LAMK
Lahden ammattikorkeakoulu
Lahti University of Applied Sciences

LAST-MILE DELIVERY FOR E-COMMERCE IN VIETNAM

Current situation and future challenges

LAHTI UNIVERSITY OF APPLIED SCIENCES LTD
Bachelor of Business Administration
Degree programme in International Business
Autumn 2019
Thao Hoang

Abstract

Author	Type of publication	Published
Thao Hoang	Bachelor's thesis	Autumn 2019
	Number of pages 63 pages, 6 pages of Appendices	

Title of publication

Last-mile delivery for e-Commerce in Vietnam
Current situation and future challenges

Name of Degree

Bachelor of Business Administration

Abstract

As a result of the global expansion of the Internet, e-Commerce has changed the way we shop, as well as other aspects of our daily lives. Many services including logistics changed themselves to adapt to the high demands of e-Commerce consumers. This thesis employs a deductive approach and analyses both qualitative and quantitative data to answer two research questions: **"What is the current situation of last-mile delivery for e-Commerce in Vietnam?"** and **"What are the potential challenges for the development of last-mile delivery service in Vietnam?"**.

The theoretical part of the thesis discusses the concept of both e-Commerce and last-mile delivery. Secondary data from published books, market reports and certified internet sites are collected and analysed to give an overview of the thesis objectives.

On the other hand, the empirical part presents an empirical study concerning Vietnamese e-Commerce end-consumers. The author conducts an online survey and distributes it among different groups of potential Vietnamese e-Commerce consumers. The survey collects primary empirical data by focusing on examining their experience with e-Commerce last-mile delivery.

The findings of the study provide information about the current situation and the future challenges of last-mile delivery for e-Commerce in Vietnam. Last-mile delivery for e-Commerce is witnessing its fastest-growing phase since adopted to Vietnam in the 2010s.

In general, the current service can cover the majority of the Vietnamese market demands by operating smooth deliveries in a nationwide network. However, its disadvantages are undeveloped infrastructure, pre-dominance of basic delivery and payment methods such as attended home delivery and COD payment. The mismatch between the customers' expectations and the market's immaturity is considered as the most significant challenge of this industry. After discussing the pros and cons of last-mile delivery for e-Commerce in Vietnam, the thesis also makes suggestions for future research.

Keywords

Last-mile delivery, e-Commerce, end-consumers, delivery

CONTENTS

1 INTRODUCTION

The introduction chapter is written with the aim of providing readers an overview of the thesis topic including principal content, thesis structure and anticipated influences. The key topics discussed here are research background, thesis objectives and research questions, scope and limitations, research methodology and data collection, theoretical framework, and thesis structure.

1.1 Thesis objectives and research questions

a. Thesis objectives

The main objective of the thesis is to give an overview of the last-mile delivery for e-Commerce in Vietnam. All the assessment and analyses are aimed at showing the current situation, as well as the future challenges of this industry in the selected country.

b. Research questions

In order to accomplish the thesis objectives, two main research questions (RQ) and four sub-questions (SQ) are designed as below:

RQ1: *What is the current situation of last-mile delivery for e-Commerce in Vietnam?*

- **SQ1:** What are the main characteristics of e-Commerce in Vietnam?
- **SQ2:** What are the main characteristics of last-mile delivery for e-Commerce in Vietnam?

RQ2: *What are the potential challenges for the development of last-mile delivery service in Vietnam?*

- **SQ3:** What do e-Commerce consumers in Vietnam expect from last-mile delivery?
- **SQ4:** What are the most significant obstacles for e-Commerce last-mile delivery in Vietnam?

1.2 Scope and limitations

Firstly, this thesis is conducted to study the last-mile delivery in Vietnam, so its geographical scope is the country of Vietnam only. If there is any data related to other countries or regions, it is only used to support the research of the Vietnamese market.

Secondly, this study will only examine the last-mile delivery in Vietnam since 2016. Because the topic focuses on current situation and future challenges, data recorded before

2016 are mentioned in a limited manner. The author will also consider before giving any anticipation for the market in the future.

Thirdly, the study only focuses on the aspects regarding e-Commerce, especially B2C and B2B e-Commerce, even though last-mile delivery is also applied in other industries such as traditional commerce and traditional logistics.

Finally, only the perspectives of business, logistics service provider and end-consumer are taken into account. The viewpoints for the government and employees are partly mentioned in sub-chapter 2.3 based on the existing literature. However, they will not be examined in the empirical findings.

1.3 Theoretical framework

Figure 1 illustrates how the thesis contents are organized to answer RQs and SQs.

What is the curent situation of last-mile delivery for e-Commerce in Vietnam?

Sub-question	Theory content	Content location
• SQ1: What are the main characteristics of e-Commerce in Vietnam? • SQ2: What are the main characteristics of last-mile delivery for e-Commerce in Vietnam?	• Overview on e-Commerce • Last-mile delivery • E-Commerce and last-mile delivery in Vietnam	• Chapter 2 • Chapter 3 • Chapter 4

What are the potential challenges for the development of last-mile delivery service in Vietnam?

Sub-question	Theory content	Content location
• SQ3: What do e-Commerce consumers in Vietnam expect from last-mile delivery? • SQ4: What are the most significant obstacles for e-Commerce last-mile delivery in Vietnam?	• Vietnamese end-consumers analysis	• Chapter 5

Figure 1 Theoretical framework of the thesis

As the study attempts to learn about the current situation and future challenges of last-mile logistics for e-Commerce in Vietnam, the fundamentals of e-Commerce and last-mile delivery will be discussed in detail in Chapter 2 and 3. These chapters act as two major theoretical pillars of the thesis.

Chapter 4 presents the key characteristics of both e-Commerce and last-mile delivery in the Vietnamese market. Along with the theories in Chapter 2 and 3, it answers two research sub-questions:

- SQ1: What are the main characteristics of e-Commerce in Vietnam?
- SQ2: What are the main characteristics of last-mile delivery for e-Commerce in Vietnam?

An analysis is employed in Chapter 5 to examine the behaviour of e-Commerce end-consumers in Vietnam toward last-mile delivery service. Based on the statistical analysis, this chapter answers the last two research sub-questions:

- SQ3: What do e-Commerce consumers in Vietnam expect from last-mile delivery?
- SQ4: What are the most significant obstacles for e-Commerce last-mile delivery in Vietnam?

1.4 Research methodology and data collection

According to Kothari (2004, 8), research methodology and data collection are crucial parts of any research to unravel the theoretical research questions. Research methodology is defined by Rajasekar, Philominathan & Chinnathambi (2013, 5) as the study of methods, which are different numerical schemes, theoretical procedures and algorithms to gain knowledge. Research methods indicates how to collect and analyse data, while data collection address the origin and collection methods.

To summarize the core layers of research methodology and data collection, Saunders, Lewis & Thornhill (2009, 108) introduce the “research onion” model with six elements formulating the methodology: philosophies, approaches, strategies, choices, time horizons, techniques and methodology. Regarding the scope and purpose of this thesis, the “research onion” is narrowed down to three layers: research approach (approaches), research method (choices), and data collection (techniques and procedures). Figure 2 illustrates this applied model.

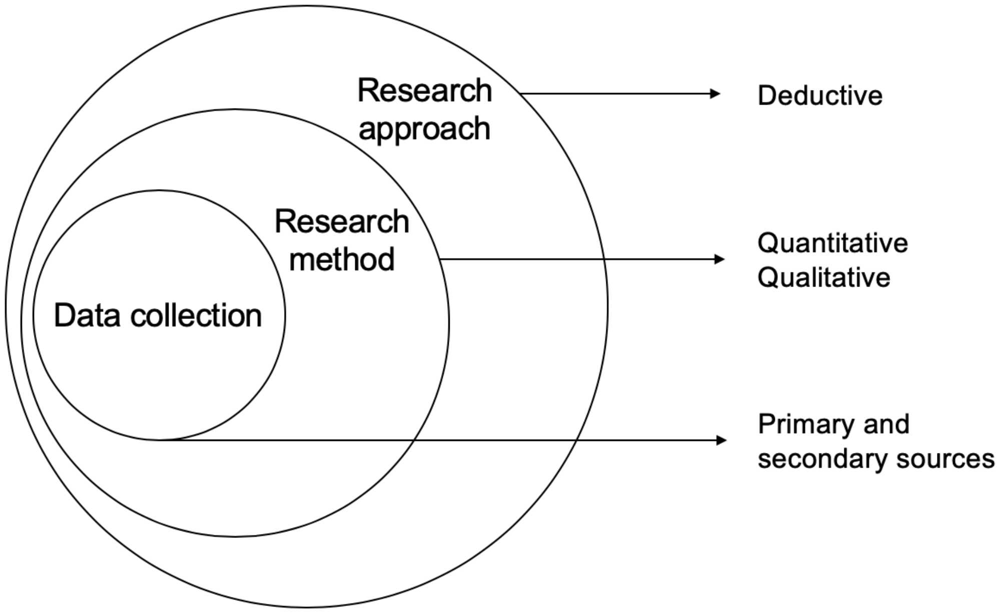

Figure 2 “Research onion” of the thesis

a. Research approach: Deductive

There are two major approaches to research which are deductive and inductive approaches. The nature of each method is opposite to the other. Deduction tests theory, which means the empirical research is conducted to verify a hypothesis or to prove a theoretical concept. A theory must be discussed and developed prior to the collection of data – theory comes first. Meanwhile, induction builds theory, which happens when different pieces of evidence are gathered and analyse to construct theories. In the inductive research method, theory comes last. (Blumberg, Cooper & Schindler 2005, 16-36; Saunders et al. 2009, 125-126.)

This thesis applies a deductive approach to proceed from general to specific. First, the theory regarding e-Commerce and last-mile logistics is presented. Secondly, a survey is conducted with various consumers in Vietnam and its results will be analysed. Finally, the final findings are concluded to answer the research questions.

b. Research method: Quantitative & Qualitative

There are two traditional research methods: quantitative and qualitative social research methods. Quantitative-oriented researches focus on data and statistics. By analysing various types of data, it addresses the questions of “what” and “how many”. On the other hand, qualitative-oriented researches tend to explore the meanings of issues and how the motivations affect the participants’ understanding and interactions toward those issues. This method attempts to answer the “what”, “how” and “why” questions. (Robson 2011, 223-227.)

However, these two methods can also be combined depending on the research questions. Especially for contemporary issues with complex research questions, complex methods are required (Tashakkori & Teddlie 2009, as cited in Brickman & Rog 2009, 283.) Quantitative and qualitative methods are believed to be on a continuum of approaches instead of dichotomous or discrete terms (Brickman & Rog 2009, viii).

Therefore, this thesis applies a mixed methodology of both quantitative and qualitative methods. Quantitative method will be employed to answer the first and the second sub-questions: *SQ1: What are the main characteristics of e-Commerce in Vietnam?* and *SQ2: What are the main characteristics of last-mile delivery for e-Commerce in Vietnam?*. In addition, qualitative method will be applied to understand the end-consumers in Vietnam e-Commerce market, thus offer a comprehensive conclusions for the third and the forth sub-questions: *SQ3: What do e-Commerce consumers in Vietnam expect from last-mile delivery?* and *SQ4: What are the most significant obstacles for e-Commerce last-mile delivery in Vietnam?*

c. Data collection: Primary and secondary sources

Data collection is the core of the research onion that refers to the techniques and procedures to gather research data (Saunders 2009, 108). There are two types of data which are primary data and secondary data. Table 1 presents the definitions, as well as basic forms of both concepts.

TABLE 1 Primary data and secondary data (Walliman 2011, 69-71)

	Primary data	**Secondary data**
Definition	Data that can be observed, experienced or recorded close to the event.	Data that is recorded or interpreted.
Basic types	Measurement, observation, interrogation, participation	Written sources from newspapers, documentaries and the Internet

The thesis will collect and analyse both primary and secondary data. To collect primary empirical data, an online survey is distributed to e-Commerce end-consumers in Vietnam to examine their experience with e-Commerce last-mile delivery. On the other hand, secondary data is referred from published books, market reports and certified internet sites.

1.5 Thesis structure

There are two major foundation constructing this: theoretical basis and empirical analysis. Figure 3 illustrates the detailed structure of this thesis.

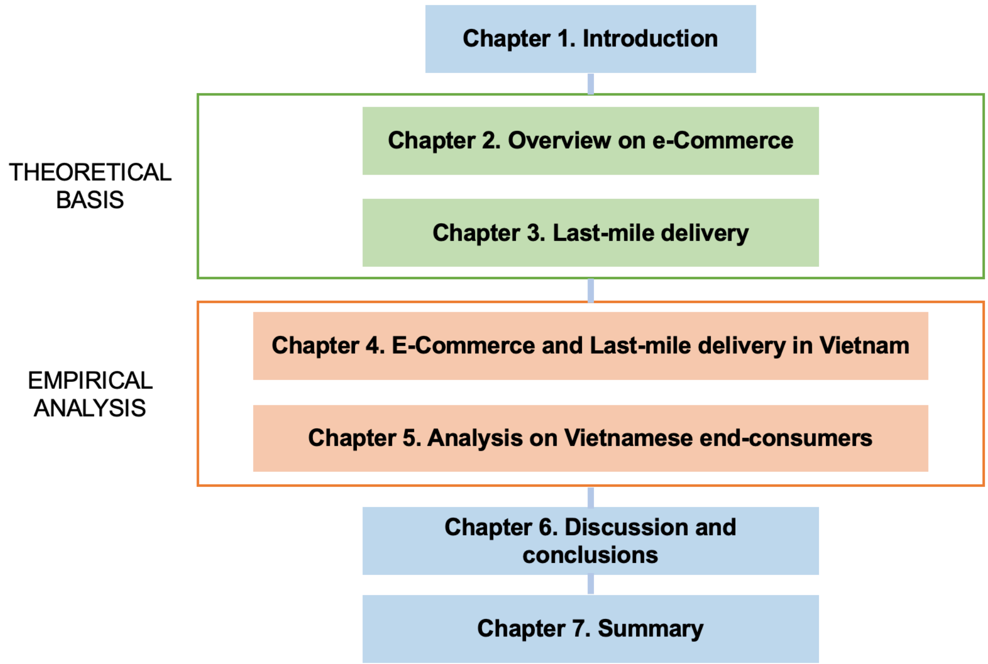

Figure 3 The thesis structure

There are seven chapters included in this thesis.

Chapter 1 gives the groundwork of the whole research. It encompasses research objectives, scope and limitations, theoretical framework, research methodology and data collection.

Chapter 2 and **Chapter 3** are theoretical basis section. Literature about e-Commerce and last-mile delivery are reviewed and analysed by secondary data. By the end of these chapter, the author aims to provide an overview of these concepts.

Chapter 4 and **Chapter 5** cover the empirical analysis of this study. Chapter 4 focuses on the current situation of e-Commerce and last-mile logistics for e-Commerce in the Vietnamese market. On the other hand, Chapter 5 examines the end-consumers to verify the current situation and to anticipate potential challenges of the mentioned market. These chapters are aimed to give answers for the sub-questions of the thesis.

Chapter 6 summarizes the findings from Chapter 2 to Chapter 5 to deliver the final answers for two research questions in Chapter 1. It also claims the validity and reliability of the thesis, as well as gives some suggestions for further studies.

Chapter 7 is the conclusion of the whole thesis.

2 OVERVIEW ON E-COMMERCE

2.1 Definition of e-Commerce

Being initially introduced about 40 years ago, the term “electronic commerce” has numerous spelling variations such as e-Commerce, E-Commerce, eCommerce and e-commerce. All of them are correct and can be chosen based on each writer’s preference. (Moore 2019.) Until now, the term has often been used to refer to buying and selling activities that happen on the Internet. People would immediately think of sales and purchases from and to websites such as Amazon, Alibaba, eBay and other online marketplaces. However, “e-Commerce” has a more complicated nature.

The Cabinet Office, a department of the UK government, broadly defines e-Commerce:

> *“Electronic commerce is the exchange of information across electronic networks, at any stage in the supply chain, whether within an organisation, between businesses, between businesses and consumers, or between the public and private sectors, whether paid or unpaid” (Cabinet Office 1999, 10).”*

According to Chaffey (2017, 13), e-Commerce includes all transactions carried out by electronic methods between an electronic business and any third parties it deals with. **Transactions** mean exchanges or interactions to conduct business. Inquiry, offer, information exchange, negotiation, contract signing, contract fulfilment, customer support and payment are all considered as forms of transaction. **Electronic methods** consist of all tools, technologies and systems that enable information to be transferred such as phone, facsimile, e-mail, electronic data interchange, computer, communication network, banking system, cryptocurrency and the Internets. By this definition, not only buying and selling activities but also non-financial transactions would be considered to be part of e-Commerce. Besides, the term “**electronic business**” comprises electricized business among all industries including governments, companies, enterprises, industrial undertakings and institutional units. (Qin 2009, 8.)

2.2 Components of e-Commerce

According to Qin (2009, 8), an e-Commerce system consists of five components: network system, e-Commerce user, certification authority, distribution centre and commercial administration. Network system is the core of e-Commerce activities. All e-Commerce components interact with each other via the network system and they are briefly illustrated in Figure 4.

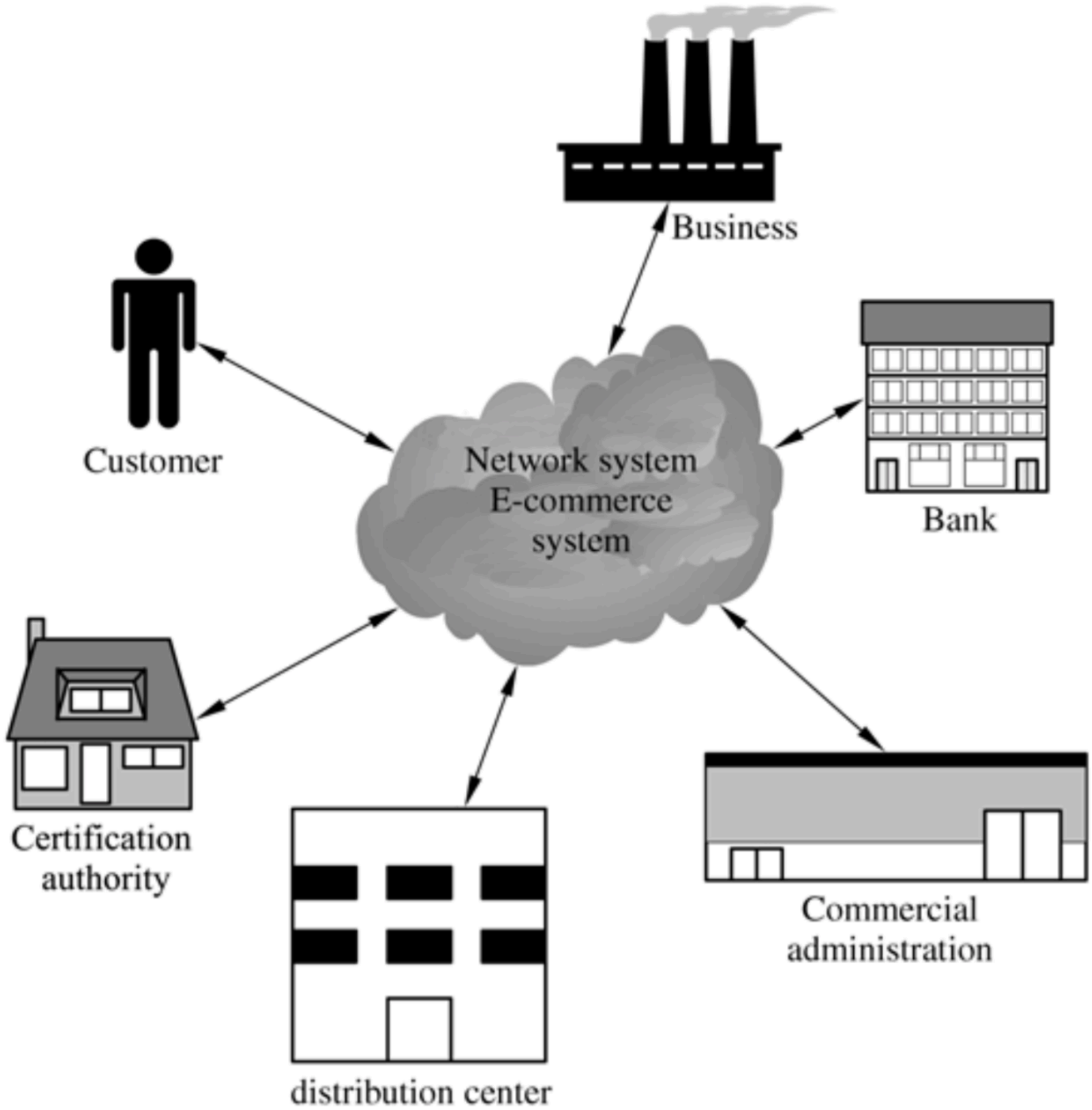

Figure 4 Components of e-Commerce (Qin 2009, 8)

The first component to define is the **Network system**. It is the element that differentiates e-Commerce from traditional commerce. The network comprises the Internet, Intranet and Extranet. Internet is the infrastructure that lets people, businesses and authorities all over the world carry information exchanges, commercial transactions via a computer network (Sample 2018). On the other hand, Intranet means a private network for companies to carry out internal affairs, while Extranet is an extended version of Intranet that allows external parties such as customers, suppliers and collaborators to access and share information (Eisenhauer 2019).

The second constituent, **e-Commerce user**, consists of personal customers and business customers (Qin 2009, 8). Both of them can access the network system to exchange information, as well as to perform trading activities.

The third one is **Certification authority**, also known as authentication authority. It is an authority that is recognized and empowered by law. Its responsibilities are issuing digital certificates, managing the uses of such certificates and facilitating enterprises to involve in online sales. (Qin 2009, 9.)

The fourth element of e-Commerce is the **Distribution centre**. It can be a warehouse or any kind of specialized building that is used to stock goods to be distributed to customers.

The last factor is the **Commercial administration**. According to Qin (2009, 9), commercial administrations are governmental departments or non-governmental organizations that are responsible for managing industry, customs, tax and trade.

2.3 Categories of e-Commerce

Considering e-Commerce, there are four groups to be taken into consideration: businesses, consumers, government and employees. These parties can interact with each other and make transactions. Based on that, we can classify e-Commerce into several categories depending on the relationship among transacting parties. Figure 5 illustrates the different categories of e-Commerce transactions.

- Business to Business (B2B)
- Business to Consumer (B2C)
- Business to Government (B2G)
- Business to Employee (B2E)
- Consumer to Business (C2B)
- Consumer to Consumer (C2C)
- Consumer to Government (C2G)
- Government to Business (G2B)
- Government to Customer (G2C)
- Government to Government (G2G)
- Government to Employee (G2E)

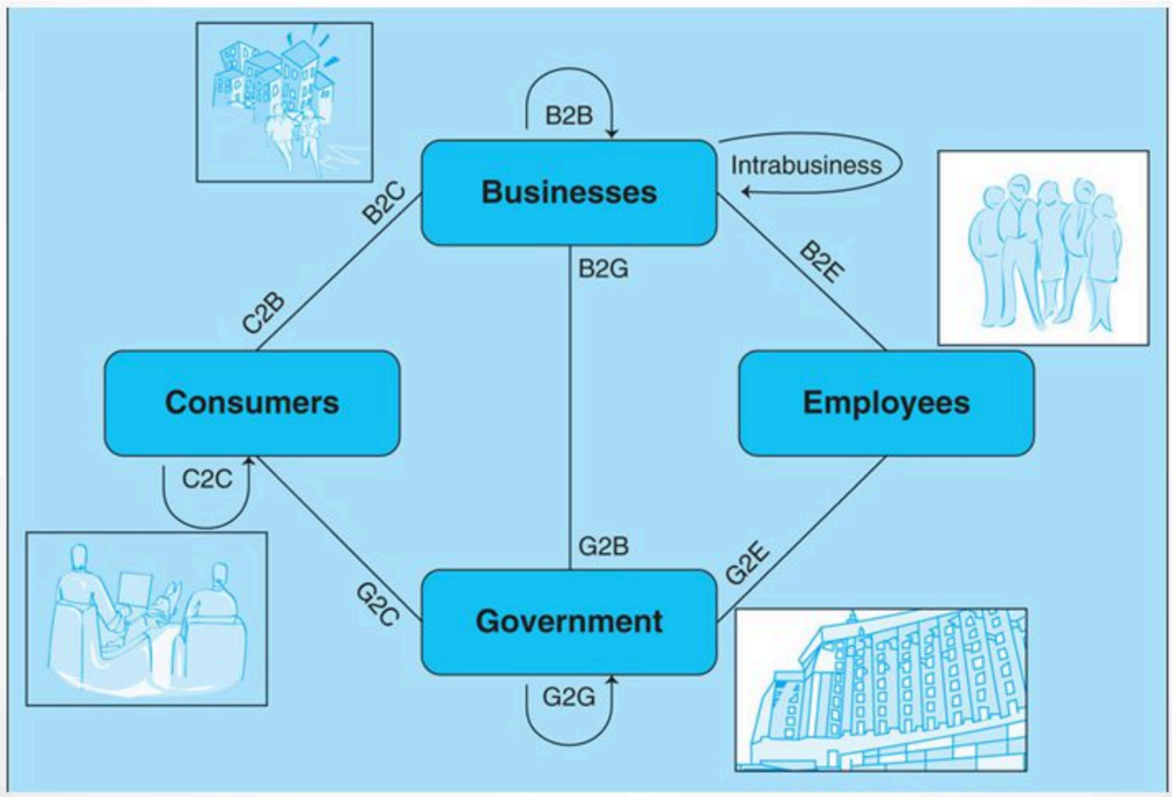

Figure 5 Categories of e-Commerce transactions (Turban, Whiteside, King & Outland 2017, 10)

a. Business to Business (B2B)

Business to Business (B2B) e-Commerce refers to electronic transactions between/among companies or organizations (Wilks 2018). Participants of this business model are retailers, wholesalers and manufacturers, who tend to trade goods and products in big volume.

According to Bonde et al. (2019), in the US, B2B e-Commerce topped $1.1 trillion in 2018, accounts for 12% of the total $9 trillion B2B sales for the year. Forrester's experts also expect that the value of B2B e-Commerce in this country will increase by 17% to reach $1.8 trillion by 2023.

The advantage of this business model is the convenient and time-saving process thanks to the application of e-technology. Moreover, by simplifying trading activities and administration, B2B e-Commerce also enhances the productivity and security of transactions among businesses.

b. Business to Consumer (B2C)

Business to Consumer (B2C) might be the most common form of e-Commerce from the consumer's perspective. B2C e-Commerce is defined as business trading activities between businesses and individual consumers via electronic transactions. This category enables businesses to develop personalized relationships and experience with their customers. (Wilks 2018.)

Thanks to the bust of the dot-com boom in the 1990s, B2C e-Commerce leaders such as Amazon and Priceline have gained great success and changed the scene of the whole industry. Since then, businesses have been able to sell directly to consumers without any middleman or retailer. Companies benefit from saving investment in physical locations, lowering prices, thus attract more customers. End-consumers can also buy cheaper products with less effort. However, the dramatic growth of this business model has threatened traditional retailers, who profited from prefer brick-and-mortar (B&M) stores. (Kelleher 2014.)

c. Consumer to Consumer (C2C)

Consumer to Consumer (C2C) e-Commerce is a business model that enables private individuals to trade goods, services and to interact with other consumers in an online environment. Trading activities are facilitated through classified or auction systems on a third-party business or platform such as eBay, PayPal, Alibaba and Craigslist. (Lim 2019.)

End-consumers benefit from the uniqueness of products and services, as well as the higher chance to own customized products according to their preference. C2C sites are also more convenient for both buyers and sellers to find each other, no matter where they are. However, lack of quality and payment controls are considerable concerns of this e-Commerce category. (Lim 2019.)

d. Consumer to Business (C2B)

Consumer-to-business (C2B) e-Commerce refers to a business model in which private individuals sell products or services to individuals and organizations on the Internet (Turban et al. 2017, 8). This business model heralds a complete reversal of the traditional e-Commerce, with those who would normally be end-consumers creating and selling products or services to businesses (Joanne 2017).

C2B e-Commerce can be considered as a disruptive model that allows companies to hire on-demand specialized talents from all over the world. People who prefer flexible workplace and desire to broaden their experience across multiple projects can also enjoy the game as they want. However, communication skills, management and payment are common issues that both sides should consider before joining this market. (Meghani 2019.)

e. Others

Besides the most common categories of e-Commerce such as B2B, B2C, C2C and C2B, there are several types of e-Commerce transactions. Each of them represents a different purchasing dynamic and contribute an important part of this market.

e-Government encompasses any categories of e-Commerce that deals with the government such as Consumer to Government (C2G), Government to Business (G2B), Government to Customer (G2C), Government to Government (G2G) and Government to Employee (G2E). In this category, information and communication technologies (ICTs) are applied to governments' portal to provide and improve services to their citizens, government agencies, employees or business. (Turban et al. 2017, 9.)

Intrabusiness e-Commerce is defined as internal communications among parties or personal parts within a given business firm over the Internet (Turban et al. 2017, 8). It is a great way for businesses to utilize and develop their value chain by offering different departments a more convenient communication method. Electronic transactions will help companies to shorten all processes, and it boosts their productivity and allows them to spend resources for other uses. (Patel 2019.)

B2E e-Commerce uses an intrabusiness network to deliver information, products and services from organizations to their employees (Turban et al. 2017, 9). Instead of focusing on consumers (as it is in B2C category) or other businesses (as it is in B2B model), B2E e-Commerce is all about employees. This model is usually applied when a company needs to automate employee-related corporate processes or communicate with their mobile staffs. In order to implement this model, companies usually use a B2E portal or an Intranet to interact with their employees. (Rouse 2010.)

2.4 Drivers and benefits of e-Commerce

Nowadays, e-Commerce is growing fast and acting as an important part of the global economy. Only in 2018, over 1.8 billion people all over the world made their purchases online, which resulted in $2.8 trillion of e-retail sales worldwide. The values of retail e-Commerce sale worldwide from 2014 to 2021 are presented in Figure 6. According to Statista, global e-Commerce sales is expected to show a growth of up to $4.8 trillion by 2021. (Clement 2019.) Thus, it is worthwhile to examine key drivers that affect directly and indirectly to the e-Commerce development, as well as the benefits that this model contributes to the economy.

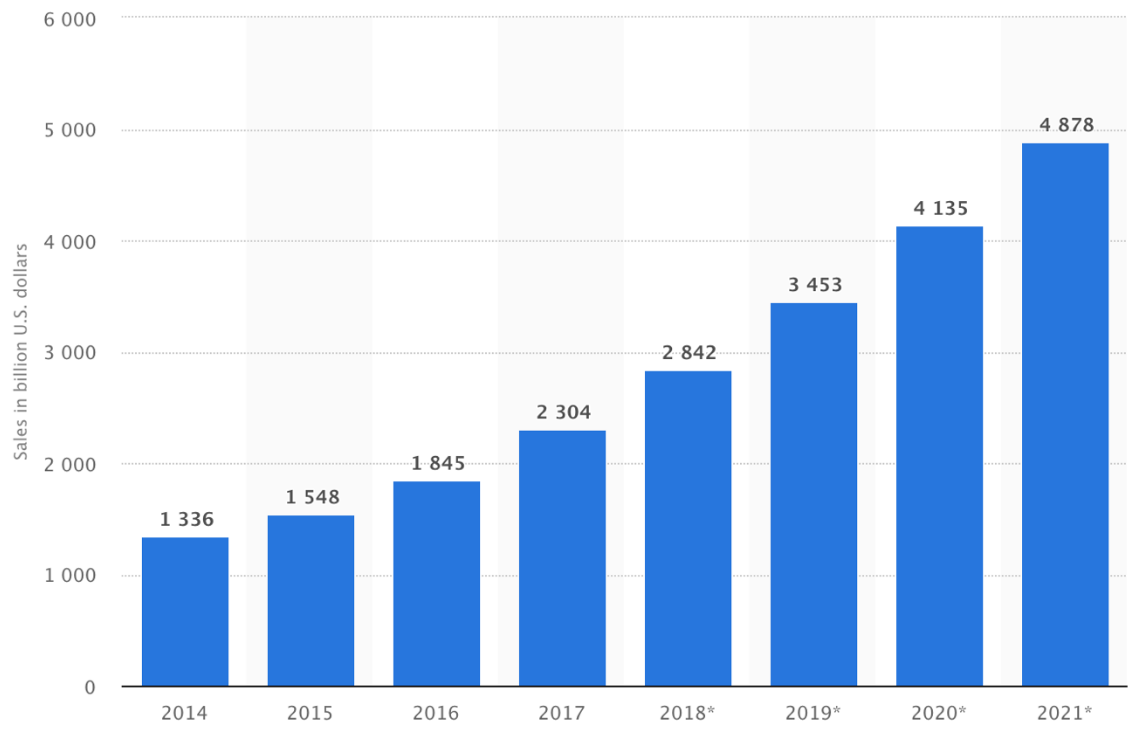

Figure 6 Global e-Commerce retail sales 2014 – 2021 (in billion USD) (Clement 2019)

a. Drivers of e-Commerce

Figure 7 below outlines the key drivers of e-Commerce. It clarifies the most influential factors that lead to the current situation and trends in e-Commerce industry.

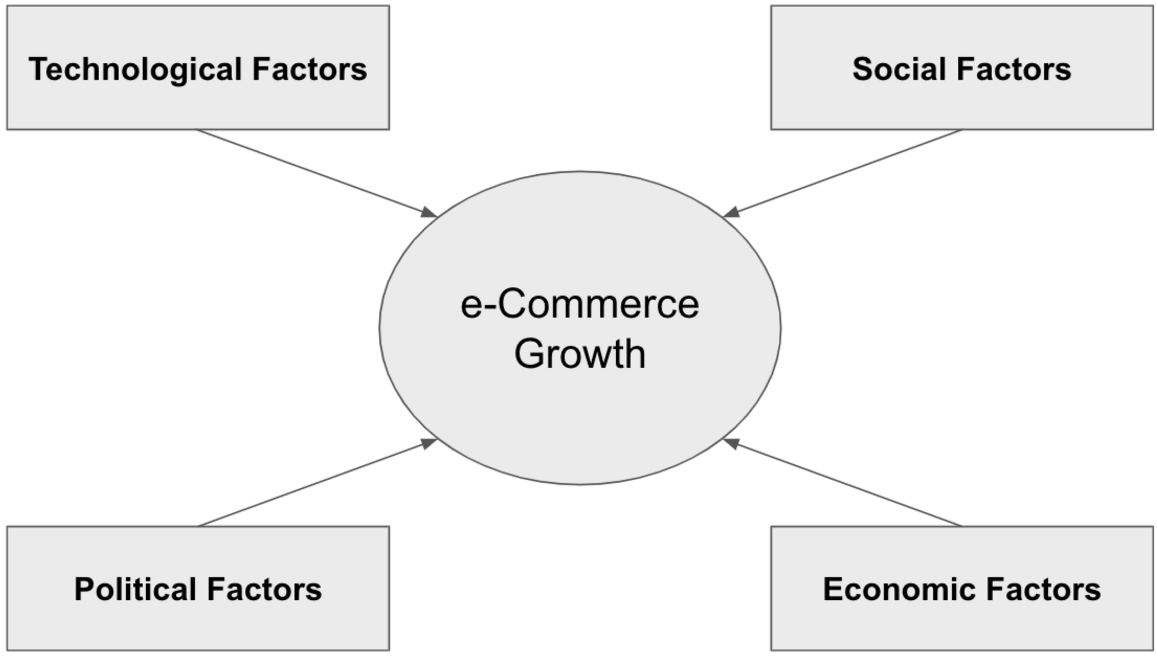

Figure 7 General e-Commerce drivers

Depending on the industry, business, and application involved, e-Commerce drivers may vary. However, generally speaking, they can be classified into four groups:

- **Technological factors** refer to all technology-related drivers such as telecommunication infrastructure, technology access and Internet availability.
- **Political factors** encompass support, rules and regulations from governments or authorities toward the adaptation of technological developments.
- **Social factors** are all about the community, which include educational level, number of Internet users, penetration rate of communication devices (PC, mobile phone, laptop, Wi-Fi)…
- **Economic factors** comprise economic situation and potentials, citizen's average income, cost of accessing telecommunication infrastructure and devices…

(Pan, Chen & Zhan 2019.)

On the other hand, there are also emerging trends and events that can be considered as driving forces of e-Commerce recently. According to a report on Business 2 Community, there are 5 key drivers:

- Rise of third-party logistics
- Penetration of mobile internet
- Increased range of payments (virtual wallet, money transfer platforms on mobile phone, local e-payment platforms…)
- Political adaption toward online trade
- Growth of Big Data.

(Suthar 2016.)

b. Benefits of e-Commerce

There are many benefits of e-Commerce that can be categorized into three groups: benefits to business, consumer, and society (Turban et al. 2017, 13). Details of e-Commerce advantages to those groups are illustrated respectively in Figure 8, 9 and 10.

Figure 8 Benefits of e-Commerce to business (Turban et al. 2017, 13)

Figure 9 Benefits of e-Commerce to consumer (Turban et al. 2017, 13)

Figure 10 Benefits of e-Commerce to society (Turban et al. 2017, 13)

3 LAST-MILE DELIVERY

3.1 The concept of Last-mile delivery

Lim, Jin, and Srai (2015) have done a synthesized analysis to give a rigorous definition to capture the mechanism of Last-mile delivery:

> *"Last-mile logistics is the last stretch of a business-to-consumer (B2C) parcel. It takes place from the order penetration point (i.e., fulfilment centre) to the final consignee's preferred destination point (e.g., home or cluster/collection point), for reception of goods."*

According to Vietnam Supply Chain Community (2017), this term is considered as "the final segment in the logistics network where finished goods are transferred to the consumer or business that ordered and purchased them". In other words, it is the last leg of the products distribution from a fulfilment centre to the customers' doorstep. General operations of Last-mile logistics are illustrated in Figure 11.

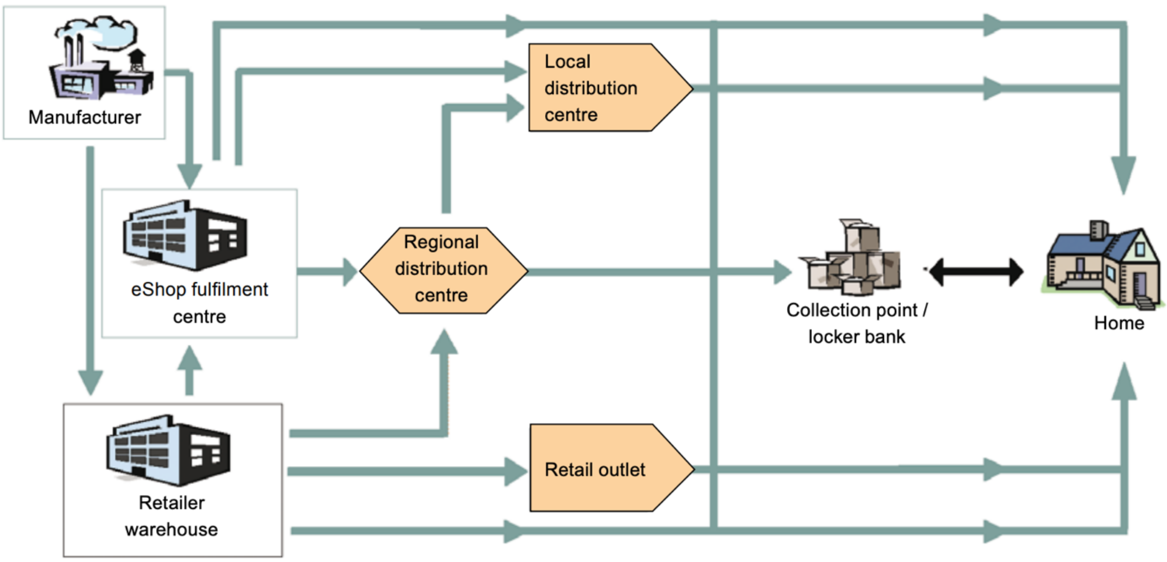

Figure 11 Last-mile logistics operations (Allen et al. 2007, 43)

First, products are distributed directly or indirectly from a manufacturer to an e-Shop fulfilment centre or a retailer warehouse. Those places are considered as the initial starting point of the Last-mile delivery process. Next, products are usually taken to another distribution centre or retail outlet before delivered to end-user customers' doorstep or collection point where they can come and pick up by themselves. Deliveries can be made either by the fulfilment centre/retailer own vehicles or by third-party logistics (3PL) providers.

3.2 Different structures of Last-mile delivery

As can be seen from the definitions, Last-mile delivery is a linear movement from the last distribution centre to the end-user consumer's place. Talking about "linear movement", there are three major forms that can be taken into consideration: Push, Pull and Hybrid (Lim et al. 2015).

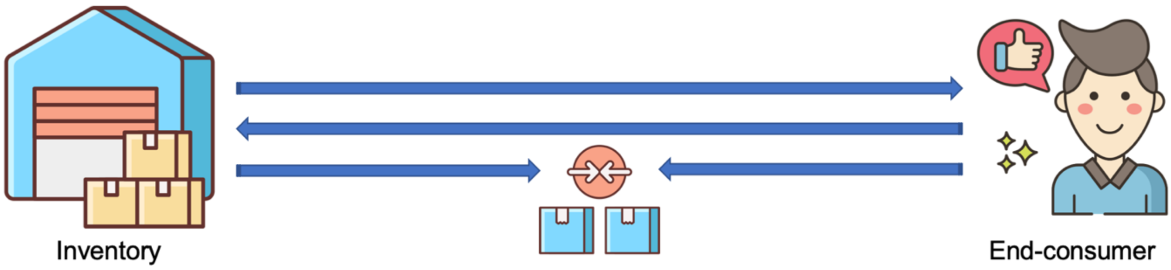

Figure 12 General flows of merchandise

Figure 12 illustrates the three general flows of merchandise. These are discussed next to give an idea of how products and services are delivered to end-consumers according to last-mile delivery.

a. Push-Centric System

The term push-centric system is used to talk about a type of movement that many people would immediately think of when it comes to delivery: products or services are pushed or sent to customers' doorstep. Retailers are responsible to fulfil the orders by choosing either in-house departments or 3PL providers to carry products to consumers' site. (Lim et al. 2015.)

There are three possible starting points of merchandise given in order from the nearest to the farthest from customers: manufacturer, distribution centre and local retail store. Each one has pros and cons regarding delivery cost, stock availability and variety, product demand rate and response time. Figure 13 presents the correlation of these factors in each case. (Lim et al. 2015.)

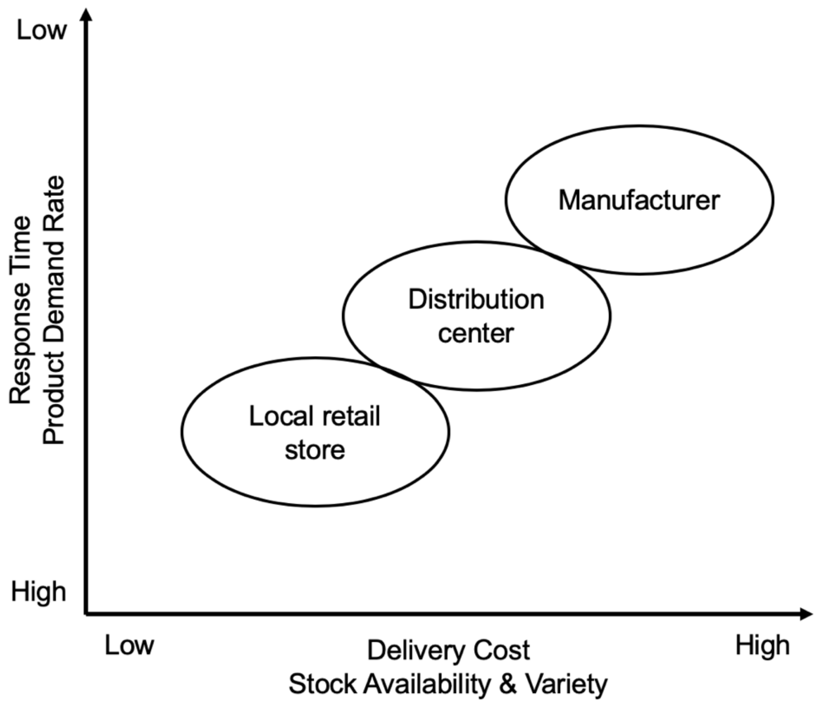

Figure 13 Paradigm of Push-Centric System

The nearer the picking site is, the cheaper it costs. A nearer picking site also results in a lower level of inventory availability and variety, but a higher product demand rate and faster response time.

b. Pull-Centric System

A pull-centric system is where consumers fulfil their own orders. What retailers do is to ensure ordered products or services are ready at the fulfilment point so that the consumer can come and pick up the product. In other words, in this system, end-user customers perform last-mile delivery by themselves. (Lim et al. 2015.)

The correlations among different characteristics are the same as in a push push-centric system, except for the response time. Since retailers are no longer responsible for last-mile delivery, this factor cannot be measured. On the other hand, customer satisfaction may also vary. A pull-centric system offers them flexibility in collecting their orders, but many consumers who prefer goods to be delivered to their door might have lower satisfaction toward this system. (Lim et al. 2015.)

c. Hybrid-Centric System

Hybrid-Centric System takes advantages of both models by involving a middle ground called collection-and-delivery point (CDP). It allows merchandises to be sent from the retailer's site to an intermediate location where consumers can fetch the parcels by themselves. This model consists of two major categories: attended CDPs and unattended CDPs. (Lim et al. 2015.)

Customers and retailers may choose which method to use depending on the characteristics of each category such as order quantity, market density and operational efficiency. More details about attended and unattended CDPs are discussed in section 3.3.

3.3 Last-mile logistics solutions

a. Attended CDPs

Also known as services points, attended CDPs refer to existing premises where customers are able to fetch and send their parcels with staff presence. The most common types of this category are:

- B&M stores that owned by e-Commerce companies
- B&M stores that owned by their partners
- Collection points: postal offices, convenience stores, gas stations.

Besides being a place for customers to pick up and send their parcels, attended CDPs also provide related services such as parcel payment, collection, and return. These additional services are carried by the store personnel and can only be done with customers' presence at the CDP. (Hellstrand & Karlsson 2017, 30.) Such locations often have long opening hours, and recipients can fetch their goods when they receive a notification that parcel is ready to be picked up.

This model can be applied in most areas without spending a huge initial investment. It also improves drop density by reducing delivery locations. However, some consumers may find it is time-consuming a be afraid to use this solution.

The advantage of this delivery option is that customers are fully assisted not only in the fetching process but also in other services as listed above. The due date to pick up the shipments may last from 7 to 60 days and most CDPs have fixed opening hours, so consumers can proactively arrange their time. In addition, this model can be applied in most areas without spending a huge initial investment. It also improves drop density by reducing delivery locations.

However, attended CDPs also shows some disadvantages. According to Xu et al. (2008), among same-day, next-day and multi-day delivery, the first option is the hardest one to fulfil since it requires e-Commerce companies to have an inventory available in nearly every local market throughout their shipping map, which equivalents to expensive operation. Next-day and multi-day delivery seems to prevail in this situation. However, whichever is chosen, they cause the same inconvenience of requiring recipient's presence.

On the other hand, many online retailers apply hourly delivery window, which means parcels are only delivered in certain time slots. According to surveys from ISOTrack (2003) and DTI (2001), the majority of internet shoppers wants their goods to be delivered between 6:00 PM and 8:00 PM from Thursday to Sunday. Uneven time slots are likely to happen and cause large demands of delivery for a limited period. This issue results in a low capacity of the delivery fleet for 80% of the day while for the rest, they must run at full or over capacity. Overall, besides apparent advantages, attended CDPs face two major problems which are "not-at-home" and "uneven time slots".

b. Unattended CDPs

In contrary to the former one, unattended CDPs indicate CDPs where consumers can pick up and send their parcels independently. This model can offer alternative solutions to solve "not-at-home" and "uneven time slots" problems of attended CDPs. In the beginning, parcels shipments that apply unattended delivery are often left on customers' doorstep, or in their garden which are not secured, especially with perishable or high-value shipments (Xu et al. 2008). This writing, on the other hand, only focus on secured unattended CDPs delivery solutions, which are:

- **Home access system:** The delivery person is given access to a building, a garage, a shed or other outhouse of recipient to drop off shipments (Allen et al. 2007). According to Rowlands (2001), this solution could cut down drop-off time from 10 minutes to 4 minutes, thus achieves 84 % higher in productivity compared to attended home delivery. However, security always needs to be considered carefully when applying this model.
- **Reception box:** It is a box or a set of boxes that is fixed permanently outside the consumer's house or department. Delivery person also has access to this box by key or security code.

  There is virtually no failed delivery using this model. 3PL only has to drop the parcels at recipient's reception box and doesn't have to redeliver at all Thus, it significantly reduces operating costs, lowers the number of failed deliveries, as well as contributes to planning and routing optimization. Customers also benefit from having their parcel delivered to right in front of their house, so they can come and pick them up quickly yet easily. Nonetheless, installation cost has avoided reception box from being widely used. It costs a lot to build and to install any reception box system, and 3PL may face loss if customer's do not use this service regularly.

- **Delivery box:** Basically, it is quite similar to the reception box. But in this model, boxes belong to the delivery company or the retailer. The delivery person brings a delivery box to customer's doorstep and collects the empty box later, while the customer is given access to open this box, pick up and/or return goods within a permitted period of time.
  This solution also has the same advantages as reception box: better planning optimization, lower delivery cost, shorten shipping time and nearly no failed/re-deliveries. Besides, since delivery boxes are portable, they have lower installation and operating costs compared to reception boxes, thus gain carriers' interest. Nevertheless, customers may not prefer this one as much as reception box because of the shorter payback period.

(Das & Fianu 2018, 42.)

More details regarding different aspects and characteristics are summarized in Table 1.

TABLE 1 Comparison of different last-mile delivery solutions

	Collection point	**Home access system**	**Reception box**	**Delivery box**
Carrier	Consumer	3PL	3PL	3PL
Delivery time	Collection point's opening hours	3PL's opening hours	3PL's opening hours	3PL's opening hours
Pick-up time	Collection point's opening hours	24/24, based on consumer's preference	24/24, based on consumer's preference	24/24, based on consumer's preference
Retrieval time	Short/long, depends on the agreement of involving parties	Short/long, depends on the agreement of involving parties	Quite short	Very short
Drop-off time	Very short	Very short	Pretty short	Pretty short
Initial investment	Low to Medium	Medium	High	Medium
Delivery cost	Lowest	Lowest	Low	Low

Possible problem	In some situations, consumers must travel to pick up their parcels	In some situations, consumers must travel to pick up their parcels	Boxes are demanded with large quantity, which is expensive	Carriers need to collect boxes

3.4 How Last-mile delivery impacts e-Commerce

Customers can never be satisfied experiencing e-Commerce without speedy and convenient last-mile logistics. A survey by the National Retail Federation (NRF) shows that 40% of online customers in the United States rated e-Commerce companies based solely on the delivery experience (Rjeb 2018). Another survey also states that 55% of end-consumers declare they will abandon a retailer with which they had poor or failed delivery experience (Vaast 2017). When the quantity of e-Commerce consumers is fast growing, last-mile delivery also becomes more important and acts as powerful leverage for any e-Commerce business. This section aims to present the most common impacts for businesses caused by the emerging of last-mile delivery.

a. Infrastructure

e-Commerce customers always expect their parcels to be sent a prompt and efficient way. Therefore, this requirement poses an issue for infrastructure systems throughout the supply chain including transportation and warehousing system. Poor transportation infrastructure is likely to cause long delivery time and inefficient route, while poor warehousing operation might result in spoiled products, high costs and time-consuming fulfilment. In many areas, especially developing countries, poor infrastructure is not a new issue and it inevitably takes time to improve their system comprehensively.

b. Customers' demand

The more efficient last-mile delivery is, the more demand consumers will have. How businesses perform the last leg of products' trip will directly affect their total sales (as 55% of end-consumers will abandon a retailer offering poor delivery experience). Then what consumers expect? First, the most basic requirements are short delivery time (especially same-day or on-demand delivery) and guaranteed parcels integrity. Second, they expect innovative, flexible solutions, as well as customized services. Third, convenience in both online and offline experiences are also highly demanded because of the emerging of breakthrough technologies. Last but not least, consumers expect such requirements to be fulfilled as many as possible.

On the other hand, customers' demand is also a conundrum for small and medium enterprises (SMEs). From the buyers' perspective, consumers tend to have the same expectation toward delivery service from all e-retailers. However, while big companies such as Amazon or Alibaba can make use of their abundant resources, SMEs with limited capacities are more likely to find it is difficult to match customers' expectations. (Rjeb 2018.)

c. Operating costs

Cost is obviously not a new issue to any businesses including e-Commerce companies. Research shows that 28% of a business' total delivery cost comes from last-mile logistics, which means last-mile delivery has a huge impact on the operating costs of any retailer (Bringg Team 2016). Any problem or unexpected situation regarding last-mile delivery (late deliveries, spoiled parcels, accidents during transit, retired drivers, untrustworthy 3PL partner, etc.) may cause companies a huge loss. Thus, they are urged to optimize last-mile delivery so it will not cause any negative impact on the bottom line.

4 E-COMMERCE AND LAST-MILE DELIVERY IN VIETNAM

4.1 e-Commerce in Vietnam

a. Overview of Vietnam's digital landscape

Figure 14 shows that since connected to the Internet in November 1997, Vietnam has witnessed a tremendous growth in the quantity of national Internet users. There are approximately 52 million Internet users nationwide in 2017, accounting for 54% Internet penetration rate of that year. This index is even higher than the global average one which is around 46.5%. (EVBN 2018, 14.)

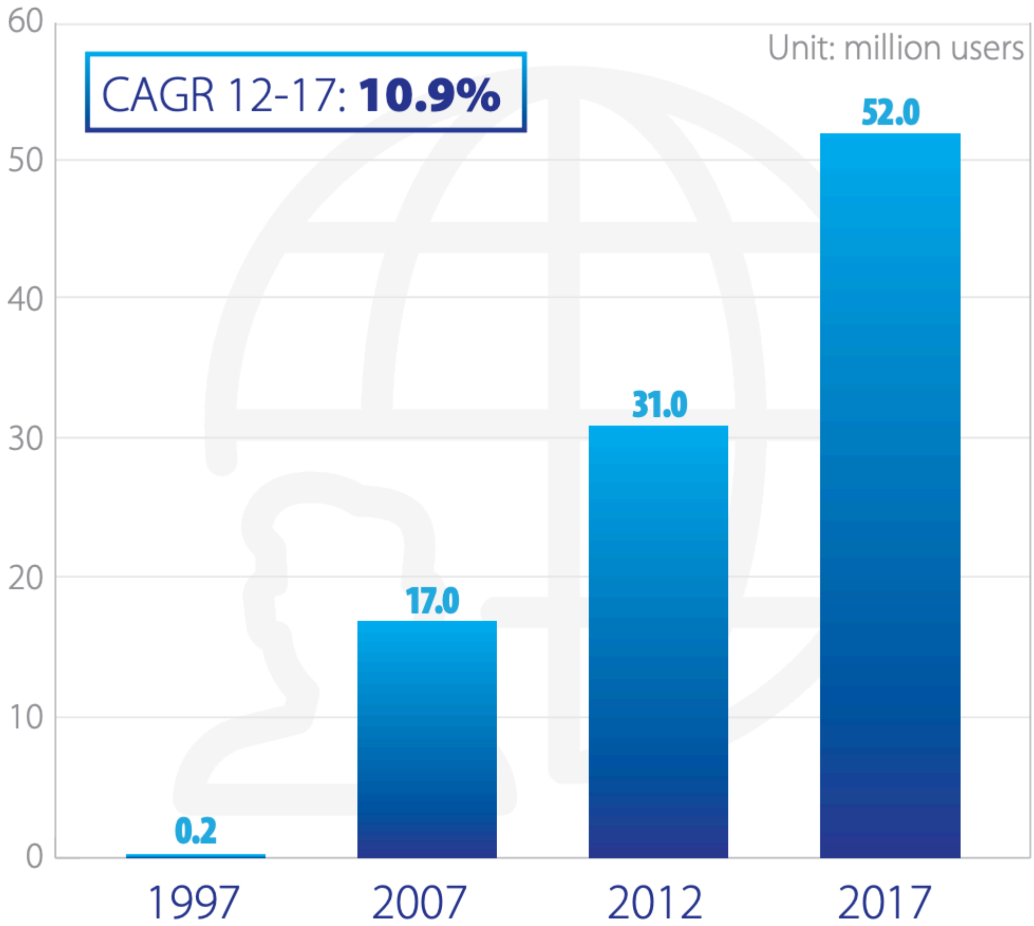

Figure 14 Internet users in Vietnam during 1997 – 2017 (EVBN 2018)

Latest reports from We Are Social about Digital in 2018 in Southeast Asia and worldwide also show that most of Vietnam's key digital statistics indicators are above the global average. Figure 15 and Figure 16 illustrate Vietnam's and the world's Internet, mobile and social media users in 2018. It can be seen that Vietnam's Internet penetration rate climbed up to 67%, 14% higher than the global Internet penetration rate of the same year and 15% higher than that of 2017. Except urbanisation rate, all the remaining indices of Vietnam are about 10% higher than the world average. These numbers also put Vietnam at the top of Asian countries regarding Internet penetration, as well as promise a continual growth at a fast pace of this industry.

Figure 15 Vietnam’s Key Digital Statistical Indicators (We Are Social 2018a)

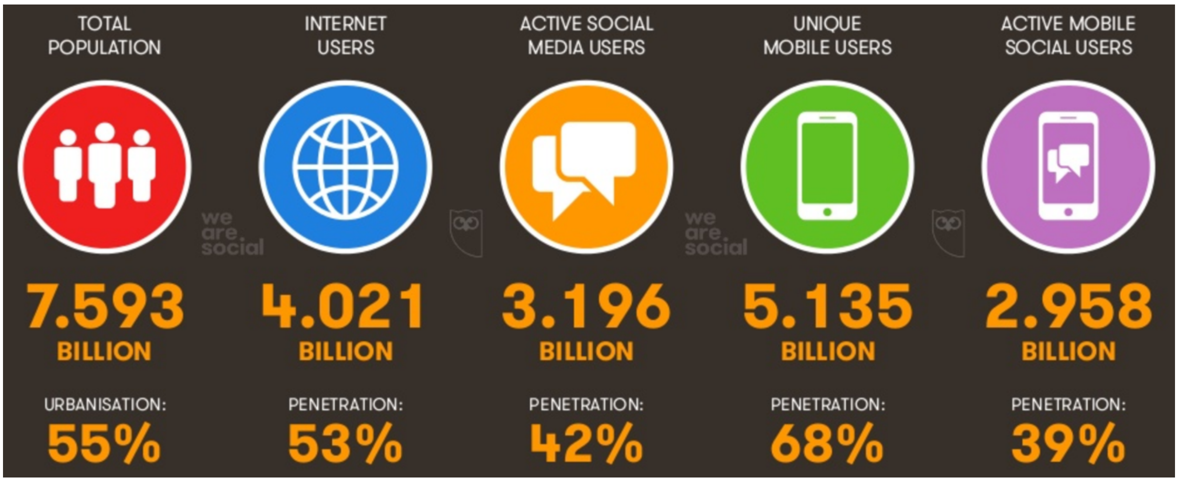

Figure 16 Global Key Digital Statistical Indicators (We Are Social 2018b)

The main reasons for the positive statistic numbers are low cellular data cost, flexible bandwidths services and widely enabled accessibility to the Internet (EVBN 2018, 14). e-Commerce companies in Vietnam should be aware and get these advantages to convert Internet users into potential consumers.

On the other hand, smartphone penetration is considered as a new game changer in this market. From 2013 to 2017, Vietnam has seen an upturn in smart devices ownership. A research of Google about smartphone penetration shows that 72% of Vietnamese population own at least one smartphone (EVBN 2018, 14). And with smart devices becoming more and more popular, consumers also gradually change their behaviour in online shopping.

According to EVBN Vietnam Retail Market Study (EVBN 2018, 15), the Vietnam retail industry consists of three main categories: traditional retail, modern retail and online retail. Figure 17 below briefly illustrates the major models of each category. Among which, online retail or e-Commerce is the main subject of this paper and the most popular sub-categories of it will discuss shortly in this section.

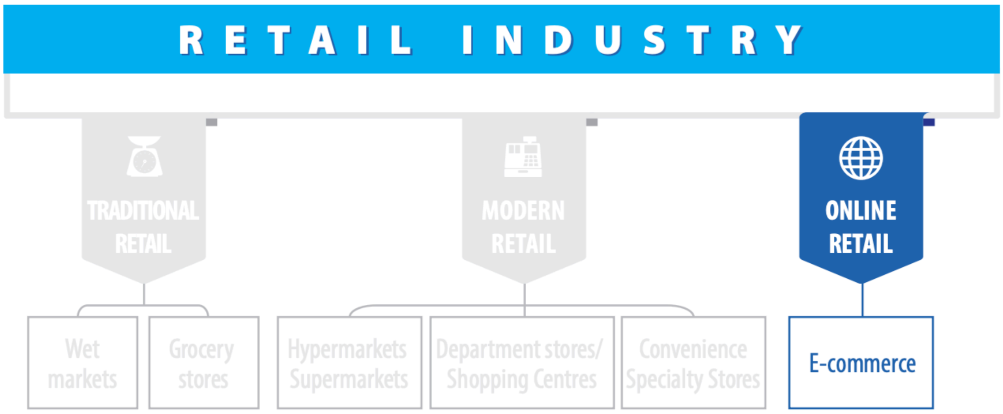

Figure 17 The structure of Vietnam retail industry (EVBN 2018, 15)

According to the Department of E-commerce and Information Technology, the turnover of e-Commerce in Vietnam in 2016 reached approximately $5 billion, increased 20% compared to 2015 and accounting for about 4% of nationwide total retail sales (VECITA 2017, 25). Figure 18 shows the value and of proportion of e-Commerce in total retail industry value during 2013 – 2020f.

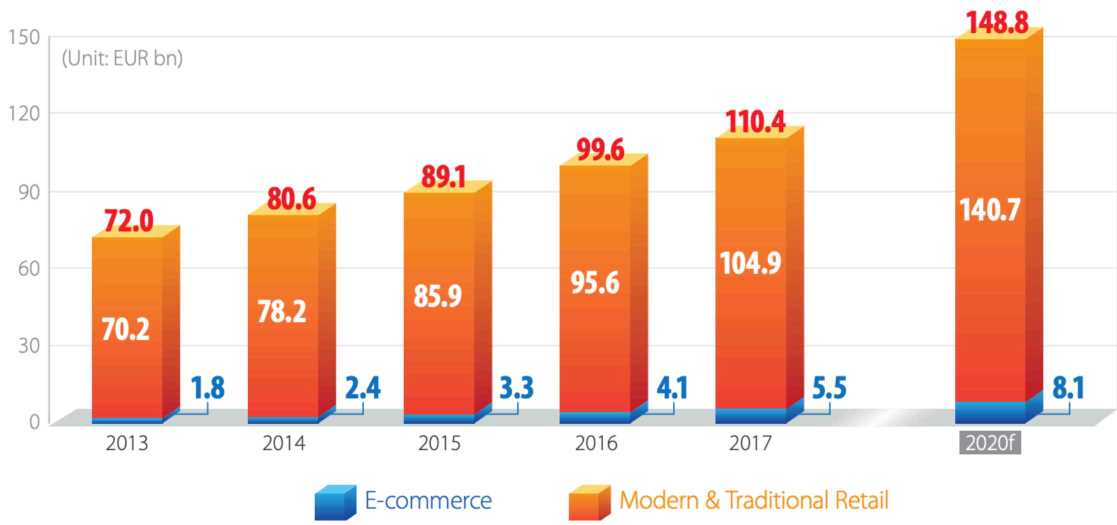

Figure 18 Correlation of e-Commerce and total retail industry value in Vietnam during 2013 – 2020f (EVBN 2018, 16)

As can be told from Figure 18, e-Commerce only accounts for small market shares compared with traditional retail segments. However, the digitally savvy young population is expected to promote mobile penetration, along with promising purchasing power and modern technology application. It means that there will be a plenty of opportunities for e-Commerce businesses to leverage in the Vietnamese market.

b. Consumer perception

It is undeniable that consumer perception is one of the major factors that directly affect the growth of e-Commerce. Vietnam E-commerce and Digital Economy Agency (VECITA)'s report in 2017 mentions what consumers care and why they are afraid of taking part in online shopping. Figure 19, 20 reveal the exact statistics of these issues from Vietnamese consumers' perspective based on a research of VECITA in 2017.

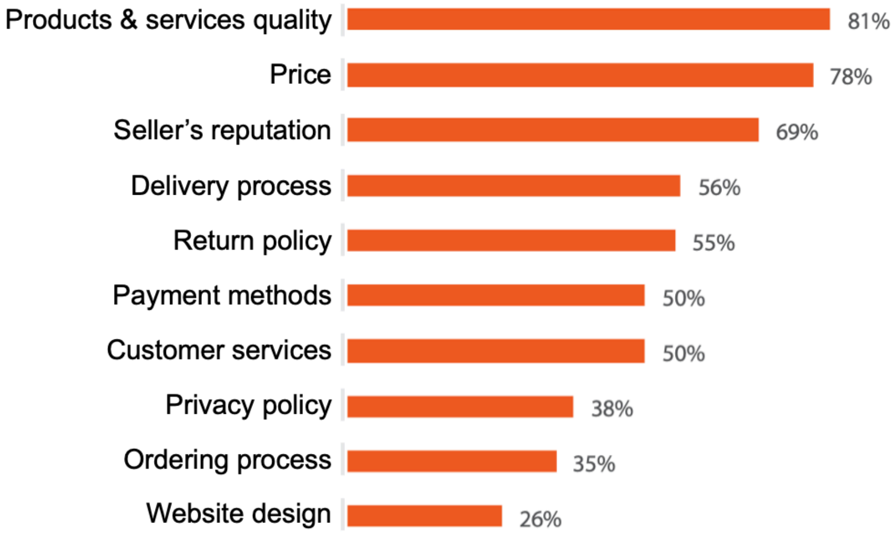

Figure 19 Factors that consumers care about when shopping online (VECITA 2017, 33)

Figure 20 Reasons why people do not want to shop online (VECITA 2017, 35)

Both figures indicate that product/service quality is the very first thing that most online shoppers care about. Approximately 80% of consumers being worry about the real quality of online products means that Vietnamese consumers are lacking trust of retailers. The year 2016 witnessed a surge of trust issues when 50% of consumers decide not to do online shopping because they are unsure about products quality. This number is 2.5 times compared to 20% in 2015 and should be marked as a red sign for e-Commerce businesses. Closely followed are the consideration of price, seller's reputation, delivery process and privacy. Comparing to the obstacles in Figure 20, the concerns listed in both figures are mostly the same. Thus, they must be considered as major factors that hinder the growth of e-Commerce in Vietnam. E-Commerce businesses should always update and take care of what their customers want to adapt accordingly.

c. Most popular e-Commerce websites in Vietnam

Learning about top players in a market is an effective way to understand its nature. Based on statistics of iPrice insight, top 10 most popular e-Commerce websites in Vietnam in Q2-2019 can be listed out as in Table 2.

TABLE 2 Top 10 e-Commerce websites in Vietnam in Q2-2019

Merchant	Monthly Web Visits	Type	Year of Launch	Products	Key Investors	AppStore Rank	PlayStore Rank
Shopee	38,589,400	C2C	2016	Everything	SEA Group	1	1
TIKI.VN	33,724,000	B2B2C	2010	Everything excluding cars and fresh groceries	JD, VNG	2	4
Lazada	28,306,700	B2B2C	2012	Everything excluding cars and fresh groceries	Alibaba Group	4	3
Sendo	28,047,300	B2B2C	2012	Everything excluding cars and fresh groceries	FPT	3	2
thegioididong	25,349,000	B2C	2004	Consumer electronics	Mobile World Investment Corporation	9	5
Điện máy XANH	10,073,700	B2C	2014	Household appliances	Mobile World Investment Corporation	10	7
FPT Shop.com.vn	9,941,600	B2C	2012	Consumer electronics	FPT	N/A	N/A
adayroi.com	7,011,200	B2B2C	2015	Everything excluding cars and motorcycles	Vingroup	6	6
cellphoneS	6,300,900	B2C	2007	Consumer electronics	N/A	N/A	N/A
PHONG VŨ	4,026,200	B2C	2007	Consumer electronics	N/A	N/A	N/A

Unlike in many South East Asia countries where Lazada is a major player, the situation is a bit different in Vietnam. As can be seen from Table 2, only 2 out of 10 leading companies are parts of international companies (Shopee and Lazada VN). All the remaining competitors are local businesses, proving the dominance and the huge potential of indigenous brands.

On the other hand, it can be seen that general websites which sell almost everything is the most popular category (50%), followed by consumer electronics (40%). It indicates a stably increase of consumer demand in these categories. Besides, an active market of electronic devices such as smartphone, laptop, tablet, etc also facilitates the development of e-Commerce not only on the web platform but also on smartphones or other smart devices.

d. Unofficial e-Commerce

Another unique characteristic of B2C e-Commerce in Vietnam is the popularity of unofficial e-Commerce. It includes small to medium e-Commerce businesses on forums and social networks. When it comes to online shopping, many Vietnamese consumers would immediately think of social media platforms such as Facebook and Instagram instead of e-Commerce websites, e-marketplaces, online auction sites, etc. A report of Q&Me in 2018 states this fact by visualizing the most used e-Commerce sites in Vietnam as in Figure 21.

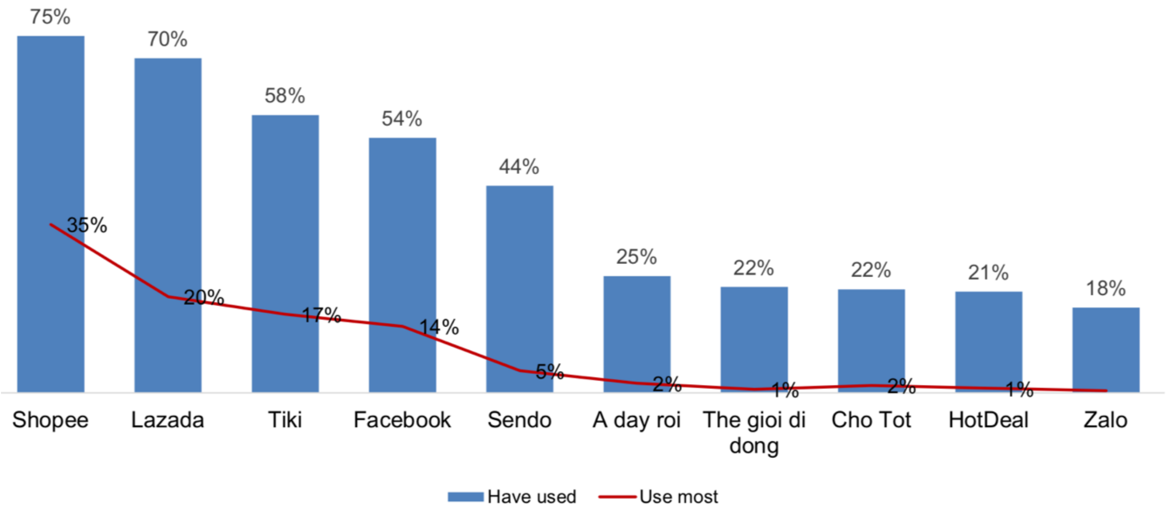

Figure 21 Popular e-Commerce sites for shopping in Vietnam (Q&Me 2018)

Among ten websites, there are two social media platforms which are Facebook and Zalo. Facebook, used by 95% of total social network users in Vietnam, also does a great job of being an e-Commerce platform. More than half of Vietnamese e-shoppers have used it to shop online, and 14% of them even name it as their most favourite channel. Followed is Zalo, which is the third most-used SNS with 91% of local social network users.

Unofficial e-Commerce in Vietnam seems to be a significant obstacle that big companies must find a way to deal with if they plan to dominate the market. There are countless individual sellers joining e-Commerce on Facebook, Zalo, Instagram or different forums. They sell nearly any kind of goods that they produce, import, or act as agents on their personal

Facebook. (Tran 2018.) Individual sellers usually offer highly customized purchasing options and services, as well as cheaper prices. In addition, consumers want a short and simple process, and unofficial stores in Vietnam are obviously more convenient to them compared to fully structured e-Commerce websites.

However, in most cases, cheap prices often come from untaxed shipments. Many stores do not register their businesses with the authorities, and Vietnamese government is still trying to manage and to tax these sellers. However, it is truly a difficulty for the Department of Taxation.

e. Payment methods

In Vietnam, the online payment landscape considerably lags behind the growth of e-Commerce industry. A research of VECITA about online payment, which is visualized in Figure 22, indicates that Cash On Delivery (COD) is still the dominant player in this market.

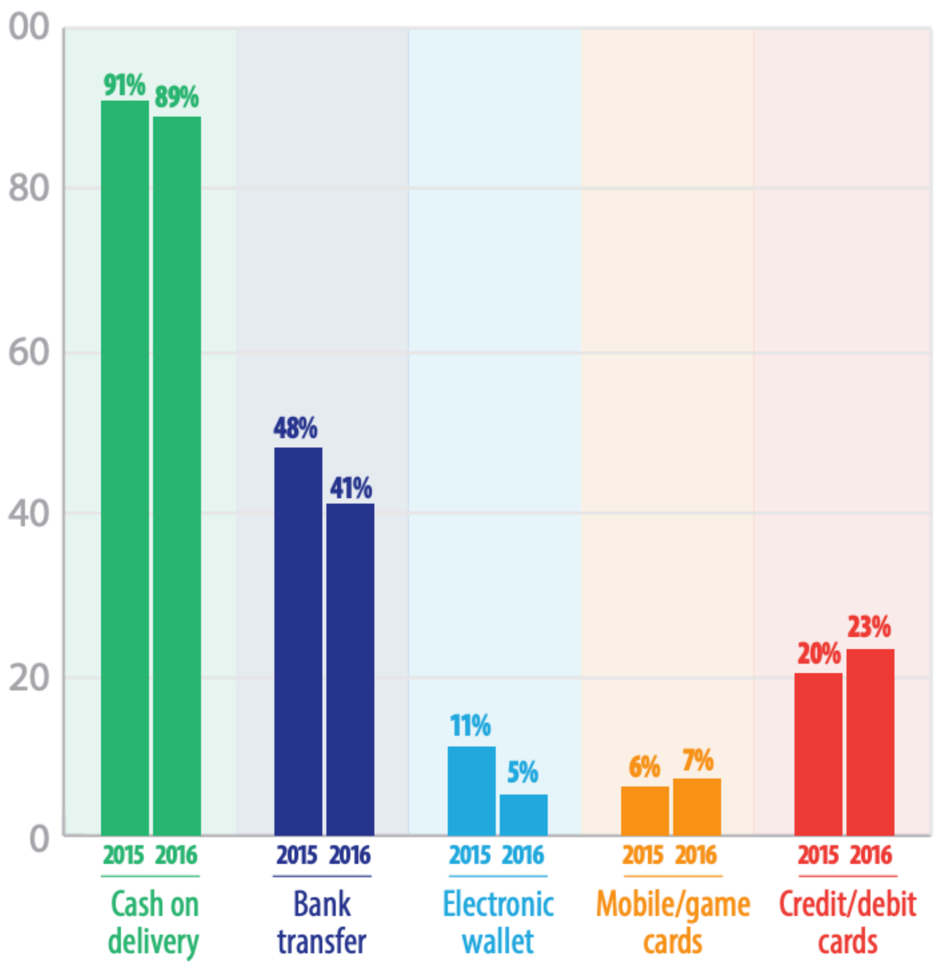

Figure 22 The most popular online payment methods in Vietnam (2015-2016) (EVBN 2018, 18)

Almost all consumers choose COD to be the preferred payment method, stated by the percentage of 91%. The second highest option, bank transfer, nearly accounts for only half of the first one. Meanwhile, other cashless options such as e-Wallet, mobile/game cards and credit/debit cards are left behind their potentials quite far, especially e-Wallet.

However, a recent survey of FT Confidential Research found that the number of urban consumers using only cash to conduct transactions in Vietnam reduced to 46% in 2019. On the bright side, it means that Vietnam government is on the right track to meet the goal of reducing cash transactions in urban areas to 50% by 2020. However, it cannot be denied that Vietnam still has a lower rate in accepting non-cash payments compared to other ASEAN-5 countries (Thailand, Philippines, Malaysia, Indonesia). Figure 23 reveals the percentage of consumers that prefer COD in such countries in details.

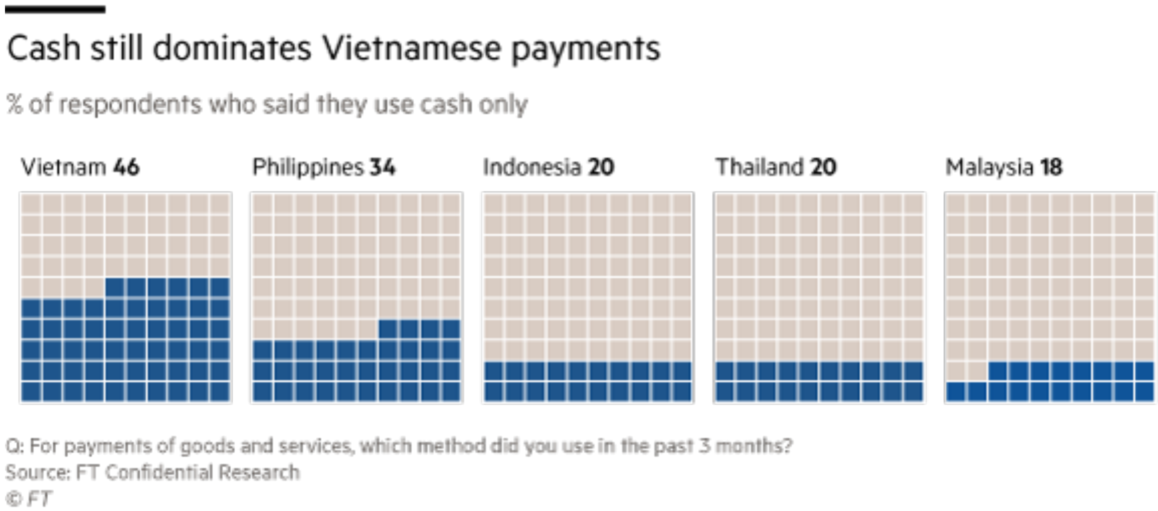

Figure 23 Consumers that use cash only in ASEAN-5 countries (FT Confidential Research 2019)

EVBN named lack of trust as the most significant barrier for the adoption and growth of advanced online payment methods (EVBN 2018, 18). Meanwhile, FT Confidential Research predicts regulations is the main issue, and the government should take action to relax them to change the current situation (FT Confidential Research 2019).

The response from Vietnam government is to implement a *Project of Developing Non-Cash Payment* for the period of 2016-2020 approved by the Prime Minister. Accordingly, by the end of 2020, the proportion of COD on total payment methods in Vietnam will decrease from over 90% (2016) to less than 10%. Until 2019, the fourth year of this project, e-payment market in Vietnam has recorded positive reactions. Since 2017, many fintech companies such as SamsungPay (Samsung), AirPay (SEA), Moca (Grab) and ViettelPay (Viettel) have joined the market and pushing the application of mobile payments in

Vietnam. Most of them focus on the purchase of low-cost daily items, develop one-stop-shop apps and run many promotion campaigns to attract new users. (Yen 2019.)

However, although there are approximately 30 e-wallet service providers in Vietnam, only four of them really stand out and have a high number of transactions. Figure 24 shows the most popular e-Wallet services in Vietnam where the "Big4" companies account for more than 90% of the market share.

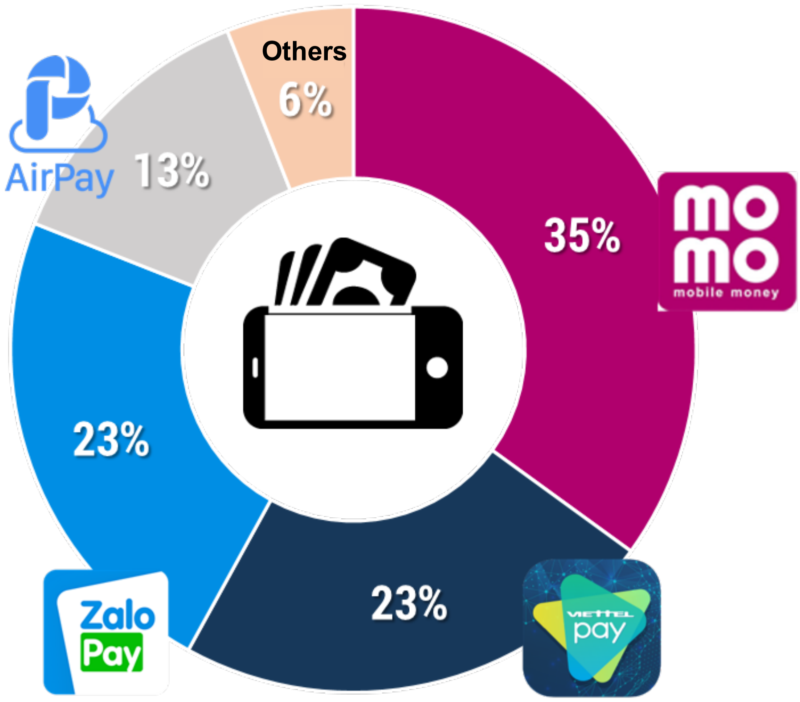

Figure 24 e-Wallet market in Vietnam (Buzzmetrics 2018)

On the other hand, the Vietnam government has also offered institutional support for fintech start-ups by establishing the National Agency for Technology, Entrepreneurship and Commercialisation Development (NATEC) in 2016. It is a platform aiming to provide training, mentorship, business incubation & acceleration and financial aid to facilitate fintech companies, especially new start-ups. (The ASEAN Post Team 2019.)

f. Market drivers and barriers

There are several factors that contribute to the development of the e-Commerce industry in Vietnam. Firstly, this country has approximately 50% of its population belonging to the Millennials (born between 1981 and 1996) and Generation Z (born between 1997 and 2010). It means that Vietnam has a potential growth of technology savvy generations, who tend to join and boost the e-Commerce market more than their prior generations. Secondly, that Vietnamese people's living standards and income keep rising also pushes them to spend more on consumption. Finally, the government shows positive perspective and takes actions to facilitate this industry. Companies, therefore, can consider Vietnam as an attractive and sustainable destination to invest. (EVBN 2018, 24 & 25.)

On the other hand, EVBN also list major caveats that would impede the growth of e-Commerce in Vietnam. The greatest hindrance is the trust issues. An immature industry and poor infrastructure systems result in lack of trust in Vietnamese consumers regarding product quality, data protection, order fulfilment, etc. In addition, experts concern about the predominant of COD (Cash-On-Delivery) payment method, which tends to cause high cancellation rates and low profitability. Besides, the underdeveloped technological and logistics infrastructure is also a significant hindrance. The growth of e-Commerce will be blocked and never meet the expectation, once these problems are not solved. (EVBN 2018, 25.)

4.2 Last-mile delivery in Vietnam

a. Overview of Vietnam's last-mile delivery landscape

In the contemporary context, e-Commerce delivery is considered as one of the most crucial parts in last-mile delivery, especially in an urban setting. Section 4.1 proves that e-Commerce in Vietnam is witnessing a fast-growing phase. It results in great opportunities for last-mile delivery to grow and adapt the demand of e-Commerce market. The expectations of merchandises and consumers bring up many challenges that logistics providers need to overcome. Thus, this segment mainly discusses last-mile delivery landscape in connection with local e-Commerce market in Vietnam.

Although Vietnam's logistics market is small in size, its growth is high (20% - 25% per year) (Vinalines Logistics 2018). The distinctive feature Vietnam's e-Logistics market is the ability to cover a wide range of destinations wherever internet access is available (from urban areas to rural areas). High frequency of small shipment deliveries and broad coverage of services across provinces are also important features of logistics for e-Commerce in Vietnam. Therefore, when the e-Commerce market develops, the e-Commerce logistics system also changes.

There are four tendencies of e-Commerce companies toward last-mile delivery:

- B&M store + attended home delivery (by in-house shipping team): Big B2C e-Commerce merchandises (such as thegioididong, dienmayxanh, FPTshop and Nguyen Kim) do fulfilment by themselves. In most cases, B2C companies have their own chain of B&M stores in many provinces, or even nationwide. Thus, once an order is placed, products will be sent to their retail stores for customer to pick up by themselves, or the retailer's delivery team will bring the parcel directly to their doorstep.

- Attended home delivery (by in-house departments): Some B2B2C websites (namely Lazada and Tiki) also cover the order fulfilment. However, the different is that they neither have physical stores nor offer pick-up services. Such companies develop their own fulfilment process including warehousing, packaging and shipping. They will be in charge of picking products from sellers, storing, re-packing and delivering the parcels to buyers.
- Attended home delivery (by 3PL providers): Other B2B2C websites (such as Sendo) and C2C platforms (such as Vatgia) provide delivery services through its shipping partners. They only act as an intermediate marketplace and supervise the fulfilment process.
- Attended home delivery (by both in-house team and 3PL providers): Shopee is applying this method in their operations. They have both in-house teams called Shopee Express and 3PL partners such as Giaohangtietkiem, Giaohangnhanh and J&T Express to fulfil a massive amount of orders every day.

(Chan 2018.)

On the other hand, last-mile logistics in Vietnam is in their very first phase of development. The lack of developed infrastructure, experience and concrete customers' expectation poses plenty of difficulties to delivery companies, requiring them to undergo a lot of experiments to find the way. Applying technologies is also a crucial step to perfect the logistics system, thus facilitate superior experience for both seller and buyer.

b. Fulfilment service companies in Vietnam

There are two types of order fulfilment: using a third-party logistics provider and using in-house specialised team. Figure 25 illustrates the result of an VECITA's survey among 3,134 companies in Vietnam in 2016 about their preferred shipping mode. The portions of both types are nearly equal.

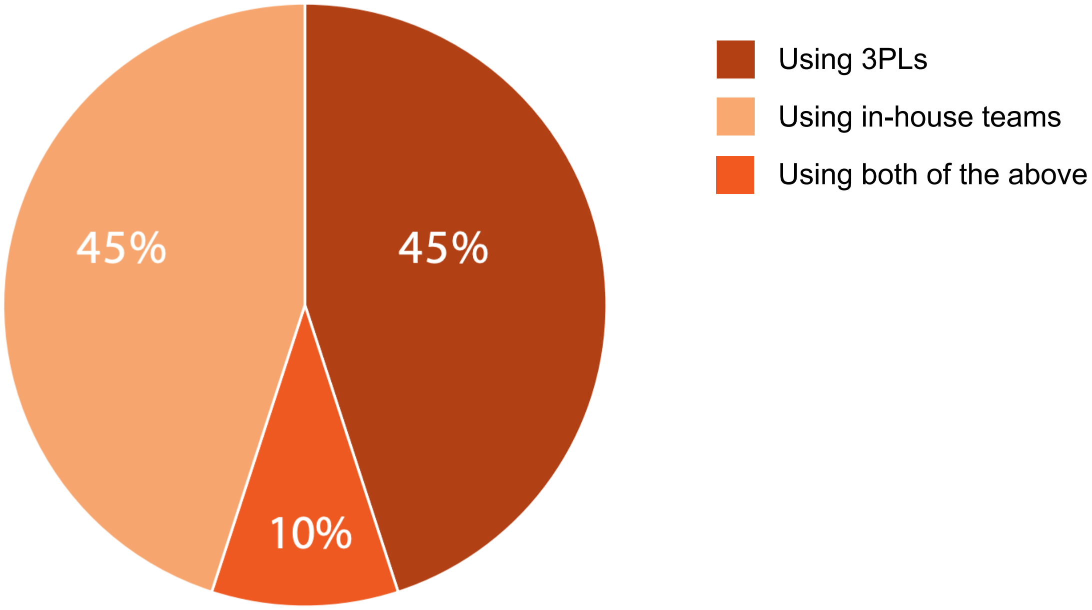

Figure 25 Modes of shipping used by merchandises (VECITA 2017, 76)

3PL and in-house share the same percentage of 45%, while the combined option accounts for 10%. From this statistic, it is clear that the 3PL service does not overwhelm seller's in-house logistics department in the Vietnamese market. Thus, the merchandises may have more bargaining power than logistics providers. e-Commerce companies seem to be more comfortable to choose between building their own dedicated shipping team and hiring a delivery company.

That fulfilment service companies mainly compete on the basis of labour sets a low thread of entry to the market, which results in numerous of last-mile delivery companies in Vietnam (Tran 2018). The most popular representatives are VNPost – EMS, Viettel Post, Giaohangnhanh, Giaohangtietkiem, Kerry Express, SShip and Shipchung. Besides, there are rising competitors such as DHL, GrabExpress and Ahamove. Among named brands, only DHL and GrabExpress are international players. It once again proves the dominance of local firms in both e-Commerce and e-Logistics markets. To take a closer look at the current situation of last-mile delivery in Vietnam, Table 3 lists out the most important features of top 4 players in this market.

TABLE 3 Comparison of most popular last-mile delivery companies in Vietnam (Sapo 2018)

Company	Introduction	Advantages	Disadvantages
VIETNAM POST	- Largest transportation network in Vietnam since 2005 - Branches throughout the country - Suitable for those who need to send heavy items because of the low cost.	- Reliable, good storage and preservation - Low price (especially with heavy parcels) - Available throughout the country, easy to access	- Slow process, long delivery time - No pick-up service for senders - If parcels are not delivered after 2 attempts, recipients must pick up the goods by themselves
VIETTEL post	- A branch of Vietnam Military Telecom Corporation (Viettel) - Established in 1997 with a nationwide network	- Delivery network throughout the country - Offer pick-up service for sender - Free home delivery and COD services for inner city areas - Reliable, good storage and preservation	- COD can't be changed in processing shipments - High price - Only commit 80% of total shipments - Quite long delivery time
GHN Express	- Specialized in internal delivery service - Offer fast delivery (within 60 minutes)	- Good customer service and website - Fast shipping time - Include goods insurance	- Storage and preservation are not really good - High price and long payment time when using COD service
Giaohangtietkiem.vn Mạng lưới chuyển phát hàng nhanh nhất	- Target to small and medium online businesses - Always focus on professionalism and speeding up delivery	- Good customer service - Attractive shipping rates, many promotions - Include goods insurance	- Long delivery time - Frequently being overloaded

5 ANALYSIS OF VIETNAMESE END-CONSUMERS

Understanding the target audience has always been a critical factor of the decision-making process. Their motivation and behaviour not only contribute to the businesses' revenue directly, but also act as motivators to shape the market in the future. Besides, last-mile delivery is the last stretch of the fulfilment service where retailers or logistics companies interact with their end-consumers. Thus, this chapter aims to provide a thorough understanding about the behaviours, unsatisfied needs and motivations of end-consumers toward last-mile delivery for e-Commerce in Vietnam. Chapter 5 will explain in detail the process of questionnaire design, as well as data collection and analysis.

5.1 Questionnaire design and data collection

The analysed data in this chapter are collected from an online survey published by the author from 8 September 2019 to 15 September 2019. This survey was posted on some active Facebook groups of young Vietnamese people who have already been e-Commerce consumers or have high potential of being so. There were 237 participants joined the survey and had all questions answered.

The online survey questionnaire is divided into three parts:

a. Part 1: Consumers' background and general information about their online shopping experience. This part employs multiple-choice questions to have standardized data.

b. Part 2: Consumers' behaviours and tendencies toward different scenarios of last-mile delivery. The Likert five-point scale is applied which respondents need to rate their attitude in different situations by a scale from 1 – Strongly disagree to 5 – Strongly agree.

c. Part 3: Problems and suggestion from the consumer's perspective. Participants are asked to name the most annoying problem to them, as well as to write down their suggestion to improve last-mile delivery experience. This part consists of one multiple-choice question (to narrow down the categories of delivery problem) and one open question (for consumers to express their unlimited ideas).

5.2 Data analysis

Harvested data from the internet survey are processed and visualized in different types of chart using tools from Microsoft Excel, Google Forms and Google Sheets. They are categorized into four topics:

- Consumers' background
- General online shopping experience
- Behaviours toward different last-mile delivery scenarios
- Problems and suggestion from the consumer's perspective

Each topic will be discussed to see how different factors affect the behaviour of e-Commerce end-consumers in Vietnam, as well as their opinions about current situation of local last-mile delivery.

a. Consumers' background

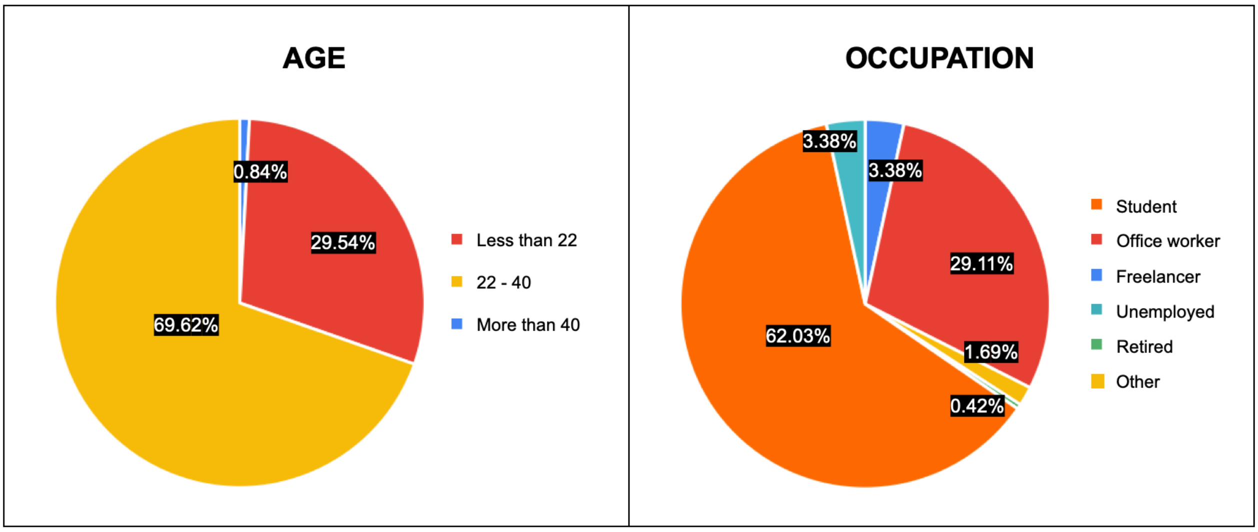

Figure 26 General background of respondents (n=237)

Figure 26 illustrates the demographic background of 237 participants regarding Age and Occupation. It is observable that the majority of them are less than 40 years old, account for 99.16% of the whole group (69.62% from 22 to 40 years old, 29.54% less than 22 years old). Regarding occupation, student stand out with 62.03% of the respondents, followed by office worker with 29.11%. The smallest portion of e-Commerce consumers are retired people who are more than 40 years old (0.42%).

Applied in a small group, these statistics cannot be representatives for the national population. However, World Bank's statistics show that 70% of Vietnamese population is under 35 years of age (The World Bank In Vietnam: Overview 2019). Thus, it can be concluded that the young generation is still the largest group of Vietnamese e-Commerce consumers.

b. General online shopping experience

The first question of this section is conducted to see if the respondents are active consumers on the Internet. There are five options to describe their purchase frequency illustrated in Figure 27. The statistics show that 67.09% of the respondents make online purchases less than once a week (which also means less than four times a month). This option is different from the “Very rarely”, which refers to one to five times of online shopping a year. In contrast, there are only two people purchasing online accounting for 0.84% of the whole group.

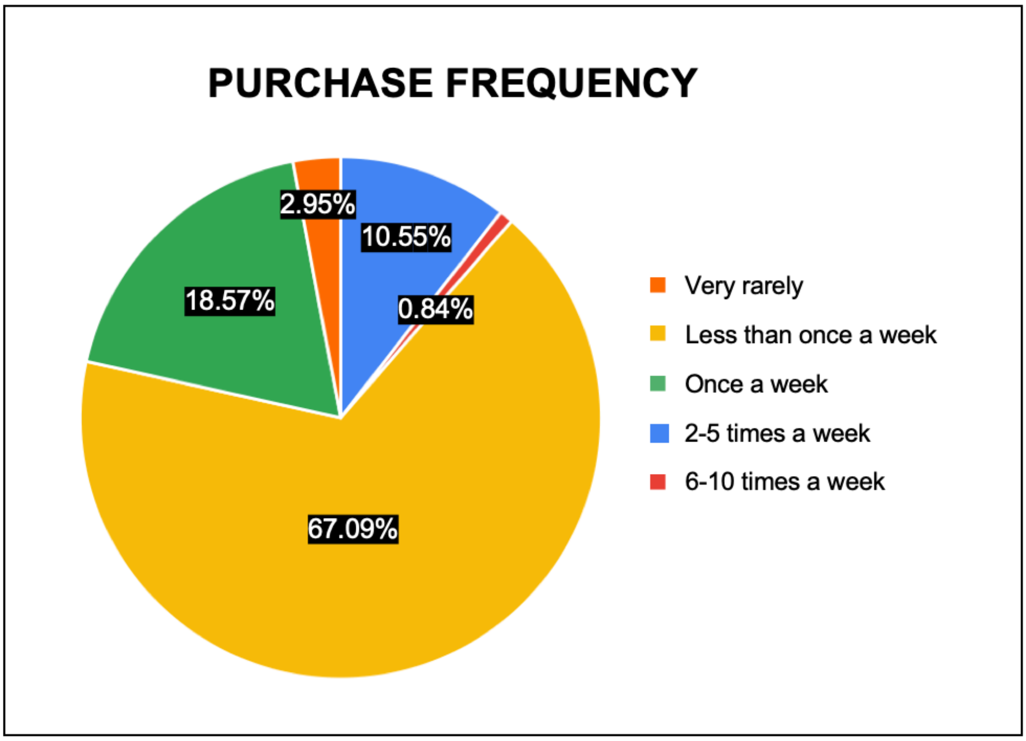

Figure 27 Respondents’ purchase frequency

After learning how frequently people make online purchases, the survey continues to examine what they usually buy on the Internet. Since the author wants to see if people often buy goods with special handling requirements online, the initial question only has four options: high-value goods, perishable goods/live animals, heavy goods and other. However, during the survey period, the variety of goods went beyond the initial expectation and lead to more complex results. The final data were categorized and presented in Figure 28.

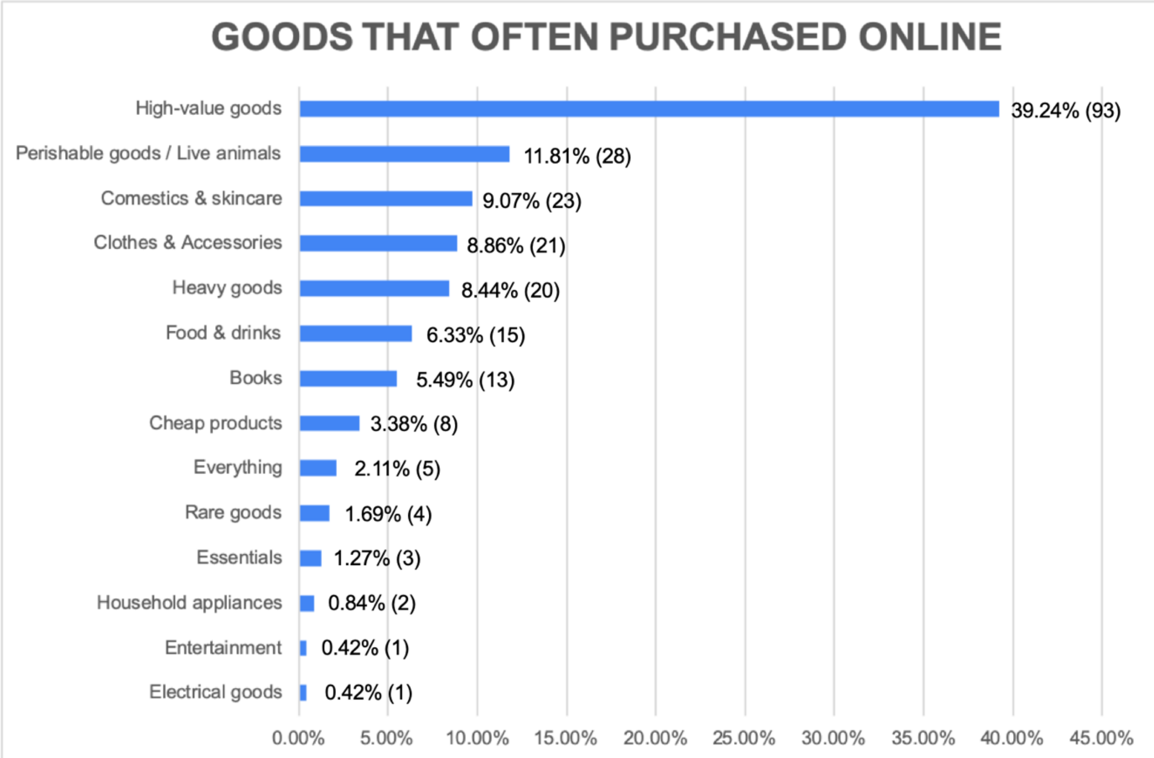

Figure 28 What respondents usually buy online

It appears that high-value goods account for the biggest percentage of 39.24%. Perishable goods/live animals are at the second place with 11.81%, followed by cosmetics & skincare, clothes & accessories and heavy goods with 9.06%, 8.86% and 8.44% respectively. Generally speaking, these statistics are not enough to make a comprehensive assumption. However, they show that e-Commerce and delivery process, to a certain extent, have gained the trust of the consumers. People would not buy anything online without believing that their goods will be delivered properly, especially in the case of high-value goods.

On the other hand, delivery time is also an important factor in the order fulfilment process. Figure 29 gathered the information of how long consumers usually have to wait to receive their parcels.

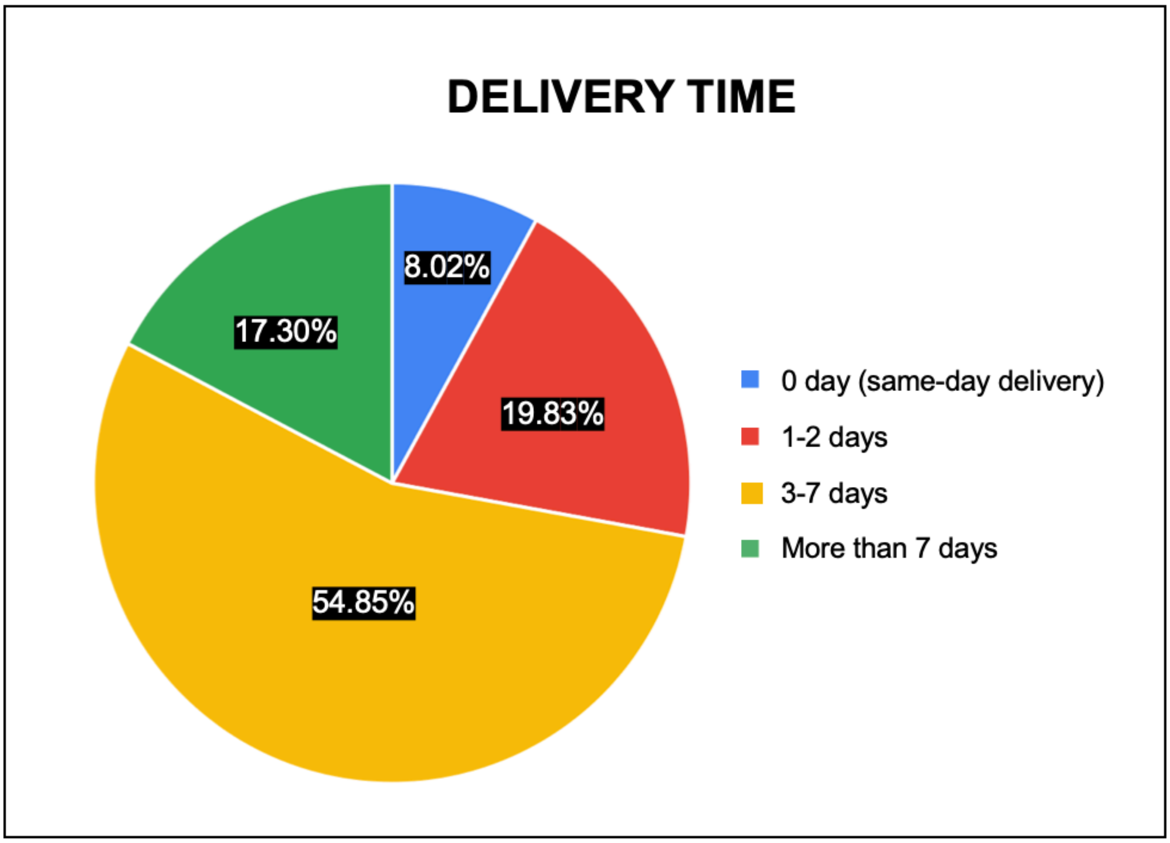

Figure 29 Delivery time of online orders

Based on Figure 29 pie chart, 54.85% of respondents states that it usually takes 3-7 days to fulfil an order in Vietnam. Knowing that the average click-to-door speed of Amazon in the United States in March 2018 is 3.07 days, this duration is acceptable (Mazareanu 2019). On the other hand, there are 19.83% of shipments sent to the consumers' doorstep within two days, and 8.02% of them are delivered on the same day of order placing. Although same-day and next-day deliveries are not yet dominant the market, they still have their own positions in the market.

In the next two questions, participants are probed about their awarenesses and preferences toward different delivery methods. Figure 30 indicates that home/office delivery is the leading delivery method for e-Commerce shipments. 75.53% of the respondents acknowledge this model and 73.00% of them refer to it as their most favourite kind of delivery. Collection points which are nearest post office, convenience store and gas station also have a high rate of recognition (40.93%), but only 16.88% of respondents choose it as their first choice. On the other hand, the models of reception box, delivery box and retailer's B&M stores all at an average level of recognition. However, they are the least used delivery methods due to many obstacles and undeveloped infrastructure.

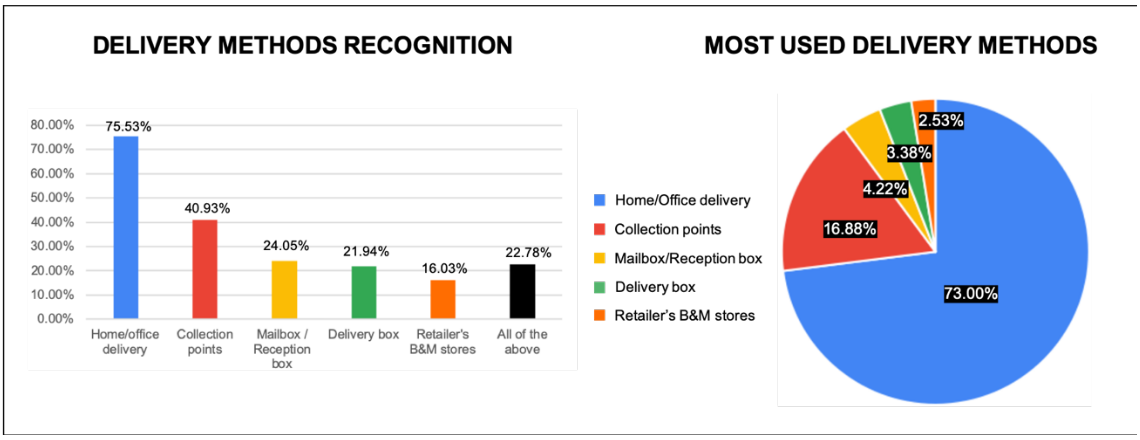

Figure 30 The recognition and popularity of different delivery methods in Vietnam

c. Behaviours toward different last-mile delivery scenarios

To examine the behaviours of respondents in different situations, five scenarios are presented by five statements as shown in Figure 31-36. Respondents are asked to describe their attitude in each scenario by a scale from 1 – Strongly disagree to 5 – Strongly agree.

As can be seen from Figure 31, 121 out of 237 respondents agree that they are satisfied with the recent deliveries. The grades above four (4) account for 71.40% of the total answers, which indicates that the major of e-Commerce consumers are satisfied with the current choice of delivery services. On the other hand, there are 68 people rate their experience at three (3) and below. The reasons of these figures will be proven later by analysing further data.

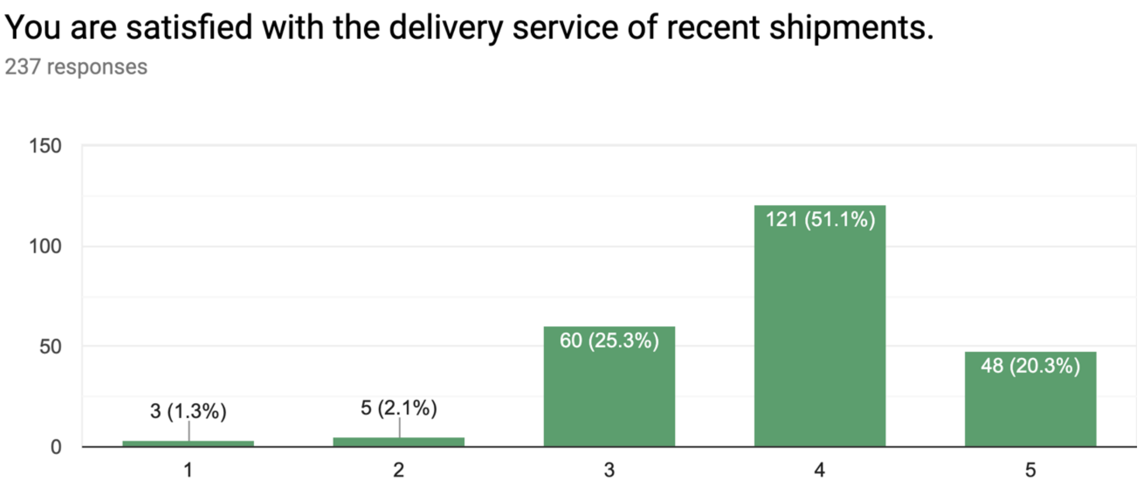

Figure 31 Satisfaction of recent deliveries

Figure 32 polls if the respondents are willing to use collection point to collect their parcels. The disparity among five options are not as much as in the previous question. 61 people, accounting for 25.7% of respondents, are neutral with going to the collection point. The data in Figure 32 reveal that the attitude towards collection point delivery is still blur and e-Commerce consumers have not created any specific trend about this topic. There are many consumers not being afraid to go to a convenience store or a post office to pick up their goods. But there are a similar number of people who remain neutral and unclear about this issue. This is a significant challenge, but also a great opportunity for those who want to become a market leader and re-define the customer's mindset.

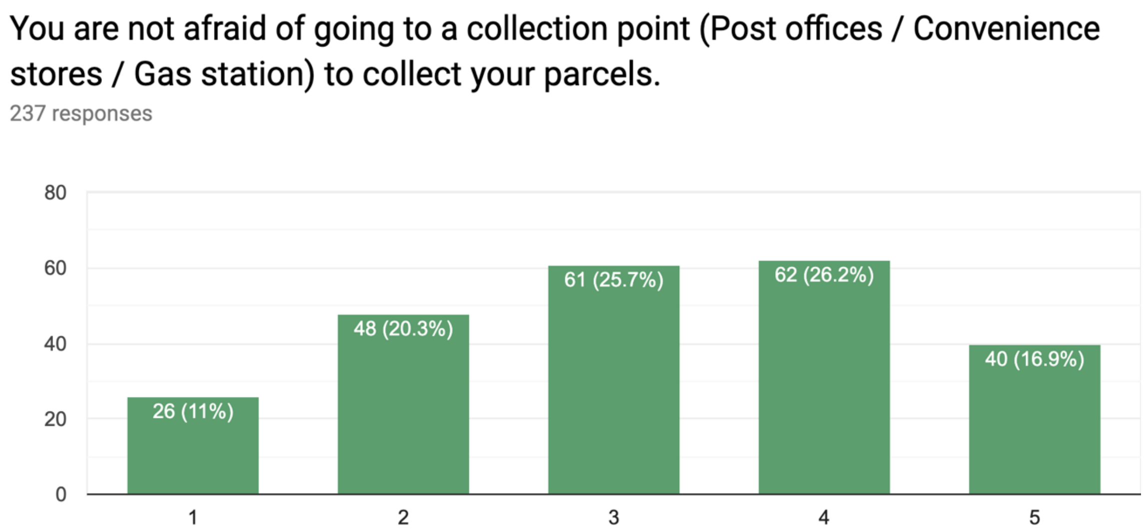

Figure 32 Respondents' attitude toward collection point model

To gain deeper understanding about consumers' attitude about less used delivery methods such as collection point and retailer's B&M store, the survey includes a question to ask whether they want to be assisted by brand's personnel during the pick-up process. As can be seen in Figure 33, the author also gave some hints so that the respondents understand the major types of services that are likely to be provided at the collection points and retailer's B&M stores.

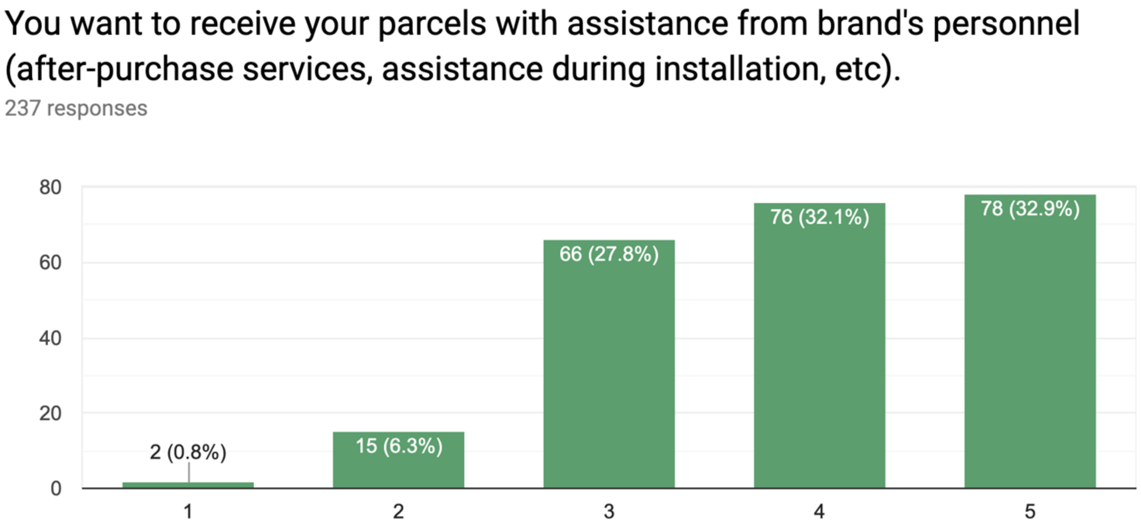

Figure 33 Respondents' attitude toward delivery assistance services

It is observable that most of e-Commerce end-consumers have high expectation toward this topic. About 65% wants to be assisted, 27.8% remain neutral and only 7.1% are not willing to experience added services. This analysis indicates a notable tendency of e-Commerce consumers. After-sales services stands out to be an important and potential factor, or even a game changer.

Figure 34 displays the behaviour of consumers in choosing a delivery partner.

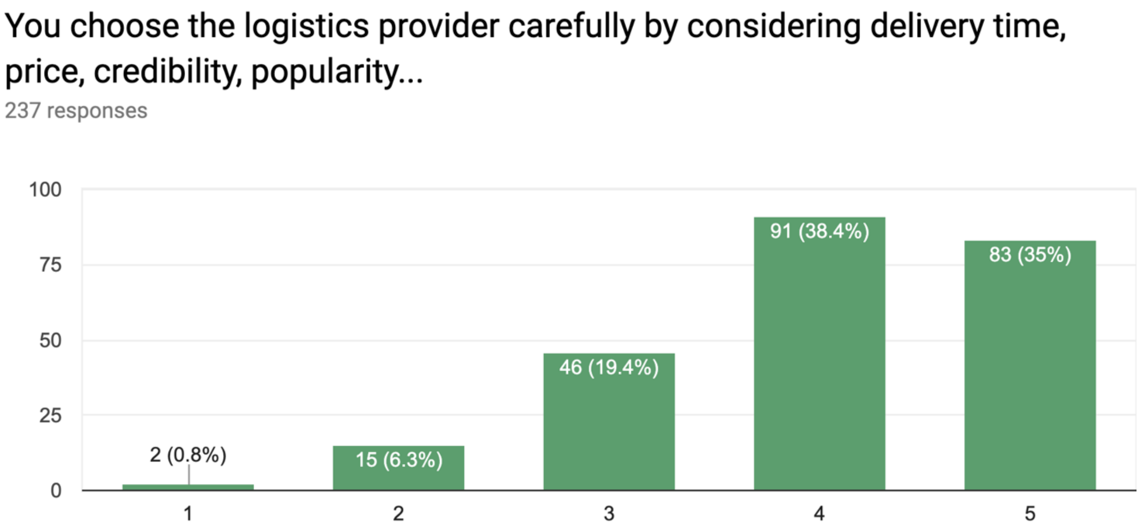

Figure 34 Respondents' attitude in choosing logistics provider

The above bar chart also shows a clear bias. More than 73.4% of the respondents react positively with the statement. It means that the logistics providers should seriously put efforts in developing their delivery time, price, credibility and popularity to gain more orders, thus leverage their businesses.

In the last question of this part, the author aims to examine the loyalty of Vietnamese consumers in choosing logistics providers. Based on Figure 35, it is inferable that the majority of the respondents (63.7%) do not have tendency to change the current shipping company for no reason. Thus, the logistics providers should explore how to maintain the customers' satisfaction to gain a long-term success.

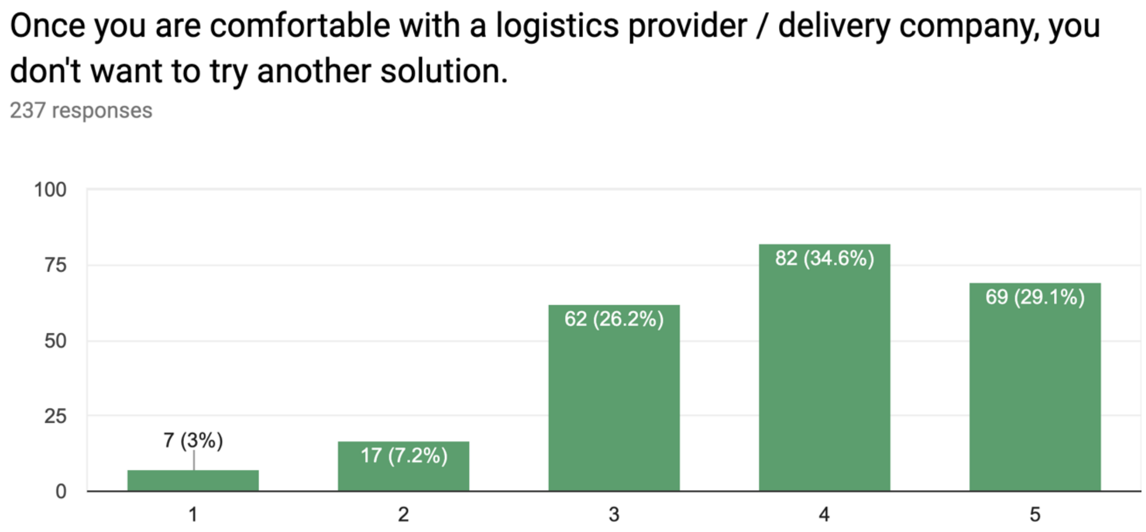

Figure 35 Respondents' attitude of changing logistics provider

d. Problems and suggestion from the consumer's perspective

In order to suggest the current situation as well as future challenges of last-mile logistics for e-Commerce in Vietnam, examing the problems and consumers' suggestion is vital. Thus, the questions in this section are conducted to dig into these topics.

The answers of the question: "What is the most annoying problem regarding last-mile delivery to you?" are categorized and visualized in Figure 36.

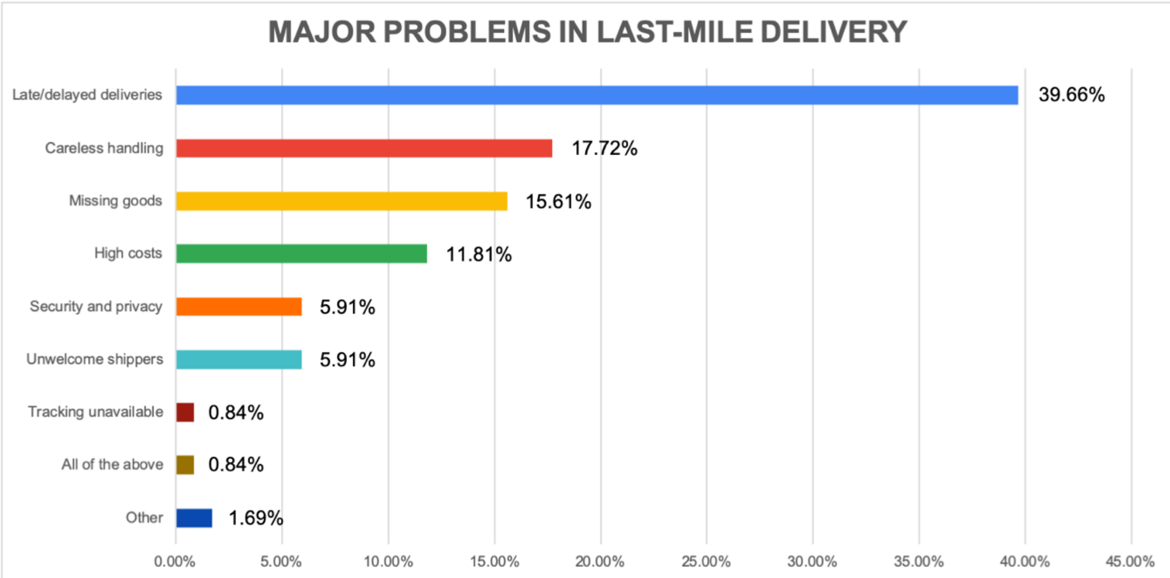

Figure 36 The most annoying delivery problems from the consumer's perspective

It is obvious that delayed delivery appears to be the biggest problem with approximately 40% of respondents choosing it. Followed are careless handling, missing goods and high costs with respectively 17.72%, 15.61% and 11.81%. The third group contains security & privacy and unwelcome shippers. It can be seen that these issues are more related to the interpersonal aspects (privacy, attitude). The last group is about unavailable tracking feature and others.

To verify the biggest concerns in last-mile delivery, the last question asks the respondents to suggest their ideas to improve the delivery experience. The results are presented in Figure 37.

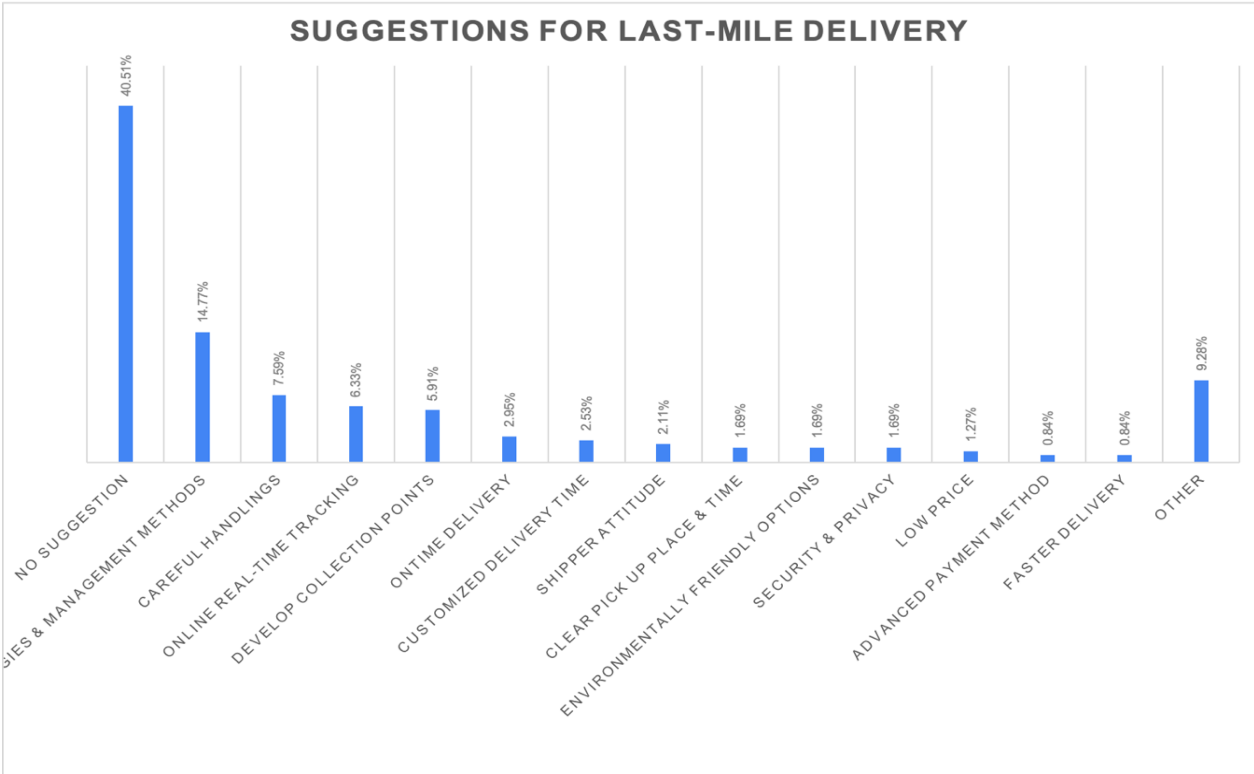

Figure 37 Suggestions to improve last-mile delivery from customer's perspective

These major ideas collected via this question are:

- New technologies & management methods (14.77%)
- Careful handlings (7.59%)
- Online real-time tracking (6.33%)
- Develop collection points (5.91%)
- Ontime delivery (2.95%)
- Customized delivery time (2.53%)
- Shipper's attitude (2.11%)
- Clear pick up place & time (1.69%)
- Environmentally friendly options (1.69%)
- Security & privacy (1.69%)
- Low price (1.27%)
- Advanced payment method (0.84%)
- Faster delivery (0.84%)
- Other (9.28%)

40.51% of respondents claim that they are either satisfied or not having any suggestions at the moment. Except that group, the most mentioned solution is to apply new technologies and management methods (14.71%). There are many examples named such as

DHL's shipping and distribution model, Grab's sharing economy model as well as other advanced technologies and management methods. To a certain extent, the consumers show their unconcreted expectations: they want things to be changed and developed, but not all of them know exactly what should be done. Other issues appeared in the previous question are also duplicated such as delivery time, handling, price, security & privacy and shippers' attitude.

The new ideas are related to applying new technologies to deliver more convenience and customized experience such as: advance payment method and real-time tracking. Especially, 1.69% of respondents suggest companies to reduce harmful effect to the environment by applying environmentally friendly solutions in their supply chain. It can be said that nowadays, consumers not only look for the efficiency, but also concern about the environment.

All the difficulties mentioned in this section result from lack of experience from the service providers, as well as the undeveloped infrastructure. Besides, it is obvious that the consumers themselves also do not have clear expectations about how last-mile delivery e-Commerce should be developed.

5.3 Results

In summary, the results of the online survey have studied four issues:

Consumers' background: Most of the Vietnamese e-Commerce consumers are young adults from 22 to 40 years old. The majority occupations are student and office worker.

General online shopping experience: The Vietnam e-Commerce consumers often do online shopping less than once a week but more than four times a month. They have positive attitude toward e-Commerce and are willing to purchase from high-value goods to daily essentials online. 3-7 days is the standard shipping time and most people prefer goods to be delivered directly to their doorsteps.

Behaviours toward different last-mile delivery scenarios: More than half of Vietnam e-Commerce consumers participated in the survey are satisfied with the current delivery process. Even though they are not familiar with collection points and B&M store pick-up, they are willing to have add-on services from the retailer or the distributor. Vietnamese consumers tend to choose the delivery partner carefully and are loyal with their choices.

Problems and suggestion from the consumer's perspective: The most outstanding issue is delayed delivery, followed by careless handling, missing goods and high price. Besides solving these problems, consumers also expect that innovative technologies will be applied to deliver more convenience and customized services in every aspect of their experience.

6 DISCUSSION AND CONCLUSIONS

6.1 Answers to research questions

The ultimate motivation to conduct this thesis is to explore the current situation, as well as to anticipate the future challenges of last-mile delivery for e-Commerce in Vietnam. These purposed are clearly demonstrated by two research questions supported by four sub-questions in the Chapter 1. A research in related topics has been employed throughout the thesis from Chapter 2 to Chapter 5 to address evidential answers for these questions

SQ1: What are the main characteristics of e-Commerce in Vietnam?

Based on the analysis in sub-chapter 4.1, the major characteristics of e-Commerce in Vietnam is the fast growth of the Internet proven by the high Internet and mobile penetration rate, as well as the increasing quantity of the Internet users. Although e-Commerce accounts for a small portion compared to traditional commerce in Vietnam, it still has much potentials thanks to the rising of savvy young generations and increasing life standards.

On the other hand, trust issues and the pre-dominance of COD are main barriers to the development of this market. In addition, underdeveloped technological and logistics infrastructure are also important problems that the government and companies need to figure out to leverage the whole market.

(A more detailed answer is provided in subchapter 4.1.)

SQ2: What are the main characteristics of last-mile delivery for e-Commerce in Vietnam?

“Small in size, its growth is high” are the most suitable words to summarize last-mile delivery for e-Commerce in Vietnam. Despite of its young history, last-mile delivery in Vietnam is able to reach nationwide destinations with high frequency of small shipments. Local shipping companies are excellent players in this market. However, the dominance of attended home delivery method is an important issue that other methods do not have much space to express their potential.

(A more detailed answer is provided in subchapter 4.2.)

RQ1: What is the current situation of last-mile delivery for e-Commerce in Vietnam?

Last-mile delivery for e-Commerce is a new term adapted to Vietnam since the 2010s. However, together with the rising of e-Commerce, last-mile delivery is witnessing its fastest growing phase ever. On the upside, it has a lot of potentials thanks to the savvy young generation and high rate of the Internet and mobile penetration. The current delivery network can partly meet the needs of Vietnamese consumers. On the downside, the undeveloped infrastructure, as well as the pre-dominance of attended home delivery and COD payment method are the biggest issues for this market.

SQ3: What do e-Commerce consumers in Vietnam expect from last-mile delivery?

The utmost need of Vietnamese end-consumers is on-time delivery. Besides, they also require delivery companies and retailers to provide careful handling with reasonable prices and customized services. Besides these concerns, modern customers also expect real-time tracking, advanced payment methods, as well as environmentally friendly actions from the service providers. Currently, most of them seem satisfied with the home delivery method but are also welcome other methods to be applied.

(A more detailed answer is provided in subchapter 5.1.)

SQ4: What are the most significant obstacles for e-Commerce last-mile delivery in Vietnam?

The most significant drawback of last-mile delivery in Vietnam is the immaturity of both service providers and customers. Both delivery method and payment in Vietnam are at the most basic level, which results in the pre-dominance of attended home delivery and COD payment method. The undeveloped infrastructure and regulations are also notable obstacles for last-mile delivery in Vietnam.

(A more detailed answer is provided in subchapter 5.2.)

RQ2: What are the potential challenges for the development of last-mile delivery service in Vietnam?

After examining the answers of SQ3 and SQ4, it is concluded that the major challenge for last-mile delivery for e-Commerce in Vietnam is the mismatch between high customer's expectation and immaturity market. However, those expectations are also greatest motivations for the development of last-mile delivery in Vietnam. Logistics companies should try to improve their performance to ensure on-time delivery, careful handlings, confidential consumer's privacy, as well as convenient and customized services.

6.2 Validity and reliability

Regarding theoretical part, the thesis starts with basic theories about e-Commerce, last-mile logistics such as brief histories, definition and main categories of each term. The framework continues with more details in each category, as well as explanation about market drivers and barriers. The research questions and sub-questions guide the way secondary data are collected and analysed throughout this thesis. Taken from sources such as published books, academic journals and articles, as well as credited publishers' reports, the quality of the collected data is guaranteed. In general, the author ensures that this research is valid.

In term of the primary data, an online survey was created by the author and distributed to potential e-Commerce consumers. Both qualitative and quantitative data are collected via the survey, thus are ensured to match the purpose of this study. All the participants are living for have been lived in Vietnam and have frequent access to the Internet. Therefore, their answers in the survey are usable in this context. All in all, the reliability of the thesis is assured.

6.3 Suggestions for future research

As mentioned in Chapter 1, the thesis has certain scope and limitations. The accuracy of the research results is only guaranteed within the limited participant group. Thus, it is recommended for further studies to apply and develop the same idea in the national, regional or a broader scale. By that means, the current situation and future challenges of last-mile delivery could be examine in different market and geographic areas.

Additionally, this study only focuses on the perspective of e-Commerce end-consumers when analysing the market. Other findings are mostly collected and processed based on prior researches. It is advisable that future empirical researches break this limit by examining other perspectives from e-Commerce companies or logistics providers.

7 SUMMARY

The study was conducted to explore the current situation and future challenges regarding last-mile delivery for e-Commerce in Vietnam. It aims not only to present the most important characteristics of the target market, but also to explain their nature, drivers and barriers. By that mean, the author hopes that the people who have interest in this topic will find valuable information in reading this study.

The thesis includes two main parts: a research framework and an empirical part.

The theoretical part is presented throughout Chapter 2 and Chapter 3. The focal contents being discussed are the term definition, components and categories, unique characteristics, as well as major drivers and benefits of e-Commerce and last-mile delivery. The mutual influence between these concepts is also included based on prior research.

The empirical part is executed in Chapter 4 and Chapter 5. Chapter 4 cover the current status of e-Commerce and last-mile delivery in Vietnam by analysing secondary data. On the other hand, Chapter 5 presents the whole process of collecting primary data via an online survey and analysing them by using mix research methodology.

To close the thesis, the findings from all chapters are gathered and discussed in Chapter 6 to answer two research questions are four sub-questions as listed in Chapter 1. These questions are answered in detail to provide a specific yet comprehensive conclusions. All in all, the author is confident to ensure the validity and reliability of this study. Some suggestions for further related studies are also included in the end of Chapter 6.

LIST OF REFERENCES

Printed sources

Blumberg, B., Cooper, D. & Schindler, P. 2005. Business Research Methods. Maidenhead: McGraw-Hill Higher Education.

Brickman, L. & Rog, D. J. 2009. A SAGE Handbook of Applied Social Research Methods. 2nd edition. California: SAGE Publications, Inc.

Chaffey, D. 2015. Digital Business and E-Commerce Management: Strategy, Implementation and Practice. 6th edition. Harlow: Pearson education Limited.

Das, J.D, & Fianu, V.D. 2018. Last Mile Delivery Dilemma in E-Commerce. Växjö: Linnaeus University.

Hellstrand, R. & Karlsson, M. 2017. Attended-collection-and-delivery points as supplementary service: A case study of a Swedish food retailer and its customers. Stockholm: KTH Royal Institute of Technology.

Kothari, C. R. 2004. Research Methodology – Methods and Techniques. 2nd revised edition. New Delhi: New Age International (P) Limited Publishers.

Robson, C. 2011. Real World Research. 3rd edition. Chichester: Wiley.

Saunders, M., Lewis, P. & Thornhill, A. 2009. Research Methods for Business Students. 5th edition. Essex: Pearson Education Limited.

Turban, E., Whiteside, J., King, D. & Outland, J. 2017. Introduction to Electronic Commerce and Social Commerce. 4th edition. Cham: Springer International Publishing AG.

Qin, Z. 2009. Introduction to E-commerce. Beijing & New York: Tsinghua University Press & Springer Berlin Heidelberg.

Walliman, N. 2011. Research Methods - The Basics. 1st edition. Oxon: Routledge.

Electronic sources

Allen, J., Thorne, G. & Browne, M. 2007. BESTUFS good practice guide on urban freight transport. BESTUFS [accessed 26 August 2019]. Available at: http://www.bestufs.net/download/BESTUFS_II/good_practice/English_BESTUFS_Guide.pdf

An, M. 2019. Cục diện 'cuộc chiến' thanh toán điện tử tại Việt Nam (The situation of the ‘electronic payment war’ in Vietnam). News. VietnamFinance [accessed 11 September 2019]. Available at: https://vietnamfinance.vn/cuc-dien-cuoc-chien-thanh-toan-dien-tu-tai-

Bonde, A., Bruno, J., Wu, S., Ruhl, C. & Birrell, R. 2019. US B2B eCommerce Will Hit $1.8 Trillion By 2023 [accessed 9 August 2019]. Available at: https://www.forrester.com/report/US+B2B+eCommerce+Will+Hit+18+Trillion+By+2023/-/E-RES136173#

Bringg Team. 2016. 4 Last Mile Delivery Challenges for eCommerce. Bringg [accessed 30 August 2019]. Available at: https://www.bringg.com/blog/insights/4-challenges-of-last-mile-delivery-for-ecommerce/

Buzzmetrics. 2018. Thị trường ví điện tử - Công thức thành công và cơ hội tiềm ẩn do người dùng cung cấp (E-wallet market - The formula for success and potential opportunities provided by users) [accessed 12 September 2019]. Available at: https://buzzmetrics.com/thi-truong-vi-dien-tu-cong-thuc-thanh-cong-va-co-hoi-tiem-an-do-nguoi-dung-cung-cap/

Cabinet Office. 1999. E-commerce@its.best.uk. A Performance and Innovation Unit Report – September 1999. Report [accessed 8 August 2019]. Available at: https://ntouk.files.wordpress.com/2015/06/ecommerce-at-its-best-1999-body.pdf

Clement, J. 2019. Retail e-commerce sales worldwide from 2014 to 2021 (in billion U.S. dollars). Statista [accessed 10 August 2019]. Available at: https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales

Eisenhauer, T. 2019. Intranets VS Extranets - What's the difference?. Blog. Axero Solutions [accessed 9 August 2019]. Available at: https://axerosolutions.com/blogs/timeisenhauer/pulse/165/intranets-vs-extranets-what-s-the-difference

EVBN (EU-Vietnam Business Netwwork). 2018. E-Commerce Industry in Vietnam. Edition 2018. Report [accessed 10 September 2019]. Available at: http://www.ukabc.org.uk/wp-content/uploads/2018/09/EVBN-Report-E-commerce-Final-Update-180622.pdf

FT Confidential Research. 2019. Red tape holds Vietnam back in digital payments. Nikkei Asian Review [accessed 10 September 2019]. Available at: https://asia.nikkei.com/Editor-s-Picks/FT-Confidential-Research/Red-tape-holds-Vietnam-back-in-digital-payments

iPrice insights. 2019. The Map of E-commerce in Vietnam. iPrice Group [accessed 11 September 2019]. Available at: https://iprice.vn/insights/mapofecommerce/en/

Joanne. 2017. What Is C2B Ecommerce And How Does It Help Your Business?. Blog. SEOPressor [accessed 9 August 2019]. Available at: https://seopressor.com/blog/what-is-c2b-ecommerce

Kelleher, K. 2014. 5 lessons from survivors of the dotcom crash. Fortune [accessed 9 August 2019]. Available at: https://fortune.com/2014/01/03/5-lessons-from-survivors-of-the-dotcom-crash/

Lim, S. 2019. Customer to Customer – C2C. Investopedia [accessed 9 August 2019]. Available at: https://www.investopedia.com/terms/c/ctoc.asp

Lim, S.F.W.T., Jin, X. & Srai, J.S. 2015. Last-mile logistics structures: A literature review and design guideline. ResearchGate [accessed 26 August 2019]. Available at: https://www.researchgate.net/publication/281783277_Last-mile_logistics_models_A_literature_review_and_design_guideline

Mazareanu, E. 2019. Amazon's average click-to-door speed in the United States from December 2015 to March 2018 (in days). Statista [accessed 15 September 2019]. Available at: https://www.statista.com/statistics/957782/parcel-carriers-on-time-delivery-rate-peak-season/

Meghani, R. 2019. Top Six ECommerce Business Models In 2019 With Pros And Cons. Blog. Magneto IT Solutions [accessed 9 August 2019]. Available at: https://magnetoitsolutions.com/blog/top-ecommerce-business-models

Moore, K. 2019. Ecommerce 101 + The History of Online Shopping: What The Past Says About Tomorrow's Retail Challenges. Blog. BigCommerce [accessed 8 August 2019]. Available at: https://www.bigcommerce.com/blog/ecommerce/#additional-ecommerce-resources

Pan, W., Chen, L & Zhan, W. 2019. PESTEL analysis of construction productivity enhancement strategies: A case study of three economies. Journal of Management in Engineering, 35(1), 05018013 [accessed 16 September 2019]. Available at: https://www.researchgate.net/publication/328063709_PESTEL_Analysis_of_Construction_Productivity_Enhancement_Strategies_A_Case_Study_of_Three_Economies

Patel, A. 2019. Know About Intra-business Ecommerce. Blog. BoTree Technologies [accessed 10 August 2019]. Available at: https://www.botreetechnologies.com/blog/know-about-intra-business-ecommerce

Prickett, K. 2014. WHAT IS THE LAST MILE FOR ECOMMERCE?. Blog. Prospress [accessed 26 August 2019]. Available at: https://prospress.com/what-is-the-last-mile

Q&Me. 2018. Vietnam consumer trends 2019. Report. Asia Plus Inc [accessed 11 September 2019]. Available at: https://qandme.net/en/report/vietnam-consumer-trends-2019.html

Rajasekar, S., Philominathan, P. and Chinnathambi, V. 2013. Research Methodology. arXiv:physics/0601009v3 [accessed 15 September 2019]. Available at: https://arxiv.org/pdf/physics/0601009v3.pdf

Rjeb, B. 2018. HOW THE LAST MILE DELIVERY IMPACTS CUSTOMER EXPERIENCE. PocketMobile [accessed 29 August 2019]. Available at: https://www.pocketmobile.se/how-the-last-mile-delivery-impacts-customer-experience

Rouse, M. 2010. B2E (Business2Employee or Business-to-Employee). TechTarget [accessed 10 August 2019]. Available at: https://searchcio.techtarget.com/definition/B2E

Sample, I. 2018. What is the internet? 13 key questions answered. Blog. The Guardian [accessed 9 August 2019]. Available at: https://www.theguardian.com/technology/2018/oct/22/what-is-the-internet-13-key-questions-answered

Sapo. 2018. So sánh các đơn vị vận chuyển, sử dụng dịch vụ ship hàng nào uy tín? (Comparing shipping companies, which one is reputable?). Blog [accessed 14 September 2019]. Available at: https://www.sapo.vn/blog/so-sanh-cac-don-vi-van-chuyen-su-dung-dich-vu-ship-hang-nao-uy-tin/

Suthar, S. 2017. 5 Things Emerging As a Driver of E-Commerce Growth. Report. Business 2 Community [accessed 10 August 2019]. Available at: https://www.business2community.com/ecommerce/5-things-emerging-driver-e-commerce-growth-01927264

The ASEAN Post Team. 2019. Strengthening e-payments in Vietnam. Article. The Asian Post [accessed 12 September 2019]. Available at: https://theaseanpost.com/article/strengthening-e-payments-vietnam

The World Bank In Vietnam: Overview. 2019. The World Bank [accessed 10 September 2019]. Available at: https://www.worldbank.org/en/country/vietnam/overview

Tran, K. 2018. [MW Special Report] E-commerce in Vietnam. The Low Down. Report [accessed 10 September 2019]. Available at: https://thelowdown.momentum.asia/e-commerce-vietnam-plenty-unrealized-potential/

Vaast, M. 2017. HOW DOES THE LAST MILE DELIVERY IMPACT YOUR E-COMMERCE?. E-Commerce Nation [accessed 29 August 2019]. Available at: https://www.ecommerce-nation.com/last-mile-delivery-impact-ecommerce

VECITA. 2017. Báo cáo thương mại điện tử Việt Nam 2017 (Vietnam e-Commerce Report 2017). Report [accessed 10 September 2019]. Available at: https://www.moit.gov.vn/documents/20182/535324/1502960840533-BCT-MDT2017%20(1).pdf

Vietnam Supply Chain Community. 2017. VIETNAM LAST MILE LOGISTICS FORUM 2017 [accessed 14 September 2019]. Available at: http://vietnamsupply-chain.com/en/learn/events/view/vietnam-last-mile-logistics-forum-2017/547

Vinalines Logistics. 2018. E-Logistics - Thương mại điện tử với logistics hiện nay (E-Logistics – e-Commerce with logistics in current situation). [accessed 14 September 2019]. Available at: http://vnll.com.vn/vi/e-logistics-thuong-mai-dien-tu/

We Are Social. 2018a. Digital in 2018 in Southeast Asia Part 1 - North-West. Report [accessed 10 September 2019]. Available at: https://www.slideshare.net/wearesocial/digital-in-2018-in-southeast-asia-part-1-northwest-86866386

We Are Social. 2018b. Digital in 2018 Global Overview. Report [accessed 10 September 2019]. Available at: https://www.slideshare.net/wearesocial/digital-in-2018-global-overview-86860338/16

Wilks, A. 2018. What are the different categories of e-commerce?. Blog. Numinix [accessed 9 August 2019]. Available at: https://www.numinix.com/blog/2018/11/05/what-are-the-different-categories-of-e-commerce

Xu, M., Ferrand, B. & Roberts, M. 2008. The last mile of e-commerce - Unattended delivery from the consumers and eTailers' perspectives. Int. J. Electronic Marketing and Retailing, Vol. 2, No. 1, pp. 20–38 [accessed 31 August 2019]. Available at: https://www.researchgate.net/publication/245528181_The_last_mile_of_e-commerce_-_Unattended_delivery_from_the_consumers_and_eTailers'_perspectives

Yen, H. 2019. Vietnam is on track to reduce cash-based transactions to 50% by 2020. Newspaper. Hanoitimes [accessed 11 September 2019]. Available at: http://www.hanoitimes.vn/economy/2019/01/81e0d2cb/vietnam-is-on-track-to-reduce-cash-based-transactions-to-50-by-2020/

APPENDICES

Part 1: Consumers' background and general information

Last-mile delivery for e-Commerce in Vietnam

Hi, I'm Thao Hoang - a last year student at Lahti University of Applied Sciences.
This survey is to collect data for my thesis which is about Last-mile delivery for e-Commerce in Vietnam. It would be very kind of you to complete this form.

LAST-MILE DELIVERY is the last leg of the products' trip from a fulfilment centre (retailer's brick-and-mortar stores, collection points, distribution centers...) to the customers' doorstep (Prickett). Meanwhile, E-COMMERCE refers to economical activities using electrical communications, by which people can purchase products, advertise goods and settle (Global Information Infrastructure Committee).

Please share your experience in online purchasing in Vietnam, it really helps me a lot!
Thanks for your time :)

*Required

Age: *

- Less than 22
- 22 - 39
- 40 - 55

Occupation: *

- Student
- Office worker
- Freelancer
- Unemployed
- Retired
- Other: ____________

On average, how many times per week do you make online orders? *

- ◯ Once per week
- ◯ 2-5 times per week
- ◯ 6-10 times per week
- ◯ More than 10 times per week
- ◯ Less than once a week
- ◯ Other: ______

Which kinds of goods do you often purchase online? *
You can choose multiple options.

- ☐ High-value goods
- ☐ Perishable goods / Live animals
- ☐ Heavy goods
- ☐ Other: ______

How long does it usually take to get your products? *

- ◯ 0 day (same-day delivery)
- ◯ 1 - 2 days
- ◯ 3 - 7 days
- ◯ More than 7 days

Which of the following delivery modes do you know? *
You can choose multiple options.

- [ ] Home/office delivery
- [ ] Retailer's brick-and-mortar/physical stores
- [ ] Collection points (Post offices / Convenience stores / Gas station)
- [ ] Mailbox / Reception box (fixed permanently outside the consumer's house or department)
- [ ] Delivery box (similar to the reception box, but belongs to a specific delivery company)
- [ ] All of the above

Which one do you often use? *

- Home/office delivery
- Retailer's brick-and-mortar stores
- Collection points (Post offices / Convenience stores / Gas station)
- Mailbox / Reception box (fixed permanently outside the consumer's house or department)
- Delivery box (similar to the reception box, but belongs to a specific delivery company)

Part 2: Consumers' behaviours toward different scenarios of last-mile delivery

Please show your opinion on the statements below by rating on the scale from 1 to 5

1: strongly disagree, 2: disagree, 3: neutral, 4: agree, 5: strongly agree

You are satisfied with the delivery service of recent shipments. *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

You are not afraid of going to a collection point (Post offices / Convenience stores / Gas station) to collect your parcels. *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

You want to receive your parcels with assistance from brand's personnel (after-purchase services, assistance during installation, etc). *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

You choose the logistics provider carefully by considering delivery time, price, credibility, popularity... *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

Once you are comfortable with a logistics provider / delivery company, you don't want to try another solution. *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

Part 3: Problems and suggestion from the consumer’s perspective

Problems and suggestions

What is the most annoying problem regarding last-mile delivery to you?

- Late/delayed deliveries
- Careless handling
- Missing goods
- Unwelcome shippers
- High costs
- Security and privacy
- Other: ____________

Your suggestions for Last-mile delivery in Vietnam (new delivery method, new technologies, new management methods, etc): *

Your answer