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Order Fulfilment and Consumer Behaviour in Online Retailing

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Chapter 1: Introduction

Profitability in online retailing is largely dependent on good order fulfilment (Agatz et al., 2008). With the advent of mobile channel, tablets and social media, online retailing moves to an omni-channel world in which the physical and online channels are interchangeable and seamless (Bell et al., 2014; Verhoef et al., 2015). Consumers can easily move through online and offline channels in their search and purchase process. Retailers manage multiple channels, e.g., physical stores, websites, mobile channels, and social media, to provide the seamless retail experiences. Business-to-consumer (B2C) e-commerce has grown significantly in recent years. Global B2C sales have increased yearly from \$1,537 billion in 2013 to an expected \$2,671 billion in 2016 (Ecommerce Foundation, 2016a). In the Netherlands B2C sales have steadily increased from €12.87 billion in 2013 to €20.16 billion in 2016 (Ecommerce Foundation, 2017). Online retailers are facing more logistical challenges to satisfy consumer expectations. For example, retailers need to implement not only home delivery but also delivery at pick-up points, to maintain inventory at sufficient levels while offering a wide range of products, or to consider lenient or strict policies when dealing with high product returns. Yet the online order fulfilment strategies could have different impacts on consumer behaviour (e.g., purchase/repurchase intentions and product returns). An understanding of the relationships between choices in order fulfilment and consumer behaviour in online retailing is thus key from both a marketing and an operations perspective. The relationships are insufficiently understood in the extant literature. Therefore my thesis is to investigate the under-explored topic in order to have theoretical and practical implications.

1. Order fulfilment in online retailing

Online order fulfilment (also known as e-fulfilment) is defined as logistics activities such as inventory management, warehousing, delivery, and returns involved in providing physical products to online consumers (Lummus and Vokurka, 2002; Pyke et al., 2001). Logistics activities are a major part of supply chain management. An effective supply chain is vital to the success of an online business as it helps online retailers reduce order fulfilment costs and at the same time deliver unique consumer value (Pyke et al., 2001). Order fulfilment in online retailing is often examined from a process-based perspective which includes activities from the point of a consumer's visit to a retailer's website to purchase a product until the product is delivered to the consumer. It encompasses both back-end operations supporting the fulfilment of orders, e.g., picking, packing, and shipping, and front-end operations visible to consumers,

e.g., order capturing, tracing and tracking. Consumers currently have opportunities to buy a product anytime, anywhere, from any device in the omni-channel retailing that offers advantages to retailers. E-commerce has had a profound impact on retailers' supply chains (Johnson and Whang, 2002). Thus the situation has put more pressure on online retailers in managing their supply chains. Bell et al. (2014) indicated that order fulfilment is a critical success factor for retailers to win in an omni-channel world. Figure 1 describes the future omni-channel supply which focuses on two key areas: fulfilment network and last-mile delivery (DHL, 2015). The future omni-channel fulfilment network will provide seamless inventory visibility, different types of warehouses, and inventory optimization across channels. Last-mile delivery with various options will enhance speed, flexibility, and convenience to online consumers.

Based on a comprehensive and systematic literature review, we identified three main themes of order fulfilment in relation to consumer behaviour in online retailing: inventory management, last-mile delivery, and returns management (Nguyen et al., 2018). Inventory management includes product assortment and selection, product availability, and product condition. Last-mile delivery consists of delivery information and options, delivery, shipping and handling charges, and order tracking. Returns management refers to returns procedures, returns preparation, returns options, refunds, and returns handling. The relationships between the order fulfilment aspects and consumer behaviour in online retailing will be thoroughly discussed in the next chapter. Previous studies suggested different fulfilment strategies to achieve e-commerce success such as fulfilment through distributed delivery centers, dedicated fulfilment centers, and third-party fulfilment centers (Ricker and Kalakota, 1999); shipping directly from suppliers to consumers, picking and shipping from existing retail stores, and shipping to a local store or central pick-up point (Lummus and Vokurka, 2002); applying automation and increasing process integration to three key areas: fulfilment center, collaborative network, and reverse logistics (Tarn et al., 2003). Agatz et al. (2008) indicated various e-fulfilment models developed in the existing literature through four stages of a supply chain (i.e. sales, delivery, warehousing, and purchasing) in a multi-channel context. Their findings suggested a closer integration of demand and supply management in e-fulfilment.

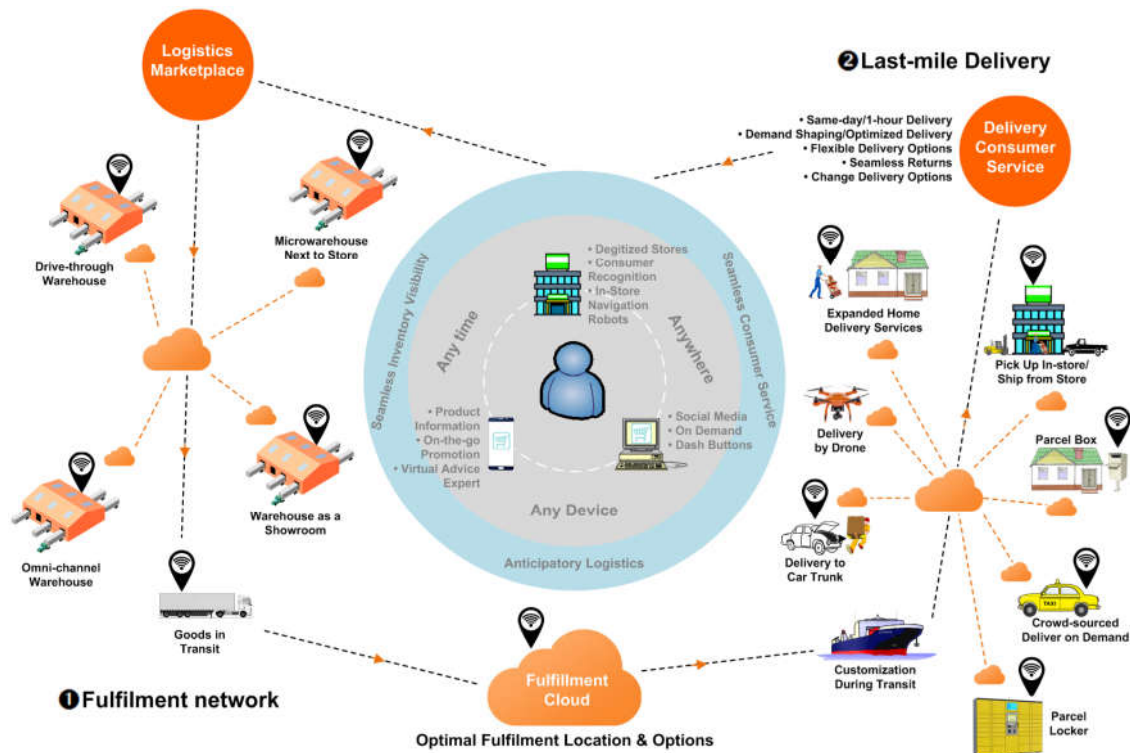


Figure 1: The future omni-channel supply chain (source: modified from DHL (2015))

In practice, online retailers are faced with trade-offs between order fulfilment costs and service levels. For example, online consumers are increasingly demanding same-day delivery at an affordable price, which challenges retailers and logistics service providers to reduce delivery costs significantly (Hausmann et al., 2014). Using pick-up point networks is one of the solutions to realize this. Tesco, for example, launched same-day delivery across the UK through their stores (Logistics Manager, 2017). Amazon implemented “Instant Pickup Points” for order pick-up within minutes after ordering in the US (Etherington, 2017). However, the dramatic failure in 2001 of Webvan, an online food webshop with home delivery, remains a good e-commerce lesson about the need to maintain cost-effective delivery operations (Boyer and Hult, 2006). L.L.Bean has recently re-considered their returns policy because its liberal policy was increasing their shipping costs (Howland, 2017). Our studies in this thesis investigate order fulfilment aspects in relation to consumer behaviour in online retailing. Thus insights into the relationships between order fulfilment and consumer behaviour could help to know where a compromising solution should be needed.

2. Consumer behaviour in online retailing

Consumer behaviour is defined as “the totality of consumers’ decisions with respect to the acquisition, consumption and disposition of goods, services, time and ideas by human

decision making units” (Hoyer and MacInnis, 2010). Specifically, three main dimensions of consumer behaviour have gained significant attention in the literature: purchase intention, repurchase intention and product return (Nguyen et al., 2018). Findings of consumer behaviour research help retailers better understand consumers, hence develop suitable consumer-oriented strategies to achieve especially sales and marketing objectives (Hardesty and Bearden, 2009). As online retailing is different from traditional retailing in different stages of the buying process, consumer behaviour also differs between the online and offline contexts. For example, online consumers expect competitive price, quality products and fastest delivery (Tarn et al., 2003). Consumers tend to return a product in online retailing more frequently than in traditional retailing (Griffis et al., 2012a). Rose et al. (2011) also indicated differences between online and offline consumer experience in terms of personal contact, information provision, time period of interactions, and brand presentation. It is not surprising that consumer behaviour in online environments has received significant attention in the fields of marketing, information systems, psychology and management (Cheung et al., 2005). Theories discussed in these fields, including Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980), Theory of Planned Behaviour (TPB) (Ajzen, 1991), and Technology Acceptance Model (TAM) (Davis, 1989), have been widely used to investigate online consumer behaviour. According to these theories, online consumer behaviour is determined by the intention to perform a particular behaviour (TRA and TRB) and it is influenced by two key variables: the perceived usefulness and the perceived ease of use (TAM). Cheung et al. (2005), Dennis et al. (2009), Dholakia et al. (2010), and Ranaweera et al. (2005) identify a number of antecedents of dimensions of consumer behaviour (e.g., purchase and repurchase intentions) such as consumer characteristics, environmental influences, product characteristics, medium characteristics, and online merchant and intermediary characteristics. Although order fulfilment factors are among these antecedents, the previous studies appear relatively fragmented and have not provided insights into the relationship between order fulfilment and online consumer behaviour.

3. Order fulfilment and consumer behaviour in online retailing

Recent industry reports on online retailing have indicated how important order fulfilment operations are to consumers. A survey of 5,330 online consumers in the US by UPS (2016) revealed that 41% of the respondents abandoned the shopping cart when the products are out of stock and 63% of the respondents were satisfied with ease of returning products to online

retailers. Another extensive survey of 6,238 online shoppers in Europe (including France, Germany, Italy, the Netherlands, Spain, and the UK) by UPS (2015) showed that 76% of the respondents considered free shipping options the most important when going through an online checkout process and 41% of the respondents were satisfied with the post-shipment flexibility. The UK's online retail association in their report showed that online consumers increasingly accept delivery at a retailer store and a pick-up point (IMRG, 2015a). To meet increasing demands related to order fulfilment, online retailers offer various delivery methods (e.g., attended and unattended delivery) and shipping fee structures (e.g., unconditional free shipping, threshold-based free shipping, and flat-rate shipping). Some retailers have developed initiatives to influence consumer decisions in online purchase, e.g., offering a variety of delivery time slots by online food retailers such as albert.nl in the Netherlands, as well as ocado.com and tesco.com in the UK; or by setting a threshold for free shipping by zara.com, amazon.co.uk, and hema.nl. These initiatives affect the online business not only from a marketing perspective but also from an operations perspective as online retailers need to design their order fulfilment operations effectively and efficiently in accordance with consumer choices.

Prior research focused on specific order fulfilment aspects in relation to consumer behaviour. For example, product selection and assortment significantly affect repurchase intention. Stock-outs have a negative impact on both purchase and repurchase intention (Cho, 2015; Otim and Grover, 2006). Delivery elements such as delivery information and options, shipping and handling charges, or on-time delivery have significant impacts on purchase and repurchase intention (Bart et al., 2005; Lewis, 2006; Ramanathan, 2010). A lenient policy increases the probability of product returns (Lantz and Hjort, 2013). Few studies investigated the use of time slots to affect consumer choice, hence helping reduce delivery costs and enhance profits (Agatz et al., 2011; Campbell and Savelsbergh, 2006). In addition to these studies in specific order fulfilment aspects, other studies examined order fulfilment as an important factor of service quality in online retailing (Collier and Bienstock, 2006; Griffis et al., 2012b; Koufteros et al., 2014; Parasuraman et al., 2005; Rao et al., 2011; Xing et al., 2010). However, these studies conceptualized order fulfilment with a focus on various elements. For example, Griffis et al., (2012b) measured order fulfilment performance in terms of timeliness, order cycle time, and the product assortment to evaluate an impact of these factors on consumers' satisfaction and referral while Koufteros et al. (2014) defined order fulfilment using timeliness, product availability, and order condition to investigate the

relationship between order fulfilment service quality and encounter satisfaction. Although the relationship between order fulfilment and consumer behaviour in online retailing has been discussed considerably in the extant literature, most of this research is fragmented.

4. Aim and structure of the thesis

The thesis consists of six chapters. Although the chapters (besides the introduction and conclusion) are stand-alone research articles that can be read in isolation, these chapters together provide a number of important insights into the impacts of order fulfilment on online consumer behaviour. Chapter 2 begins with a systematic literature review of order fulfilment and consumer behaviour in online retailing. In Chapter 3 and Chapter 4 we investigate consumer preferences for delivery services in the modern retailing. Based on an integrative framework proposed in Chapter 2, in Chapter 5 we empirically examine the impacts of order fulfilment aspects on consumer repurchase intention. The contributions of the individual chapters are summarized below.

In Chapter 2 we present a systematic overview of relationships between order fulfilment aspects and online consumer behaviour dimensions in the literature. Based on an extensive review of multiple electronic databases and peer-review journals, we propose an integrative framework of order fulfilment and consumer in online retailing. The content of this chapter is based on the paper '*Consumer Behaviour and Order Fulfilment in Online Retailing: A Systematic Review*' (Nguyen et al., 2018).

In Chapter 3 we investigate how Dutch consumers value a variety of delivery attributes when selecting a delivery option for their online purchases across different product categories. The Dutch B2C e-commerce market was selected due to its fast-growing sales in Europe (Ecommerce Foundation, 2017). Online retailers are offering a variety of delivery options consisting of varying combinations of delivery attributes. The findings of this study will provide some insight into the structure for consumer preferences which reveals importance values of these delivery attributes as well as the best combination of the attributes from a consumers' perspective.

In Chapter 4 we mainly examine how delivery methods and shipping fee structures impact consumer purchase intention. It was not clear from the literature which combinations of these

factors are most appreciated by online consumers. Understanding consumer perception is vital for retailers and logistics service providers to effectively implement or adapt delivery strategies, which are an important driver of sales in e-commerce. We investigate the influence of these factors on consumer purchase intention by employing a laboratory experiment with Dutch students. Collier and Bienstock (2006) indicate that students are an active group in online retailing. Furthermore, more than 80% of the individuals between 16-25 years old frequently shops online in the Netherlands (CBS, 2016).

In Chapter 5 we empirically study the impacts of order fulfilment aspects on consumer repurchase intention across product categories. This study is based on the integrative framework proposed in the literature review of Nguyen et al. (2018) as presented in Chapter 2. Using structural equation modeling and survey data of online consumers in the UK, the largest B2C e-commerce market in Europe (Ecommerce Europe, 2016a), the study reveals significant impacts of order fulfilment factors on consumer repurchase intention and indicates how trust in an online retailer mediates the relationships across product categories.

Finally, in Chapter 6 we summarize and discuss the main findings and contributions from the studies performed and formulate potential avenues for future research. Table 1 shows an overview of the research questions, approaches and data used in Chapters 2 – 5.

Chapter	Topic	Data sources	Research questions	Research approach	Journal publication status
2	A literature review of consumer behaviour and order fulfilment in online retailing	Electronic databases and international peer-reviewed journals	<ul style="list-style-type: none"> • Which order-fulfilment elements influence consumer behaviour related to purchasing, repurchasing, and returning products online? • What is the relationship between online consumer behaviour and order fulfilment performance? 	<ul style="list-style-type: none"> • Systematic review 	<ul style="list-style-type: none"> • Published in <i>International Journal of Management Reviews</i> in 2018
3	An analysis of consumer preferences for delivery attributes in online retailing	Survey data of online consumers in the Netherlands	<ul style="list-style-type: none"> • Examine how consumers value delivery attributes and make trade-offs when selecting a delivery option for their online purchases • Examine the consumer preferences across segments and product categories 	<ul style="list-style-type: none"> • Conjoint analysis • Cluster analysis • Simulation 	<ul style="list-style-type: none"> • Second round of revisions in <i>Journal of Business Logistics</i> in April 2018
4	An analysis of consumer perception of delivery methods and shipping fee structures	Experimental data of Dutch students	<ul style="list-style-type: none"> • Examine how consumers value delivery methods, shipping fee structures, order value, and travel time, in terms of online purchase intention 	<ul style="list-style-type: none"> • Laboratory experiment • Linear mixed-effects model 	<ul style="list-style-type: none"> • It has been revised to be submitted to <i>International Journal of Physical Distribution & Logistics Management</i>
5	An analysis of the impacts of order fulfilment aspects on consumer repurchase intention across product categories	Survey data of online consumers in the UK	<ul style="list-style-type: none"> • Determine how order fulfilment factors (inventory management, last-mile delivery, and returns management) influence consumer repurchase intention in online retailing across three product categories (convenience goods, shopping goods, and specialty goods) • Examine the mediating role of trust in the relationships 	<ul style="list-style-type: none"> • Structural equation modeling 	<ul style="list-style-type: none"> • “Under Review” in <i>International Journal of Research in Marketing</i> in March 2018

Table 1: Overview of research questions in the thesis

