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Customer's perceptions in Last-mile delivery service

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Abstract

Purpose – Increasingly, last mile logistics is driven by customer-oriented strategies that requires better understanding of customers’ perceptions. This thesis views last-mile delivery as a service and aims to examine the relation of logistics service quality and other constructs used in service management literature to measure customers’ perception. Built on the operational definition of perceived value as trade-off between benefits and sacrifices, the effects of logistics service quality factors as components of perceived value are modeled and investigated together with customer satisfaction and loyalty acting as outcomes.

Design/methodology/approach – An online survey is conducted resulting in 210 valid responses collected from two different Internet platforms. Data are analyzed using Partial least squares - Structural equation modeling technique.

Findings – Logistics service quality is consistently proved to be main driver for perceived value, in which timeliness has strongest effect. Sacrifices indicated by monetary and non-monetary indicators are found to have nonsignificant effect on perceived value for last-mile delivery service context. Furthermore, customer satisfaction is a complementary partial mediator in the relationship between perceived value and loyalty.

Practical implication – Different strength of logistics service quality factors could be quantified providing logistics managers insights of which aspect customer value the most in their service. Not only are service attributes needed to be improved but also customer satisfaction should be taken into consideration if they want to maintain behavioral loyalty.

Originality/Value – This thesis unfolds perceived value of last-mile delivery service by modeling perceived value as a formative second-order construct that is conceptualized using logistics service quality factors and sacrifices so that it complies theoretical justification and enables assessment of relationship in a nomological network.

Key words Last-mile delivery, logistics service quality, perceived value, satisfaction, loyalty, hierarchical construct.

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1. Introduction

1.1. Study background

The market share of e-commerce is expanding consecutively all over the world (Lone, 2018), imposing on retailers competing more and more intensively by employing different operational strategies to best serve customer' increasing demand. Last-mile delivery is a critical part that retailers endeavor to become outstanding in service but still economically efficient. However, rapid growth of cybershopping has increased significantly the number of direct-to-customer deliveries to a level that many issues has occurred making the last-mile "most expensive, inefficient and polluting part of the supply chain" (Gevaers, Van de Voorde, & Vanelslander, 2009, p. 1). Different perspectives rather than the have been proposed and applied in the practice, yet appropriate level of investment and integration of distribution network for customer-centric shipment need to be critically redefined in connection with consumer participation, social considerations and institutional actors (Harrington, Singh Srail, Kumar, & Wohlrab, 2016). Among all, various growing research streams have been extensively concerning customer's perspectives as a benchmark for evaluating performance under the realm of service management.

Service quality has long been a pivotal issue for a successful business associated with the distinct nature of service, and it maintained to be a key to competitive advantage after the outbreak of the Internet-based commerce. Most of the concerns on this subject has led to numerous service quality models that are expected to best integrate managerial framework, service design and operation, and marketing activities (Brogowicz, Delene, & Lyth, 1990). Different measure scales for electronic service quality were also established such as the works of Wolfinbarger and Gilly (2003), Collier and Bienstock (2006); Parasuraman, Zeithaml, and Malhotra (2005). Additionally, global retailing industry has witnessed a revolution in the whole supply chain from the back-end (order fulfillment) to the front-end (last-mile) to cater as best service to customers as possible, through many new concepts of selling channel (i.e.

omni-channel) and technological innovation (i.e. self-service technologies such as smart lockers, reception boxes).

Around the same time, service science has been witnessing the evolutions of Service-dominant logic attributed to extensive elaborations, applications and amplifications in endless other service sectors, one of which is logistics. Vargo and Lusch (2016) demystified the “generic actor” designation which characterizes the parties involving in resources integration, service exchange and value co-creation. Accordingly, given the reciprocal service exchange, value is always cocreated by and for multiple actors, including the beneficiary, as well as not optional and non-deliverable, thus it is “different for each referent and must be assessed separately” (Vargo & Lusch, 2016, p. 10). Putting other foundational premises of Service-dominant logic together, it essentially emphasizes that service provider is not the only one but all social and economic actors integrate resources to create value and when the value propositions are accepted by the beneficiary, a continuing role of associated actors is implied.

There exist different typologies for last-mile logistics, one of which uses the spectrum of effort put by vendor and end-consumer as a basis. As such, both vendor and consumer share the delivery effort at the decoupling point (Lim, Jin, & Srari, 2018). Collection and delivery point (CDP) or service point or pick-up point is one type of decoupling point that recently received many discussions as an alternative form of delivery service for home delivery. CDPs is created to have significant advantages for logistics efficiency and urban last-mile design effectiveness. It is expected to resolve the problems of failed home delivery, reduce net traveling for carrier and/or consumers, and enhance security level to avoid thieves before buyers get their goods (Weltevreden, 2008). There are research that quantified overall transport cost in a system with CDPs and showed it could be decreased, as in the work of Song, Wang, Liu, and Bian (2016). Additionally, vehicle kilometer travel (VKT) can be reduced if consumers collect parcels on their way to another place or substitute motorized trips with walking, whereas retailers or courier firms might employ economic of scale for freight trucking to CPDs

and do not have to go to each consumer's home (Kedia, Kusumastuti, & Nicholson, 2017).

However, an incremental portions of parcels volumes and online shoppers use CDPs, and mainly for returning goods, for example such as in The Netherlands (Weltevreden, 2008). Main factor affecting the take-up of customers is deemed to be accessibility for customers (Weltevreden, 2008). Advantages of hybrid system with regard to vehicle mileage depend heavily on various key factors such as “delivery failure rate, the carrier depot distance from the delivery area, the number of available collection points, the preferred modes of transport used by householders and the extent to which trips were combined with each other” (McLeod, Cherrett, & Song, 2006, p. 307). Another discouragement for the use of CDPs claims that customers are believed to use motorized vehicles to go picking up orders which in turn results in not only emissions as home delivery but also additional traffic (Arnold, Cardenas, Sørensen, & Dewulf, 2017). If delivery is seen as a service, it is necessary to take into consideration impacts of these factors on value proposition offered which might help service providers to improve the design of last-mile logistics.

There are still much room to extend the B2C logistic research regarding the most demanding stake-holder – customers in the last-mile logistics service. Logistics research has been influenced by the economic and the behavioral approaches to scientific study (Mentzer & Kahn, 1995). Essentially, the last-mile service is strongly consumer-oriented and behavioral related (Wang, Yuen, Wong, & Teo, 2019). To this end, it is interesting to look into how established constructs that are used to measure customer's attitude and intentions in extant literature from service management and logistics service quality can be applied to last-mile service context. Research on this topic will be conducive to a bigger picture of logistics service quality parallel to increasing divergence of retailing channels (Murfield, Boone, Rutner, & Thomas, 2017).

1.2. Research aim and research question

This research is intended to contribute to the body of research exploring the customer's perception and its consequences in the context of last mile delivery service

through the theoretical lens of customer perceived value. Understanding customers' value is key for any firms to devote resources accordingly and adapt proper logistics strategies. Customer perceived value, customer satisfaction and loyalty are popular constructs measuring customers' response in service literature. The objective is to both conceptually and empirically investigating the customer perceived value in relation to logistics service quality, and its effect on customer satisfaction and loyalty. Thus, two research questions are addressed in this research:

RQ1. What is customer perceived value in relation to logistics services quality in last-mile context?

RQ2. How does customer perceived value affect customer satisfaction and loyalty?

Answer for the first research question in discussing customer's perceived value should be a consideration of how it has been defined and conceptualized in service context. Literature that addresses the relationship between service quality and perceived value should also be reviewed. To get a better feel for last mile service specifically, we will need to look at how order fulfilment process has been included as part of electronic service. The synthesis of results from customer value literature and electronic service quality will provide insights to understand how logistics service quality could act as instruments for perceived value. It is only when we see the relation between them in this way that we can answer the first question. Following up the first question, perceived value needs to be validated in relation to customer satisfaction and loyalty. In the second question, a proposed model articulating relationships among constructs is tested using primary data from online shoppers, who are also last-mile service users. Result from data analysis is expected to testify the research model and provide a potential framework for operationalizing customer perceived value as well as practical implications for B2C logistics managers.

1.3. Thesis structure

The structure of this thesis will continue as follows: after the introduction, relevant literature is first reviewed to describe in details extant knowledge in the context of last-mile logistics and the rationale behind choosing this topic. The corpus of literature addressing the study background are hereby discussed in themes of last-mile

logistics concept, service quality and customer value in electronic retailing, and the relation of logistics service quality and customer perceived value. Conceptual model applied in this study is then presented based on substantive concepts and what have been carried out in the discipline of service management.

Secondly, methodology chapter delineates the choices of research philosophy, approach and methods of collecting primary data. Data analytical technique of Partial least squares – structural equation modeling (PLS-SEM) is employed to empirically validate the proposed model from the collected data, which will be presented in the next chapter together with findings for the hypotheses. As being conducted by a novice researcher, technical analysis in this study relies on guidelines and previous knowledge in the statistic field.

Fourth, results and discussion chapter is presented in which the findings are highlighted along with research questions as well as the contribution to the practical knowledge and theoretical base. Research limitations and future research directions are outlined in this chapter. Finally, the thesis will be ended by conclusion chapter as a summary.

2. Literature review

In this section, previous works are compiled to provide a precedent context for the present study. Last-mile logistics involves disparate strategies with quality-based supply chain characteristics, associated with many novel challenges. Thus, it is important to establish a clear review of last-mile definition and typologies, relating concepts, as well as practical issues and how they have been reacted to so that the reader will be able to identify the relevance of this study within that context. The literature review starts from a broad background on last-mile and progresses towards a focused lens of service quality, perspectives and predicted behaviors of customers. It should be noticed that delivery service, as a part of last-mile logistics, is not only a noteworthy practical phenomenon but also underscores the philosophy of service management, which is the main area of interest this thesis project is trying to address.

2.1. Last-mile definitions

The last-mile are receiving considerable interest thanks to the increasing of online retailing, of which the supply chain being responsible by retailers is extended to the household (Yuan & Grant, 2006). The term “last-mile” is generally accepted in the extant literature to refer to the last part of a supply chain or even multiple supply chain requiring the end-consumer to be taken into careful consideration. The following part is supposed to demonstrate a broader view about different ecosystem that the last-mile could be involved in, by presenting definitions and typologies proposed by previous scholars. Furthermore, doing this would obviously help clarify the focus for the research at hand.

Regarding the last-mile as a component part of supply chain, descriptions of starting and ending point are used to define the boundary of this part. For example, Esper, Jensen, Turnipseed, and Burton (2003) claimed that “the critical link between consumer-based Internet ordering and the delivery of the product to the consumer is often referred to as the final or last mile” (Esper et al., 2003, p. 177), implying starting point to be order processing. However, Gevaers et al. (2009) in clarifying the working definition in his paper eliminated order-picking part, yet instead chose the origin at “the storage place of the supplier” (Gevaers et al., 2009, p. 2). The latter definition for last

mile logistics coined by Lim et al. (2018) managed to denote last-mile as a process with starting and ending point, as following:

“Last-mile logistics is the last stretch of a business-to-consumer (B2C) parcel delivery service. It takes place from the order penetration point to the final consignee’s preferred destination point.” (Lim et al., 2018, p. 310)

On the other hand, positioning the last mile in the context of urban freight logistics, Harrington et al. (2016) defined urban system “last-mile” by extending urban system terminology to a service logistics context, resulting in the following definition for the urban system ‘last-mile’:

“the final component of a B2C delivery process. It takes place within a pre-defined urban system, with specific characteristics, and includes upstream logistics to the last transit point until the destination point of a delivery. It involves a series of activities and processes, of critical value to all the involved stakeholder groups, within an urban system.” (Harrington et al., 2016, p. 458)

The work of Harrington et al. (2016) and their definition was more exhaustive than the other definitions by emphasizing on stakeholders concerning their own value and encompassing both social and economic considerations. Three main pillars of perspective, included but not exhaustively, are of customers, industry and institution, covering various actors (the 3PL company, the retailer, the manufacturer, the local council, the consumer, local transport authority) (Harrington et al., 2016). In fact, separate interests as well as trade-offs of each pair within these pillars were at the core of other works, which focused on traditional operation management and efficient service outcome. In the next sections, such focus is reviewed under the forms of typologies of last-mile operational structure and relevant innovations are discussed.

2.2. Typologies of the last-mile

The fashion of developing typologies of order fulfilment process and last mile strategies could be divided into two ways. The first one previous researches used to categorize last-mile typology was basing on dimensions of network configuration. To elaborate, operational logistics strategies for order fulfilment process were once classified by Hult, Boyer, and Ketchen Jr. (2007) using a matrix of two dimensions:

order fulfillment location (store-based vs. distribution center-based) and methods of delivery (direct vs. indirect) as in Figure 1.

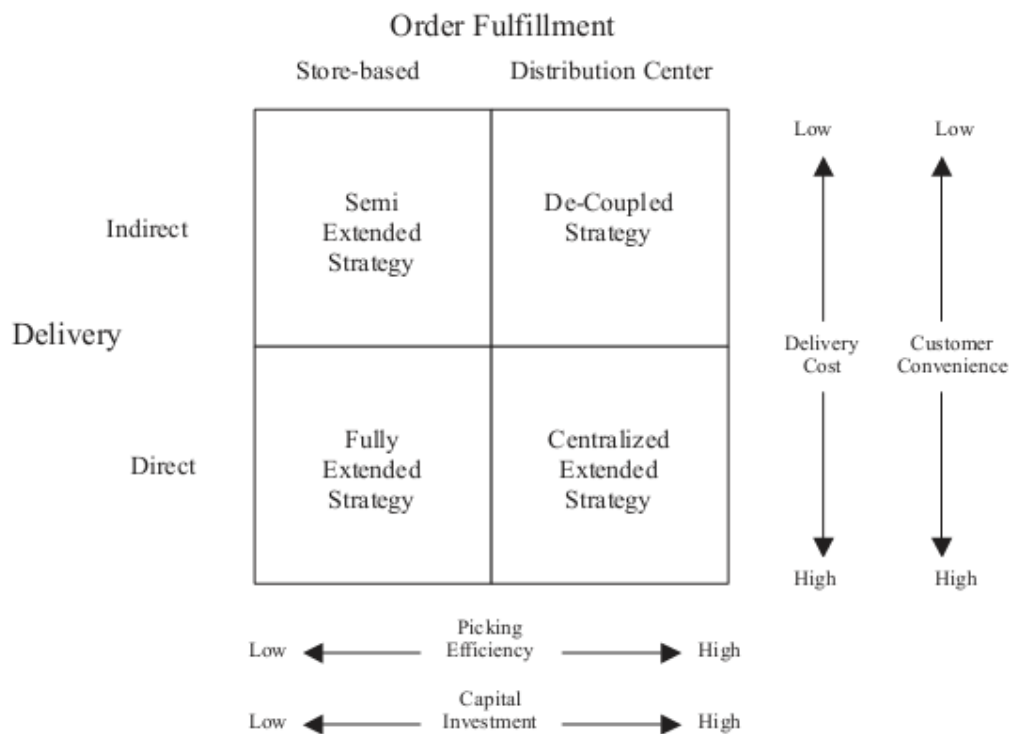


Figure 1. Typology of last-mile order fulfilment by Hult et al. (2007)

Initially, last-mile service merely meant home delivery service to end-consumer as a part of order fulfillment in e-commerce context (Esper et al., 2003). Thereby, the efficiency of the whole fulfilment process has been assessed as if this ultimately impacts the last-mile value created for customers (Hult et al., 2007). As shown by the graph, each strategy inevitably faces trade-offs between delivery cost/capital investment and picking efficiency/customer convenience.

Notwithstanding, the e-tailing business has recently evolved to emerging models such as multi-channels and omni-channel, changes in more aspects of distribution network such as network flow, relationship governance and service architecture were argued to result in reciprocal adaption of network structure so that customers can enjoy higher performance (Lim & Srari, 2018). Favoring customer service outcomes, latter matrix for network design purpose suggested by Lim and Srari (2018) sorted out six forms of last-mile supply network using delivery responsiveness and product variety trade-offs (Figure 2). In this classification, delivery responsiveness was

denoted by customer demanded delivery speed, while product variety was a function of several factors such as resource orchestration, supply base depth, and information visibility. Especially, offering various delivery speeds, so-called hybrid delivery responsiveness, was believed to emerged in omni-channel context (Lim & Srari, 2018), which also means various delivery options for customer.

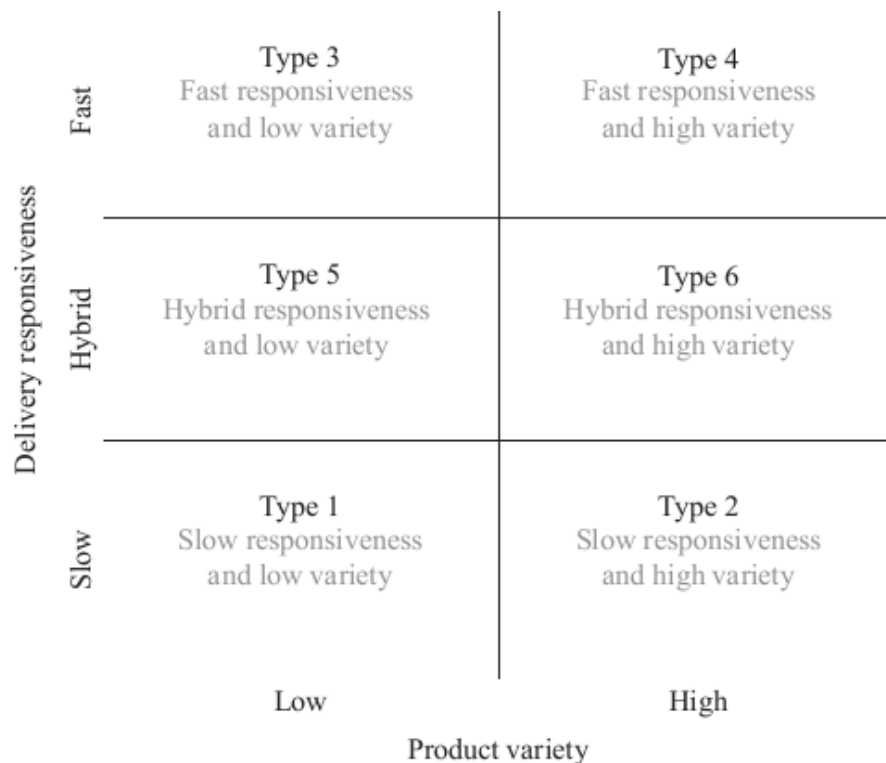


Figure 2. Typology of Last-mile supply network by Lim and Srari (2018)

Customer-driven categorizes of last-mile logistics is the second way of developing last-mile delivery. Gevaers et al. (2009) argued that above typologies are strategy-oriented and only takes customer service into consideration for performance assessment, thus unable to realize other challenges. The authors on the other hand emphasized the need to clarify types of reception and proposed another diagram (Figure 3) underlying issues associated with home delivery and standard next day delivery. Examples of such issues are first attempt failure of home delivery, inefficient routing and consolidating orders, less-than-truckload running (Gevaers et al., 2009; Rai, Verlinde, & Macharis, 2019).

Additionally, Lim et al. (2018) recently divided last-mile logistics distribution structure into three types based on efforts required between vendor and consumer: push-centric, pull-centric, and hybrid system. Push-centric and pull-centric require full effort for delivery and transporting the product(s) from either vendor or customer respectively, whereas hybrid system shares the effort for both sides (Lim et al., 2018). Figure 4 visualizes differences in level of effort and further breakdown in terms of mode of picking, mode of collection and mode of CDP.

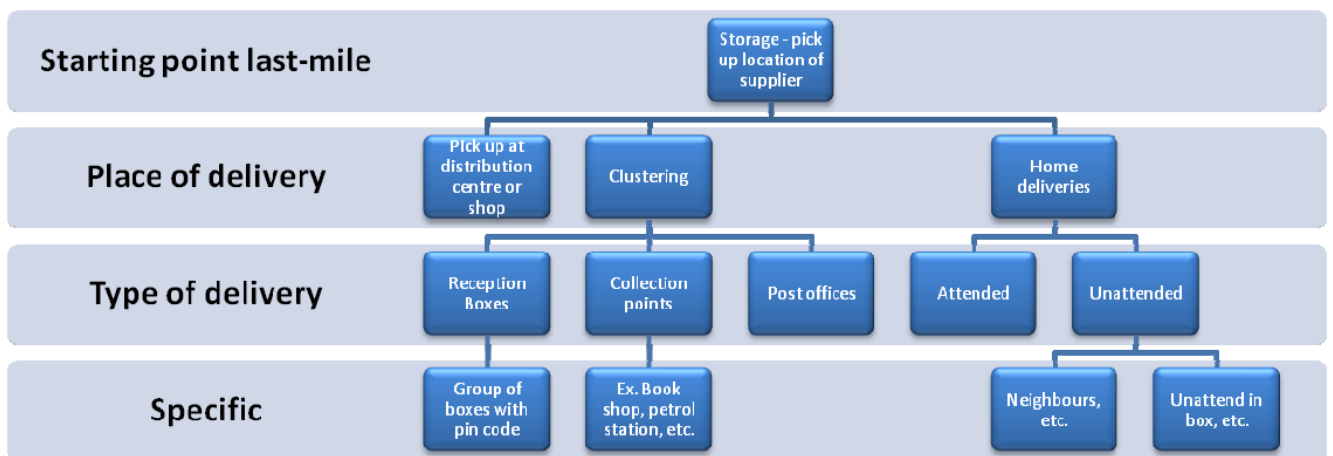


Figure 3. Last-mile typology based on types of reception by Gevaers et al. (2009)

*Black arrow: effort from vendor *White arrow: effort from customer			
Distribution structure type	Further breakdown	Level of effort	Ending point
Push-centric	(Mode of picking) M-based DC based BM-based	←—————→	Customer
Hybrid	(Mode of CPD) CDP-A CDP-U	←—————→	Customer
Pull-centric	(Mode of collection) BM Information store	←—————→	Customer

Figure 4. Last-mile distribution structure typology by Lim et al. (2018). M: Manufacturer. DC: Distribution center. BM: Local brick-and-mortar store. CDP-A: Attended collection delivery point. CDP-U: Unattended collection delivery point.

Basically, customer-driven typologies allow a different viewpoint for resolving inefficiency issues that has been omitted if too much emphasis is put on customer service. This implies compromise with customers' demand so that resources

could be more precisely aligned and utilized. Approaches putting forward parcel consolidation such as longer delivery schedule (rather than next day), parcels pick-up points and lockers located in busy residential areas, or stores pick-up (Rai et al., 2019). In other words, perceived urge for fastest delivery is alleviated as consumers' waiting time increases. Furthermore, sustainability awareness has increasingly been enabled by these emerging delivery methods. Up to this point, the structure of last-mile distribution has been enriched by the input of customers' concessions.

In their latest review, Daugherty, Bolumole, and Grawe (2019) claimed that logistics customer service and customers' role are more and more placed as driving forces behind logistics strategies and expenditures. Last-mile logistics, with the persistent presence of customer-related elements discussed above, is not beyond this vision. As firms are trying to balance out between cost and customer service level, understandings of consumers' decision-making process could act as one benchmark for firms in designing distribution system. This rationale roots for a pool of research looking at logistics customer service and other variables that measure customers' perceptions. Hence, in order to reaching closer to the purpose of addressing customers' perceptions as a factor that impact their actions toward delivery service, next section of this review identifies logistics service quality, electronic service quality and customer perceived value in the context of online and omni-channel retailing to be the most relevant.

2.3. Customer perceptions of quality and value

2.3.1. Electronic service quality and logistic service quality

Internet-based service and logistics service share some distinct characteristics that make service quality model retrieved from conventional services unsuitable for them. It is noticed that service provider and receiver being physically separate with the service directed at things rather than people (Bienstock, Mentzer, & Bird, 1997; Collier & Bienstock, 2006; Parasuraman et al., 2005). Rao, Goldsby, Griffis, and Iyengar (2011) postulated thoroughly that preceding scales established for B2B's relationship such as relational performance or SERVQUAL scale were not suitable in business-to-customer delivery service. This idiosyncrasy gave rise to new criteria for evaluating

service quality, resulting in numerous scales designed to measure how customers evaluate these types of service quality. Collier and Bienstock (2006) converged the body of researches on e-SQ and logistic service quality to propose additional criteria for how products are delivered within ‘outcome’ dimension of e-SQ, made up of three first-order dimensions: order timeliness, order accuracy, and order condition. Likewise,

On the other hand, by using the keyword “logistics service quality” (LSQ), one can easily identify a research stream developing this construct to evaluate the provision of logistics-related service. Basically, LSQ was established as an attempt to expand theoretical domain of customer-based definitions of logistics value, which was expected to bring together observable attributes in technical research and unobservable factor such as customers’ perceived value in marketing research (Mentzer, Rutner, & Matsuno, 1997). It was grounded on the assertion that it is important for firms to gain competitive advantage over their competitors by identifying what customers truly desire, highlighting the importance of assessment from the perspective of what the customer values in addition to the perspective of what the company provides (Mentzer, Flint, & Kent, 1999; Mentzer et al., 1997). There is a research line that investigating physical distribution service quality (PDSQ) separately in the online B2C context, which has its ground from logistics service quality framework in B2B business. Murfield et al. (2017) in their literature review section accumulated details on B2B/B2C context, channels and measurement of LSQ that had been studied. Besides a dearth of LSQ research in omni-channel environment, as claimed by the authors, it is also noteworthy that LSQ in B2C online setting mostly focus on timeliness, availability, condition, with the addition of return identified only by Yuan, Grant, McKinnon, and Fernie (2010) (Table 1).

Table 1. LSQ dimensions and variables by Yuan et al. (2010)

Dimensions	Variables
Timeliness	Choice of delivery date and delivery time window; deliver on the first date arranged and within a specified time slot
Availability	Confirmation of availability; substitution offer; order tracking and tracing system
Condition	Order accuracy and completeness; order in-transit damage; condition upon arrival
Return	Return channels options; promptness of collection; promptness of replacement

LSQ was adopted in broad contexts ranging from industrial and household customers, as well as all types of retailing channel environments. Relating to last-mile delivery service and the purpose of this study, the review at hand limits its scope to focus on the rationale of previous works about 1) how LSQ has been developed to account for customers' judgement regarding last mile delivery service quality and 2) the relationship of LSQ and perception-related and behavior-related constructs. Thereby, it will help ignite the relevance of research context and why LSQ is used in the study at hand. Up to this point, factors relating last-mile delivery service in the corpus of e-SQ and electronic LSQ could be seen to be similar in the way that customers' evaluation regarding delivery service was initially examined through fulfilment as a part of overall electronic service quality (e-SQ). Fulfillment was defined similarly in those studies relating to the extent to which promises on delivery of order was fulfilled (Parasuraman et al., 2005; Wolfinbarger & Gilly, 2003).

In response to enrich the intellectual base for developing consumer service strategies that takes into account order-fulfillment outcomes, three processes (inventory management, last-mile delivery and returns management) and their elements were recapped to have influences on consumers' behaviors by a review of Nguyen, Leeuw, and Dullaert (2018). According to their review, most of previous researches missed one or more order-fulfilment-related elements, such as shipping charges, when investigating impacts on consumers behaviors. Nonetheless, the core of pertaining studies lies in linkage between logistics service quality (LSQ) and purchase satisfaction and customers loyalty, yielding a variety of insights about this relationship. Customers' perception of service elements for B2C last-mile logistics plays an important role of differentiating an online retailing firm from its competitors (Yuan & Grant, 2006). In the context of home delivery, timeliness is asserted to be the most important factor in customers' perception of electronic PDSQ (ePDSQ) (Yuan et al., 2010). In another research by Rao et al. (2011), timeliness, shipping options, item availability, and order tracking are listed as measures for PDSQ and together with shipping cost impact customer's satisfaction. Last but not least, Murfield et al. (2017) examining LSQ in omni-channel retailing suggested that LSQ should not be studied as a bundle of attributes as only timeliness was found to constantly impact on customer satisfaction and loyalty.

2.3.2. Customer perceived value in electronic retailing

In the latest literature review conducted by Zauner, Koller, and Hatak (2015) of 104 papers focusing on this concept published during the 1980s until 2014, they pointed out the effects of market dynamics and trends on the relevance of certain value dimensions in certain situations, yet customer value perceptions commonly involve some forms of trade-offs or weighing up benefits and sacrifices. The concerns are more towards the circumstance when a psychological phenomenon is applied in business and management-related disciplines, “the conceptualizations of customer perceived value are appearing only slowly including its level of abstraction, its dimensionality, the cognitive vs. affective character of the concept and its dynamic nature” (Zauner et al., 2015, p. 12). Their conclusion indicates several emerging trends regarding these concerns that:

- 1) The multi-dimensional view of value is more and more favored since it adds affective or emotional dimensions to cognitive or economic aspects of the unidimensional view, with specific dimensions are strongly affected by the research contexts.
- 2) Higher-order level of abstraction is advocated to increase practical and scientific relevance by facilitating the examination of the concept and other variables in a nomological network.

It is evident that customer perceived value has been examined with a wide proliferation of definitions, conceptualizations, frameworks, and typologies of perceived value as an empirical construct, given the amount of literature review that have been established on this concept (Smith & Colgate, 2007; Zauner et al., 2015). Smith and Colgate (2007) straightens out that specific benefits and sacrifices differ for goods and services, as well as for customers and business contexts, notwithstanding their work focuses on categories of value that maintain the same and could differentiate strategic orientation. Hence, instead of identifying benefits and sacrifices four types of value (functional/instrumental value, experiential/hedonic value, symbolic/expressive value, and cost/satisfices) and five key sources of value (information, products,

interactions, environment, ownership/possession transfer) were postulated, resulting from integrating and extending previous customer value frameworks.

Regarding online shopping context, preceding researchers such as Overby and Lee (2006) and Chiu, Wang, Fang, and Huang (2014) divided perceived value in into two types: utilitarian and hedonic value. Utilitarian value was consistently found to be dominant driver for online shoppers, putting emphasizes on functional benefits and sacrifices, which were cognitive and incorporated “economic value for the money and judgment of convenience and time savings” (Overby & Lee, 2006, p. 1161). Chiu et al. (2014) postulated perceived value as a second-order multi-dimensional formative construct and still have similar conclusion. This provides evidence for customers’ preference towards convenience, a benefit that can be attributed to last-mile delivery service quality.

On top of that, Lin, Sher, and Shih (2005) aroused the discussion of using give-get components integrated to the perceived value by structural model. Accordingly, the authors integrated electronic service quality’s dimensions as get components and monetary sacrifice as give component of perceived value, making it a second-order formative construct. They also compared and contrasted models with different hierarchy level of these aforementioned variables to demonstrate that it would be more theoretically convincing when perceived value was conceived as formative construct. Nonetheless, their conclusion also denotes in that case the magnitude of cognitive-based value perceptions on behavioral intentions would supplant affective-based satisfaction.

The conceptual definition followed by Lin et al. (2005) was coined by Zeithaml (1988) as “the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given.” (Zeithaml, 1988, p. 14). Approaching the issue by means-end chain, perceived value had higher level of quality because of two reasons: 1) value was more individualistic and personal than quality and 2) although quality was specified as get component, more abstract factors might be implicitly included such as prestige or convenience. Thereby, perceived quality is a benefit component of value. As for give component, she suggests that sacrifices could

be monetary and non-monetary (i.e. time, effort) that are given up when consuming a service, depending on the context of that service.

This thesis proposed a linkage between LSQ and customer perceived value to contribute to the discussion of last-mile delivery service at hand. Although attention was mostly paid to the direct relationship of LSQ and customer satisfaction, perceived value has a competitive position in service marketing literature over customer satisfaction (Eggert & Ulaga, 2002). This could also be true in electronic retailing and especially last-mile delivery service, where price and convenience were found to simultaneously impact on customers' motivation and decision for buying online (Rao et al., 2011; Yuan et al., 2010). Research on logistics strategies increasingly attached special importance to consumers' role with the main objective of providing better service in the form of time-based delivery (Daugherty et al., 2019). Conceivably, the shorter the lead time is, the higher the cost is, as can be seen in the review of last-mile problems. Therefore, it is crucial to understand an integrative customers' perceptions of both what they want and what they can give up, which can be explored by using perceived value.

Customer perceived value could be formulated as a composite construct based on the definition mentioned in previous sections, which includes four dimensions of LSQ and sacrifices as formative indicators. This paper stipulates four dimensions (timeliness, condition, availability, and return) of LSQ, as different benefits that are enjoyed by customers with last-mile delivery services. As delivery service often goes with shipping fee, monetary cost is inevitably one of customers' sacrifices. In addition, this study proposed time and effort consumers exert to receive orders as inconvenience that could definitely happen regardless last-mile service options. Hence, price, time, and effort contribute to sacrifices as reflective indicators. Overall, the first hypothesis is as following:

H1. Consumer's perceptions of LSQ's dimensions and sacrifices simultaneously affect their perceived value of using last-mile delivery services.

2.4. Customer attitude and behavioral consequences

Perceived customer value has been found to be a powerful predictor of purchase intention (e.g., Dodds & Monroe, 1985; Gale, 1994; Zeithaml, 1988), or clearly suggested leading to various behavioral consequences such as word-of-mouth, repurchasing, customer reference, loyalty (Zauner et al., 2015) which are ultimate goals of retailers in their relationship with customers. Although service quality is apparently the crucial determinant of behavioral intentions, there has been ample evidence of the nature of interrelationships between service quality, perceived value, satisfaction and behavioral intentions (Cronin Jr., Brady, & Hult, 2000). Several attempts were made to resolve this point.

Adding on the theoretical justifications for causal direction based on mental sequence of appraisal, emotional response, and coping, Cronin Jr. et al. (2000) argued that all antecedents of behavioral intentions (service quality, value, satisfactions) had to be collectively assessed. They empirically confirmed the indirect and complex effects of service quality through service value and satisfaction, as well as service value through satisfaction, on dependent variable (behavioral intentions). Perceived value was asserted to be distinguished from customer satisfaction as a cognitive-based construct which is independent of the timing of the usage (pre- and post-purchase), directed toward present and potential customers so that it can help assess by which means customer's requirement can best be met (Eggert & Ulaga, 2002).

Regarding ample evidence for the complex impact perceived value has on customer satisfaction and customer loyalty in the preceding review, such linkages is hypothesized in this research as following:

H2a. Perceived value of last-mile delivery service positively affects customer satisfaction in online shopping context.

H2b. Perceived value of last-mile delivery service positively affects customer loyalty in online shopping context.

H3. Customer satisfaction positively affects to customer loyalty in online shopping context.

2.5. Conceptual model

This study's originality is in the inclusion of variables that are germane to last-mile delivery as a crucial part of perceived customer value theory. In addition, perceived value is relative to competition (Eggert & Ulaga, 2002), which could be inferred that one delivery option has more preferred trade-offs than the others. Customers decide to choose a delivery option because it offers maximum perceived value to them. Thus employing perceived value concept as the total net of benefits and sacrifices in using a delivery service preferred by customers helps validate their overall perception.

A structural model is used to examine the effects of last-mile service quality on customers' perspectives and behaviors, represented by conceptual constructs such as LSQ, perceived value, customer satisfaction and loyalty. All of these are latent variable/construct that are measured by multiple items/indicators. A visual graph below demonstrates the structural model of relationships among them:

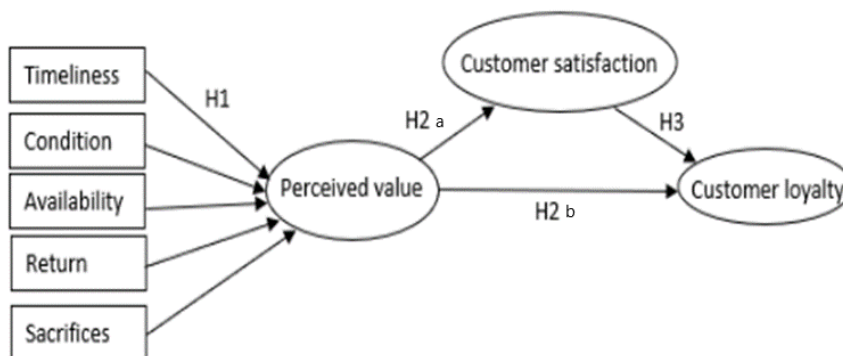


Figure 5. Theoretical model

On the one hand, perceived value in this study is modeled a second-order construct that is composed of five components above, hence can represent its theoretical definition of Zeithaml (1988) followed by this thesis. The rationale of second-order model put forward in this thesis is that the effect of all first order factors, representing get-give components, could be considered at the same time and interpreted by one overall perceived value. Then it is superior to investigate and examine relationship of that one higher order factor with both its own lower-order factors, and other dependent variables which are at similar level of abstraction, within the same nomological network (W. W Chin, 1998). Therefore, perceived value also acts as exogenous construct in its

relationship with customer satisfaction and loyalty. In other words, dependent variables of perceived value in this study are customer satisfaction and loyalty, acting as outcomes of perceived value.

Researchers was interested in the effects of fulfilment on the whole online service quality and customer satisfaction towards Internet-based shopping experience, and subsequently repurchase intention and loyalty in the form of relationship between these theoretical constructs (Murfield et al., 2017; Parasuraman et al., 2005; Rao et al., 2011; Wolfinbarger & Gilly, 2003; Yuan et al., 2010). Previously, home delivery was the dominant delivery service that researchers investigated customers' perceptions against LSQ's dimensions (e.g Rabinovich and Bailey (2004); Rao et al. (2011); Yuan et al. (2010)). Fulfilment was consistently found to be important facets of overall e-SQ (Wolfinbarger & Gilly, 2003) and strongly impact on customer satisfaction, perceived value and loyalty (Parasuraman et al., 2005). LSQ alone was mainly hypothesized and tested its magnitude for customer satisfaction, loyalty and referral behaviors, as can be seen from the review of Murfield et al. (2017). However, Murfield et al. (2017) also expanded to omni-channel delivery methods and studied the impact of LSQ as a useful tool to assess customers' perception regarding last-mile delivery service. Noticeably, they found each component of LSQ had different weight in driving customer satisfaction in omni-channel context, and called for more research on the impact of LSQ in other variables used to evaluate customers' perceptions in service quality literature such as perceived value.

3. Methodology

3.1. Research philosophy

Delimiting research philosophy when doing a study is important because it encloses preliminary assumptions about the stance of researcher viewing the world and knowledge is achieved. Such views definitely impacts research methods of collecting data (Bryman, 2016; Saunders, Lewis, & Thornhill, 2006). Ontology is the branch of philosophy that concerns whether the nature of entities and reality should be considered objective or subjective; while epistemology takes into consideration what is acceptable knowledge in a discipline (Bryman, 2016; Saunders et al., 2006). This thesis works under the definitions and concepts delineated prior to the research process by previous works about logistics service quality and its dimensions, as well as perceived value and its components. The idea stems from objectivism, the ontological belief that reality and social phenomenon exist externally to either the researcher or customer who is service participants. Relating to this, Tronvoll, Brown, Gremler, and Edvardsson (2011) suggested that researchers' view of ontology impacts their epistemological stance and methodological approach chosen as well, which in turn forms the research processes. Hence, the study at hand departs from ontological standpoint of objectivism and follows the goals of positivism to explain and predict reality that can be discovered under the form of underlying patterns or relationships among constructs. The distinction of positivism lies in "the emphasis on accumulation of knowledge and discrete steps that follow a consistent pattern" (Mentzer & Kahn, 1995, p. 232).

Discussions on theory of methodology in logistics research and service research share the consensus that positivism has been adopted largely in both, dictating the position of the researcher separate from the research setting and at a privileged point of observation, from which predictive understanding of phenomenon is theory-driven and findings are accumulated to build knowledge (Mentzer & Kahn, 1995; Tronvoll et al., 2011). Gammelgaard (2004) advocated that schools of logistics research within positivistic viewpoint are likely to take analytical approach, in which concepts are decomposed and fragmented to enable analyzation. On the other hand, Tronvoll et al. (2011) classified positivistic service research as being a snapshot of stationary situation

with a single transaction and consisting of predefined (a priori) relationship. On top of that, service management and logistics management in particular are highly applied science which academic knowledge is expected to provide practitioners with applicable insights and tools for managerial tasks. This necessitates the relevant and precise adoption of theory development, testing and application for both conceptual and practical purposes. Fine-tuning research methods to better capture more detailed and complex structures of phenomenon poses as foremost challenge for future studies using positivism in service research and being attributed to the nature of science and managers' demand for rapid and normative information for their business decisions (Tronvoll et al., 2011).

3.2. Research approach

The view of the role of theory in relation to research is by no means straight forward, yet it involves two major standpoint: deductive and inductive theory (Bryman, 2016). A deductive approach is chosen in this thesis to address the research gap identifying relationship between LSQ and perceived value. This thesis applauds and is inspired by the comprehensive framework for theory testing, application and development by Mentzer and Kahn (1995) for logistics research going under positivistic paradigm and deductive approach. The framework involves three main research stages (Mentzer & Kahn, 1995): idea generation, theory construction to methodology, and methodology to conclusions, which are discussed subsequently in the context of this thesis (Figure 6).

Firstly, idea generation can occur via literature review or observation or both, which promote substantive justification that leads to research question (Mentzer & Kahn, 1995). An integrative literature review pulled together research in last-mile logistics, logistics service quality, and service quality and formed a research agenda of customers' perspectives and evaluation towards last-mile delivery as a service they use. It was then observed that a general principle can be established for the existence of relationships between attributes-oriented service constructs with perception constructs from customers' viewpoint such as customer satisfaction or perceived value. The substantive justification of this thesis is that dimensions of logistics service quality in

last-mile delivery context might constitute perceived value, thereby motivate next steps of the research test this proposition.

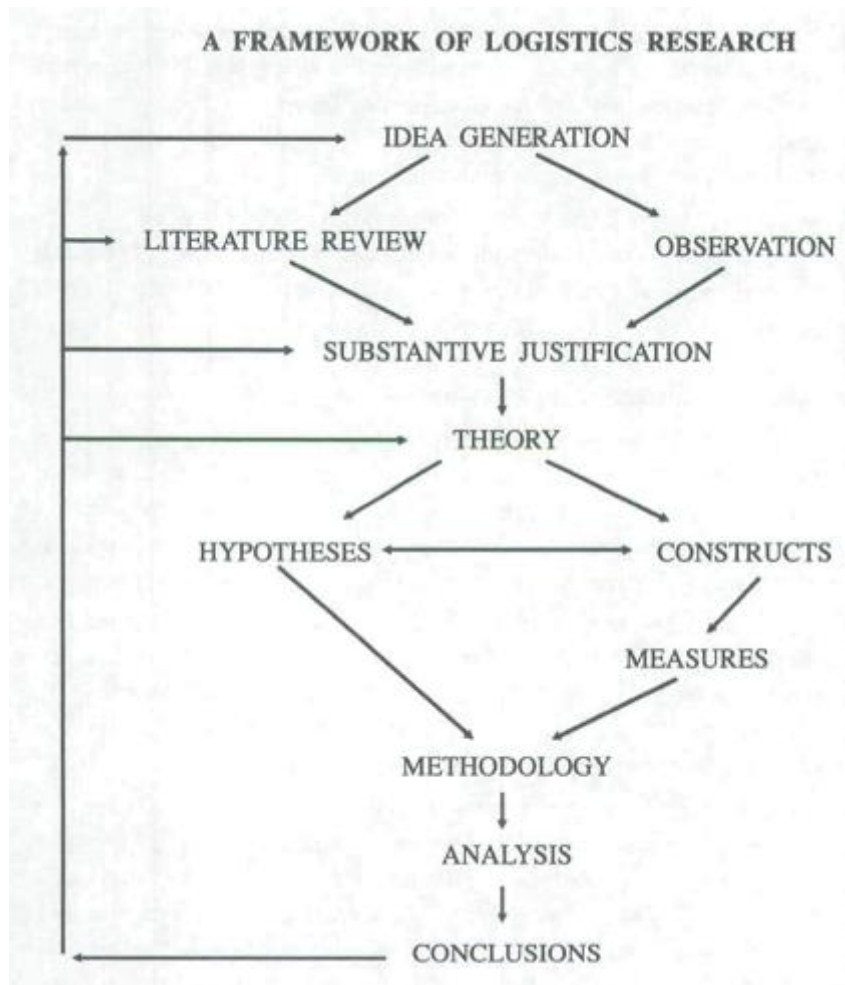


Figure 6. Research framework by Mentzer et al. (1995)

The next main stage is “theory construction to methodology” which is the process of “application of logic, the implementation of methods and procedures (e.g., the experimental method), and the observance of standards of conduct and evaluation” (Mentzer & Kahn, 1995, p. 235). First requirement is thus awareness and understanding of extant theories as a foundation from which hypotheses can emerge. The theory of customer service in logistics evolved from supplier focus to customer focus, concentrating more on logistics service quality (Mentzer & Kahn, 1995). Furthermore, Pellathy, In, Mollenkopf, and Stank (2018) push for middle-range theorizing on logistics customer service, which pays particular attention to contexts and mechanisms

to extend current knowledge by consolidating empirical regularities established by fellow researchers into theoretical propositions.

The literature review of this thesis addresses a mechanism that explains the ability of firms to gain competitive advantages through the relation between service quality and customers' perceptions impacting satisfaction and behavioral intentions. Taking middle-range theorizing approach, this thesis tends to focus on the context of last-mile delivery of e-commerce retailing and hypothesizes customers' perceived value as the mechanism explaining customers' overall assessment of using delivery service, and in turn on satisfaction and loyalty. Such correlation between service quality and perceived value in service literature constitutes the theory base that hypotheses in this thesis are drawn from and tested. Following such approach, next methodological choices involve research strategy for a quantitative data collection, convenience sample composition, and measures of constructs to be used. These choices are discussed in detail in next sections.

Final stage in Mentzer and Kahn (1995)'s framework is methodology to conclusions that connects the previous stage. Accordingly, in order to assure acceptable findings, researcher must examine issues of the validity, reliability and precision prior to data collection and deal with limitations of data analysis technique. This thesis chooses PLS-SEM to analyzing the data and findings are reported to feedback to proposed theory and hypotheses.

3.3. Research strategy

Research strategy is general orientation to the conduct of a research, influenced by research philosophy and approach (Bryman, 2016; Saunders et al., 2006). Given the purpose of explaining and predicting the proportion of logistics service quality on customers' perception and behaviors, survey is considered to logically fit the philosophy and the research question of the study at hand that examine theoretically grounded model of relationships between variables and testing hypotheses. As the most common strategy used in business and management research, one advantage of survey is that it allows collection of large amount of data in an economical way, which can be analyzed using statistics (Bryman, 2016; Saunders et al., 2006). Given the scope of this

thesis constrained by time and cost limitation, survey using questionnaire is the key strategy providing primary data for the whole study. Indicators of theoretical constructs are adopted from literature, hence are used also to design the questionnaire of the study. In addition, this thesis only aims to collect data at a specific moment in time, in other words, time horizon of the survey is cross-sectional rather than longitudinal. This means that the findings should be understood as a “snapshot”, since main purpose is only to understand the incidence of customers’ opinions.

3.4. Sample design

Essentially, an online shopper, who had purchased on any Internet-based commerce platform and inevitably involve in last-mile delivery service, is part of the population of this research. Although the research desired to project its findings to the population in this case as broad as possible, it is obviously impossible or impracticable to do survey on entire population, hence necessarily to do so on a sample selected from a sample frame. In addition, there are basically two major sampling technique: probability and non-probability. Non-probability technique is used in this study to increase accessibility to respondents because of given time and cost restrictions. Specifically, convenience sampling was employed since the study was conducted on sampling frames that are convenient for the author, as described following.

There is no sampling frame of customers of a specific retailers or e-commerce site that is available to the author since it is usually very confidential to outsiders or expensive to buy. Therefore, two alternative and web-based sampling frames were chosen in this case. The first one is social networking site community on Facebook, a platform that the author also participates. Participants were obtained through friends network of the author and different Facebook groups. Only users who have online shopping experience within a maximum of previous six months are qualified for the survey. They are filtered by a section in the questionnaire including questions about online shopping experience. The second frame is crowd-working platform Prolific, which has been recently developed and increasingly utilized by researchers thanks to its transparency of participants’ profile and responses as well (Palan & Schitter, 2018). Identical inclusion criteria on Facebook platform can be done by setting fixed criteria

of users' profile on Prolific and further specifying with same questions in the questionnaire. The participants on Prolific were compensated by the researcher for an amount of money aligned with the time it took participants for the survey according to the platform's policy. The author can evaluate the responses before approving the compensate.

Limitations and bias of the sample in this study could be seen coming from convenience sampling technique and sampling frame that are both web-based. Although these two platforms have been praised recently to be good and relatively inexpensive source of survey respondents, a sample selected from them is still subject to bias of online survey in terms of verifying identities and environment control (Brickman Bhutta, 2012; Palan & Schitter, 2018). Moreover, convenience sampling technique adds to the limitations of generalizations and representations (Bryman, 2016), especially in terms of respondents' attributes because of large demographic diversity. In all fairness, demographic diversity was wished for to establish external validity that is able to generalize the results, which is one of the ultimate aim of a quantitative study in any case (Bryman, 2016). There is a description of the sample itself in following chapter before main data analysis to examine the structural model.

3.5. Data collection

The data collection process of this study was accepting responses for a period of two weeks. In total, 219 responses were obtained, yet of which 6 were eliminated because of violating within-6-month-experience criterion and 3 were testing responses by Prolific's administrator, hence rejected. Actual data was collected using online survey with questionnaire designed on popular Internet-based platform Google Form. Specifically, potential respondents were directed to the questionnaire with a link provided electronically through the two platforms abovementioned. Given that there are only planned questions needed to be answered, self-administered questionnaire alone is suitable.

The questionnaire consists of three main parts: i) Information of demographic and socio-economic background (living country, age, gender, whether they have income); ii) online shopping experience (product types, chosen delivery method, and

how long it has been since the last online purchase); iii) respondents were asked to rate their agreement on statements about the delivery method (home delivery, pick up at collection point, or pick up at stores) that they frequently choose in their online shopping experience. Questions in the third part were all inspired by examined theories as well as adopted measurement items for all constructs. In addition, English version of the questionnaire was also translated into Vietnamese for convenience of Vietnamese respondents reached on the author's Facebook friends network. Equivalent meaning is ensured to the best knowledge of the author.

3.6. Analysis tool

Structural equation modeling (SEM) is a family of statistical models that is developed in order to explain the relationships among multiple variables (Hair, Black, Babin, & Anderson, 2014). According to the book of Hair et al. (2014), SEM is superior than other statistical techniques thanks to the simultaneous estimation of a series of separate but interdependent, multiple regression equations by structural model. The interdependent nature of structural model is suitable for the research objectives of this paper. It allows dependent variables in one relationship to be independent ones in subsequent relationships (Hair et al., 2014), which is the case of perceived value. Moreover, differing effects on each dependent variable of the same variables can also be expressed by SEM (Hair et al., 2014). Specifically, SEM could be divided into full-information and partial least square estimation approach (Anderson & Gerbing, 1988). In this study, the data were analyzed using Partial-least squares (PLS) structural equation modeling (SEM) techniques.

Based on the preliminary considerations that are necessarily acknowledged of using PLS-SEM suggested by (W. W Chin, 1998; Hair, Risher, Sarstedt, & Ringle, 2019; Hair, Sarstedt, Pieper, & Ringle, 2012; Ringle, Sarstedt, & Straub, 2012), this methodological choice is preferred due to several reasons. PLS-SEM is more suitable for research with small sample size, including both reflective and formative constructs, non-normal data, higher statistical power, and focusing on causal-predictive analysis in situations of learning something about the data and the phenomenon underlying the data (Hair et al., 2019; Hair et al., 2012). With regard to model characteristics, PLS-SEM is

also capable of dealing with hierarchical latent variables and especially superior with complex model with high number of latent variables and indicators (Becker, Klein, & Wetzels, 2012; Hair et al., 2012). These advantageous properties are deemed to suitable for the current study.

In addition, there are several attempts to steer clear of misconception in the appropriate use of different approaches to structural equation modeling in relation to research purpose as exploratory/confirmatory orientation or theory testing/application-prediction (i.e Anderson and Gerbing (1988)). Further than that, it is more important to think of these approaches as complementary choices and acknowledge both strengths and limitations of each choice (Becker et al., 2012; Hair et al., 2012). PLS-SEM is advocated to compromise the dichotomy between explanation and prediction since it emphasizes prediction in structural model that is designed to provide causal explanations, resulting in the appropriateness of following prediction-oriented evaluation procedure (Hair et al., 2019), as followed in the result section.

SmartPLS 3 (Ringle, Wende, & Becker, 2015) was the computing program used for the data analysis in this study. PLS algorithm with path weighting scheme are selected to determine item loadings and path coefficients for structural relationships. Furthermore, bootstrapping approach with 5,000 samples and significance level defined at 0.05 was used as resampling method for significance testing. Figure 7 illustrates the graphical representation of PLS path model that was created in SmartPLS 3. Missing value on items of Return construct due to the respondents having no experience of returning goods was handled by option “Mean replacement” of the program so that the sample size did not need altering¹. Other settings of the bootstrapping were Bias-Corrected and Accelerated (BCa) for confidence interval method, two-tail test type.

The author followed “repeated indicator with mode B” approach that is advocated to be used for reflective-formative hierarchical latent construct, and produce more precise weights of lower-order constructs on higher-order one and path coefficient

¹ Mean Replacement: This option replaces all missing data points with the mean value of all remaining data points per column (i.e. indicator or variable). Mean replacement has the benefit not to alter the sample size. Also, the mean value of variables in the sample does not change. However, it affects the variance of the variables in the sample (and thus the estimated path coefficients in PLS-SEM) (Ringle et al., 2015).

to subsequent endogenous variables (Becker et al., 2012). Such superior properties are suitable for the study at hand which focuses on all relationships in the nomological network of the model. A disadvantage of this method is that other antecedents apart from lower-order factors cannot explain any variance of the higher-order construct (Becker et al., 2012; Ringle et al., 2012). However, this is not a concern in this study since perceived value plays as an exogenous construct.

The author used output of SmartPLS program and followed the guidelines of Hair et al. (2019) and W. W. Chin (2010) on reporting the results and assessment criteria in predictive manner. Criteria for construct reliability and validity differ for formative and reflective models (Hair et al., 2019). With regard to lower-order factors, their measurement scales have been developed with rigorous procedure in preceding studies and employed all indicators as reflective one. In this thesis, they are consistently used in the same manner and the focus of validity check is not on face validity for reflective indicators but rather on other sub-dimensions.

3.7. Research ethics

Research ethics refers to the appropriateness of the researcher in relation to the rights of those who are the subject of the research or affected by it, which is critical throughout all stages of a research (Saunders et al., 2006). Ethical issues are widely debated for using the Internet as data collection method that require researchers to familiarize with netiquette – guidelines for the behavior of Internet users in collecting data (Bryman, 2016; Saunders et al., 2006). Notwithstanding it is more relaxing in this study given the research topic and there is no sensitive data needed to be gathered. Very little and basic demographic information was collected and aggregated to inform matching characteristics of respondents and targeted population.

All participants are aware of the research in advance so that they understand exactly why data is being gathered and no harm or disadvantages would be imposed on them (Bryman, 2016; Saunders et al., 2006). Furthermore, the questionnaire is preceded by a brief introduction of the researcher, purpose of the research, approximate duration needed to undertake the survey, and the anonymity of the data. As the administration of the questionnaire is articulated in above sections, issues with gaining access to

prospective respondents did not evolve due to the nature of the survey. This also increases trust and gain consent which they give by filling the questionnaire. The submission of completed answers for the questionnaire is taken to have implied consent (Saunders et al., 2006).

3.8. Constructs and measurement items

All constructs/variables in this research are measured by multiple items/indicators, adopted from the extant researches. From the start, four factors of LSQ (timeliness, condition, availability, return) are conceptualized as four first-order components, operationalized LSQ from consumers' perceptions as in the works of Murfield et al. (2017); Yuan et al. (2010). Sacrifices complements as the fifth first-order components, measured with items adopted from Brady and Robertson (1999). These are represented by a set of indicators which timeliness, condition, availability, sacrifices each consists of 4 items, whereas return consists of 3 items. In addition, this study is interested in the customer satisfaction as a judgement of performance relative to perceived standards as has been adopted in the work of Murfield et al. (2017), which is slightly modification in wordings to fit the focus on delivery service and includes 3 items. Finally, loyalty towards the e-commerce site(s) that customers have bought from is measured through five-items in Behavioral Loyalty Scale that Parasuraman et al. (2005) adopted for scale validity in their study developing E-S-QUAL scale.

Five-point Likert-type scale format with varied scale anchors were used for all questions. Apart from sacrifices measurement scales using very low-very high anchor, the others all used very disagree-very agree anchor to ascertain semantic issue. Measurement scales for all constructs are summarized in Table below with supporting literature.

It is important to specify the nature of relationship of a construct and its indicators in the research model at hand as this has implications for evaluating validity (Bollen, 2011; Jarvis, Mackenzie, Podsakoff, Mick, & Bearden, 2003), especially it is also helpful for choosing a suitable data analysis technique. Generally, there are two types of relationship nature, or so-called formative and reflective model (Jarvis et al., 2003). Formative model means that direction of causality is from indicators to construct,

Table 2. Measurement items

Items	Supporting literature
<p>LSQ-Timeliness</p> <p>Tim1_ The time between placing and receiving an order is short.</p> <p>Tim2_ The product is delivered by the time promised.</p> <p>Tim3_ Delivery date and time slot/Date for pick up is specified.</p> <p>Tim4_ I have multiple options for delivery date and time.</p>	<p>(Collier & Bienstock, 2006; Wolfinbarger & Gilly, 2003) (Murfield et al., 2017), (Yuan et al., 2010); (Parasuraman et al., 2005)</p>
<p>LSQ-Condition</p> <p>Con1_ I get what I ordered.</p> <p>Con2_ Damage rarely occurs during transportation.</p> <p>Con3_ My orders when received rarely contain the wrong items and quantity.</p> <p>Con4_ Products are packed properly and conveniently.</p>	
<p>LSQ-Availability</p> <p>Ava1_ I can track order delivery.</p> <p>Ava2_ Products are consistently available for my chosen delivery method.</p> <p>Ava3_ If products are out-of-stock, waiting time for restock is short.</p> <p>Ava4_ Alternative products offer is available.</p>	
<p>LSQ-Return</p> <p>Ret1_ Returning procedure is easy.</p> <p>Ret2_ Different options for returning (picked up at home or sent back at store/collection point) are available.</p> <p>Ret3_ The item returned is collected and refunded/replaced promptly.</p>	
<p>Sacrifices</p> <p>Sac1_ The fee charged to use this delivery option is</p> <p>Sac2_ Amount of time to receive the product with this delivery option is</p> <p>Sac3_ The effort that it takes me to receive the product with this delivery method is</p> <p>Sac4_ In general, the sacrifice required to use this delivery option is</p>	<p>(Brady & Robertson, 1999)</p>
<p>Perceived value</p> <p>Val1_ Compared with the price I pay, the delivery service provides good value.</p> <p>Val2_ The overall value I get from this experience is worthwhile for my money and effort.</p> <p>Val3_ Overall, using this delivery service is convenient.</p>	<p>(Lin et al., 2005), (Parasuraman et al., 2005)</p>
<p>Customer satisfaction</p> <p>Sat1_ Overall, I am very satisfied with delivery service that I often use.</p> <p>Sat2_ Compared to other options, my current shopping experience with the delivery method I chose has been superior.</p> <p>Sat3_ This delivery method comes very close to giving me “perfect” service.</p>	<p>(Murfield et al., 2017)</p>
<p>Customer loyalty</p> <p>Loy1_ Say positive things about the site(s) to other people.</p> <p>Loy2_ Recommend the site(s) to someone who seeks your advice.</p> <p>Loy3_ Encourage friends and others to buy on the site(s).</p> <p>Loy4_ Consider the site(s) to be your first choice for future transactions.</p> <p>Loy5_ Do more business with the site in the coming months.</p>	<p>(Parasuraman et al., 2005)</p>

indicators need not to covary and dropping an indicator may alter the conceptual domain of the construct (Jarvis et al., 2003). The other model contain reflectively-measured variables, meaning direction of causality is from variables to items, items within a variable share common theme and are expected to covary, dropping an item should not alter the conceptual domain (Jarvis et al., 2003). If a higher-order construct is formative, it is a combination of several dimensions into a general concept (Becker et al., 2012). In the research at hand, perceived value is model as formatively-measured second order construct, consists of five reflectively-measured factors. Although three items were prepared to measure perceived value as unidimensional variables, they were not necessarily used for the proposed model.

3.9. Research quality

As with all methods and approach used in a research are subjected to critique and possible censure, the choices made for the design and analysis of questionnaire and measurement is now presented with quality aspects in relation to reliability and validity as shown in Table 3.

Table 3. Research quality

Quality aspects	Advantages	Disadvantages
Reliability	<ul style="list-style-type: none"> - Adopting measurement items that were developed by rigorous procedure from previous works enhances internal reliability of multi-items constructs - Web-based questionnaire with closed questions avoids bias in translation of data by researchers among respondents and allows more accurate recording of replies. - PLS-SEM analysis allows testing scale reliability with new data. 	<ul style="list-style-type: none"> - Stability is weak as there is no chance for longitudinal research.
Validity	<ul style="list-style-type: none"> - Face validity and content validity are supported by adopting established measurements -PLS-SEM allows testing for measurement validity (convergent validity and discrimination validity) - Causality of relationship is supported by theories and previous findings. 	<ul style="list-style-type: none"> - External validity is weak because the sample is small and not highly representative because of convenience sampling technique and the administration of online questionnaire. - Inferential validity is limited to only the meanings of established constructs. Attitudes and opinions might be more complex and change over time.

4. Data analysis

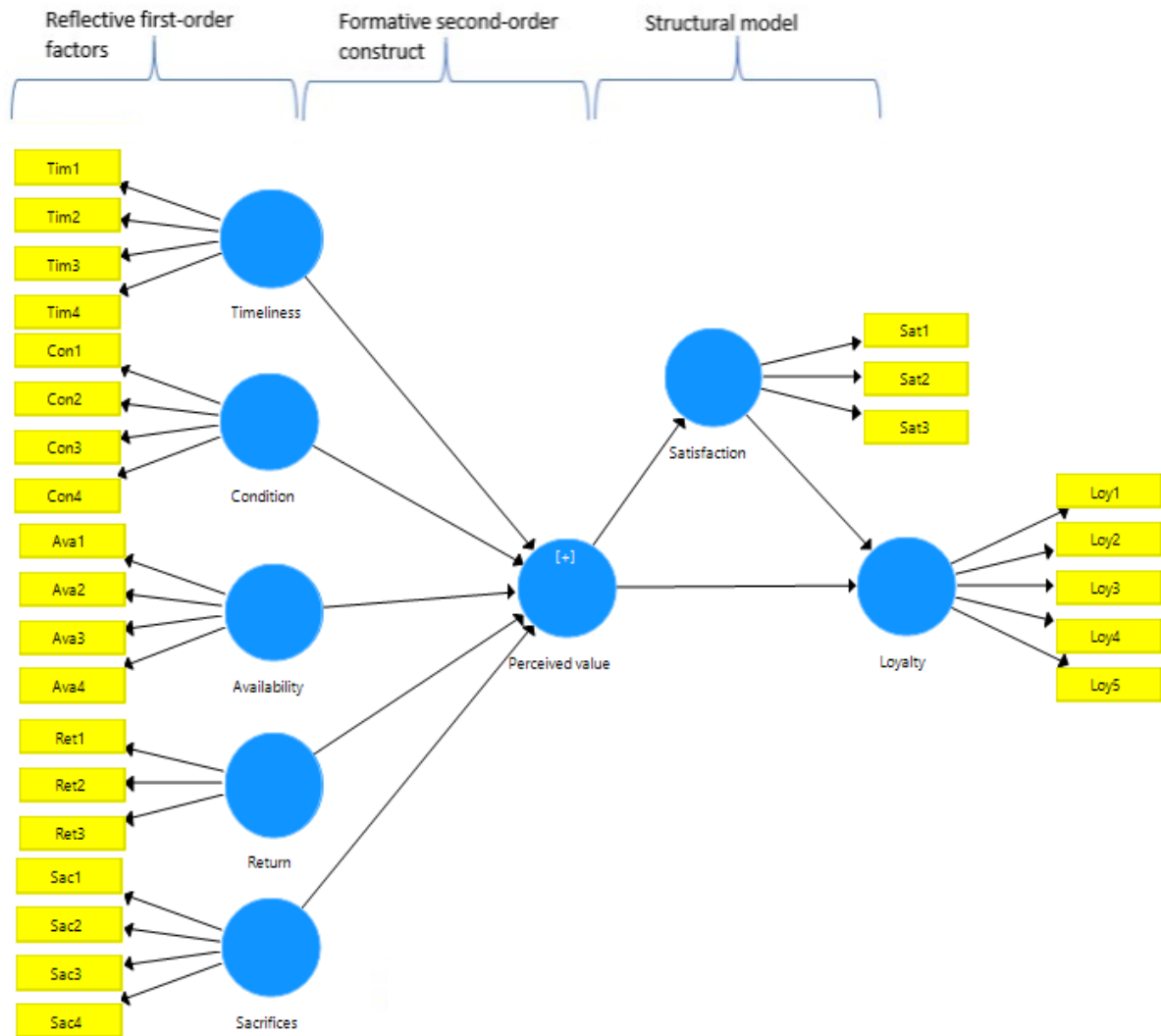


Figure 7. Graphical demonstration of the research model

This section contains two separate parts: demographic profiles and e-commerce experience of respondents, and PLS path model assessment. The latter part could be considered as a sequence including three stages: assessment of reflective constructs, assessment of second-order formative constructs, and assessment of structural estimates. All assessments are conducted within the setting of actual structural model. The logic for these parts to happen in sequent order is that the measures should adequately represent the constructs of interest then it is more reasonable to test the theoretical model in question (W. W. Chin, 2010). Assessing the measures of higher-order construct – perceived value – serves to prove hypothesis 1. Similarly, conclusions from assessing structural estimates is for hypothesis 2 and 3.

4.1. Demographic profiles of respondents

Table 3 depicts basic information of 210 respondents described in categories. Accordingly, the number of female respondents is nearly twice more than that of male ones with rate 65% female and 35% male. Over half of the sample is people from 18 to 28 years old, while 30% of them are between 29 and 38, and a small percent of 15% of sample are over 38 years old. It could be said that the majority of sample are in the range of young generation. Living location scattered over 27 countries, therefore it is not necessary to report specific percentage on each country. In addition, dominant ratio of 73% of respondents earn an income from working.

Table 4. Descriptive information of respondents

Variable	Categories	Frequency	Percentage
Gender	Male	74	35%
	Female	136	65%
Age	18-28	115	55%
	29-38	63	30%
	>38	32	15%
Do or Don't have income	Yes	153	73%
	No	57	27%
Products bought online	Fashions	156	74%
	High-tech electronics	93	44%
	Books	102	49%
	Cosmetics and body care	89	42%
	Food & drinks	71	34%
	Household appliances/ Furniture	60	29%
	Stationery and hobby supplies	68	32%
	Toys and babies' products	41	20%
Frequently chosen delivery method	Home delivery	165	79%
	Pickup at collection points	32	15%
	Pickup at stores	13	6%
Returning experience	Yes	143	68%
	No	67	32%
Last online purchase	Less than 1 month	165	79%
	From 1 to less than 3 months	33	16%
	From 3 to less than 6 months	12	5%

With regards to shopping experience, the percentage of people who usually choose home delivery is 79% and the other delivery options accounts for only approximately 20%, of which only 6% prefer pick-up at store. The same ratio applies

for duration of time since their last online purchase - within less than 1 month, from 1 to 3 months and from 3-6 months respectively. Notably, fashions products are the most dominant goods category bought from the Internet given the sample, follow by books and high-tech electronics, then cosmetics. This trend seems to coincide the results from other statistics published on Internet-based media ("Share of internet users who have purchased selected products online in the past 12 months as of 2018," 2018; "The Top 5 Most Popular Categories Purchased Online Are...", 2018). Finally, approximately two-third of respondents have return experience, implying missing data occurs for questions regarding return aspect for one-third of the sample and will be handled by Mean replacement function of SmartPLS program as mentioned above.

4.2. Assessment of reflective constructs

Reflective constructs assessed in this section are five first-order factors and two outcomes of perceived value. All of them have psychometric scales that are assessed against the evaluation criteria for reflective construct including fourth steps of examining: indicator reliability, internal consistency reliability, convergent validity, and discrimination validity. This stage involves an elimination of two items having low loadings on their purported variables, thus numbers in parentheses in all tables show value after the elimination. Overall, the measurement model could be deemed to be of sufficient quality.

Firstly, acceptable item reliability is achieved if loadings is above 0.708, indicating that more than half of an indicators' variance is explained by its construct (Hair et al., 2019). Loadings of all reflective constructs are recorded in Table 4. All first-order factors have some of their items with loadings slightly lower than 0.708 (yet over 0.6) such as Tim3, Ava1, Ava3, Ava4, and Sac1. Nonetheless these results would be acceptable if in an exploratory analysis (Hair, Ringle, & Sarstedt, 2013). Meanwhile, Tim4 and Con3 was far lower with value of 0.492 and 0.424 respectively prior to the elimination. Theoretically, this can be interpreted that more of these items' variance is error variance rather than explained by their purported constructs. In order to increase acceptable level of reliability as a necessary condition for the goodness of subsequent evaluations (W. W. Chin, 2010), Tim4 and Con3 are dropped from the data.

Table 5. Item loadings

	Timeliness	Availability	Condition	Return	Sacrifices	Satisfaction	Loyalty
Tim1	(0.854)	0.477	0.338	0.233	-0.332	0.547	0.385
Tim2	(0.861)	0.276	0.309	0.125	-0.340	0.489	0.363
Tim3	(0.663)	0.216	0.226	0.132	-0.127	0.289	0.186
Tim4	(-) 0.492	0.261	0.181	0.221	-0.170	0.289	0.133
Ava1	0.304	0.672	0.338	0.239	-0.004	0.345	0.375
Ava2	0.431	0.817	0.416	0.337	-0.208	0.489	0.357
Ava3	0.259	0.671	0.173	0.206	-0.070	0.247	0.158
Ava4	0.231	0.672	0.150	0.123	-0.004	0.320	0.312
Con1	0.236	0.275	(0.719)	0.156	-0.123	0.309	0.195
Con2	0.273	0.324	(0.814)	0.181	-0.280	0.405	0.245
Con3	0.071	0.130	(-) 0.424	0.095	-0.081	0.132	-0.001
Con4	0.371	0.321	(0.738)	0.273	-0.110	0.350	0.246
Ret1	0.157	0.286	0.224	0.858	-0.099	0.279	0.188
Ret2	0.189	0.184	0.139	0.706	-0.049	0.239	0.154
Ret3	0.245	0.325	0.277	0.887	-0.267	0.403	0.333
Sac1	-0.259	-0.159	-0.119	-0.170	0.604	-0.221	-0.139
Sac2	-0.257	-0.065	-0.038	-0.088	0.705	-0.255	-0.166
Sac3	-0.271	-0.084	-0.226	-0.174	0.830	-0.283	-0.164
Sac4	-0.312	-0.062	-0.281	-0.148	0.855	-0.319	-0.243
Sat1	0.577	0.438	0.441	0.378	-0.412	0.871	0.552
Sat2	0.469	0.476	0.437	0.370	-0.253	0.860	0.527
Sat3	0.506	0.438	0.351	0.273	-0.267	0.909	0.597
Loy1	0.307	0.374	0.181	0.299	-0.163	0.526	0.817
Loy2	0.349	0.352	0.208	0.244	-0.166	0.503	0.810
Loy3	0.307	0.312	0.205	0.218	-0.191	0.498	0.857
Loy4	0.299	0.349	0.306	0.196	-0.163	0.490	0.747
Loy5	0.326	0.335	0.246	0.192	-0.259	0.500	0.734

For internal consistency reliability, composite reliability and Cronbach's alpha need to be evaluated simultaneously since the former might be too liberal while the latter might be too conservative (Hair et al., 2019). Cronbach's alpha is expected to exceed 0.7 and composite reliability (CR) should range from 0.7 to 0.9 to be considered satisfactory to good (Hair et al., 2013; Hair et al., 2019). Table 5 shows that CR value of all reflective variables is in satisfactory bound, although Cronbach's alpha of Availability and Condition (0.676, 0.631 respectively) is slightly less than expected limit even after item dropping. Altogether, it is possible to say that internal consistency reliability is supported.

Convergent validity is next metric assessed using average variance extracted (AVE), with acceptable AVE is 0.5 or higher. The meaning of this metric for reflective constructs informs the extent to which the construct converges to explain the variance of its items (Hair et al., 2019). In fact, AVE is calculated using total of all loadings squared then divided by the number of items, whereas loadings is the metric for item reliability (Hair et al., 2014). AVE of all constructs is higher than 0.5. Specially, dropping item Con3 enables AVE of Condition to increase from 0.468 to 0.575 and exceed required cutoff.

Finally, discrimination validity is examined by Fornell-Larcker criterion and HTMT ratio. Fornell-Larcker criterion suggests that the square root of AVE should be higher than its correlation with any other latent variable so that discrimination validity can be supported (Hair et al., 2019). Table 6 shows square root of AVE in the diagonal cells and correlations appear below it. Accordingly, the condition for discrimination validity exists in all cases. In addition, the same conclusion is drawn from HTMT ratio shown which is advised to be below 0.9 (Hair et al., 2019) in Table 7.

Table 6. Internal reliability and Convergent validity

	Cronbach's Alpha	CR	AVE
Timeliness	(0.716) 0.678	(0.838) 0.803	(0.637) 0.514
Availability	0.676	0.802	0.504
Condition	(0.631) 0.624	(0.802) 0.771	(0.575) 0.468
Return	0.760	0.860	0.674
Sacrifices	0.757	0.848	0.586
Satisfaction	0.854	0.912	0.775
Loyalty	0.852	0.895	0.630

Table 7. Fornell-Larcker criterion

	Timeliness	Availability	Condition	Return	Sacrifices	Satisfaction	Loyalty
Timeliness	0.717						
Availability	0.447	0.710					
Condition	0.380	0.404	0.684				
Return	0.245	0.333	0.271	0.821			
Sacrifices	-0.361	-0.117	-0.230	-0.191	0.765		
Satisfaction	0.590	0.512	0.465	0.387	-0.356	0.880	
Loyalty	0.400	0.435	0.288	0.291	-0.237	0.635	0.794

Table 8. HTMT ratio

	Availability	Condition	Loyalty	Return	Sacrifices	Satisfaction	Timeliness
Availability							
Condition	0.557						
Loyalty	0.555	0.385					
Return	0.429	0.359	0.339				
Sacrifices	0.202	0.357	0.292	0.222			
Satisfaction	0.648	0.597	0.744	0.463	0.437		
Timeliness	0.617	0.523	0.492	0.348	0.474	0.742	

4.3. Assessment of second-order formative construct

Repeatedly, perceived value is modeled as a formative second-order construct consisting of five sub-constructs as indicators, altogether forming the focal measurement model of the hierarchical construct. The assessment of higher-order construct focuses on the weights and loadings obtained from relations between itself and first-order constructs rather than relations with items of first-order indicators (Becker et al., 2012). Regardless of hierarchical property, testing criteria differ between reflective and formative measurement model (Hair et al., 2019), thus criteria for perceived value in this section are indicators collinearity, statistical significance, and relevance of the indicator weights.

First of all, indicator collinearity is evaluated by variance inflation factor (VIF), of which value close to 3 and lower is required to avoid collinearity among indicators (Hair et al., 2019). Table 8 demonstrates a good sign of no collinearity problem for all factors with VIF for all sub-constructs of perceived value less than 3.

Secondly, path coefficient estimates and their statistical significance (applying bootstrapping procedure with 5000 subsamples with significance level at 0.05) are also recorded in Table 8. For the path to the posited second-order construct, hypothesis 1 proposed all five factors as components has concurrent effect on perceived value. A confidence intervals including zero means nonsignificant influence (Hair et al., 2019). All four factors of logistics service quality have significant effect on perceived value, of which the strongest effect belongs to Timeliness, followed by Availability, Return, and Condition (0.433, 0.391, 0.234, 0.195 respectively). Condition

and Return has moderately weaker effect on higher-order perceived value compared to Timeliness and Availability. Noticeably, the effect of sacrifices appears to be nonsignificant (confidence intervals is from -0.37 to 0.19) with negative and low absolute contribution (path coefficient). Although this is a crucial component of value on the theoretical ground, it is not supported statistically. Therefore, H1 is only partially supported.

Table 9. Assessment of second-order construct

	VIF	Path coefficient	Standard Deviation	T-Statistics	P Values ($\alpha=0.05$)	Confidence Intervals Bias Corrected	
						2.5%	97.5%
Timeliness -> Perceived value*	1.437	0.433	0.078	5.524	0.000	0.28	0.58
Availability -> Perceived value*	1.421	0.391	0.082	4.785	0.000	0.24	0.56
Condition -> Perceived value*	1.325	0.195	0.086	2.259	0.024	0.03	0.36
Return -> Perceived value*	1.176	0.234	0.069	3.378	0.001	0.10	0.38
Sacrifices -> Perceived value*	1.183	-0.191	0.177	1.083	0.279	-0.37	0.19
Perceived value -> Loyalty	2.084	0.198	0.076	2.594	0.010	0.01	0.31
Perceived value -> Satisfaction	1.000	0.721	0.032	22.540	0.000	0.62	0.77
Satisfaction -> Loyalty	2.084	0.492	0.080	6.133	0.000	0.36	0.66

* $R^2 = 0.981$

4.4. Assessment of structural estimates

As shown in Figure 6, hypotheses 2 and 3 were tested by evaluating the relationships in the structural model where perceived value is exogenous construct whereas customer satisfaction and loyalty are endogenous ones. Evaluating statistical significance and relevance of the path coefficients is sufficient for concluding about hypotheses in question with similar cutoff values as in assessing formative construct.

First of all, collinearity among these constructs is not an issue since VIF values of the relationships among these constructs are all below 3, as presented in Table 8. Perceived value shows a significant positive relationship with customer satisfaction and loyalty. Hence, hypothesis 2a, 2b are supported. Particularly, direct effect of perceived value on satisfaction is much stronger than on loyalty (0.721 and 0.198

respectively). Hypothesis 3 predicted a positive relationship from consumer satisfaction to consumer loyalty. This is also supported with positive, significant path coefficients of 0.492.

Furthermore, PLS-SEM also allows researchers to examine implicit mediation relationship based on the significance of indirect effect on a certain target construct in interest (Hair et al., 2019). Hence, the indirect relationship of perceived value on customer loyalty was tested following two-step procedure described by Nitzl, Roldan, and Cepeda (2016). Step one is determining the significance of indirect effect between these two constructs and their mediator. Output of bootstrapping procedure shows confidence interval for indirect relationship of perceived value \rightarrow satisfaction \rightarrow loyalty is from 0.25 to 0.48, thus the indirect effect is significant. This also means that a mediating effect exists, which should be further defined its type of mediation in step 2.

As long as indirect effect has been detected, mediation literature classified into full mediation if the direct effect is insignificant, and partial mediation in opposite situation, which is once again divided into complementary and competitive partial mediation (Nitzl et al., 2016). Since confidence intervals of the direct relationship of perceived value \rightarrow loyalty is from 0.01 to 0.31, indicating a significant effect, hence it is partial mediation. Since the indirect effect and direct effect from perceived value to loyalty are both in positive direction, this represents complementary mediation.

5. Results and discussion

This paper set out to answer two research questions on consumer perceived value that were formed in the context of last-mile delivery service as following:

RQ1. What is customer perceived value in relation to logistics services quality in last-mile context?

RQ2. How does customer perceived value affect customer satisfaction and loyalty?

The literature review enables the argumentation that four main factors of logistics service quality coincide with benefits that could be sought for from using delivery service, added with sacrifices (both monetary and non-monetary) given up by users could be hypothesized to integrally operationalize overall perceived value, thereby influence customer satisfaction with the service and loyalty with the retailer they buy from. A conceptual model is proposed for the relationship of customer perceived value in relation to attributes of logistics service quality, with customer satisfaction and loyalty. Constructs measurement are totally grounded on previous literature and empirically tested under the context of last-mile delivery service. Section 5.1 and 5.2 respectively present findings for above research questions.

5.1. Disconfirmation of sacrifices component

The collected data suggests that such perceived value integration does not occur for customers using delivery service as only service attributes have significant influence on perceived value whereas customer's efforts and money are taken lightly. This result builds on the extant literature that supports the importance of service quality as determinant of perceived value and satisfaction. This finding adds one more context where service quality can play as crucial criteria for customers' cognitive appraisals as in some other service sectors (Cronin Jr. et al., 2000).

Previous literature supports the driving force of logistics service quality to customer's perception in B2C context (Rabinovich & Bailey, 2004; Rao et al., 2011; Yuan et al., 2010). Despite of being designated under the second-order formatively-measured model, logistics service quality in this study are still in line with previous literature regarding their influence. All factors are estimated at the same time and

quantifying their strength allowing a comparison of to each other and further giving hints about their ranking. Conclusion drawn from data analysis illustrated that among factors all having significant effect, timeliness plays as the most important aspect whereas condition is the least important one. Returning even surpass product condition, implying that customers are more and more paying attention to returning process. Although a high portion of respondents in this study frequently use home delivery for their online order, the research of Murfield et al. (2017) with omni-channel customers yielded similar findings. Therefore, it is possible that the reliability and generalization of such findings about customers' insights are enhanced since different research approaches lead to the same outcomes.

In the customer-oriented typologies of last mile system posited by Lim et al. (2018), customers' efforts are required to share the responsibility of completing service process, which suggests an examination of customer's sacrifices. In this study, consumers seem to place less stress on cost and effort associated with it and be in favor of utilitarian benefits bought by service attributes. The finding about insignificant impact of sacrifices used to be found when value was depicted as tradeoff with quality in other B2C service sectors such as healthcare and sport (Cronin Jr. et al., 2000).

The lack of meaningful finding for sacrifices could be interpreted in several ways. One of which is that customers truly do not mind spending time and efforts or a shipping fee when acquiring delivery service. This might be a good signal for other priorities such as reducing environmental impacts at the expense of consumers' effort, since it is not going to negatively affect their perceived value. Otherwise, sacrifices could have been minimized thanks to the ongoing competition among retailers to make consumers' daily life easier as a marketing message. This is in fact the goal of the transformation of the whole supply chain in electronic retailing that is going on with the emphasis on timeliness at consumer-level fulfillment.

Another explanation is that customers in today's supply chain become so accustomed to a fully informed and visible delivery process that one might voluntarily choose to pick up at stores to avoid shipping fee, hence unlikely to think that as a sacrifice. From theoretical view, this also corroborates Zeithaml (1988)'s position that

value integration is quite dynamic and might mean different things. In this case, aggregation of monetary and non-monetary indicators for sacrifices could not be able to elaborate underlying reference in which consumer is making an evaluation.

5.2. Complementary partial mediating effect of satisfaction

Lastly, some understandings of the relationships between logistics service quality as instrument of perceived value with satisfaction and loyalty are added to the extant research. Firstly, perceived value that is constituted by logistics service quality is confirmed to have positive and direct impact on satisfaction and behavioral loyalty, which is in line with previous research carried out in other service context. Secondly, a complementary partial mediating effect of customer satisfaction found in the data at hand adds weight to role of affection-based evaluation towards a service. While some extant research has yield supplanting effect of value under the same formative model over satisfaction on post-purchased intentions (i.e Lin et al., 2005), it is evidently important to take customer satisfaction into consideration while investigating customer's perception. The mental sequence that parallel to customers' evaluation of a service is a complex process and comprehensive models of service assessment from customers' perspective should include collectively different variables to gain comprehensive results, as suggested by Cronin Jr. et al. (2000).

For practical implications, logistics managers in B2C business who attempt to design or improve delivery service blueprints need to predict customers' behavioral intentions by assessing different indices. It is not to compare which one is better but to see them as complementary benchmarks and find the best balance with respect to preliminary strategic visions.

5.3. Limitations and future research

As with any research project, the findings have to be interpreted in light of limitations which should be outlined. Firstly, using established measurement scaled for unobservable constructs in a new context might limit potential unique understandings as with the case of customers' sacrifices. A mixed-methods approach can overcome this limitation, where exploratory qualitative methods should be used to develop measurement scales that dedicate to last-mile context, which will definitely enhance

any efforts to gain deeper insights of customers' perceptions and needs. After gaining more precise understandings, experimental methods can maximize internal validity and more accurately estimate causal relationships between customer's perceptions and logistics service quality.

Another limitation comes from the deductive approach and mostly convenience sampling technique. The current study is conducted with a sample of only 210 respondents which might be considered relatively small to the population of online shoppers that it is withdrawn from. A bigger sample size associated with classifications of customer segment or product segment might create clearer picture of perceived value in relation to service quality. The methods chosen and sample size result in problems with generalizing the findings as it is not representative enough. While proposed hypothesis could be tested successfully, it is exclusive only with phenomenon identified, and therefore impossible to generate knowledge about various psychological theories that are often use as theoretical framework for quantitative research. In fact, this study departs from middle-range theories that are accumulated from evidence within the discipline of logistics and service management to contribute specific understandings of last-mile delivery. Thus, it is very challenging to use the data to build on psychological theories.

As Lin et al. (2005) advocated the true model in the reality can never be known, all models can only be theory-driven. The conceptualization of customer perceived value using logistics service quality applied in this thesis is based on the simple definition of value introduced by Zeithaml (1988). Answer for the first research question is led by preceding theories and assumptions. It is obvious that a phenomenon should never be explained by only one theory. Future research could opt for more complex conceptual models with different aspects and dimensions of the constructed so that more interesting findings and conclusions could be drawn. This would require more time and efforts as well as advanced research skills and experience that need to be accumulated over time and number of projects.

Lastly, other outputs of SmartPLS 3 program have not been fully utilized for discussion. For example, the coefficient of determination (R^2) provide extra information

about the variance explained in the endogenous constructs, or in-sample predictive power (Hair et al., 2019). R^2 of satisfaction and loyalty (0.520 and 0.422) could be considered to imply moderate model's explanation power according to general guidelines. Nonetheless, it is also advised to interpret this criteria in relation to related studies (Hair et al., 2019). This will require more comprehensive review of a corpus of substantive research that go beyond the scope of this thesis, yet future research should pick up from this starting point to compare among extant studies.

6. Conclusion

B2C logistics today is driven by customers' demand and cause many challenges for the service providers. To this end, this study examined the customers' perceptions towards using last-mile delivery service and their behavioral intentions. As academic literature clues in the perceived value as trade-off between benefits and sacrifices over using a service and supports a relationship between service attributes and customers' attitude such as perceived value and satisfaction, logistics service quality is considered instruments of benefits for perceived value in last-mile service context. The results show that timeliness, product availability, product condition, and returning procedure respectively act as important aspects of logistics service quality and influence customer evaluation and perception. While these are assessed together with sacrifices as first-order constructs that form customers' value, the effect of sacrificed was found insignificant from the collected sample of 210 respondents who are frequent online shoppers. Although the results are limited in generalization, they are intriguing enough to encourage both scholars and practitioners to continuously spend efforts to gain deeper insights of customers' perception. Only then proper strategies can be designed to maximize efficiency and maintain loyal relationship with consumers. Furthermore, the results from data analysis also stress on the relationships between customer value, satisfaction and behavioral loyalty, of which satisfaction plays as a complementary partial mediator between the others. This necessitates the need to adopt a complex and holistic view and include all variables for both theoretical and managerial implications.

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Appendix

Survey questionnaire

Assessment of delivery service in online shopping

Hello! I am a master student majoring in Service Management at Lund University, and I am conducting a research for my graduation thesis on delivery service that online shoppers use to receive their orders. This questionnaire is used to collect your perceived value as a consumer about this service.

Your response will only be used for my study and treated totally anonymous. I would appreciate if you read instructions prior to each section and answer as close as your thoughts of the statements about your experience.

Online shopping experience

How long has it been since your last online purchase?

- Less than 1 month
- From 1 to less than 3 months
- From 3 to 6 months
- I don't remember

Which delivery method do you frequently choose the most?

- Home delivery
- Pick up at collection points
- Pick up at stores

Which products do you often buy online? (Multiple answers are accepted)

- Fashions (Clothing, shoes, bags, accessories, etc...)
- High-tech electronics
- Books
- Cosmetics and body care
- Food & drinks
- Household appliances/ Furniture
- Stationery and hobby supplies
- Toys and babies products

Please think about the delivery method you frequently choose and indicate the extent to which you agree and disagree that the service quality you receive possesses each feature below.

Service quality

The time between placing and receiving an order is short.

Totally disagree 1 2 3 4 5 Totally agree

The product is delivered by the time promised.

Totally disagree 1 2 3 4 5 Totally agree

Delivery date and time slot/Date for pick up is specified.

Totally disagree 1 2 3 4 5 Totally agree

I have multiple options for delivery date and time.

Totally disagree 1 2 3 4 5 Totally agree

I get what I ordered.

Totally disagree 1 2 3 4 5 Totally agree

Damage rarely occurs during transportation.

Totally disagree 1 2 3 4 5 Totally agree

My orders when received rarely contain wrong items and quantity.

Totally disagree 1 2 3 4 5 Totally agree

Products are packed properly and conveniently.

Totally disagree 1 2 3 4 5 Totally agree

I can track and trace order delivery process.

Totally disagree 1 2 3 4 5 Totally agree

Products are consistently available for my chosen delivery method.

Totally disagree 1 2 3 4 5 Totally agree

If products are out-of-stock, waiting time for restock is short.

Totally disagree 1 2 3 4 5 Totally agree

Alternative products offer is available.

Totally disagree 1 2 3 4 5 Totally agree

Returning

Returning procedure is easy.

Totally disagree 1 2 3 4 5 Totally agree

Different options for returning (picked up at home or sent back at store/collection point) are available.

Totally disagree 1 2 3 4 5 Totally agree

The item returned is collected and refunded/replaced promptly.

Totally disagree 1 2 3 4 5 Totally agree

The fee charged to use this delivery option is

Totally disagree 1 2 3 4 5 Totally agree

Customers' sacrifices

Amount of time to receive the product with this delivery option is

Very low 1 2 3 4 5 Very high

The effort that it takes me to receive the product with this delivery method is

Very low 1 2 3 4 5 Very high

In general, the sacrifice required to use this delivery option is

Very low 1 2 3 4 5 Very high

Perceived service value

Compared with the price I pay, the delivery service provides good value.

Totally disagree 1 2 3 4 5 Totally agree

The overall value I get from this experience is worthwhile for my money and effort.

Totally disagree 1 2 3 4 5 Totally agree

Overall, using this delivery service is convenient.

Totally disagree 1 2 3 4 5 Totally agree

Satisfaction

Overall, I am very satisfied with delivery service that I often use.

Totally disagree 1 2 3 4 5 Totally agree

Compared to other options, my current shopping experience with the delivery method I chose has been superior.

Totally disagree 1 2 3 4 5 Totally agree

This delivery method comes very close to giving me "perfect" service.

Totally disagree 1 2 3 4 5 Totally agree

Customer loyalty

Say positive things about the site(s) to other people.

Totally disagree 1 2 3 4 5 Totally agree

Recommend the site(s) to someone who seeks your advice.

Totally disagree 1 2 3 4 5 Totally agree

Encourage friends and others to buy on the site(s).

Totally disagree 1 2 3 4 5 Totally agree

Consider the site(s) to be your first choice for future transactions.

Totally disagree 1 2 3 4 5 Totally agree

Do more business with the site in the coming months.

Totally disagree 1 2 3 4 5 Totally agree