents. This age cohort is typically more technologically adaptable, and receptive to digital innovations, characteristics that may have resulted in an overestimation of willingness to adopt Collection-and-Delivery Points (CDPs). By contrast, older consumers, who were underrepresented in this study, may hold divergent attitudes shaped by heightened risk perceptions, resistance to technological change, or a preference for human-mediated services. Consequently, the findings may not adequately capture generational variation in adoption behaviour, limiting the extent to which conclusions can be generalized to the broader Vietnamese population. Future research should aim to incorporate older age groups in order to examine intergenerational differences in perceptions of trust, convenience, and technological reliability.

The urban-centric focus of the sample also introduces constraints on generalisability. Respondents were primarily drawn from metropolitan areas, where CDPs are more prevalent, infrastructure is better developed, and consumers are generally more integrated into digital commerce ecosystems. In contrast, rural populations face unique challenges, including limited accessibility, weaker logistics infrastructure, lower digital literacy, and distinct trust dynamics, all of which may significantly affect CDP adoption patterns. The omission of rural consumers from the study therefore restricts the applicability of the findings to Vietnam as a whole, given the country's socio-economic diversity and uneven distribution of technological infrastructure.

In general, the demographic skew toward young, urban consumers narrows the representativeness of the study and constrains the generalisability of its conclusions. Future research would benefit from employing more inclusive sampling strategies that encompass a broader range of demographic characteristics, including older age cohorts, rural populations, and consumers across different income levels. Such an approach would provide a more comprehensive understanding of adoption behaviour, illuminate potential subgroup differences, and yield more nuanced insights for both theoretical development and managerial application.

5.3.3. Cross-Sectional Nature of the Study

The study relied on cross-sectional data, which measured consumer trust and adoption intentions at a single point in time. While such an approach is valuable for identifying key predictors of adoption, it does not capture the dynamic nature of trust. Trust is not static; rather, it evolves in response to repeated service interactions, regulatory changes, and technological

improvements. Consequently, cross-sectional designs may provide only a partial view of the processes underlying CDP adoption.

A longitudinal approach would offer a more comprehensive understanding of how both Cognitive Trust and Emotional Trust develop over time. For example, a consumer who is initially hesitant to adopt CDPs due to security concerns may gradually build confidence after repeated positive experiences with the service. In contrast, a consumer who begins with strong Emotional Trust may lose confidence following a negative event, such as a stolen or delayed parcel, which could diminish their intention to continue using CDPs. These temporal dynamics are critical for understanding both adoption and retention.

By capturing how trust evolves across multiple time points, future research could generate more robust predictive models of CDP adoption. Such models would not only clarify how long it typically takes for consumers to develop enduring trust in CDPs but also identify the factors that help sustain trust over time. This longitudinal perspective would therefore provide richer insights for both theory development and practical strategies aimed at fostering long-term consumer confidence in last-mile delivery innovations.

5.3.4. Unmeasured Effects of Perceived Risk and Security Concerns

Although this study examined trust as a determinant of CDP adoption, it did not explicitly account for the role of perceived risk, which is a critical construct in consumer behaviour research. Prior studies indicate that concerns regarding parcel theft, service failures, and the absence of direct accountability can significantly weaken consumer trust in CDPs. These concerns highlight the possibility that adoption decisions are not only shaped by the presence of trust but also by the extent to which risks are anticipated and managed by service providers.

For example, consumers may be reluctant to use unattended parcel lockers due to fears that packages could be tampered with or stolen. Others may feel uneasy about engaging with fully automated systems in situations where immediate customer support is unavailable. These perceived vulnerabilities can act as substantial barriers to adoption, particularly in contexts where consumers are unfamiliar with self-service technologies or where social trust in institutions is relatively low.

Future research should therefore integrate Perceived Risk (PR) into trust-based models of CDP adoption. More specifically, PR could be examined as a moderating factor that shapes the relationship between trust and adoption intention. This approach would allow researchers to assess whether stronger security measures—such as real-time parcel tracking, biometric authentication, or insurance guarantees—can effectively mitigate perceived risk and thereby

strengthen consumer willingness to adopt CDPs. Such an extension would enrich theoretical models of technology adoption while also offering practical insights into how logistics providers can design services that balance convenience with consumer reassurance.

5.3.5. Overlooking the Impact of Industry Regulations and Government Policies

The study concentrated primarily on consumer-driven factors while giving less attention to the influence of government regulations and industry standards in shaping trust. In many developed markets, regulatory frameworks, third-party audits, and consumer protection mechanisms play a critical role in reinforcing consumer confidence in logistics services. Such institutional safeguards provide formal assurances that complement private-sector initiatives, thereby strengthening both Cognitive and Emotional Trust in service adoption.

Examples from international contexts illustrate the importance of regulatory intervention. In France and Germany, strict parcel security regulations have been instrumental in reinforcing Cognitive Trust by assuring consumers that their deliveries are protected by law. Similarly, in China, government-subsidized smart locker networks have increased public confidence in CDPs by signalling state endorsement and ensuring widespread accessibility. In contrast, Vietnam currently lacks a comprehensive regulatory framework for CDPs, which means that trust-building efforts rely almost entirely on private-sector initiatives. This regulatory gap places greater pressure on logistics providers to create consumer confidence through technological features, marketing strategies, and service guarantees.

Introducing consumer protection measures in Vietnam, such as compensation policies for lost parcels, data protection laws for automated locker systems, or minimum industry security standards, could significantly strengthen consumer trust. Such measures would not only reduce perceived risks but also provide a structural foundation for sustainable adoption. Future research should therefore investigate how regulatory interventions influence trust formation and adoption behaviour, particularly in emerging markets where state involvement in logistics innovation has been limited. This line of inquiry would deepen theoretical models of adoption by incorporating institutional dimensions while also offering practical insights for policymakers seeking to foster consumer confidence in last-mile delivery solutions.

5.3.6. Potential Influence of Market Competition and Alternative Delivery Options

Another limitation of the study is that it did not situate Collection-and-Delivery Points (CDPs) within the broader landscape of last-mile delivery options. In Vietnam, traditional home delivery continues to dominate, reflecting entrenched consumer habits and relatively low delivery costs. At the same time, alternative models such as buy-online-pick-up-in-store (BOPIS) and crowdsourced delivery services—often enabled by ride-sharing platforms—are

becoming increasingly available. Each of these options offers distinct advantages and disadvantages in terms of cost, convenience, flexibility, and security, which may strongly influence consumer preferences.

The absence of a comparative framework makes it difficult to fully understand whether CDPs represent a superior alternative or simply a complementary option alongside existing delivery solutions. For example, some consumers may prefer BOPIS because it allows them to consolidate shopping with parcel collection, while others may favour crowdsourced delivery due to its speed and flexibility. Similarly, home delivery may remain attractive for consumers who value convenience above all else, particularly when delivery fees are low. Without systematic comparison, it is challenging to determine which factors motivate consumers to choose CDPs over other models or how CDPs should be positioned in the competitive delivery ecosystem.

Future research should therefore incorporate comparative analyses of CDPs alongside other last-mile solutions. Examining consumer trade-offs across different models would provide richer insights into adoption behaviour and help identify the contexts in which CDPs are most likely to succeed. Such research could also generate more actionable recommendations for logistics providers, allowing them to refine their market positioning, develop hybrid delivery strategies, or target specific consumer segments more effectively. By framing CDPs within a broader portfolio of last-mile services, scholars and practitioners alike would gain a more comprehensive understanding of their role in shaping the future of e-commerce logistics.

5.3.7. Limited Consideration of Emotional Trust Variability Across Customer Segments

The study revealed that Emotional Trust (EMT) exerted a stronger influence than Cognitive Trust (COT) on the adoption of Collection-and-Delivery Points (CDPs), particularly among low-frequency shoppers and consumers who were relatively unfamiliar with self-service logistics. However, the research did not examine how Emotional Trust may vary across different consumer segments. For example, younger, tech-savvy consumers—often more accustomed to digital platforms and automated services—may enter with a higher baseline of trust in automated logistics systems compared to older, non-digital natives, who may require stronger assurances of security and reliability. Similarly, business customers might place greater emphasis on reliability, speed, and operational efficiency, rendering them less influenced by Emotional Trust and more reliant on Cognitive Trust factors.

Understanding how trust formation differs across these distinct consumer groups could provide significant managerial implications for the design of targeted marketing and communication strategies. For instance, firms may need to emphasize Emotional Trust elements, such as safety, reassurance, and ease of use, when targeting casual shoppers or consumers with limited technological familiarity. Conversely, marketing directed at business customers or heavy e-commerce users may be more effective when highlighting efficiency, system reliability, and performance guarantees. Future studies should therefore employ segmentation analyses to investigate which groups respond more strongly to EMT-based appeals and which require stronger COT-based assurances.

While this study offers valuable insights into the role of trust in CDP adoption, several important limitations remain. The research was geographically constrained to Vietnam, a collectivist cultural context, and demographically skewed, with a sample disproportionately composed of younger consumers. It also relied on a cross-sectional design, preventing the examination of how trust evolves over time, and did not explicitly account for perceived risk or regulatory influences, both of which are central to consumer trust formation. Furthermore, market competition, the relative appeal of alternative delivery options, and the variability of Emotional Trust across consumer segments were not fully explored.

Addressing these limitations in future research could yield a more comprehensive understanding of how trust affects CDP adoption across diverse cultural, demographic, and technological contexts. Longitudinal studies, cross-cultural comparisons, and analyses incorporating risk perception and policy frameworks would provide greater explanatory depth. Additionally, incorporating comparative evaluations of CDPs alongside other last-mile delivery options could help situate CDPs within a broader consumer choice landscape. By addressing these gaps, scholars and practitioners can develop more nuanced and targeted strategies to enhance trust, strengthen consumer confidence, and ultimately increase adoption rates of CDPs worldwide.

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APPENDICES

APPENDIX A: Participant Information Sheet

Participant Information Sheet/Information about the research

(Draft Version 3.0 / Final version 3.0: 28 Nov 2023)

Title of Study: Cognitive trust, emotional trust, and consumers' adoption intention toward collection-and-delivery points in online-order delivery in Vietnam

We are inviting you to take part in a research study. Before you decide, it is important that you know why we are doing the study and what is involved. Please read the following information carefully.

What is the purpose of the study?

This research is a part of my dissertation in PhD in Logistics Management at University of Lincoln. The purpose of this study is to assess factors influencing users' adoption intention toward collection and delivery points (CDPs) in Vietnam.

Collection and delivery points are places where buyers can go to pick up and receive parcels purchased online, instead of home delivery.

How to use: When the package is successfully delivered to the receiving point, the system will send a notification with an OTP code to your phone. If the product has been there for more than 3 days, it will be returned to the warehouse.

- Pick-up points can be convenient stores, drug stores... (Circle K, Pharmacity, ...): you need to provide OTP code or bill of lading code to the staff and receive the goods.
- Smart lockers can be placed at shopping malls, universities...: you need to enter the OTP code on your phone number to open the lockers and pick up the goods.

Am I eligible to take part?

You are being invited to take part because you are online consumers aged 18 or above.

Do I have to take part?

Participation is completely voluntary. You should only take part if you want to and choosing not to take part will not disadvantage you in anyway.

What will I be asked to do?

If you agree to participate in this study, you will complete a consent form electronically and complete an online survey to assess factors influencing users' adoption intention toward collection and delivery points (CDPs) in Vietnam. The completion time is about 20 minutes.

Will I be paid expenses for taking part?

You will not be paid to participate in the study.

What are the possible benefits / risks of taking part?

The research results can enhance the last-mile delivery service offered by e-commerce platforms to serve customers like you. Whilst the researchers do not perceive that there are any risks to taking part, should you prefer not to answer questions about collection and delivery points then you are advised to not take part.

Will anyone know I have taken part?

The information we collect will be handled in confidence. No one will know you have taken part, as your responses are anonymous. Your answers will be kept confidential and combined with the answers of other participants for research purposes only.

Where will my data be stored?

Data collected is already anonymised. The data obtained from the study will be stored securely on the university OneDrive in password protected files. Only the researcher, his supervisors, and person with the consent of the author will have access to it.

What will happen if I don't want to carry on with the study?

You may withdraw from the study at any time before submitting your response, by closing the questionnaire. After your responses have been submitted, it will not be possible to remove the data provided, as I will not be able to identify your responses in any way.

What will happen to the results of the research study?

This study is to be written up as part of my dissertation in PhD in Logistics Management at University of Lincoln. The results are likely to be published, and you can obtain a copy of the published results via email.

Who is organising and funding the research?

This research is being organised by Van Dat Luong at the University of Lincoln.

Who has reviewed the study?

All research conducted by the University of Lincoln is looked at by an independent group of people, called a Research Ethics Committee, to protect your rights, dignity, and wellbeing. This study has been reviewed and given favourable opinion by a University of Lincoln Research Ethics Committee [please add reference number].

What if there is a problem?

It is very unlikely that this study would cause you any harm. If you have a concern or a complaint about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. The researchers contact details are given at the end of this information sheet.

If you remain unhappy and wish to complain formally, you can make a formal complaint through the University complaints procedure or by contacting ethics@lincoln.ac.uk.

Further information and contact details.

Contact details

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APPENDIX B: Consent form

Ethics reference: (to be added)



CONSENT TO PARTICIPATE IN RESEARCH

Title of Project: Cognitive trust, emotional trust, and consumers' adoption intention toward collection-and-delivery points in online-order delivery in Vietnam

Name of Researcher: Van Dat Luong

Please
initial/tic
k box

1. I confirm that I have read the information sheet dated 28 Nov 2023 (version 3.0) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that as I have completed the study anonymously it will not be possible to remove any information I have provided, as you will not be able to identify me in any way. ☐
3. I understand that individuals from the University of Lincoln may look at research data collected during the study, to ensure that the study is conducted appropriately. I give permission for these individuals to have access to my research data. ☐
4. I agree to take part in the above study. ☐

APPENDIX C: Questionnaire

Section 2: Personal information

Phần 2: Thông tin cá nhân

1. Please choose your gender/ Vui lòng chọn giới tính của bạn

- ☐ Male/ Nam
- ☐ Female/ Nữ
- ☐ Prefer not to say/ Không tiết lộ
- ☐ Other/ Khác

2. Please choose your age range/ Vui lòng chọn độ tuổi của bạn

- ☐ 18-25
- ☐ 26-35
- ☐ 36-49
- ☐ 50-64
- ☐ > 64

3. Please choose your education status/ Vui lòng chọn trình độ học vấn cao nhất của bạn

- ☐ Not attained secondary education yet/ Chưa tốt nghiệp THCS
- ☐ Secondary education/ Tốt nghiệp THCS
- ☐ Tertiary education/ Tốt nghiệp THPT
- ☐ Bachelor's/ Đại học
- ☐ Higher education (Master's or Doctoral)/ Thạc sĩ hoặc Tiến sĩ

4. Please choose your monthly disposable income/ Vui lòng cho biết thu nhập khả dụng hàng tháng của bạn

- ☐ Less than VND 5 million/ Ít hơn 5 triệu VNĐ
- ☐ From 5 to less than 10 VND million/ Từ 5 triệu VNĐ đến 10 triệu VNĐ
- ☐ From 10 to less than 15 VND million/ Từ 10 triệu VNĐ đến 15 triệu VNĐ
- ☐ From VND 15 million to less than 20 VND million/ Từ 15 triệu VNĐ đến 20 triệu VNĐ
- ☐ From VND 20 million and above/ Lớn hơn 20 triệu VNĐ

5. Please choose the number of online orders you place last month/ Vui lòng chọn số lượng đơn hàng trực tuyến trung bình bạn đặt hàng tháng.

- ☐ 1-5
- ☐ 6-10
- ☐ 11-20
- ☐ 21-30
- ☐ > 30

6. Please choose the average value of an online order you place/ Vui lòng chọn số tiền bình quân bạn sử dụng cho một đơn hàng trực tuyến.

- ☐ < 100,000 VND
- ☐ 100,000-500,000 VND
- ☐ 500,000 VND – 2,000,000 VND
- ☐ 2,000,000 VND – 5,000,000 VND
- ☐ > 5,000,000 VND

7. Please choose your employment status/ Vui lòng chọn tình trạng việc làm của bạn

- ☐ Student/ Học sinh, sinh viên
- ☐ Have a job/ Có việc làm
- ☐ Unemployment/ Thất nghiệp
- ☐ Homemaker/ Nội trợ

- ☐ Retired/ Đã nghỉ hưu

Section 3: General information

Phần 3: Thông tin chung

8. Have you ever experienced the following delivery services for your online orders (You can select more than one option)/ Bạn đã từng trải nghiệm các dịch vụ giao hàng sau cho đơn hàng trực tuyến của mình chưa (Có thể chọn nhiều lựa chọn)

- ☐ Home delivery/ Giao hàng tận nhà
☐ Collection and delivery points (CDPs)/ Điểm nhận hàng
☐ Buy online and pick up in store (BOPIS)/ Mua trực tuyến và nhận tại cửa hàng
☐ Other service:/ Dịch vụ khác.....

Section 4: Assessment of collection-and-delivery-points, the questions are arranged on a Likert scale (Strongly Disagree – Strongly Agree), please choose the most appropriate answer for each criteria.

Phần 4: Đánh giá về điểm nhận hàng, các câu hỏi được sắp xếp theo thang đo Likert (Hoàn toàn không đồng ý – Hoàn toàn đồng ý), vui lòng chọn phương án trả lời phù hợp nhất cho từng tiêu chí

9. To what extent do you agree with the following statements about the relative advantage of collection-and-delivery-points service:/ Mức độ đồng ý của bạn với những nhận định sau về lợi thế tương đối của dịch vụ điểm nhận hàng:

Statements/ Nhận định	Strongly Disagree/ Hoàn toàn không đồng ý	Disagree/ Không đồng ý	Neutral/ Trung lập	Agree/ Đồng ý	Strongly Agree/ Hoàn toàn đồng ý
CDPs service is reasonably priced. / Dịch vụ điểm nhận hàng có giá hợp lý.					
CDPs service is a good value for the money/ Dịch vụ điểm nhận hàng xứng đáng với đồng tiền bỏ ra.					
At the current price, CDPs service provides a good value/ Với mức giá hiện tại, dịch vụ điểm nhận hàng mang lại giá trị tốt.					
Using CDPs service let me know exactly the delivery time/ Sử dụng dịch vụ điểm nhận hàng cho tôi biết thời gian giao hàng chính xác					
Using CDPs service reduces a need to wait at selected place					

of delivery for at least one shift of the day (morning, afternoon, or night)/ <i>Sử dụng dịch vụ điểm nhận hàng giúp giảm thời gian chờ đợi tại địa điểm giao hàng đã chọn, ít nhất một ca trong ngày (sáng, chiều hoặc tối)</i>					
Using CDPs service reduces a need to wait at selected place of delivery throughout a whole day/ <i>Sử dụng dịch vụ điểm nhận hàng giúp giảm thời gian chờ đợi tại địa điểm giao hàng đã chọn trong suốt cả ngày</i>					
Using CDPs service is easy/ <i>Sử dụng dịch vụ điểm nhận hàng thật dễ dàng</i>					
Using CDPs service does not require much effort/ <i>Sử dụng dịch vụ điểm nhận hàng không tốn nhiều công sức</i>					
Using CDPs service allows me to collect parcels at my convenient time/ <i>Sử dụng dịch vụ điểm nhận hàng cho phép tôi nhận bưu kiện vào thời gian thuận tiện</i>					
Collection points are located close to my residence or daily activities/ <i>Điểm nhận hàng nằm gần nơi ở hoặc sinh hoạt hàng ngày của tôi</i>					

10. To what extent do you agree with the following statements about the compatibility of collection-and-delivery-points service:/ *Mức độ đồng ý của bạn với các nhận định sau về tính tương thích của dịch vụ điểm nhận hàng:*

Statements/ <i>Nhận định</i>	Strongly Disagree/ <i>Hoàn toàn</i>	Disagree/ <i>Không đồng ý</i>	Neutral/ <i>Trung lập</i>	Agree/ <i>Đồng ý</i>	Strongly
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	<i>không đồng ý</i>				Agree/ Hoàn toàn đồng ý
Using CDPs service is compatible with my lifestyle/ <i>Sử dụng dịch vụ điểm nhận hàng phù hợp với phong cách sống của tôi</i>					
Using CDPs service is compatible with my needs/ <i>Sử dụng dịch vụ điểm nhận hàng phù hợp với nhu cầu của tôi</i>					
Using CDPs service is compatible with my current situation/ <i>Sử dụng dịch vụ điểm nhận hàng phù hợp với hoàn cảnh hiện tại của tôi</i>					
Using CDPs service would be compatible with the way I like to receive parcels/ <i>Sử dụng dịch vụ điểm nhận hàng sẽ tương thích với cách tôi muốn nhận bưu kiện</i>					

11. To what extent do you agree with the following statements about the complexity of collection-and-delivery-points service: / Mức độ đồng ý của bạn với các nhận định sau đây về mức độ phức tạp của dịch vụ điểm nhận hàng:

Statements/ <i>Nhận định</i>	Strongly Disagree/ Hoàn toàn không đồng ý	Disagree/ Không đồng ý	Neutral/ Trung lập	Agree/ Đồng ý	Strongly Agree/ Hoàn toàn đồng ý
Using CDPs service would be difficult/ <i>Sử dụng dịch vụ điểm nhận hàng sẽ khó khăn</i>					
CDPs service would be difficult to learn how to use*/ <i>Dịch vụ điểm nhận hàng khó học cách sử dụng*</i>					
Using CDPs service would be frustrating/ <i>Sử dụng dịch vụ điểm</i>					

<i>nhận hàng gây khó chịu</i>					
CDPs service would be cumbersome to use/ <i>Dịch vụ điểm nhận hàng lằng nhằng khi sử dụng</i>					
Using CDPs service would require a lot of efforts/ <i>Sử dụng dịch vụ điểm nhận hàng cần rất nhiều công sức</i>					

12. To what extent do you agree with the following statements about the trialability of collection-and-delivery-points service:/ Mức độ đồng ý của bạn với các nhận định sau đây về khả năng dùng thử của dịch vụ điểm nhận hàng:

Statements/ <i>Nhận định</i>	Strongly Disagree/ <i>Hoàn toàn không đồng ý</i>	Disagree/ <i>Không đồng ý</i>	Neutral/ <i>Trung lập</i>	Agree/ <i>Đồng ý</i>	Strongly Agree/ <i>Hoàn toàn đồng ý</i>
It is easy to try out CDPs service/ <i>Thật dễ dàng để dùng thử dịch vụ điểm nhận hàng</i>					
I know where I can go to try out various functions of CDPs service/ <i>Tôi biết nơi tôi có thể đến để thử các chức năng khác nhau của dịch vụ điểm nhận hàng</i>					
I am permitted to try out with CDPs service for long enough period/ <i>Tôi được phép dùng thử dịch vụ điểm nhận hàng trong thời gian đủ dài</i>					
I am able to experiment with CDPs service facilities when necessary/ <i>Tôi có thể thử nghiệm với các cơ sở dịch vụ điểm nhận hàng khi cần thiết</i>					
CDPs service is accessible adequately to allow me test various functions it					

offers/ Tôi có thể tiếp cận dịch vụ điểm nhận hàng một cách đầy đủ để kiểm tra các chức năng khác nhau mà nó cung cấp					
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13. To what extent do you agree with the following statements about the observability of collection-and-delivery-points service:/ Mức độ bạn đồng ý với các nhận định sau về khả năng quan sát được của dịch vụ điểm nhận hàng:

Statements/ Nhận định	Strongly Disagree/ Hoàn toàn không đồng ý	Disagree/ Không đồng ý	Neutral/ Trung lập	Agree/ Đồng ý	Strongly Agree/ Hoàn toàn đồng ý
I would have no difficulty telling others how I collect my parcels from CDPs service/ Tôi không gặp khó khăn gì khi nói với người khác cách tôi nhận bưu kiện của mình từ dịch vụ điểm nhận hàng					
I could communicate to others how I collect my parcels from CDPs service/ Tôi có thể truyền tải với những người khác về cách tôi nhận bưu kiện của mình từ dịch vụ điểm nhận hàng					
I would have no difficulty explaining why using CDPs service is or is not beneficial/ Tôi không gặp khó khăn gì khi giải thích tại sao sử dụng dịch vụ CDPs có lợi hay là không					
The process of CDPs service is apparent to me/ Quá trình sử dụng dịch vụ điểm nhận hàng rõ ràng đối với tôi					

Section 5: Your knowledge, experience, and social influence about CDPs service
Phần 5: Kiến thức, kinh nghiệm và ảnh hưởng xã hội về dịch vụ điểm nhận hàng

14. Do you have knowledge of CDPs service, please choose the most appropriate answer? / Hiểu biết của bạn như thế nào về dịch vụ điểm nhận hàng, vui lòng chọn phương án trả lời phù hợp nhất?

Never heard/ <i>Chưa nghe bao giờ</i>	Heard with no further information/ <i>Đã nghe nhưng không có thông tin thêm</i>	Heard with little information/ <i>Đã nghe và biết một ít thông tin</i>	Experienced with further information/ <i>Đã trải nghiệm và biết một số thông tin</i>	Experienced with all sorts of information/ <i>Đã trải nghiệm và biết đầy đủ thông tin</i>
1	2	3	4	5
☐	☐	☐	☐	☐

15. How many instances can you remember of having experience with CDPs service, please choose the most appropriate answer? / Bạn có thể nhớ bao nhiêu trường hợp đã sử dụng dịch vụ điểm nhận hàng, vui lòng chọn phương án trả lời phù hợp nhất?

Not at all/ <i>Không nhớ trường hợp nào</i>	Extremely small numbers/ <i>Rất ít trường hợp (1-2 trường hợp)</i>	Small numbers/ <i>Ít trường hợp (3-5 trường hợp)</i>	Large numbers/ <i>Nhiều trường hợp (5-10 trường hợp)</i>	Extremely large numbers/ <i>Rất nhiều trường hợp (>10 trường hợp)</i>
1	2	3	4	5
☐	☐	☐	☐	☐

16. How easy do you recall these instances, please choose the most appropriate answer? / Mức độ dễ dàng khi bạn nhớ lại những trường hợp nêu trên, vui lòng chọn phương án trả lời phù hợp nhất?

Extremely easy/ <i>Cực kỳ dễ dàng</i>	Easy/ <i>Dễ dàng</i>	Intermediate/ <i>Trung bình</i>	Difficult/ <i>Khó</i>	Extremely Difficult/ <i>Cực kỳ khó</i>
1	2	3	4	5
☐	☐	☐	☐	☐

17. To what extent do you agree with the following statements about social influence of using collection-and-delivery-points service, please choose the most appropriate answer for each criteria: / Mức độ đồng ý của bạn với những nhận định sau đây về ảnh hưởng xã hội đối với việc sử dụng dịch vụ điểm nhận hàng, vui lòng chọn phương án trả lời phù hợp nhất cho từng tiêu chí:

Statements/ <i>Nhận định</i>	Strongly Disagree/ <i>Hoàn toàn không đồng ý</i>	Disagree/ <i>Không đồng ý</i>	Neutral/ <i>Trung lập</i>	Agree/ <i>Đồng ý</i>	Strongly Agree/ <i>Hoàn toàn đồng ý</i>
People who are important to me think that I should use CDPs service/ <i>Những người quan trọng với tôi nghĩ rằng tôi nên sử dụng dịch vụ điểm nhận hàng</i>					

People who influence my behaviour think that I should use CDPs service/ Những người có tầm ảnh hưởng đến hành vi của tôi nghĩ rằng tôi nên sử dụng dịch vụ điểm nhận hàng					
People whose opinions that I value prefer that I use CDPs service/ Những người mà tôi tin tưởng ý kiến của họ khuyên tôi sử dụng dịch vụ điểm nhận hàng					

Section 6: Your trust in CDPs service, the questions are arranged on a Likert scale (Strongly Disagree – Strongly Agree), please choose the most appropriate answer for each criteria.

Phần 6: Sự tin tưởng của bạn đối với dịch vụ điểm nhận hàng, các câu hỏi được sắp xếp theo thang đo Likert (Hoàn toàn không đồng ý – Hoàn toàn đồng ý), vui lòng chọn phương án trả lời phù hợp nhất cho từng tiêu chí

18. To what extent do you agree with the following statements about the cognitive trust in collection-and-delivery-points service:/ Mức độ đồng ý của bạn với các nhận định sau đây về niềm tin nhận thức đối với dịch vụ điểm nhận hàng:

Statements/ Nhận định	Strongly Disagree/ Hoàn toàn không đồng ý	Disagree/ Không đồng ý	Neutral/ Trung lập	Agree/ Đồng ý	Strongly Agree/ Hoàn toàn đồng ý
I have no reservations about choosing CDPs service/ Tôi hoàn toàn yên tâm về việc chọn dịch vụ điểm nhận hàng					
I have good reason to doubt CDPs service/ Tôi có lý do chính đáng để nghi ngờ dịch vụ điểm nhận hàng					
I can rely on the CDPs service to get my parcel delivered/ Tôi có thể dựa vào dịch vụ điểm nhận hàng để nhận bưu kiện của mình					

I have to be cautious about using CDPs service/ <i>Tôi phải thận trọng khi sử dụng dịch vụ điểm nhận hàng</i>					
I cannot confidently depend on CDPs service to get my parcel delivered/ <i>Tôi không dám tự tin dựa vào dịch vụ điểm nhận hàng để nhận bưu kiện của mình</i>					

19. To what extent do you agree with the following statements about the emotional trust in collection-and-delivery-points service: / Mức độ đồng ý của bạn với những nhận định sau đây về niềm tin cảm tính đối với dịch vụ điểm nhận hàng:

Statements/ <i>Nhận định</i>	Strongly Disagree/ <i>Hoàn toàn không đồng ý</i>	Disagree/ <i>Không đồng ý</i>	Neutral/ <i>Trung lập</i>	Agree/ <i>Đồng ý</i>	Strongly Agree/ <i>Hoàn toàn đồng ý</i>
I feel secure about relying on the CDPs service/ <i>Tôi cảm thấy yên tâm khi tin tưởng vào dịch vụ điểm nhận hàng</i>					
I feel comfortable about relying on the CDPs service/ <i>Tôi cảm thấy thoải mái khi tin tưởng vào dịch vụ điểm nhận hàng</i>					
I feel content about relying on the CDPs service/ <i>Tôi cảm thấy hài lòng khi dựa vào dịch vụ điểm nhận hàng</i>					

Section 7: Your adoption intention of using CDPs service, the questions are arranged on a Likert scale (Strongly Disagree – Strongly Agree), please choose the option for each criteria.

Phần 7: Ý định chấp nhận của bạn khi sử dụng dịch vụ điểm nhận hàng, các câu hỏi được sắp xếp theo thang đo Likert (Hoàn toàn không đồng ý – Hoàn toàn đồng ý), vui lòng chọn phương án cho từng tiêu chí

20. To what extent do you agree with the following statements about the intention to use collection-and-delivery-points service: / Mức độ đồng ý của bạn với các nhận định sau đây về ý định sử dụng dịch vụ điểm nhận hàng:

Statements/ <i>Nhận định</i>	Strongly Disagree/ <i>Hoàn toàn không đồng ý</i>	Disagree/ <i>Không đồng ý</i>	Neutral/ <i>Trung lập</i>	Agree/ <i>Đồng ý</i>	Strongly Agree/ <i>Hoàn toàn đồng ý</i>
I intend to use CDPs service in the future/ <i>Tôi dự định sẽ sử dụng dịch vụ điểm nhận hàng trong tương lai</i>					
I will always try to use CDPs service in my daily life/ <i>Tôi sẽ luôn cố gắng sử dụng dịch vụ điểm nhận hàng trong cuộc sống hàng ngày của mình</i>					
I plan to continue to use CDPs service frequently/ <i>Tôi dự định tiếp tục sử dụng dịch vụ điểm nhận hàng thường xuyên</i>					

Thank you for participating!