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Investigation on Vietnamese customers' intention towards adopting collection and delivery points

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Abstract

E-commerce in Vietnam is growing at an annual rate of 33%, which creates an extremely competitive marketplace for both domestics and foreign E-businesses. Despite the growing E-commerce and customer demand, the logistics market in Vietnam is still underdeveloped and considered the most ineffective part of the supply chain. This opens great potential for further investment in a more reliable, economical and transparent delivery solutions. Collection and delivery points (CDPs). Even though CDP is in its experimental phase, it has been considered as a solution for the future of last-mile delivery in Vietnam.

The objectives of the thesis were to investigate what factors could influence customers' intention to use CDPs and how service providers could utilize that knowledge to facilitate the adoption of CDPs. To achieve the objective, data was collected from empirical studies, online survey, and individual interviews.

A combination of qualitative and quantitative approaches was used to achieve the thesis objectives. A literature review was adopted to establish a knowledge base for research and case implementation. A quantitative approach was applied to analyze the results of the online survey. In-depth interviews with survey respondents were conducted to further elaborated on the survey results.

The results of the analysis suggested that customers have a high tendency to try CDPs. Three elements: Relative Advantage, Perceived Ease of Use, and Compatibility were found to be the most influential factors towards customers' intention. Recommendations were given to company to improve the likelihood of customers trying CDPs and the overall customers' delivery experience.

Keywords/tags (subjects) E-commerce, Last-mile Delivery, Collection and Delivery Points, Adoption, Developing countries, Vietnam

Miscellaneous (Confidential information)

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1 Introduction

1.1 Topic Background

Internet made its first appearance in Vietnam in 1997 with a humble start: 0.2% local penetration. After 20 years, Vietnam Internet penetration rate is now 54%, making it ranked 17th in the world (E-commerce industry in Vietnam, 2018). With this unprecedented influence, Internet is changing the face of Vietnamese retail industry. Nowadays, we are witnessing a new era of E-commerce being a growing part in Vietnam trading sector. In 2017, Southeast Asian E-commerce market was growing at 35% per year, 2.5 faster than that in Japan (ibid.). Vietnam ranked 4th for online shopping volume in the Asia Pacific region, and is expected to reach sales of 3.2 US billion in 2020 (Statistica, 2019). In Vietnam, of three main models of E-commerce business - Business-to-Business (B2B), Busi-ness-to-Customer (B2C) and Customer-to-Customer (C2C) - the B2C online busi-nesses dominate, accounting for 5.5% of total retail industry market value. With the increasing rate of Internet penetration, the rise of online retail seems inevitable (ibid.).

One of the biggest advantages of online shopping is the ease of ordering and receiving order just with few click. Due to the fact, the logistics and delivery parts have critical roles in the supply chain behind online shopping experiences. The supply chain is the bridge between the virtual experience online and the real value delivered. Because of this, the need for E-retailer to find the delivery solutions optimized for operational efficiency that satisfy demanding need of customers has never been more important. However, the complexity of delivery network with time, resources and infrastructure constraints makes last-mile delivery the constant challenge for E-retailer. In addition, the continuously increasing demand for an innovative, rapid, and reasonably-priced delivery option by customers puts more pressure on retailers to continuously improve their existing logistics services and devise more delivery alternatives.

In Vietnam, the logistics market is still in its infancy compared to regional peers (E-commerce industry in Vietnam, 2018, 2018). The country's logis-tics market is facing significant challenges from the lack and immaturity of infra-structure, limited

resources, and low automation level. At the moment, the main delivery method in Vietnam is Cash-on-Delivery (COD), which presents additional challenges such as high delivery failure rate and logistics cost. While COD is a troublesome area in last-mile logistics, it represents an opportunity for increasing trust in E-sellers and thus increase sales. Therefore, the immature last-mile logis-tics remains a key growth area for logistics service providers to introduce new method and technology in delivery. Despite the need for diverse delivery alterna-tives, company should be aware of factors affect customers adoption and willing-ness to use it. An innovative and beneficial solutions from an organization point of view might not be compatible with customers' actual needs. As there is possible gap between customer and organization expectation, it's crucial to investigate consumer intention and readiness before implementing a new mode.

1.2   Research purposes and questions

This thesis aimed at investigating key factors that influence customers' intention to adopt the use of collection and pickup point, a relatively new delivery model in Vietnam. The scope of the study was limited to customers in Hanoi, since it is Vietnam's capital and the commercial hub for the Northern Vietnam. Following which, recommendations on how to improve customers' intention were suggested for the successful roll-out of collection and delivery points (CDPs). On the other hand, this thesis served as an overview on last-mile delivery in Vietnam with focus on current logistics challenges. Followed by the thesis purposes, the main research question is:

What are the key factors influencing E-consumers' intention to use collection and delivery point for last-mile delivery?

In order to find an answer for the main question, there are following sub-questions:

1. **What are the main challenges and existing solutions for last-mile delivery in Vietnam?**

Since CDPs remain a novel concept, knowledge about the common issues of existing delivery method is useful to evaluate how CDP could be the better solution.

2. **What should E-tailers and logistics companies pay more intention to in order to successfully implement collection and delivery points?**

Based on survey and interview result, suggestions on how to increase customer willingness to try this new mode of delivery was presented.

1.3   Research method

In order to successfully reach the research objective, it's important to select the appropriate research method. Based on the research questions and purposes, a mix between qualitative and quantitative was chosen.

According to Norman & Yvonna, (2005), qualitative approach is a holistic approach, as it looks at the bigger picture and begins with a search for understanding the whole. In the scope of this thesis, qualitative approach is utilized in order to explore the technical aspect of E-commerce, last-mile logistics, Collection and Delivery Point concept. Besides, it helps to address research questions about the current logistics challenges in Vietnam and the framework for survey analysis. In order to gain a better insight of the topics mentioned above, a literature review was conducted as the main method for data collection. Literature review is defined as qualitatively summarizes evidence on a topic using informal or subjective methods to collect and interpret studies (Kysh Lynn, 2013). After refining thesis's scope, main and sub questions, studies with topic that were relevant to "last-mile delivery", " e-commerce logistics", "collection and delivery points adoption", "customers' adoption toward an innovation" are searched and carefully inspected to select recent, relevant, and high-quality sources. The research findings and author's critiques were presented in Literature Review section. Besides, qualitative interview is conducted to elaborate on the survey results, mainly to understand the reasons behind respondents' choices. The interview could be classified as a semi-structured inter-view, with a specific number of questions were predetermined and some elaborated questions based on the respondents' answer. It would give the respondent the op-portunity to freely express their opinions than a structured interview and thus help the authors to gain a deeper insight. The three respondents were chosen from two age group of 20-35 years old and 30-40 years old, with different shopping

frequencies and occupations to maintain the representativeness of the interview. Due to the geographical distance constraints, interviews were conducted by video call via Skype or Messenger with approximate duration of 30 mins and recorded for later review.

However, qualitative method could not accurately reflect authetic customer opinions. In order to gain better insight into the influential factors affect customers' adoption of CDPs, quantitative approach was employed. A survey consists of 20 questions with Likert 5-point scale answer that ranges from Completely disagree to Completely agree, which helps the author to understand what the main area of concern from customers' perspective is. For the time and budget limit, an online survey was spread on social media and translated in Vietnamese. The survey is aiming at customers, who had purchased products online with a frequency of at least one to two times in a month. Out of 108 received responses, 106 valid responses were chosen for data analysis. Next, Cronbach's Alpha of the test was calculated to examine the level of reliability and internal consistency between each question. After the reliability of the test was confirmed, Spearman correlation was conducted in order to identify and rate factors affecting customers' willingness to try CDPs.

2 Literature review

2.1 E-commerce

In simple terms, electronic commerce or e-commerce refers to commercial transactions conducted electronically. Commercial transaction is the interaction between two or more parties in which services or goods or something of value is exchanged for some type of enumeration. It is primarily over the Internet - the interconnected computer networks built on top of Internet protocol suite - where modern commercial transactions take place. Since the term e-commerce encompasses such a diverse range of activities, a more broad definition could be used to describe the phenomenon: "electronic commerce includes any form of economic activity conducted via electronic connections" (Wigand, 1997).

E-commerce is a revolutionary business phenomenon with interesting past and bright future. It was in 1960s that marked the inception of e-commerce, when businesses started using Electronic Data Interchange (EDI) to share business documents (Le & Koh, 2002). With the magical advance of the Internet, company such as Amazon and eBay ushered evolutionary new light on the future of the e-commerce. The business phenomenon has grown by leaps and bounds since then with average year over year growth of 20%. It is projected by eMarketer to top $3.578 trillion by 2019 (Worldwide Retail and Ecommerce Sales: eMarketer's Updated Forecast and forecast through 2019, 2016).

E-commerce businesses could be classified in many ways. One way is to look at the classes of products and services being transacted electronically: physical goods, digital products, and services. Many physically goods (.e.g. clothings, grocery, and cars), digital products (.e.g. musics, movies, and softwares) and services (.e.g. online courses, consultance, insurance) could now be purchased over the Internet from home. E-commerce activities could also be classified based on where and how it take places. This varies greatly, but common and notable pattern exists: online storefronts where products is sold directly by merchants, online marketplaces where buyers and sellers are connected, and social media where users can reach to online stores or even buy merchandises directly.

However, the most widely used method to classify e-commerce activities is based in the classes of parties evolved. Major classes of parties participating in the e-commerce transactions are business, consumer, and governments. Based on this classification, four main types of e-commerce models are identified as Business to consumer (B2C), Business to business (B2B), Consumer to business (C2B), Consumer to consumer (C2C) . In B2C model, businesses sell product to end-users or customers. Similarly, companies operates on a B2B model have others businesses as theirs customers. In C2C model, one individual can sell to and purchases product directly from another (Wigand, 1997). In the scope of this thesis, logistic activities within B2C model will be the area of focus.

B2C is simply selling products and services to end-customers directly without an intermediate party. According to Decree 52/2013/ND-CP, B2C E-commerce in Vietnam is classified into four different types: E-commerce website, E-commerce

trading floor (E-market place), Online auction website and Online promotion website. At the moment, E-commerce website accounts for the majority of B2C business in Vietnam, yet E-market places are gaining popularity (E-commerce industry in Vietnam report, 2018). The main difference between this two models is E-market places allow traders apart from website owners to conduct the whole process of buying and selling goods or services. In Vietnam, big names such as Lazada, Shopee (Sea Limited), Tiki and more currently, Amazon are successful examples of this model, with the myriad of products offered to customers (ibid.). In the next chapter, the author will break down the process of trading on these websites.

2.2   Online shopping process

From a consumer behavior perspective, the online shopping involves 5 steps (Darley, Blankson & Luethge, 2010) as shown in Figure 1. The first step is problem recognition; it is when customers have a consumption need or have an impulse to purchase. The Internet enables customers to perform the next step Information search with ease, where they can have unlimited options available for their need. The third step is evaluation of products, suppliers and prices. This could be done based on reviews from previous buyers, supplier reputation or previous purchase experience of the buyer. Next step is to make a choice, when customers choose which product to buy and possibly make a transaction. The last stage is outcome, including the assessment and possible re-evaluating of their shopping experience. In this stage, customer decide if they would purchase, re-purchase or return products. It's important for E-commerce business to assess the factors could influence customers decision-making process in each step. By doing so, they could answer two questions: (1) What value customer is looking for and (2) How they would like these values to be delivered. Last-mile delivery is the connection between Purchase and Post-purchase evaluation phase, with its role to delivery the expected values customers had paid for.

Figure 1: Consumer purchasing process (adapted from Darley et al. 2010)

In another study, Chen & Chang (2003, 562) proposed a descriptive model of online shopping which includes elements could affect customer online shopping experience. This model is based on the interview and survey results from 306 valid responders.
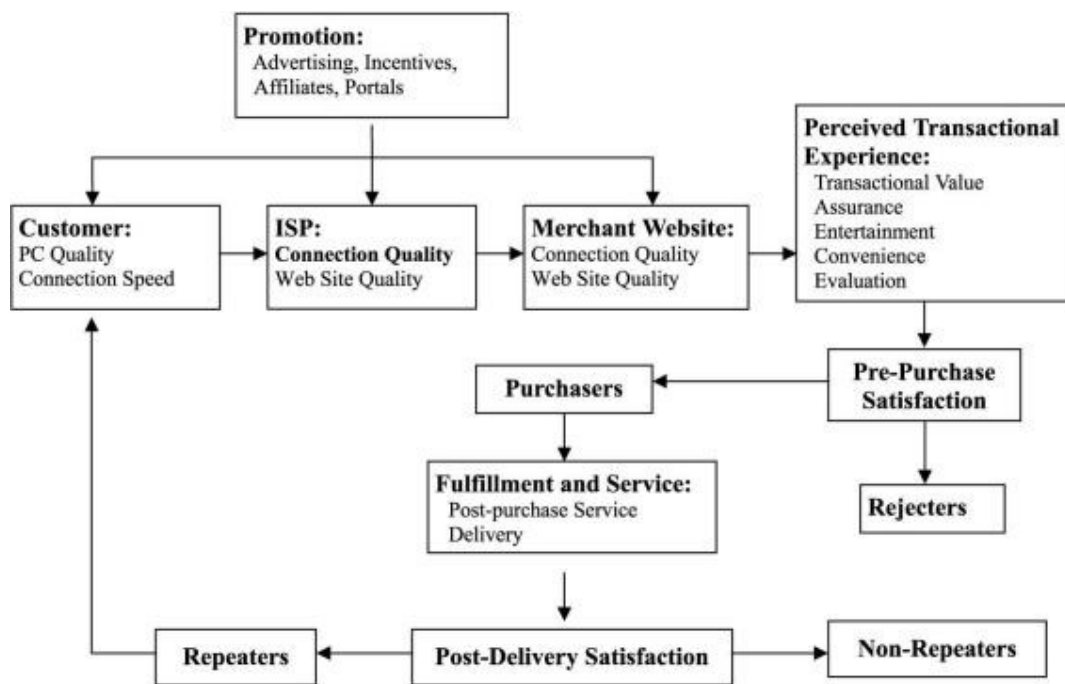
Figure 2: The descriptive model of online shopping (Chen & Chang, 2003)

Based on the description shows in Figure 2, an online shopping experience includes three main components: Interactivity, Transaction and Fulfillment. Interactivity associates with customer initial experience with the virtual store, namely website design, Internet connection quality, maneuverability, and waiting time. The second step, Transaction contains factors that link to the actual purchase such as price, convenience and security. With the visual and operational design of the website, the transaction procedure security and customers received the virtual perception of products value, which determine their desire toward the product/service. At this point, the purchase process is halfway done, with the other half concerning order

fulfillment and post-purchase service. Interactivity and Transaction can decide customer Pre-Purchase Satisfaction, which directly affects buying decision from them. Once order is placed, the fulfillment and services have great impact to customers contentment and loyalty (Chen & Chang, 2003). It decides whether customer can receive the expected value they order and thus bring the whole process into a profitable circle.

2.3 Last-mile delivery

Definition of last-mile delivery

Before analyzing the definition of last-mile delivery, it's worth having a look at the basic structure of a supply chain in B2C model, as shown in Figure 3:
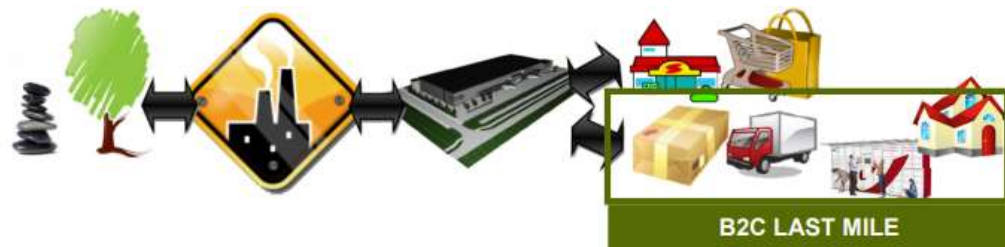
Figure 3: Basic structure of a supply chain - B2C Last mile part (adapted from Gevaers 2013, 8).

According to Figure 3, the key stages in a B2C supply chain could be described as followed: raw materials are purchased and provided to the manufacturing site, from where finished products is transported to the distribution center (DC). The next phases of products distributions could be organized in three ways: either through traditional chanel such as brick-and-motar retailers, or direct to customers through E-marketplace when goods is shipped straight from the DC, or a combination of both, when goods can be shipped from both DC and retailer points. The last-mile belongs to the last segment of the supply chain, when parcels is packed and ready to ship to customer.

In B2C context, last-mile delivery is defined as "the last stretch of a business-to-consumer (B2C) parcel. It takes place from the order penetration point (i.e., fulfillment centre) to the final consignee's preferred destination point (e.g., home or cluster/collection point), for reception of goods". (Lim, Jin and Srai 2015,1). This

definition indicates the starting and final point of last mile delivery, and the new delivery modes (customer/collection points) that differentiate B2C last mile from the general freight transportation last mile. When looking into the significance of last-mile delivery, Wohlrab, Harrington & Srai (2012,p.8) propose another way to define it:

'Last mile logistics is the last part of a B2C delivery process. It takes place within a predefined delivery area (e.g. urban area); including the upstream logistics to the last transit point until the destination point of the parcel. It involves a series of activities and processes, of critical value to all the involved stakeholders (e.g. Customer, Industry and Institution) within the delivery area'.

The above definition can be considered as a more comprehensive definition for E-commerce last-mile logistics. It is not only aligned with previous definition but also mentioned the components and criticality of last-mile logistics in E-commerce industry. Lim et al (2015) shared the same view on the significance of last mile logistics, as he considered it is the final portion of order fulfillment that directly connects retailers with customers. According to Lee & Whang (2001,1), the last mile is what differentiate E-retailer and the ability to fulfill order on time could be the "make-or-break" factor for an E-business's success. From the same perspective, Collier and Bienstock (2006,38) claimed that an on-time delivery record could offset the possible failure of delivery in the future, as customers would consider it as an exception.

Last-mile delivery modes

Based on the physical flow of goods and the involvement of stakeholders (consumer, sellers and intermediates) in the process, there are 3 models of last-mile delivery supply chain:

(1) Push-centric System: Merchandise is delivered to customers' address by someone other than the customer. From the starting point, which could be the manufacturer, inventory or brick-and-mortar stores, it is sellers' responsibilities to fulfill the whole delivery process.

(2) Pull-centric System: In contrast to the push-centric system, merchandise is picked up from the order fulfillment points by customers. Customers bear all responsibilities from picking up to delivering the order to the last point desired.

(3) Hybrid-centric System: Merchandise is sent to some intermediate site from which it is picked up by customers. This system requires both customer and seller involvement to fulfill the delivery process. (Lim et al. 2015.).

Based on the three categories of last-mile delivery as mentioned above, the different last mile delivery options are illustrated in the following Figure 4.
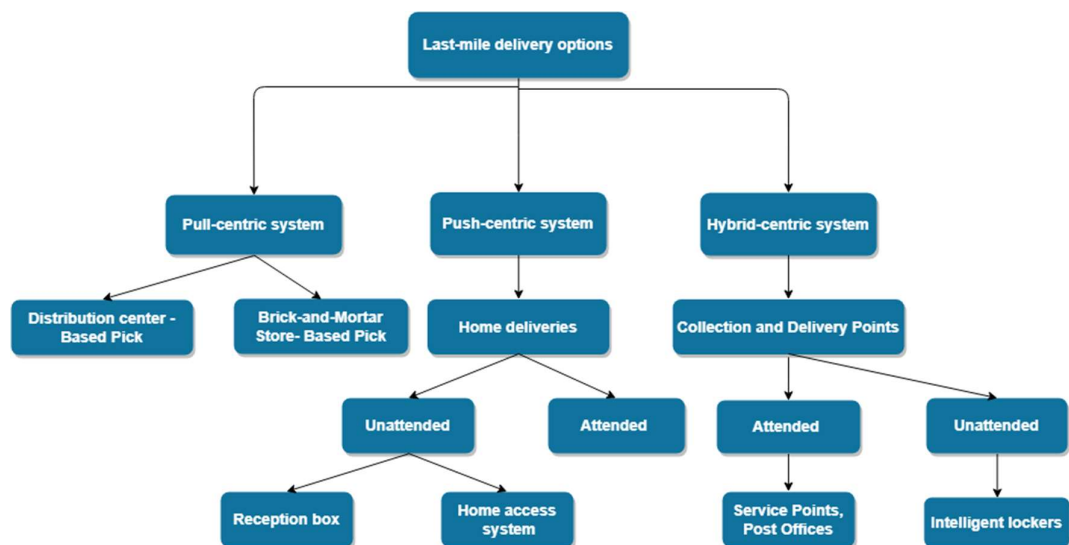
Figure 4: Common last-mile delivery options

After being packed at the distribution center, shipments could be delivered to customers in three modes. The first option is that the parcels are picked up by the consumers at the distribution center or the retailer. Another option is that the parcels are delivered to customer home address. Attended home delivery is when customers are presented to receive the orders In the case customers are not at home, orders are dropped at reception box, or the carrier can access a specific area of the houses with the use of a remote-control system. Finally, the ordered goods can be shipped to a delivery and collection points, where customers could fetch their orders from. It could be an automated (unattended) point, namely intelligent lockers,

or a service points (attended), where the process of picking up the goods entails interaction with the reception staff.

The diversity of last-mile delivery choices makes the process of choosing the appropriate options increasingly difficult. An appropriate solution should consider customer satisfactory factors and operational efficiency to maintain cost effective. However, last-mile delivery remains one of the most troublesome and inefficient leg of the supply chain. In the next section, the prominent last-mile problems are analyzed according to available delivery methods.

Challenges in last mile delivery

The last mile is considered the most expensive segments in the whole supply chain. The last mile cost could account for 13% to 75% of total logistics cost, which includes cost of labor, material resources, and operational inefficiency (Gevaers, 2013). Operational inefficiency is known to be the primary factors contributed to the high cost of last-mile delivery. The most significant attribute to last-mile inefficiency occur within attended home deliver method. The constraint of specific time-window for delivery and the failure rate of "not-at-home" delivery is inevitably high, making it the unfavorable method for E-tailers (Wang et al. 2014). According to an investigation by Fernie & Mckinnon (2004), 30% of small packages that delivered to customer homes failed at first time. As a result, shipments must be re-arranged, or a specific delivery time window should be established to ensure successful delivery. However, this will in turn compromise on routing efficiency and flexibility of carrier. According to Boyer, Prud'Homme & Chung (2009), the limited time window means higher travel distance for the carrier, which is associated with the number of non-optimal trips that are covered.

Another great attribute to the cost of last-mile delivery is geographical area and market penetration and density. For home delivery, offering narrower time slot might satisfy customer desire, yet reduce routing efficiency and shipment-density (Agatz et al. 2008). If there is a low concentration of orders in a residential area, the cost of delivery will significantly increase, with the delivery charge remains unchanged. If there are massive number of orders in one area, CDPs become the most efficient mean of delivery. However, in case there is usually few orders in one

area, home delivery is the optimal choice due to high cost of investment in CDPs (Wang et al. 2014).

Environmental issue is another area that raises increasingly concern from consumers. Customers expect the E-tailers to provide sustainable method of shipping. However, they are not willing to pay a higher charge for a "promoted" environmental- friendly delivery method (Gevaers, 2013). The smaller time window for home deliver and the low-density problems pose a major challenge for E-tailers to find the balance between greener last-mile delivery, operational profitability, and customer desires.

The last-mile delivery from customers' perspective

Cost

One of the primary factors in customer last-mile delivery decision is cost. In fact, customer demand for a faster home delivery with reasonable price is rising. Factors used to measure customers' preference in cost are: delivery charges and extra charge for speed delivery or premium delivery options. The correlation between handling & shipping fee to customer satisfaction once confirmed in a study by Rao et al. (2011a). It showed that a satisfaction with shipping cost is positively related to customer overall purchase satisfaction. According to McKinsey survey with 4700+ respondents in China, Germany, and the US, 70% of respondents prefer to choose the cheapest form of home delivery over same day or instant delivery with higher cost (Martin Joerss, Jürgen Schröder, Florian Neuhaus, Christoph Klink & Florian Mann, 2016). Generally, Hybrid model of last-mile delivery (LMD) costs less than Push Model shipping options. The model helps to reduce the number of direct, failed and subsequent return deliveries in the city area (Iwan, Kijewska & Lemke, 2016, 653). This further reinforces Lee & Whang (2001,1) statement that in the future, e-businesses that can deliver the goods and services at a reasonable cost will have the edge.

Convenience

The perceived convenience varies between individuals depending on their needs and lifestyles. For example, customers with hectic lives consider the need to present at home to wait for the courier, schedule for a re-shipping or pick up shipment from

another location the main inconvenience of online shopping deliveries (Xu, Ferrand & Roberts, 2008). In the same study by Xu et al. 2008, customers prefer to pick-up the parcels by themselves at a collection point than having products delivered unattended in their safe boxes. A study by Yuen, Wang, Ng & Wong (2018) suggested that customers slight favor collection point over home delivery as it has greater compatibility with their schedule. However, the convenience of home delivery convenience is undeniable, as it requires no effort from customer to physically come and pick up parcels. Therefore, offering a variety of delivery options could enhance customer satisfaction while maintain operational effiency.

On-time delivery

The on-time delivery is a critical factor, as Reichheld and Schefter (2000) identified on-time delivery as one of the key drivers of consumer repurchase and found that any failure or delay in delivery can give online consumers a bad impression and result in diminished repurchases. Another study by Rao et al.(2011b) also found that delays in the delivery of consumer orders have a significant impact on consumers' future purchase patterns. The timeliness of order also acts as a buffer for future delivery failures, as customers believe this represents a one-time exception to a normally excellent delivery record (Collier & Bienstock, 2006). To minimize the anxiety of customers with late delivery, delivery tracking service could be offered by E-tailers. (Xu et al. 2008).

2.4 Collection and delivery point

The concept of collection and delivery point (CDP) has emerged in recent year as an alternative to parcel delivery in last-mile logistics. Collection and delivery points are a network of services points where operators pool and deliver their consignees' parcels, and consignees pay, collect and return their parcel (Piplani and Saraswat, 2012). In this type of delivery mode, customer will co-operate with the seller to complete the delivery trip. The process of last-mile collection is depicted by Ring and Tigert (2010) in Figure 5:
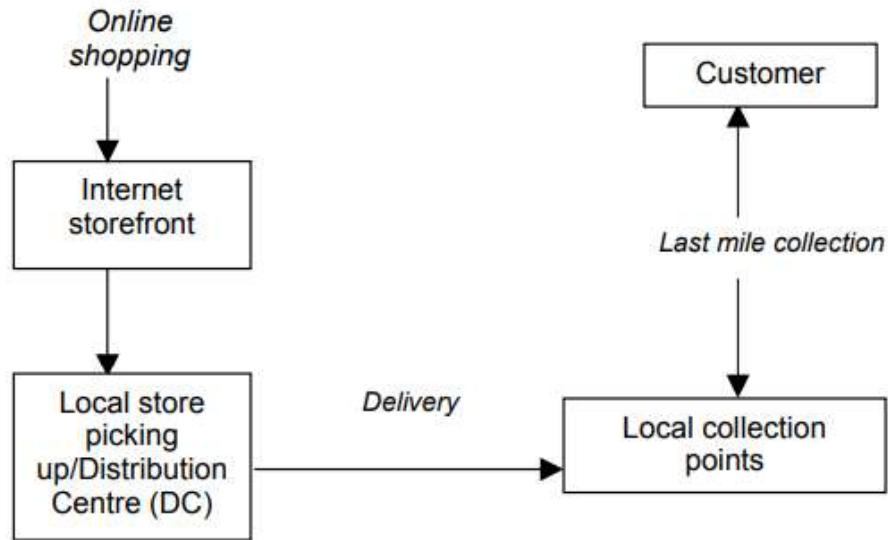
Figure 5: The last-mile collection (Intercept model)

According to Lee and Whang (2001), CDPs is the adoption of two strategies that could be used to optimize last-mile delivery: "Leveraged shipments" and "Clicks-and-mortar". Leverage shipments is a strategy to consolidate orders in the same neighborhood and ship it in a single trip to maximize economical savings. It also means assigning orders to carriers, and each carrier delivers goods to his assigned area. For "Clicks-and-mortar" strategy, operators utilize a brick-and-mortal stores nearby customers' address to store the goods for customers to collect their parcels.

The adoption of self-collection services brings numerous advantages that could address recent challenges in last-mile delivery. The most obvious advantage of collection point is cost reduction. This directly tackles the "not-at-home" issues, which results in cost saving opportunity for carriers and retailers by cutting down vehicle idling time, and re-shipping travelling time and distance. For example, it is estimated that £850 million could be saved if all home deliveries in London were successful at first attempt (Francke and Visser, 2015). In another study, Lee and Wang (2001) found that the cheaper rate from collection point could be achieved if there is a large enough number of orders in one geographical region. Consider the urban area where customers make frequent online shopping, collection point could be considered as an effective way to adapt the geographical and market penetration challenge.

From a customer service perspective, another obvious advantage of collection point is flexibility. When the goods arrive at collection point, customer will receive a notification to pick up the parcels. They are free to collect the goods at their own convenient time without waiting at home for parcel delivery. Consequently, it saves customers waiting time and opportunity cost caused by waiting. Besides, the long opening hour of service points (kiosk, petrol station, intelligent locker, etc) allows customers to pick up parcel with a much broader time window.

From a societal and environmental perspective, CDPs offer distinctive benefits. By using CDPs, the negative effect on the environment by failed delivery consequences such as re-shipping or self-pick-up travel could be significantly. According to Edwards et al. (2010), there is possibility to cut down up to 83% of carbon emission if consumers collect their parcels from self-collection facilities as part of their trip chain. In the case of product returning, the use of CDPs produces far less emission than a trip to a store (Edwards et al. 2010) Additionally, it can reduce urban traffic density, parking issues, and improves urban liveability (Chen et al., 2017; Van Duin et al., 2016). On the other hand, a study by Liu, Wang & Susilo (2019) revealed that to reach the sustainable goal of CDP, the density of CDP and its closeness to customers' address should be increased. Otherwise, the amount of CO_2 emission from the collection-delivery trips is likely to outweigh the environmental benefit of CDP.

There are 2 common types of CDP: Unattended and Attended.

- Unattended:

Locker points are basically a bank of intelligent lockers where customers can self-collect their parcels without the presence of staff. Upon the arrival of the parcel, customer will receive a PIN code to open his lockers and retrieve the goods. Locker points are accessible 24/7, unless they are in facilities with specific opening time.

- Attended

Service point (attended) is a concept where parcels are delivered to a post-office or a pick up location such as kiosks, supermarket, gas station, etc for customer to pick up. The collection from this kind of delivery point requires interaction with staff and attendance during opening hour.

Each type of CDs has its own pros and cons which are described in Figure 6:

Item	Locker point	Service point
Opening hours	+	−
Time needed to collect the parcel	+	−
Anonymity when collecting the parcel	+	−
Pay when collecting the parcel	+	+
Payment options	−	+
Storage possibilities	−	+
Use of public space	−	+
Sensitivity to crime and vandalism	−	+
Possibility to combine the collection of the parcel with other shopping activities	−	+
Ease of use of the service	−	+

Figure 6: The advantages and disavantages of locker point and service point (Weltevreden, 2007a)

As shown in Figure 5, Service Point appears to be more advantageous compared to locker point, as it offered a higher level of security and possibility to make the payment when pick up the goods for customers. The fact that there is human handling the picking up process enable real-time update between carrier/seller and better security level, as customer signature and Identity Document are required for order release. On the other hand, locker points provide user with more time flexibility and anonymity when collecting the orders. Nevertheless, intelligent locker could cause some difficulties for first-time users, as the instructions is not verbally communicated. From E-tailers standpoint, attended CDPs usually requires a lower investment. However, the relationship between logistics service provider and the collections point could be broken as customers don't buy products from the shop when they pick up the orders. Compared to attended CDPs, unattended CDPs have higher investment initially, but have a low operation cost, and more "stable" than manned stations.

3 Last-mile delivery in Vietnam

3.1 Overview of E-commerce in Vietnam

Among Southeast Asia's e-commerce markets, Vietnamese market is a notable rising star with a B2C e-commerce growth rate of 32%. In 2018, the country's eCommerce

market value reached 2.7$ billion EUR in 2017. In 2019, there is a 52.4% user penetration rate, and is expected to hit 55.3% by 2023 (Statista, 2019). The market is forecasted to rise with CAGR of 14% during 2017-2020. According to the E-commerce industry in Vietnam report by the EU-Vietnam Business network (2018), the key driver behind the expected growth of eCommerce in Vietnamese is the high Internet penetration rate and a growing population of 100 million by 2020, ranked 3rd in SouthEast Asia. The country is considered to have a golden demographic structure with 50% of the population is in working age and 36% of people living in the urban area, leading to an increasing market penetration and density. According to Vietnam Ministry of Industry & Trade, in 2016, Ha Noi and Ho Chi Minh city are the two commerce hubs in Vietnam, ranking first and second in B2C transaction index (Bao cao Logistics Vietnam, 2017).

There are two popular platforms of online shopping in Vietnam: Social media flatforms (Facebook, Instagram, etc) and E-market places where online vendors advertise and sell their products on a third-party platform, which is similar to the concept of Amazon. Although the use of social media is dominant in online shopping, the high rate of growth in E-commerce websites is changing the shopping habit of Vietnamese consumers. In less than 3 years, Vietnam's B2C e-commerce witnessed the growth of many big players such as Shopee, Tiki, Lazada VN, Thegioididong, Sendo and Amazon is expected to enter the market soon (E-commerce Industry in Vietnam, 2018). According to KPMG's international survey: "The truth about online consumers" , 18% of Vietnamese consumers have used e-marketplace such as Lazada, Tiki, while 10% purchased from the retail shops' websites, and only 3% used the manufacturer or brand's website. The growing of online retailers offers customers opportunities to compare prices and have the best deal online. However, it puts E-retailers under severe competition, where the competitive advantage is belonged to whom could deliver the state-of-the-art supply chain, allowing customers to have a seamless shopping experience.

3.2   E-commerce last-mile logistics in Vietnam

The hyper growth in e-Commerce in Vietnam constantly pushes the logistics demands beyond the limit. According to a report by Ken research, Vietnam E-

commerce logistics market value is reported to be EUR 90 million in 2018, and it is projected to grow at an annual rate of 42% per year till 2022 (Demand for e-logistics in Vietnam projected to boom, 2019). Despite the surge of E-commerce logistics, "last-mile logistics" is struggling to move products quickly and effiently across the country. Apart from the downside, it creates the urge to develop more efficient and economical shipping solution while retaining excellent customer service.

At the current time, at home Cash-on-delivery (COD) is the dominant mode of last-mile delivery (E-commerce industry in Vietnam report, 2018). One of the reasons for the popularity of COD is the low adoption and usage of digital payment service. In Vietnam, cash is the preferred and prevailing mode of payment, which account for 51% of total payment method (Figure 7). In contrast, according to recent survey by Google and Temasek, only one in four internet users in Vietnam makes use of digital payment services (E-Conomy SEA, 2018). This is only half of the already low usage rate in Southeast Asia region. The preference of COD also reflects customers lack of trust for products quality, payment security, unsatisfied delivery,etc, which is rooted from an immature market and technological infrastructure. Customers feel more comfortable and confident to pay by cash as it's the most common means of payment in Vietnam (Vietnamese prefer offline payment for online shopping, 2018).
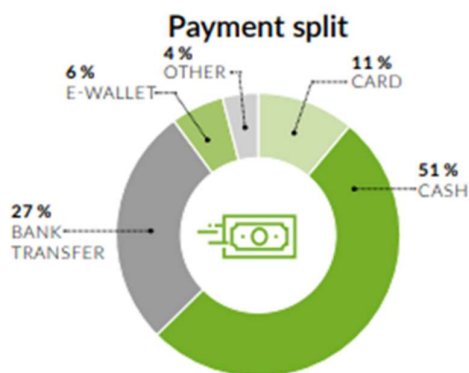

Figure 7: Rerent payment methods for E-commerce in Vietnam (Payment & E-commerce report, 2018)

In general, there are three main shipping options offered by the leading Vietnam E-retailers (Lazada, Shoppee, Tiki, etc) with different lead times and shipping fees:

- Standard delivery : Standard delivery usually takes 2-3 days in big cities with an average charge of 15 000 VND (1$) for an order. For rural erea, it could take up to 14 days for the order to arrive.
- At home free delivery with thred-hold order value: Shipping fee for orders with a minimum value would be free of charge. For example, on Lazada, shipping fee is free with order value above 150,000 VND (6 USD), except for bulky/heavy items with subcharge.
- Same day delivery: Orders would be shipped within 2-3 hours, which is only for big cities(Ha Noi and HCM city) with a higher rate. For example, TIKI and Lazada offered express delivery with a rate of 30,000 VND to 40,000 VND per order. (Source: Tiki, Lazada, Shopee websites)

While the majority of customers received door-to-door shipment, DHL eCommerce has launch more than 100 service points and planned to expand its network nationwide to 1000 points at the end of 2018. Similarly, Giaohangnhanh, a last-mile delivery start-up planned to roll out 1500 service point by the end of 2018. To provide customers with pick-up self service, the two firms cooperated with local shops, convenience stores and even coffee shops (E-commerce set for strong 2018, 2018). Lazada is reported to utilize its transportation hubs across the country to offer customer self-pick up service (Calbeto et al., 2017). However, the actual adoption of CDPs in practice is insignificant as E-commerce companies haven't offered an option for self-collecting on their website.

E-retailers considered last-mile logistics as a crucial part in gaining customers' favor and thus started to build a logistics network by using a third-party logistics providers (3PL) or develop their own order-fulfillment network. The playground of E-commerce 3PL includes traditional carriers (state-owned enterprises) such as VN post, EMS, Viettel Post and delivery start up (e.g, giaohangnhanh, supership, and giaohangtietkiem) and international players (e.g DHL, Grab Express). With the e-market place model, the 3PL carriers come to pick up shipment at the merchants/ suppliers' site, perform packing, invoicing, and ship it to customers. If the products is in stock at the E-tailer warehouse, the delivery time is shorter, as the 3PL carriers could pick up the ready-to-ship parcel and ship it at once. Meanwhile, major players such as Tiki and Lazada invested in their own fleet, personnel and distribution center

which performs order fulfillment in-house. For example, Lazada E-logistics ran one sorting center in Hanoi after the first one in Ho Chi Minh city (Demand for e-logistics in Vietnam projected to boom, 2019). The proportion of different models of used by E-commerce businesses is illustrated in Figure 8:
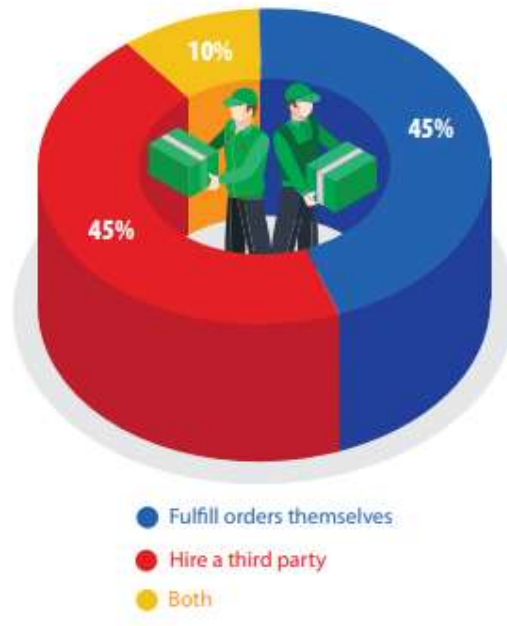
Figure 8: Model of shipping used by E-commerce businesses in 2016 (Source: E-commerce industry in Vietnam report, 2018)

3.3   Last-mile logistics challenges in Vietnam

Being the last customer touchpoint, last mile delivery in Vietnam is facing multiple mounting challenges to meet the fast growth of the eCommerce market.

The dominance of COD (Cash-on-delivery)

Whereas COD naturally fits current Vietnamese everyday life and ultimately win customer trust, it hindered last-mile delivery optimization in many ways. On top of the list, COD posts a higher cancellation risk, where customers have no liability on the placement of an order. It puts E-tailers at a vulnerable position where customer might refuse to receive the parcel and pay for it, even when the shipper arrives. The collection of cash requires the recipient to physically present to make the payment, which means shippers couldn't leave the parcel in the reception box or at the

neighbor's place. With COD, the required coordination between logistic provider and customers not only results in cost-incurring operational overhead, but also increases the delivery failure rate. COD is also frequently enhanced with "open box" service, enabling customer to view the products before the completion of the purchases. This further increases the return rate. The high level of uncertainty and risks involved in the COD process could lead to a lower profit for the business. In fact, logistic cost in eCommerce in Vietnam is very high. Whereas logistic cost as part of eCommerce revenue in Vietnam is 30%, it is as low as 15% in India, United State (11.7%), or 12% in China. Last-mile delivery cost contributed 28% to the logistic costs (Bao cao Logistics Vietnam, 2017).

Underdevelopment logistics infrastructure

In Vietnam, lack of diversified means of transport also posed a big challenge. Logistics firms primarily use motorbikes and trucks for their delivery services. The efficiency of trucks remains low due to the high investment and operational costs. The narrow roads and traffic jam in Ha Noi makes compact vehicle such as motorbike the ideal vehicle for home delivery in urban area. However, motorbikes are not designed for delivery with a low carrying capacity. In fact, motorbike can safely handle only 0.25 cubic metres of cargo, lower than the 0.5-0.6 cubic metres of an e-bicycle and 1 cubic metre of an electrical three-wheeler vehicle (E-commerce requires logistics reboot, 2018). Moreover, the amount of carbon dioxide emission that each motorbike discharges is higher compared to the aforementioned alternative mean of transports. For example, motorbikes emiss on average 2.27 kg of CO_2 per 45 kilometres, wheareas the index is 0.238 for e-bicycle and 0.743 kg for electric three-wheel vehical (ibid). Those alternatives are not part of the logistic infrastructure in Vietnam yet despite being environmentally friendlier and more efficient. An investment in alternative transportation infrastructure would reduce the traffic and environment pressure on urban transportation system, while enabling a bigger shipment density.

Firstly, low application of technology contributes to the high cost of last-mile delivery in Vietnam. As the supply chain is heavily depends on human labour, logistic providers struggle to leverage warehouse automation in especially in sorting and fulfillment phases (Bao cao Logistics Vietnam, 2017). Low level of automation means

more costly human errors and incurs high labour cost. This presents a vital bottleneck to scale the infrastructure in the face of rapid eCommerce growth. At the current time, Lazada E-Logistics claimed to be the first E-commerce company to employ an auto-sorting system which utilizes robots to sort its parcel. The ultilization of this innovation helps Lazada to significantly reduce its in-house order process, with the capacity of 10,000 parcels per hour (E-commerce requires logistics reboot, 2018).

Another challenges concerning the technology infrastructure is a low usage of an IT system to control the whole order processing chain. Customers are not updated with their real-time order dispatching, results in a loss in trust and satisfaction. For company that count on 3PL to handle last mile delivery, having a common order management platform is indispensible for order visibility. As previously pointed out, the last-mile delivery in Vietnam is mainly conducted by an enormous number of individual shippers, which makes it more difficult to equip each shipper with a tracking device and compatible software. This require enormous investment from both parties whereas the two most common 3PL services available have its own limitation regarding logistics infrastructure.For traditional 3PL such as Vietnam Post, despite its the expansive network and fleet capacity, the company is in short of IT implementation. On the other hands, start-up delivery firms such as Giaohangnhanh are owning a well-developed and easily synchronized IT system, yet having difficulties in expand its coverage outside big cities(Calbeto et al., 2017).

3 Factors influence customers' intention towards self-service technologies trial

Customers' intention is the plan whether to adopt an innovation, a new service or a product, while customers' readiness is a condition or state in which customer is prepared and likely to use an innovation for the first time (Yuen et al. 2018, 3; Meuter et al, 2005, 64.). In fact, the adoption of self-service technologies (SST) from customers' perspective has been investigated in numerous studies. These empirical studies focused on finding different factors potentially mediate the SST trial. In the scope of this thesis, the authors focused on examining the two most common and

influential SST adoption models: the Diffusion of Innovation (Roger, 2003) and the Technology Acceptance model by Davis, Bagozzi and Warshaw (1989).

Firstly, according to the Diffusion of Innovation Theory (DIT) (Rogers, 2003), there are 5 attributes that affects consumers' perception of SST: relative advantage, compatibility, complexity, trialability, observability. Those attributes are defined as follow:

•Relative Advantage: the degree to which an innovation is perceived as be-ing better than its precursor. In this case, it presents whether customers consider CLPs as a better alternative than home delivery or other delivery modes based on its nature. Relative advantage is considered to have a pos-itive impact on the adoption of SST.

• Compatibility: the degree to which an innovation is perceived as being con-sistent with the sociocultural values, lifestyle, and past experiences of potential adopters. For example, a person may consider CDPs to have relative advantage due to its cost saving value, but not compatible with the way they would like to receive his parcel, as they prefer to interact with carrier rather than staff at the convenience store.

• Complexity: the degree to which an innovation is perceived as being diffi-cult to use. This is related to whether customer feels that the new self-collect process is burdensome or easy to use. Some people might find the process of checking in the system, scanning barcode or filling the infor-mation to retrieve the parcel requires the extra effort that they're not will-ing to take.

• Trialability: the degree to which an innovation may be experimented with on a limited basis. Rogers (2003) argues that the higher possibility that customers can try SST without considerable hassle, the more likely they can understand and attach a meaning to it.

• Observability: The degree to which the results of an innovation are observ-able to others. Regarding CDPs, it means whether the self-collection process could be easily learned by observing and communicating others. If users could observe the benefit of using CDPs, they have a higher tendency to adopt this service.

The effect of five innovation attributes to consumers' adoption of SST was experimented in several researches. In a study to investigate the customers' intention to use self-collection services by Yuen et al. (2017), relative advantage and compatibility were found to have the highest significant level on customers' intention. On the other hand, complexity, trialability and observability did not show a high mediat-ing impact. Using the theory of innovation diffusion, Meuter at al. (2005) conducted a study on the adoption of automated prescription refill system, which could be conducted via an interactive voice response telephone system (IVR) or the Internet. The results of this study indicated a consistent positive effect of relative advantage and compatibility on customers' intention. Nevertheless, complexity shows a neg-ative influence only on Internet-based options. Trialability and Observability do not generate any significant predicting properties on both options. In addition to 5 attributes recommended by Rogers, other innovation attributes such as perceived risk, security, reliability, performance and control, which represents the level of uncertainty related to the use of SST were included in different studies (Lawlor, Kelly & Mulvey, 2011). Since reliability issues has been one of the main concern are-as of online shopping, it's worth to take risk factors into account when considering customers' adoption. The level of risk is associated with the concern about system accuracy, reliability, and the ability to recover its failure (Jasmand, 2006). In the context of CDPs in Vietnam, perceived risks could be associated with the reliability level of the advance payment and the ease of product return and examination.

In 1989, Davis, Bagozzi and Warshaw developed another model to assess the cus-tomers' intention to try SSTs, which is the Technology Acceptance Model (TAM). This model included two primary attributes which are perceived usefulness and perceived ease of use. Perceived usefulness is "the degree to which an individual believes that using a particular system would enhance his or her job performance". Perceived Ease of use is "the degree to which an individual believes that using a particular system would be free of physical and mental effort". (Davis, 1989, 320). The perceived usefulness and ease of use are believed to form an attitude towards using the system, followed by the behavioral intention to use it, which leads to the actual use eventually. Other external variables such as demographics, personal traits and technology attributes are the antecedent predictors that affects perceived usefulness

and perceived ease of use (Davis et al., 1989). The model of TAM is illustrated in Figure 9. In general, TAM has been widely applied in researches focusing on diverse technologies and users proved to be a scientifically robust model (Venkatesh, Morris, Davis, & Davis, 2003; Gefen, Karahanna and Straub, 2003).
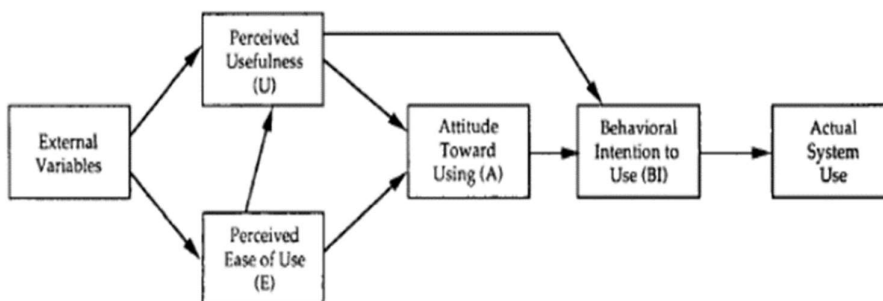
Figure 9: Key predictors of Customer Trial of Self Collection Service

From the above definition, those are quite similar to the relative advantage and complexity that mentioned in Roger's theory. David decided to put a different terminology for his factors, as relative advantages could be perceived as a general-ized term where all advantages related to the technology itself are measured. However, his term suffered from the same problems as being broadly understood (Moore and Benbasat, 2001). From the definition of the two variables, one person considers one service as more advantageous compared to its precursor only when it's likely to improve his/her performance, or experience. Venkatesh et al. (2003) suggested that the perceived usefulness, extrinsic motivation and relative advantage could be grouped under a construct named "performance expectancy". Similarly, through its definition, the perceived ease of use could be understood as the opposite of complexity (Lee, Lee and Eastwood, 2003). In his study, Venkatesh et al. (2003) consolidated the two variables under a name called "effort expectancy".

However, (Roger, 2003) suggested that the five attributes might not always be the five most important perceived characteristics for a particular set of respondents. Therefore, some refinement from the original instrument is needed to adapt the model to the circumstance of Vietnam e-commerce and to maintain the survey to a desired length. Firstly, since self-collection is relatively simple compared to other form of self-service technology, observability could be insignificant to the decision-

making process. Moreover, customers might not feel comfortable with observing others while they picked up their parcel. Secondly, as collection from a CDP is not available as a delivery option in many e-commerce sites, there is a low possibility that trial is possible, hence Trialability is not a relevant factor in this case. Finally, trust issue is an area worth mentioning with online shopping in Vietnam, which could result in a high uncertainty level regarding this new form of delivery. Therefore, perceived risks would be added as another factor.

Survey design

To develop the survey questions, a pool of items is chosen to represent each characteristic that were selected: (1) Relative Advantage, (2) Compatibility, (3) Perceived Ease of Use, (4) Perceived Risk, (5) Intention. Each variable would be measured by Likert scale from one to five with: (1) Completely disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Completely Agree. Questions about the customer online shopping frequency, common delivery mode and current issues with home delivery were also included to gain insights into the customer preferences and concerns. Besides, a brief introduction on collection points concept and process is provided at the beginning of the survey to ensure respondent have the adequate knowledge about the topic beforehand. The questionnaire also included questions about age and occupations to maintain the generalization of the test. The details of the survey could be seen from Appendix 1.

4   Results

4.1   Results from the survey

In total, the survey received in total 107 valid responses, of which 28% are male and 72% are female. The distribution of respondents' occupations is displayed in Figure 10. The age profile ranges from bellow 20 to above 50 years old. The largest age group is 20 to 35 years old with 65% respondents, while the number of age group 35-50 and below 20 respectively account for around 18.3% and 13.8% of total responses. In general, the variety of occupations and age group ensures that the

measurement items are reliable and could be analyzed to achieve the main aim of the thesis.

Distribution of Professionals

3.74%
14.02%
57.01%
23.36%
1.87%

- Frelancer
- Private companies employees
- Public service employees
- Self-employed
- Student
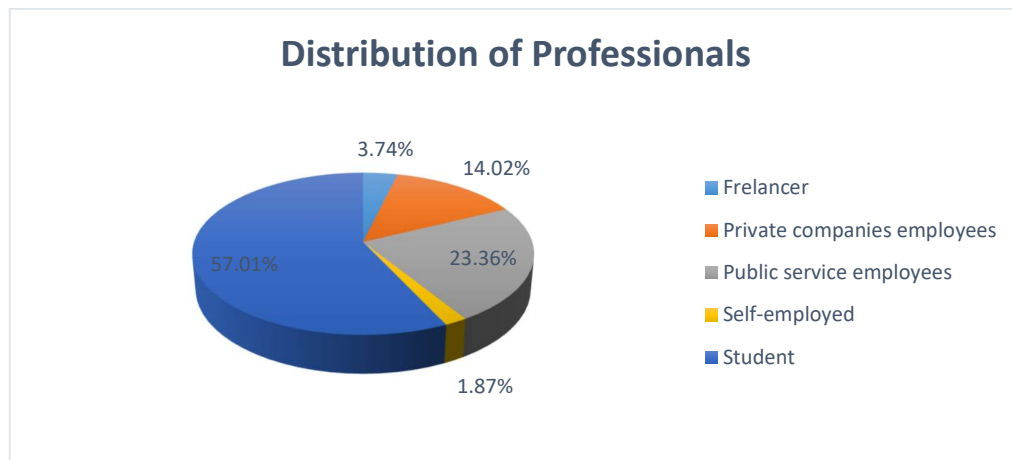
Figure 10: Distribution of respondents' professionals

Customers are also asked for the delivery method that they're currently using or had used in the past. As predicted, Cash-on-delivery (COD) is the dominant delivery choice with the largest share of response (90%), followed by Click-and-collect with 38.5% of the respondents. Surprisingly, Pickup parcels at post office and delivery was the delivery choice of delivery for 28% respondents.

From this point, the common problems for COD delivery are examined. Aligning with previous research on the challenges of at home delivery, 64.7% of customers chose "not-at-home" as the most frequent issues they encountered. Followed closely is "have to wait for shipper" (64.2%), and lack of order tracking information and high delivery charge with 40% of responses. As previously stated, not-at-home remains the biggest problems with attended home delivery, customer experienced inconvenience with the narrow time window. With this fact, we can confirm that customer has a high demand for order visibility and more reasonable shipping fee.

 Based on the common problems that customers reported to encounter, we will have a deeper look at customers' perceived characteristics of CDPs.

Relative advantage	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I think CDPs are advanta-geous	4%	2%	28%	28%	38%	3.95	1.04

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I can pick up my order at the time which is convenient for me	3%	5%	9%	32%	51%	4.24	0.99
I have better visibility of my order	2%	6%	28%	33%	32%	3.87	0.99
It's a more environmental friendly option	3%	6%	15%	33%	44%	4.09	1.03
It improves my overall delivery experience	3%	5%	25%	29%	38%	3.95	1.04

Table 1: Relative Advantage measurement

From Table 1, it is clear that all items received a relatively high score, especially "convenience" and " environmental friendly" factors. This suggests that these two factors could be the main areas that CDPs are more advantageous than home delivery. However, the visibility of order received the least score, although by using CDPs, customers could know exactly when their products arrive, instead of waiting for a call from shipper. This could be explained by the unclear of CDPs process to customers or this advantage is not obvious to them. In general, with a score ranging from 3.9 to 4.24, customers have a positive perception on the benefit of CDPs. A mean score of 3.94 is achieved by Compatibility, which is slightly lower than Relative Advantage, yet considered widely accepted by customers. The reason might be, they are not usually at home (fits with their lifestyle), or they have the need for a greener delivery options (fits with their needs). In general, a high score in Relative Advantage and Compatibility could increase the likelihood of customers trying the self-collection services.

Another area that worth mentioning is Perceived Risk, with the results are presented in Table 2.

Perceived Risk	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I'm concerned about paying online before receiving orders	9%	12%	31%	24%	23%	3.40	1.23
I can have difficulty in returning the parcel	7%	4%	30%	26%	34%	3.77	1.15
I can't open the package and check my order at the spot	5%	6%	35%	23%	32%	3.72	1.11

I spent more time travelling to CDPs than waiting at home	12%	10%	28%	26%	23%	3.38	1.28

Table 2: Preceived Risk measurement

As indicated in Table 2, more than half of the respondents considered returning and checking the order as their self-collecting delivery concerns The data also shows that there is a tendency that customers are concerned about product returning (3.4) and the quality of delivered goods (3.72). It is surprising that viewing the products at the spot as the main area of concern for customer, while the score for paying online is lower than other factors. In general, customers are quite neutral on these answers, compared to other components.

Ease of use is another factor that has negative effect on customers' intention to use CDPs. The more difficult to learn and use the service, the less likely customers will try it. For perceived Ease of use, it is observed that the mean values of each item failed between the range of 3.5 to 4.2 (Table 3). Nearly 40% of the respondents consid-ered the steps to receive their parcels from a collection point is unclear. On the other hand, it is believed to be easily learned (Mean=4.25) and used (Mean=3.99). About the effort involved in using this form of delivery, the result is relatively neutral with mean score of 3.49 and standard deviation of 1.19.

Ease of use	Strongly Disa-gree	Disa-gree	Neu-tral	Agree	Strongly Agree	Mean	SD
I find the steps to receive my parcel at the pick-up point is clear	3%	7%	29%	33%	29%	3.79	1.02
I believe I can learn how to use CDPs easily	2%	2%	12%	37%	47%	4.25	0.88
It takes less effort for me to use CDPs	7%	14%	28%	27%	24%	3.49	1.19
I am fully capable of using the CDPs	2%	3%	21%	42%	32%	3.99	0.90

Table 3: Perceived Ease of use measurement

Last but not least, customers are asked about their intention to use CDPs in the future:

Intention to use CDPs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
I will look for more information about CDPs	1%	4%	21%	39%	35%	4.03	0.89
I will try using CDPs in the future	1%	3%	18%	38%	40%	4.14	0.87
This is my favorite mode of delivery	3%	16%	42%	17%	22%	3.40	1.08
I will recommend using CDPs to my friend and family	2%	7%	33%	28%	30%	3.77	1.02

Table 4: Customers' intention to use CDP

In general, the response revealed great customers' willingness to know more about this mode of delivery and adopt it in the future. The mean score (4.14) for item " I will try using CDPs in the future" shows that most people are interested in trying this delivery mode, while 33% they are neutral on recommend using CDPs to their friends and family. However, it remains unclear whether customers would choose CDPs over other modes of delivery, as 42% customers are neutral on item "This is my favorite mode of delivery".

Reliability of the test

To test the reliability of the questionnaire, a Cronbach's alpha was run on the results of the questionnaire on SPSS (Statistical Package for the Social Sciences). Cronbach's Alpha was developed by Lee Cronbach in 1951 to measure the internal consistency and the reliability of a test. Internal consistency is defined as the degree to which all item in test measure the same concept or construct. The acceptable range for Cronbach's Alpha is from 0.70 to 0.95, and the higher the value is, the more inter-related the items are (Tavakol & Dennick, 2011). A reliability test was executed on the questionnaire which comprises in total 20 items. The Cronbach's Alpha received is α =0.890 (table 5), which indicated a high level of reliability or correlation between

items in the test. This showed that the model is adequately fit and could be reliable to analysed further.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standard-ized Items	N of Items
0.890	0.901	20

Table 5: Survey Reliability Statistics

Next, to assess the influence of different construct on customer's intention to use CDP, a Spearman correlation was computed. Table 6 presents the result of the calculation as follow:

Correlations		IN	RA	CP	CX	PR
IN	Pearson Correlation	1	.605[**]	.462[**]	.511[**]	.065
	Sig. (2-tailed)		.000	.000	.000	.503
	N	107	107	107	107	107
RA	Pearson Correlation	.605[**]	1	.744[**]	.711[**]	.238[*]
	Sig. (2-tailed)	.000		.000	.000	.013
	N	107	107	107	107	107
CP	Pearson Correlation	.462[**]	.744[**]	1	.650[**]	.152
	Sig. (2-tailed)	.000	.000		.000	.119
	N	107	107	107	107	107
EA	Pearson Correlation	.511[**]	.711[**]	.650[**]	1	.321[**]
	Sig. (2-tailed)	.000	.000	.000		.001
	N	107	107	107	107	107
PR	Pearson Correlation	.065	.238[*]	.152	.321[**]	1
	Sig. (2-tailed)	.503	.013	.119	.001	
	N	107	107	107	107	107
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Table 6: Correlation between constructs and intention to use CDP

The correlational revealed that almost all constructs have a correlational relationship with intention factors except for Perceived Risk (r=0.065). On the other hand, each construct exerts a different level of influence on the customer. According to Mukaka (2012), a closer the correlation coefficient to one, the higher correlation between two variables.

It is not surprising that Relative Advantage is the most significant factor influencing on the customers' intention. The correlation coefficient value of 0.65 and the Sig. (2-tailed) value <0.05 indicated that there is a strong, positive correlation between Relative Advantage and customers' intention to use CDPs. The results suggested that the higher level of relative advantage perceived by the consumer, the more likely they are to adopt this service. This result is in line with the hypothesis in the Diffusion of Innovation theory. Only when customers are aware of the advantage that the CDPs offers compared to home delivery, they could decide to use it or not.

 In addition, the analysis data showed that Compatibility (r=0.462; p<0.01; n=107) and Perceived Ease of use (r= 0.511; p<0.01; n=107) also have a positive correlation with customer intention. The influence of those factors is slightly lower than Relative advantage. However, their relationship with customers' intention is still considered relatively strong. For Perceived Risks, the results suggested that there is a weak correlation between the factor and customers' intention.

4.2   Results from individual interviews

A semi-structured interviews were conducted with three interviewees to elaborate on their choices in the questionnaire. All interview respondents usually shop online at least 1-2 times a month with home delivery as the primary delivery option and haven't tried the Collection and Delivery points service.

The respondents identified the three major weaknesses of home delivery which are: Shipping charge, Not-at-home when the shipper arrives and communication issues with the shippers. One of the respondents said: " The shipping charges is expensive if the distance from my home to the shops is far and the value of order is small. And sometimes I missed the shippers' phone call and he had left the time I called back". This case is also evident in the following answer:

"Many times the shipper arrived later than the time I had agreed with him and I had to count on my neighbors to receive my parcel. Besides, my home address is not clearly directed on Google Map, so I got to navigate the shipper to my house."

"The shippers possibly called in inapproximately time, for example during my working time, so I couldn't pick up."

In addition, the interview revealed other inconveniences customers encountered when experience home delivery such as the unpleasant attitude of the shipper as they must wait for a while or come back again, or the lack of visibility of the order. All three interviewees had positive opinion about the trial of CDPs. Similar to what were found in the survey, they mostly argreed on the flexibility and time-wise convenience that it could offer. For the person who has a nine-to-five job, they could collect the parcel at the suitable time frame, and know exactly when they can pick it up. Another benefit which is acknowleded by three interviewees is the carbon emission offset when utilize CDPs.To further assess other element contributed to the intention of using CDPS, interviewees was asked about their concerns toward this alternative. The majority of participants claimed that they are worried about the reliability and liability of the involving parties.

"What if my parcel is given to a wrong person, how can the collection points manage the information of the receiver?"

"What if the products are faulty and I would like to return it? Do I have to go to the re-turn it by myself and how could I receive the refund?"

Further, they emphasized that they are not much concerned with paying in ad-vance if the vendor is qualified and positively feedbacked. However, they could en-counter some difficulties when paying online as the website might decline their payment method. Interviewees also mentions that the distance to the delivery points shouldn't be too far from their residence area. If it takes more than 15 minutes walking from their houses, they would use their motorbikes to get there, which perhaps offset the environmental benefit of using CDPs.

Lastly, the interviewees were asked to choose between home delivery and CDPs. Although they acknowledge the advantage of CDPs and are willing to try it, they

praised the convenience of home delivery. This is revealing in the following answer of one responder: "I preferred to sit at home and have my parcel delivered to the front door. However, I could choose CDPs over home delivery if it's offered for free". She also stated that CDPs is more advantageous for the operator than the consumers, as they had customers to do "half of the work". In contrast, responders who are younger and have a busier lifestyle are more willing to prioritize CDPs for its independency: "I hate the stress of waiting on the phone and having no idea when my parcel will arrive. If it's delivered to a CDP, I could pick up the parcel after I finish at work."

5   Discussion

The research was successfully covered the proposed research questions proposed in chapter 1.2.

Research Question 1

What are the key factors influencing E-consumers' intention to use collection and delivery point for last-mile delivery?

It is not surprising that Relative Advantage is the most significant factor influencing customers' intention. Relative Advantage is not only a key factor that influences customers' intention, but also a mediating factor on Compatability and Ease of Use. The influence of factors such as Compatability and Perceived Ease of use on customer intention is slightly lower than Relative advantage. However, since those have strong correlation with Relative Advantage, which in turn affects customers' intention, it shouldn't be taken lightly. Its low impact could be due to the different lifestyle in Ha Noi, as people don't go to the supermarket daily to get refreshments or basic items, but rather get those at the convenient store or self-owned grocery. Consequently, it could be less likely that a trip to pick-up parcels could be combined with a shopping trip. It's important to note that compatibility is different among individual due to different ages, occupations, needs and changed throughout times. For example, an older person could have more difficulty in adopting a new form of service compared to a younger, more tech-savvy person. Customer could recognize the benefits of CDPs, yet did not consider it as the relative advantage for him or her.

For Perceived Ease of use, the correlation is less significant, since the concept of CDP is relatively simple compared to other self-service technologies. The process of collecting parcels from CDP just usually involves interacting with the staff members, thus customers could ask for help from the staff if they face any difficulty during the process. The process is believed to easily learned, which lessen the effect of Perceived Ease of Use on customers' decision.   However, there is a strong correlation between Compatibility, Relative Advantage and Ease of use. The results suggested that customers have the tendency to consider CDPs as an advantageous mean of delivery when that advantage are aligned with their lifestyle, past experience, and needs. Likewise, the perceived ease of use has a positive influence on customers' perceived advantage of CDPs. Given that it is simple and doesn't take a lot of effort to do the self-service pick up could be considered as an advantage.

For Perceived Risks, the results suggested that there is a weak correlation between the factor and customers' intention. This could be explained as this form of delivery is relatively new, customers are quite unsure about what could go wrong. Hence, their opinions about it are relatively neutral. Contradict to the correlation analysis, the individual interviews revealed customers' concern about the reliability, product return and payment method have a huge influence on their overall shopping experience. For customers, the perceived risk might associate with the E-tailers capacity rather than the use of CDP itself. With home delivery, customers are often asked to check their parcel when they receive it to confirm it's their orders, and they could return the products directly via shippers and receive the refund on hand. This could be the disadvantage of collection and delivery point since customer must return the product by themselves and could not check the parcel before signing. However, customer could be assured if they believe the vendors are reliable and receive clear instructions from involving parties such as the online vendors or the shop assistants.

Research question 2:

What are the main challenges and existing solutions for last-mile delivery in Vietnam?

The last-mile delivery in Vietnam is still in its infancy with lack of diversity in shipping options and the underdevelopment of transportation and IT infrastructure. The strong tendency of customers toward COD delivery causing by the lack of trust and compatable payment method is a barrier to leverage E-commerce logistics. The prevalance of COD could build customer trust at the first place, yet post major challenges for stakeholders to satisfy customers demand while retaining operational efficiency. CDPs could be the alternative that both satisfy customers demand while cutting down delivery cost for E-commerce companies. The concentrated poplulation and the surge of small shops and convenient stores in Ha Noi make an ideal environment to employ CDPs. Eventhough the use of CDPs remains in its experimental phase, it has great potential to be a key solutions for the current logistics challenges. Besides, E-commerce businesses are in the initial phase of integrating new technologies and innovation to tackle those main challenges, such as automatic sorting and order tracking system, which leaves a huge room for improvement.

Research question 3:

What should E-tailers and logistics companies pay more intention to in order to sucessfully implement collection and delivery points?

Based on the survey analysis, there are actions could be taken by relevant stakeholders to increase the adoption rate on CDPs. Obviously, to raise the likelihood of customers trying CDP, the Relative Advantage is an area that relevant stakeholders should pay attention to. The idea is to communicate the benefits of CDPs to customers based on the Perceived Relative Advantage, as a benefit recognized by service providers is not necessarily a benefit acknowledged by customers. For example, some customers considered CDPs as a more flexible and environmental-friendly options compared to home delivery rather than an convenient and economical option. To boost customers motivation, firms could highlight the potential of cutting down carbon emission and waiting time at home. At last, the advantage of CDPs should be tangible to customers instead of solely invisible on different medias. To provide added extrinsic motivation for customer to try CDPs, incentive on shipping fee for who uses CDPs could be applied. Meanwhile, the price for home delivery could be risen. Price is considered to have a major impact on

customers' decisions to try CDPs for the first time, as reported in the interviews. The first trial would provide customers the clarification on CDPs process and its benefits, thus increase the possibility that customer would choose it again. Considering customers' compatibility, firms should offered customer more choices of shipping options, and more locations of pick-up points compared to three main shipping modes available at the moment. Therefore, customer could choose the most suitable mode of delivery depending on their needs at the time.

Since CDPs is a new form of delivery, it's the E-tailers' responsibility to educate customers on the procedure of receiving/returning parcels and have clear instructions at the service points. To increase the Ease of use, another aspect should be taken into account is the location of CDPs, as convenience chain and self-own kiosk are closer to residential area and often intersect in daily shopping for customers. At the moment, convenient stores and mini supermarket is considered to dominate the local retail market in Vietnam. By 2020, Ha Noi targets too have 1000 more convenience store, in addition to the existing retail network that is available in almost every residential area (Vietnam to see strong development of convenience stores, 2019). To take advantage of the upcoming trend, the service providers should establish a close relationship with those retail businesses to facilitate a real-time system to update parcels and customer information. In addition, to reduce the Perceived Risk, the payment method should be taken into consideration. As COD is the most popular form of payment method at the current time, the option to pay at the CDP could be offered to reduce customers' uncertainty when purchase online. Having COD payment at the CDPs is not enough, the e-payment must be improved to reduce the risk concerning with paying after the goods is delivered. E-tailers should consider to cooperate with banking companies to develop an integrating E-payment system.

6 Conclusion

The first question concerns the key factors that effects on customers' intention to use CDPs. Based on the Innovation Diffusion Theory and Technology Acceptance Model, four leading factors were choosen to represent customers' intention, which are: Relative Advantage, Compatability, Perceived Ease of Use, and Perceived Risk. It

is found that Relative Advantage ranked first among attributes that influence customer willingness to try self collecting service. The more benefits customers see CDPs have, the more likely they are willing to take part in the self-pickup process.The effect of Compatability and Perceive Ease of use is in moderate. However, these factors were found to have strong correlation with Relative Advantage. It is noteworthy to note that their effect might be less significant since there is so much interindividual difference and external variation in term of compatability. On the other hand, Perceived Risk shows no significant correlation with customer likelihood to try CDPs.

The study also provided an overview of last-mile logistics E-commerce in Vietnam. The dominance of COD delivery method and lack of logistics infrastructure were identified as the main hindrances for an efficient and responsive last-mile delivery. The process of last-mile delivery depends to a great extent on humans involvement, which further increases the level of uncertainty and risks associate with COD. Although E-commerce companies are making huge investment on order fullfilling facilties, transportation fleet and IT infrastructure, they have a long way to meet up with the surging demand of E-commerce in Vietnam.

Finally, this study provided recommendations for E-tailers to enhance customers' willingness to adopt CDPs. Since Relative Advantage is the most influential factors on CDPs trial, it is important for the customers to fully understand the advantage and process of it. Clear instruction, friendly support, customer-targeted marketing would be helpful in clarify customers perception on CDPs. Additionally, the integration of COD payment at the service points could lower customers anxiety when going out of their habits. Also, company should offer a wide range of delivery options for customer to choose the most suitable one at the time. With CDPs, various choices of pick-up locations has a positive effect on customer's desire to try the service.

Although the study was successful in provide partitial explaination for the laid out questions, certain limitation need to be considered. With a relative small sample of 106 respondents, the results of the study would be limited to residents in Hanoi and thus might not applicable for Vietnamese customers in general. Secondly, although there is general introduction on the concept of CDPs, participants might not fully understand the concept or misunderstand the item meaning. Another disadvantage

from online questionnair is unreliable or careless response due to the length of the survey. Therefore, futher research could focus on improving the sample size to achieve a better understanding of the population.

References

Agatz, N., Campbell, A., Fleischmann, M. & Savels, M. 2008. *Challenges and opportunities in attended home delivery*. Julkaisussa The vehicle routing problem: Latest advances and new challenges. 379-396. Boston, MA: Springer US.

Boyer, K. K., Prud'homme, A. M. & Chung, W. 2009. *The last mile challenge: Evaluating the effects of customer density and delivery window patterns.* Journal of Business Logistics. Retrieved from https://search.proquest.com/docview/212655475.

Calbeto, J., Abareshi, A., Sriratanaviriyakul, N., Nkhoma, N., Pittayachawan, S., Ulhaq, I., ... Vo, H. X. (2017). *Lazada's last mile: Where no E-commerce company in Vietnam had gone before.* Proceedings of the Informing Science and Information Technology Education Conference, Vietnam, pp. 117-126.Santa Rosa, CA: Informing Science Institute. Accessed on 16th May 2016. Retrieved from https://www.researchgate.net/publication/317753330_Lazada's_Last_Mile_Where_No_E-Commerce_Company_in_Vietnam_Had_Gone_Before

Collier, J. E. & Bienstock, C. C. 2006. *How do customers judge quality in an e-tailer ?* MIT Sloan Management Review, 48, 1, 35. Retrieved from https://search.proquest.com/docview/224961845.

Chen, S. & Chang, T. 2003a. *A descriptive model of online shopping process: Some empirical results. International Journal of Service Industry Management.* Retrieved from http://www.emeraldinsight.com/doi/abs/10.1108/09564230310500228.

Darley, W. K., Blankson, C. & Luethge, D. J. 2010. *Toward an integrated framework for online consumer behavior and decision making process: A review. Psychology and Marketing.* Retrieved from https://search.proquest.com/docview/227762124.

Davis, F. D., Bagozzi, R. P. & Warshaw, P. R. 1989. *User acceptance of computer technology: A comparison of two theoretical models*. Management Science, 35, 8, 982-1003. Retrieved from http://mansci.journal.informs.org/cgi/content/abstract/35/8/982.

Demand for e-logistics in Vietnam projected to boom. Page on Hanoitimes. Access on 14 May 2019. Retrieved from http://www.hanoitimes.vn/economy/trade-service/2019/01/81e0d1c0/demand-for-e-logistics-in-vietnam-projected-to-boom/

Ecommerce Viet Nam. Page on Statistista's website. Access on 14 May 2019. Retrieved from https://www.statista.com/outlook/243/127/ecommerce/vietnam

E-commerce industry in Vietnam report. 2018. Page on the EU-Vietnam Business network's website. Access on 14 May 2019. Retrieved from http://www.ukabc.org.uk/wp-content/uploads/2018/09/EVBN-Report-E-commerce-Final-Update-180622.pdf

E-commerce requires logistics reboot.2018. Page on Vietnam Investment Reviews. Retrieved from https://www.vir.com.vn/e-commerce-requires-logistics-reboot-58445.html

E-Conomy SEA 2018, Southeast Asia's internet economy hits an inflection point . Page on Google Reasearch's website. Access on 13 May 2019. Retrieved from

https://www.thinkwithgoogle.com/intl/en-apac/tools-resources/research-studies/e-economy-sea-2018-southeast-asias-internet-economy-hits-inflection-point/?_ga=2.39374890.865485706.1556457911-1924075103.1556457911

E-commerce set for strong 2018, 2018. Page on Vietnamnews's website. Accessed on 14th May. Retrieved from https://vietnamnews.vn/economy/424916/e-commerce-set-for-strong-2018.html#gJYcf0rJSKwS8acc.97

Edwards, J., Mckinnon, A., Cherrett, T., Mcleod, F. & Song, L. 2010. *Carbon dioxide benefits of using collection-delivery points for failed home deliveries.*

EDWARDS, J., McKINNON, A., CHERRETT, T., McLEOD, F. & SONG, L. 2010. *Carbon implications of returning unwanted goods ordered online*. Retrieved from http://www.wctrs-society.com/wp-content/uploads/abstracts/lisbon/selected/02425.pdf.

Fernie, J. & McKinnon, A. 2004. *The development of e-tail logistics.* 164-187. Retrieved from http://www.econis.eu/PPNSET?PPN=477807038.

Frederick W.T. Lim Stanley, Jin Xin and Singh Srai Jagjit. 2015.*Last-mile logistics models: A literature review and design guideline*. Institute for Manufacturing, Cambridge University.

IMRG Valuing home delivery; E-retail industry review. 2018. IMRG, London.

Iwan, K., & Lemke. 2016. *Analysis of parcel lockers' efficiency as the last mile delivery solution – the results of the research in poland*. The 9th International Conference on City Logistic., Accessed on 17 April 2019. Retrieved from https://www.researchgate.net/publication/299460301_Analysis_of_Parcel_Lockers'_Efficiency_as_the_Last_Mile_Delivery_Solution_-_The_Results_of_the_Research_in_Poland/citations.

Gevaers Roel. 2013. *Evaluation of innovations in B2C last mile, B2C reverse & waste logistics.* University of Antwerp,8. Retrieved from http://uahost.uantwerpen.be/sig2/wctrs/html/Ph.D.%20THESIS%20-%20REWORKED%20FINAL%20VERSION%20-%20ROEL%20GEVAERS%20protected.pdf.

Gefen David, Karahanna Elena & W. Straub Detmar. 2003. *Trust and TAM in online shopping: An integrated model*. MIS Quarterly, 27, 1, 51-90.

Jasmand Claudia, 2006. *The Adoption of Self-Service Technologies: The Role of Consumer Readiness, Trust, and Experiences.* Master's thesis. Maastricht University. Retrieved from https://www.grin.com/document/75028

Kysh Lynn. 2013. *Literature review vs systematic review. University of Southern California.* Accessed on 17 April 2019. Retrieved from https://libguides.sjsu.edu/c.php?g=230370&p=1528399

Maira, A. and M. Taylor. 1999. *The big picture: An overview of electronic commerce.*

Meuter Matthew, Jo Bitner Mary, L. Ostrom Amy & W. Brown Stephen. 2005. *Choosing among alternative service delivery modes: An investigation of customer trial of self-service technologies.* Journal of Marketing, 69, 2, 61-83. Accessed on 17 April 2019. Retrieved from

https://pdfs.semanticscholar.org/b94b/c45b6406c664fa765143cbb362c1bbdc7011.pdf

Moore, G. C. & Benbasat, I. 2001. *Development of an instrument to measure the perceptions of adopting an information technology innovation.* Information Systems Research, 2, 3, 192-222. Retrieved from http://isr.journal.informs.org/cgi/content/abstract/2/3/192.

Mukaka, M. M. 2012. *Statistics corner: A guide to appropriate use of correlation coefficient in medical research*. Malawi Medical Journal : The Journal of Medical Association of Malawi, 24, 3, 69. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23638278.

Nguyen, D. H., Leeuw, S. & Dullaert, W. E. H. 2018. *Consumer behaviour and order fulfilment in online retailing: A systematic review*. International Journal of Management Reviews. Accessed on 17 April 2019. Retrieved from https://search.proquest.com/docview/2023534491.

Norman K, D. & Yvonna S, L. 2005*. Introduction: The discipline and practice of qualitative research.* In N. K. Denzin & Y. S. Lincoln (Eds.), the Sage Handbook of Qualitative Research (Pp. 1-32), Thousand Oaks, CA. Accessed on 15 April 2019. Retrieved from https://uk.sagepub.com/sites/default/files/upm-binaries/40425_Chapter1.pdf

Lee, H. L. & Whang, S. 2001. *Winning the last mile of e-commerce*. Sloan Management Review, 42, 4, 54. Retrieved from https://search.proquest.com/docview/224963621.

LEE EUN-JU, LEE JINKOOK & EASTWOOD DAVID. 2003. A two-step estimation of consumer adoption of technology-based service innovations. The Journal of Consumer Affairs, 37, 2, 256-282. Retrieved from https://www.jstor.org/stable/23860594.

Le, T. & Koh, A. 2002. *A managerial perspective on electronic commerce development in malaysia.* Electronic Commerce Research, 2, 1, 7-29. Accessed on 22 April 2019. Retrieved from https://pdfs.semanticscholar.org/5927/b6d6fd35dc094f19045487b2c9d02cbe7c3d.pdf

Lummus, R.R. and Vokurka, R.J. 2002. *Making the righte-fulfillment decision.production and inventory manage-ment journal*,43, pp. 50–55.

L. Meuter Matthew, Jo Bitner Mary, L. Ostrom Amy & W. Brown Stephen. 2005. *Choosing among alternative service delivery modes: An investigation of customer trial of self-service technologies*. Journal of Marketing, 69, 2, 61-83. Accessed on 24th April 2019. Retrieved from https://www.jstor.org/stable/30162045.

Lawlor, J., Kelly, P. & Mulvey, M. 2011. *A review of key factors affecting consumers' adoption and usage of self-service technologies in the tourism sector*. Dublin Institute of Technology.

Lim Stanley, Jin Xin, Srai. 2015. *Last-mile logistics models: A literature review and design guideline.* SraiInstitute for Manufacturing, Cambridge University. Accessed on 22 April 2019. Retrieved from

https://www.researchgate.net/publication/281783277_Last-mile_logistics_models_A_literature_review_and_design_guideline

Liu, C., Wang, Q. & Susilo, Y. O. 2019. *Assessing the impacts of collection-delivery points to individual's activity-travel patterns: A greener last mile alternative?* Transportation Research: Part E: Logistics and Transportation Review, 121, 84-99.

Patton, M. Q. 2015. Qualitative research & evaluation methods. Fourth edition p. Los Angeles [u.a.]: SAGE. Viitattu pp.kk. Retrieved from http://bvbr.bib-bvb.de:8991/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=027548353&sequence=000002&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA.

Payment & E-commerce Asia report, 2018. Page on PPRO group's website. Retrieved from https://www.ppro.com/wp-content/uploads/dlm_uploads/2018/01/PPRO_regional-report-Asia_e-commerce_payments.pdf

Rao, S., Goldsby, T. J., Griffis, S. E. & Iyengar, D. 2011. Electronic logistics service quality (e-LSQ): Its impact on the customer's purchase satisfaction and retention. Journal of Business Logistics, 167-179. Accessed on 22 April 2019. Retrieved from https://www.researchgate.net/publication/230233395_Electronic_Logistics_Service_Quality_e-LSQ_Its_Impact_on_the_Customer's_Purchase_Satisfaction_and_Retention

Reichheld, F. F. & Schefter, P. 2000, *E-loyalty : Your secret weapon on the web. Harvard Business Review, 78, 105*. Accessed on 22 April 2019. Retrieved from https://hbr.org/2000/07/e-loyalty-your-secret-weapon-on-the-web.

Ring, L. J. & Tigert, D. J. 2001. *Viewpoint: The decline and fall of internet grocery retailers*. International Journal of Retail & Distribution Management, 29, 6, 264-271.

Tavakol, M. & Dennick, R. 2011. Making sense of cronbach's alpha. International Journal of Medical Education, 2, 53-55. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28029643.

The truth about online consumers, 2016. Page on KPMG's website. Retrieved from https://www.google.com/search?q=KPMG%E2%80%99s+international+survey%3A+%E2%80%9CThe+truth+about+online+consumers&rlz=1C1CHBF_enFI798FI798&oq=KPMG%E2%80%99s+international+survey%3A+%E2%80%9CThe+truth+about+online+consumers&aqs=chrome..69i57.1122j0j4&sourceid=chrome&ie=UTF-8

Timmers Paul. 1999. *Electronic commerce - strategies and models for business-to-business trading.* John Wiley & Sons Ltd., Chichester, West Sussex, England, 8, 1, 1-6. Accessed on 21th April 2019. Retrieved from http://scholar.dkyobobook.co.kr/searchDetail.laf?barcode=4010022848676.

Venkatesh Viswanath, Michael G. Morris, Gordon B. Davis & Fred D. Davis. 2003. User acceptance of information technology: Toward a unified view. MIS Quarterly, 27, 3, 425-478. Retrieved from https://www.jstor.org/stable/30036540.

Vietnamese prefer offline payment for online shopping, 2018. Page on Tuoitrenews' s website. Retrieved from

https://tuoitrenews.vn/news/business/20181017/vietnamese-prefer-offline-payment-for-online-shopping/47190.html

Vietnam to see strong development of convenience stores, 2019. Page on Vietnamplus's website. Retrieved from

https://en.vietnamplus.vn/vietnam-to-see-strong-development-of-convenience-stores/149246.vnp

Wang, X., Zhan, L., Ruan, J. & Zhang, J. 2014. *How to choose "last mile" delivery modes for e-fulfillment.* Mathematical Problems in Engineering, 2014. Accessed on 22 April 2019. Retrieved from https://search.proquest.com/docview/1552695376.

Wohlrab, J., Harrington, T. S. & Srai, J. S. 2012*. Last mile logistics evaluation - customer, industrial and institutional perspective*. Cambridge University Press, 5.

Worldwide Retail and Ecommerce Sales: eMarketer's Updated Forecast and forecast through 2019, 2016. PDF document on UPS's website. Access on 13 May 2019. Retrieved from https://www.ups.com/assets/resources/media/knowledge-center/eMarketer_eTailWest2016_Worldwide_ECommerce_Report.pdf

WIGAND, R. T. 1997*. Electronic commerce: Definition, theory, and context*. The Information Society, 13, 1. Retrieved from http://www.tandfonline.com/doi/abs/10.1080/019722497129241.

Xu, M., Ferrand, B. & Roberts, M. 2008. *The last mile of e-commerce unattended delivery from the consumers and eTailers perspectives*. International Journal of Electronic Marketing and Retailing, 2, 1, 20-38. Retrieved from https://www.researchgate.net/publication/245528181_The_last_mile_of_e-commerce_-_Unattended_delivery_from_the_consumers_and_eTailers'_perspectives.

Yuen, K. F., Wang, X., Ng, L. T. W. & Wong, Y. D. 2018. An investigation of customers' intention to use self-collection services for last-mile delivery. Transport Policy, 66, 1-8. Retrieved from https://www.sciencedirect.com/science/article/pii/S0967070X17306169.

Appendices

Appendix 1.   Survey Questions

Part I. General info

1. What is your gender?

    a. Female

    b. Male

2. What is your age?

    a. Below 20

    b. From 20 to 35

    c. From 35 to 50

    d. Above 50

3. What is your current occupation?

    a. Student

    b. Public service employee

    c. Private organization employee

    d. Self-employed

    e. Freelancer

4. What is your online shopping frequency

    a. 1 or 2 times per month

    b. 3 to 5 times per month

    c. More than 5 times per month

    d. I don't usually shop online

5. What are the delivery modes you usually choose?

    a. COD (Cash-on-delivery)

    b. Order online and pick-up online at the store

    c. Pick-up orders at the post office or service point

6. What problems you usually encounter with home delivery?

    a. Waiting for shipper at home

    b. Not-at-home when order arrived

    c. Lack of order visibility

	Factors	Strongly Disagree (1)	Disagree (2)	Neither Agree nor disagree (3)	Agree (4)	Strongly Agree (5)
	Relative Advantage					
1	I think CDPs are advantageous					
2	I can pick up my order at the time which is convenient for me					
3	It improves my overall delivery experience					
4	I have better visibility of my order					
5	It's a more environmental friendly option (parcel consolidation, reduce re-shipping trip)					
	Compatibility					
6	CDPs fits my lifestyle (not at home regularly, value home privacy)					

7	It fits my needs					
8	It's the way I like to receive my parcel					
	Ease of use					
9	I find the process to receive my parcel at the pick-up point is clear					
10	I believe I can learn how to use CDPs easily					
11	It takes a less effort for me to CDPs					
12	I am fully capable of using the CDPs					
	Perceived Risk					
13	I'm concerned about paying online before receiving orders					
14	I can have difficulty in returning the parcel					
15	I can't open the package and check my order at the spot					

16	I spent more time travelling to CDPs than waiting at home					
	Intention to use CDPs					
17	I will look for more information about CDPs					
18	I will try using it in the future					
19	This is my favorite mode of delivery					
20	I will recommend CDPs to my friend and relatives					

Questions are adapted from Yuen et al. 2018 and Matthew et al. 2005

Appendix 2   Interview questions

1. Do you shop online frequently?
2. What is the mode of delivery that you usually use? Have you ever heard of Collection and Delivery Point Service
3. Have you experienced any inconvenience or problems with the current delivery modes? If yes, what is it?
4. Are you clear about the use of CDPs? What are your main concern or unclear points towards it?
5. Do you prefer CDPs over home delivery? Why/ Why not?

6. What do you think is the main benefits of CDPs?

7. What could make you choose CDPs over home delivery?