



Does delivery service differentiation matter? Comparing rural to urban e-consumer satisfaction and retention

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ABSTRACT

In the context of continuously growing e-commerce and the rising global count of e-consumers, e-retailers and logistics service providers need to differentiate and tailor their offerings to refine their operations and meet e-consumers' needs. This study investigates how e-consumers' residential-area type affects the satisfaction with delivery services and reuse intentions in relation to e-consumers' ability to choose between delivery options. The aim was to explore and compare rural e-consumers to urban ones and conclude whether the service fitting can be performed without satisfaction loss. The results showed that for e-consumers from rural residential areas, the availability of different delivery options did not translate into greater satisfaction with the delivery service and reuse intention, while for urban residents, service diversity was linked to greater satisfaction.

1. Introduction

Rapidly rising e-commerce revenues and the growing share of e-commerce in the total retail volume, accounting for 14% of total sales in 2019 and to reach 23% in 2023 (Statista, 2019), are evidence that e-retail and associated services represent the market driving force defining supply channels for billions of online consumers who now perceive online retail as an integral part of life. A substantial share of this growth stems from increasing internet access and economic growth on national and individual levels, where the convenience and accessibility of e-commerce continuously generate new consumers and retail segments. Consequently, the typical e-consumer profile is transforming from a young urban individual to encompass a more diverse and inclusive portrait. The new depiction of global e-commerce's consumer pool and increasing competition are pushing e-retailers and associated service providers to discover new offering strategies, reconfigurations, and innovations regarding offerings.

With an estimated 3.5 billion people living in rural areas by 2025 (Statista, 2020), the knowledge gap regarding urban vs. rural e-retail and logistics is vastly disproportional to its potential benefits. With know-how on fitting e-retail service profiles extremely skewed toward the urban market segment, where same- and next-day deliveries have become the norm (Buldeo Rai et al., 2018), logistics service providers

struggle to provide equally smooth and timely service experiences in rural and even suburban areas. Consequently, limited knowledge exists on how to treat rural residents and whether service segmentation is applicable without losing customer satisfaction and loyalty. Rural logistics research is scarce; the few available studies on rural supply-chain management primarily center on network planning and route optimization (Liu, 2020; Filippi et al., 2019; Gong, 2019), often in underdeveloped e-commerce markets (Kshetri, 2018). An even bigger knowledge gap exists in the understanding of consumer behavior and expectations in rural areas of developed economies and e-commerce markets (Sousa et al., 2020). Such lack of knowledge hinders e-retailers wishing to adjust their service profiles to reach broad consumer groups and geographical areas as premium “same-day free delivery” is often an unacceptable option for both e-retailers and third-party logistics service providers. Considering e-retail logistics business sustainability and sufficient product and service supply in different types of residential areas, the question remains: “Can e-retail service offerings be differentiated between urban and rural areas without loss of consumer satisfaction and loyalty?”

The new age of consumer-centric supply chain management highlights the benefits of placing the consumer at the core of strategy development and operations design (Esper et al., 2021). Recent e-commerce shifts translate into opportunities beyond online sales for all types

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of retailers, enabling retailers to meet the needs of diverse customer segments (Tang and Zhu, 2020). Broad knowledge of e-consumer behavior and delivery service demands has been developed based on scientific and operation insights from urban or broad, non-differentiated settings (Olsson et al., 2019; Nguyen et al., 2019). Furthermore, current e-consumer culture in urban settings, particularly in developed e-commerce markets, is heavily shaped by speedy deliveries, innovative delivery solutions, and a broad range of services (Buldeo Rai et al., 2018; Buldeo Rai et al., 2021), which is not fully applicable to rural e-consumers.

Studies show rural residents are the fastest-growing e-commerce customer segment (Liu et al., 2020), a phenomenon fueled by growing internet access, poor accessibility, and scant brick-and-mortar outlet variety (Ma et al., 2019; Sousa et al., 2020). This renders rural areas a promising revenue stream for e-retailers with varied product ranges and market strategies. Differentiation, optimization, and the fit of supply chain activities to rural environments offer sustainable development to rural communities by improving life quality and offering new business venues and revenue streams to various supply chain actors (Prockl et al., 2021). Moreover, delivery service differentiation has been identified as a key strategy in engineering e-commerce growth (Accenture, 2016).

This study investigates e-consumers' responses, in both rural and urban areas, to differing numbers of available delivery options to explore whether consumer segmentation is possible based on residential-area type. Accordingly, we conducted a survey-based study in Sweden, which has a developed e-commerce market with 96% of adults shopping online, average spending of 1012 EUR per person per year (PostNord, 2021), and an established delivery service tradition with standards corresponding to developed e-commerce markets. E-retail and corresponding delivery services in Sweden have been previously studied via consumer expectations of unattended deliveries (Olsson et al., 2021), order-returns strategies (Hjort et al., 2013), and other features facilitating the evaluation and acceptance of the Swedish market as a feasible setting for this investigation. This study's findings provide insight into the differences between the service needs and behavioral responses of urban vs. rural e-consumers, thus supporting e-retailers and logistics service providers in tailoring their service offerings.

The rest of the paper is organized as follows. First, we provide a conceptual background and conduct a pre-study to develop a theoretical basis for hypothesis development. Then, we present the methodology and theoretical model, followed by the results and findings analysis. Finally, we discuss the results and implications and provide concluding remarks.

2. Theoretical background

As the market evolves, new retail setting services have become a source of competitive advantage (Grönroos, 2008; Javed and Wu, 2020) and the delivery experience accepted as a critical touchpoint in consumers' e-retail experience (Vakulenko et al., 2019). Research shows that not only market leaders like Amazon but, now, also small and medium-sized retailers realize how heavily they rely on services associated with online purchases (Sorkun, 2019). In this new retail paradigm, overall satisfaction with an online retail experience is directly affected by the delivery experience (Vakulenko et al., 2019) and post-delivery services (Chang and Wang, 2012).

The extensive knowledge of consumer behavioral and emotional responses in e-retail and omni-retail settings provides retailers and associated service providers with rich insights for establishing viable market strategies (Selin Atalay et al., 2017; Sun et al., 2020; Xu, 2020). While previous e-consumer research has covered multiple dimensions of consumer psychology and behavior, the generalizability is usually defined and somewhat limited by urban settings. Various studies' focus is commonly set (by default or purposely) on urban environments, while some adopt a broad, inclusive scope covering urban, suburban, and rural

environments as one demographic group. Meanwhile, global population growth, economic development, and increased internet accessibility mean new markets and consumers gain access to e-retail, making rural and developing markets the fastest growing e-consumer segments (Liu and Ai, 2018; Liu et al., 2020). This trend highlights the lack of knowledge of consumer needs and behavior when segmented by residential-area type, specifically of non-urban environments.

An extensive stream of research provides insight into urban e-commerce settings via investigations of behavior and attitudes toward e-retail offerings and associated services. To understand and fulfill urban e-consumers' needs and expectations regarding logistics, previous studies have explored consumer responses to service pricing strategies, delivery windows, delivery modes, service failures, environmental performance, returns policies, and demographic features of the population (Rao et al., 2011; Boyer et al., 2009; Cárdenas et al., 2017; Esper et al., 2003; Liao and Keng, 2013). Furthermore, digital tools and innovative solutions have been tested in urban settings in developed e-commerce markets to battle the competition, carry out operations, and secure consumer loyalty (de Oliveira et al., 2017; Iwan et al., 2016; Vakulenko et al., 2018). The state-of-the-art image of the average urban e-consumer, thus, features varying degrees of technological readiness, relatively high innovation acceptance, financial-value orientation, and, most commonly and uniformly, demands high speed and convenience. These characteristics and standards are then taken on by logistics service providers, who serve non-segmented consumer groups in various residential areas, which entail different travel distances, states of infrastructure, and delivery service practices. As most e-consumers are situated in urban settings and the most advanced knowledge and expertise stem from urban environments, logistics service designs and operations orientation are heavily skewed toward such environments.

The rise of the rural e-consumer pool has spurred a shift of focus away from urban settings (Sousa et al., 2020). In developing rural-type e-commerce markets, e-commerce is much more limited and often investigated and sourced for A2C and A2B operations (Cai et al., 2019; Li et al., 2019), as well as B2B, where e-commerce equips agricultural businesses and small private enterprises to enter national and international markets and enables more sustainable performance (Changyu et al., 2015; Cristobal-Fransi et al., 2020; Jin et al., 2020). In underdeveloped and developing e-commerce markets, online retail can mediate innovation and support business, community, and individual capabilities (Cui et al., 2019; Gao and Liu, 2020; Gustafson et al., 2018; Huang et al., 2020; Tang and Zhu, 2020). Furthermore, due to the benefits that e-commerce provides to key stakeholders, self-organizing e-commerce ecosystems have started emerging in rural markets (Leong et al., 2016).

Recent initial studies have illuminated certain aspects of rural e-commerce logistics and delivery services by focusing on route and cost optimization (Feng, 2019; Gong, 2019; Liu, 2020), innovative logistics solutions (Yang et al., 2020), logistics center locations (Zhang et al., 2017), and evaluation of logistics service quality in particular settings (Jiang et al., 2019; Lozano Murciego et al., 2020). These studies are pioneering initiatives in rural e-retail logistics research, which still lacks the perspective of a key actor in e-commerce last-mile delivery contexts—the consumer.

The knowledge gap regarding consumer expectations and needs pertaining to the convenience and advantages of e-retail hinders the extraction of benefits for both consumers and market actors (Sousa et al., 2020; Kirby-Hawkins et al., 2018). This gap is particularly critical to logistics service providers who carry the financial and operational burden of inefficient rural deliveries. This unbalance is largely due to the core difference between rural and urban settings, namely, the distances between the final delivery destination (i.e., consumers' delivery points) and the associated last-mile distribution center, commonly designed and located to serve urban territories. To date, the two most common solutions to this situation have been (1) offering multiple delivery options and (2) the exclusion of certain operationally implausible territories from the service range.

Studies show rural consumers often choose online shopping for different reasons than do urban e-consumers, namely, geographic isolation, long travel distances, and a sparse range of products and services in proximate physical outlets (Clarke et al., 2015; Kirby-Hawkins et al., 2018; Paddison and Calderwood, 2007). Therefore, e-consumers from different residential area types assumably have different service needs and expectations. The dearth of knowledge on the diversification of e-consumers' requirements and perspectives by residential-area type is a major gap, contributing to a vicious circle for service-level fitting: poor understanding of various demands and responses of e-consumer groups leads e-retailers to offer the same service range to consumers from different residential areas, causing logistics service providers to experience workload and cost disbalances when servicing urban and rural residential areas, resulting in higher costs for some operations (e.g., servicing failed home deliveries). This can negatively affect consumer experiences and satisfaction in segments without appropriate service offerings (e.g., rural residential areas), particularly in developed e-commerce markets.

3. Pre-study

The scant consumer segmentation literature on logistics service needs places this research in the category of initial investigations with limited theoretical support. To develop a sufficient basis for the core investigation and accept the assumption of differences between the service needs of urban and rural consumer groups, we conducted a pre-study. We explored the general population's believe regarding consumers' response to different delivery offerings based on different residential area types. To this end, we performed an intuition-based 2 (single vs. multiple delivery options) \times 2 (short; < 2 miles to travel, vs. long; > 2 miles to travel) between-subject experiment (Holmqvist et al., 2019; Otterbring et al., 2018). Using Mturk ($N = 318$; $M_{age} = 33.47$, $Rural = 24.8\%$), the pre-study's respondents were asked to the following question (for 1 USD compensation): "Compared to having multiple [a single]¹ delivery options when ordering from an e-commerce store, how do you think a customer would respond to delivery if offered a single [multiple] delivery option and needed to travel more than [less than] two miles (three km) to pick up the package?" The respondents were asked to evaluate how a customer would respond when faced with the delivery situation using the three ACSI measures (Fornell et al., 1996). The items were averaged to represent an index score ($\alpha = 0.94$), and a one-way ANOVA, including post-hoc comparison using LSD, was performed (Fig. 1).

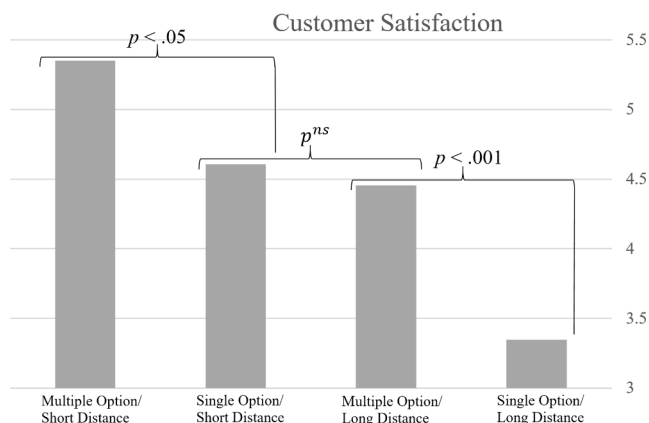


Fig. 1. Customer Satisfaction with Single vs. Multiple Delivery Options at Long and Short Distances to the Delivery Point (Pre-Study).

Our analysis reveals a significant difference in effect between groups offered a single (vs. multiple) delivery option and whether long (vs. short) distances impact customer satisfaction for the four conditions ($F [3, 314] = 19.56, p < .001$). The intuition study indicated that no matter the traveling distance, having more than one delivery option should have a positive effect on the consumers satisfaction with the service delivery ($p < .05$). Moreover, it indicated that either a short distance to the pick-up point or having more than one pick-up alternative should be equally effective delivery solutions ($p > .05$). Finally, having the option to choose the pickup point is always better, no matter the traveling distance ($p < .05$).

4. Hypothesis development

4.1. Delivery service options and e-consumer behavior

Delivery experience theories describe logistics service quality (LSQ) as including different measurements and configurations of logistics service offerings in e-retail. The original service quality—ServQual—model fit a range of diverse service settings (Parasuraman et al., 1985) and was later adapted for logistics and fulfillment services, shifting toward LSQ (Gil Saura et al., 2008; Mentzer et al., 2001; Rahman, 2006) and mirroring physical distribution service quality (PDSQ) (Mentzer et al., 1989). Current versions of the model focus specifically on e-retail logistics services via eLSQ (Rao et al., 2011)—with the core logistics determinants of customer purchase satisfaction being PDSQ and price (Rao et al., 2011), as well as other more specific model fittings (e.g., LSQ for omni-channel retailing by Murfield et al. (2017)). One common denominator that emerged during the LSQ model's evolution is diversity in logistics service offerings, as research shows a variety of shipping options can be linked to e-consumer purchase intention (Rao et al., 2011). E-consumers offered several delivery options are assumably more inclined to reuse the delivery service than others constrained to a single option (Fig. 1). The offering of multiple delivery service options is a service parameter intended to suit diverse consumer groups, thus fulfilling diverse needs and translating into perceived convenience and control, which aligns with our investigation of potential differences between urban and rural populations. Therefore, we propose the following hypothesis:

H1. Diversity of delivery service options is positively related to service reuse intention.

Following the LSQ frame and the ServQual model in general, a greater diversity of delivery options assumably leads to higher customer satisfaction. Previous research shows that delivery option availability increases consumer online trust, resulting in behavioral intent (i.e., willingness to buy) (Bart et al., 2005). From the operation point of view, delivery service differentiation and offering segmentation are strategies to achieve consumer satisfaction and sustainable growth (Accenture, 2016). Traditionally, satisfaction and retention (or loyalty) have been the ultimate experience measures defining consumer profitability and customer lifetime value, where retention is traditionally perceived as an outcome of satisfaction (Oliver, 1980). This notion was further investigated and applied to the e-commerce setting, where e-satisfaction is accepted as a direct antecedent of e-loyalty (Anderson and Srinivasan, 2003). Finally, the evaluation of the role of the delivery experience in the e-retail context showed the mediating effect of the former on the relationship between the e-consumer retail experience and consumer satisfaction (Vakulenko et al., 2019). Given logistics service offerings and their performance effect on e-consumer satisfaction, which, in turn, affects consumer retention (Murfield et al., 2017; Koufteros et al., 2014), we propose the following hypothesis:

H2. The relationship between the diversity of delivery service options and service reuse intention is mediated by customer satisfaction with the delivery service.

¹ Note that brackets refer to the manipulation of scenario.

4.2. Rural and urban: E-consumer segmentation

Delivery service offerings for e-consumers typically differ in terms of speed, options (i.e., location and type), and price (Nguyen et al., 2019), with the combination of these factors usually being established according to e-retailers’ convenience and general understanding of consumers’ needs, without relying on consumer segmentation. This is because the one-size-fits-all approach using the most conventional delivery options satisfies most consumers’ needs, while service diversification for different consumer groups creates risks in terms of operating costs related to customer purchase intentions, satisfaction, and, ultimately, lifetime value. Consequently, rural populations are often underserved in terms of service range, and delivery services are no exception.

Residential environments impose specific features on e-consumers’ behaviors and demands, expectations, and satisfaction levels: this has been demonstrated for e-consumers from smaller islands (Freatly and Calderwood, 2013). From the logistics perspective, consumers’ geographical density, physical convenience, and time convenience are among the contingency variables that influence last-mile distribution structures (Lim et al., 2018). Previous research has investigated purchasing, consumption, service setting, and service experiences specifically for broad, inclusive consumer groups or urban consumers (Morganti et al., 2014; Lachapelle et al., 2018; Ducret, 2014). Similarly, last-mile logistics research has focused either on a broad scope or urban context, featuring investigations of urban freight terminals, urban logistics planning, and urban freight structures (Olsson et al., 2019). The attention to urban environments is understandable given that urban residents constitute the majority of e-consumers, living in areas with denser networks of delivery nodes. This market setting leaves rural e-commerce markets underserved and under-investigated, creating a vicious cycle where lack of knowledge limits the fitting of service and retail offerings.

The initial pre-study findings indicated a significant difference between rural and urban satisfaction levels with different numbers of delivery options, which could indicate the presence of a moderation effect (see Fig. 2 below). Thus, we propose the following hypothesis:

H3. E-consumers’ residential-area type moderates the effect of the number of delivery service options on customer satisfaction.

5. Methodology

The purpose of this study was to test whether customers who could choose from multiple delivery options were more inclined to reuse a delivery service vs. those offered only a single delivery option (H1).

Furthermore, whether this relationship was mediated by customer satisfaction with the delivery service (H2) or moderated by consumers’ residential-area type (urban vs. rural) (H3) were examined.

5.1. Study and survey design

Data were collected in November–December 2019 in Sweden. For an urban area, we selected a city center whose target population (n = 15,000 inhabitants) lived within the city-center borders and where each potential respondent would have at least one delivery point within a 15-minute walking distance. Data collection consisted of sending the city-center residents a physical copy of a questionnaire twice (two weeks apart), as well as an SMS request when possible. For the rural areas, we identified three rural settlements (n < 500 inhabitants each) based on the selection criteria that customers had to travel at least 20 km to the nearest delivery point and lived in a sparsely populated area. Participants from the rural areas were offered 3€ if they responded to the questionnaire. Furthermore, a physical copy was mailed to the potential study participants, following an SMS request. The response rate was approximately 10% for the urban and 20% for the rural area.

Prior to distributing the main questionnaire, it was tested on 50 volunteer participants of different age groups, genders, and occupations. The volunteers filled out the questionnaire, and an additional eight participants took part in a 15–20-minute interview about their online shopping experiences and understanding of the questionnaire. The modified survey was then distributed to the identified study participants and complemented with a description of the study’s purpose, the organizer’s information and contact details, a privacy and anonymity statement, and a voluntary-participation statement.

Based on the feedback (including the preliminary results), in the final version of the survey, the participants were first asked to state their approximate travel distance to pick-up locations (seven alternatives: I did not have to travel; 0–200 m; 200–500 m; 0.5–2 km; 2–5 km; 5–15 km; and >15 km). The distance span was based on interview feedback from the volunteer participants. Moreover, we chose a dichotomous variable and asked the respondents whether they had the option to choose their delivery pick-up point (no, yes). For the independent variable, customers were asked if they were offered different delivery alternatives (no, yes). This item was self-constructed to align with the research aim. The participants were also asked about their satisfaction with their service delivery options using a single seven-point item (1 = not at all satisfied; 7 = very satisfied). A single-item question for estimating satisfaction with service delivery was justified based on the rather utilitarian context, including the concrete nature of the phenomenon under study (Westbrook, 1980; Bergkvist & Rossiter, 2007). Finally, as the dependent variable of reuse intention is also concrete and

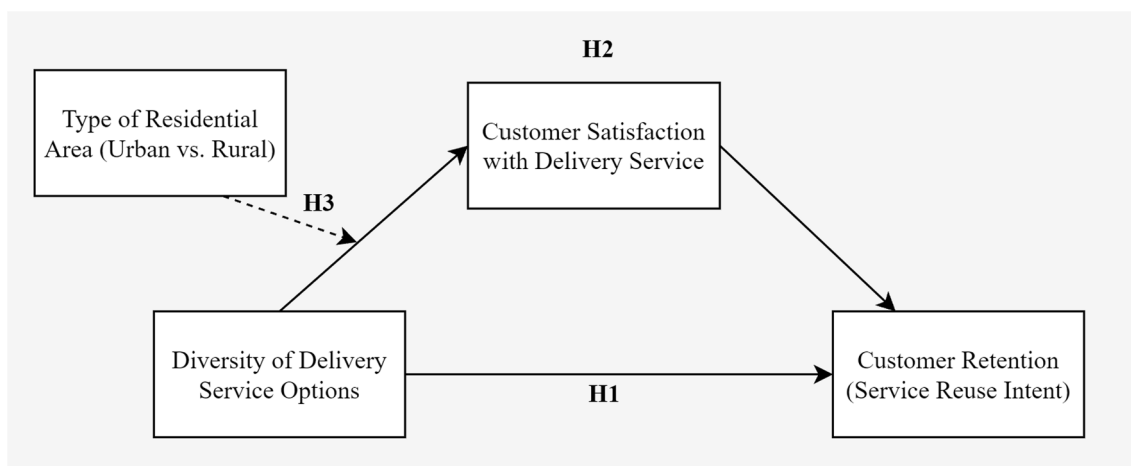


Fig. 2. Conceptual Framework Including Hypothesis.

specific, we followed Bergkvist and Rossiter’s (2007) recommendation. We adapted and reformulated the single-item repurchase behavior measure from Arsenovic and colleagues (2021) to reflect reuse intention of the delivery service. As such, the respondents replied to a single seven-point item regarding their intention to reuse the delivery service (1 = not at all likely; 7 = very likely).

5.2. Sample

The initial sample included 1,677 responses from the urban area and 188 from the rural areas. Preparing the data for analysis, we first excluded 53 outliers scoring three standard deviations from the mean of the dependent variable. Second, we only included the respondents who had responded to all key measures, resulting in a total sample of 1,336 respondents (urban, n = 1,210; rural, n = 126). The final sample had an even gender split and represented all age groups in both urban and rural populations (see Table 1).

5.3. Validation of travel distance between urban and rural consumers.

We theorized that consumers need to travel significantly different distances to pick up delivery orders, depending on the residential-area type. To check whether this held for our sample, we performed an independent sample t-test. The independent variable was a binary variable stating whether customers lived in an urban or rural environment; the dependent variable was ordinal and included seven options (I did not have to travel; 0–200 m; 200–500 m; 0.5–2 km; 2–5 km; 5–15 km; and > 15 km).

The analysis confirmed our theorizing, as rural customers needed to travel significantly further (M = 4.23, SD = 2.17) than urban customers (M = 2.77, SD = 1.28; t[1325] = -11.24, p > 0.001). The descriptive findings supported this, showing almost 95% of urban customers had to travel <5 km, while the majority (59%) of the rural population had to travel 5 km or more to their closest delivery pick-up point. Finally, to ensure that despite the need to travel, rural customers were not deprived of pick-up-point options compared to their urban counterparts, we performed a Pearson’s χ^2 -analysis on 2 (Location: Urban, Rural) \times 2 (Option: No, Yes) crosstabs. The findings showed a non-significant

Table 1 Demographic Overview of Urban and Rural Sample.

Items		Urban (n = 1,210)	Rural (n = 126)
Gender	Male	42.56 %	50.0 %
	Female	56.53%	50.0%
Age	16–29	19.67 %	10.32 %
	30–49	27.77 %	40.48 %
	50–64	30.83 %	34.13 %
	65 +	21.07%	15.08%
Education	Incomplete high school	5.45 %	3.97 %
	High school or prof. education	31.9 %	45.24 %
	< 3 years of university	20.41 %	13.49 %
	> 3 years of university	40.08%	35.71%
Income	0–1,499 EUR	13.55 %	11.90 %
	1,500–2,999 EUR	29.75 %	28.57 %
	3,000–4,499 EUR	31.32 %	40.48 %
	4,500 + EUR	15.79%	9.52%
Online shopping	Every week	5.70 %	8.0 %
	Once in 2 weeks	16.28 %	21.60 %
	Once a month	34.05 %	32.80 %
	Once in 3 months	24.13 %	16.0 %
	Once in 6 months	9.75 %	6.4 %
	Less than once in 6 months	9.01%	13.6%

association χ^2 (N = 1,336, p = .446) between where the customer lived (urban vs. rural area) and the likelihood of being offered more delivery options. Descriptively, approximately 69.2% of the urban customers had the option of choosing a delivery pick-up point, and 65.9% of the rural customers were offered more than one delivery point.

6. Results

The primary purpose of this study was to test our hypotheses (H1–H3). For this purpose, we used the PROCESS macro (PROCESS model 7; Hayes, 2017) for SPSS to test for mediation and moderation simultaneously. In particular, the analysis allowed us to test whether customers offered more than one delivery option were more inclined to reuse the delivery service (H1) and whether this link is mediated by customer satisfaction with the delivery service (H2), including whether the delivery options and delivery satisfaction link varies across residential-area type (H3). Descriptive measurements for the urban and rural respondents are presented in Table 2.

For the PROCESS model 7, the binary item reflecting delivery options (no, yes) was set as the independent variable. Next, the single seven-point item (1 = not at all satisfied; 7 = very satisfied) measuring satisfaction with the delivery option was set as the mediator, and the dependent variable was set as the adapted and contextually modified single seven-point item of reuse intention, which was anchored (1 = not at all likely; 7 = very likely). Finally, as previously validated, the residential location (urban vs. rural) was set as a moderator to examine the relative importance of delivery options for customers with different geographical residences for the link between delivery options and satisfaction with delivery options.

The analysis confirmed that the link (H1) was mediated by customer

Table 2 Mean (M) Standard Deviations (SD), Including Correlation on the Items Used for the Complete, Urban, and Rural Customers*.

Item	Correlation				
	M	SD	1	2	3
<i>Full sample</i>					
1. Delivery option	1.69	0.46	1	1.69**	0.15**
2. Satisfaction	5.82	1.68	0.29**	1	0.59**
3. Reuse intention	6.39	1.13	0.15**	0.59**	1
<i>Urban</i>					
1. Delivery option	1.69	0.46	1	0.31**	0.15**
2. Satisfaction	5.85	1.65	0.31**	1	0.59**
3. Reuse intention	6.39	1.12	0.15**	0.59**	1
<i>Rural</i>					
1. Delivery option	1.66	0.48	1	0.08	0.15
2. Satisfaction	5.59	1.95	0.08	1	0.58**
3. Reuse intention	6.39	1.23	0.15	0.58**	1

* Non-standardized, anchored: Delivery option (1 = Single delivery option; 2 = multiple delivery options), Satisfaction (1 = not satisfied at all; 7 = very satisfied), and reuse intention (1 = not at all likely; 7 = very likely).

** denotes correlation significant at the level if 0.01 level (two-tailed).

satisfaction with service delivery (H2).² More specifically, our findings revealed a significant link between delivery options and customer satisfaction ($b = 1.05, s.e. = 0.09, t = 0.13, p > .001$) and between customer satisfaction and customer intention to reuse the delivery service ($b = 0.40, s.e. = 0.06, t = 25.64, p > .001$). Including satisfaction with delivery service as a mediator between more delivery options and customers' intention to reuse the delivery service rendered the relationship between more than one delivery option and customers' reuse intention insignificant ($b = -0.05, s.e. = 0.07, t = -0.87, p = .385$).

Furthermore, we hypothesized that rural (vs. urban) customers would not find additional delivery options important regarding satisfaction with service delivery. In support of H3, the analysis revealed a significant moderation effect between delivery options and customer satisfaction with delivery options when moderated by location (urban vs. rural) ($b = -0.80, s.e. = 0.32, t = -2.5, p = .012$), suggesting that the effect of more delivery options drives customer satisfaction with delivery options for urban ($b = 1.13, s.e. = 0.10, t = 11.23, p < .001$) but not rural customers ($b = 0.33, s.e. = 0.30, t = 1.08, p = .28$). In contrast, multiple delivery options for consumers from urban areas positively influence their service delivery satisfaction and have a downstream effect on their intention to reuse the service. To assess the moderated mediation effect, we used a bootstrap procedure that generated a sample size of 5,000. Using a 95% confidence interval (CI), the index of the moderated mediation analysis differed significantly from zero (CI = [-0.64, -0.01]).

To summarize the finding, an additional mediation analysis (PROCESS model 4) was performed on the rural and urban groups individually (see Table 3). To assess the mediation effect, we utilized the same bootstrap procedure, and the index of the mediation analysis differed significantly from zero in the urban (CI = [0.32, -0.52]) but not the rural group (CI = [-0.15, 0.32]), indicating that satisfaction does mediate the link between options and customer reuse intention for the urban but not the rural consumers.

7. Discussion and implications

This study's initial assumption was that consumer groups that

Table 3
Mediation Model Paths Summarized (PROCESS Model 4; Hayes, 2017) Analyzed with 5,000-Bootstrap Procedure for Urban and Rural Consumers, Respectively.

Relationship	β	s.e.	t	p
Urban (n = 1,210)				
Delivery option -> Reuse intention	-0.09	0.06	-1.53	0.13
Delivery option -> Satisfaction	1.13**	0.10	11.51	< 0.001
Satisfaction -> Reuse intention	0.41**	0.02	24.60	< 0.001
Rural (n = 126)				
Delivery option -> Reuse intention	0.38	0.23	1.65	0.10
Delivery option -> Satisfaction	0.33	0.37	0.89	0.37
Satisfaction -> Reuse intention	0.36**	0.05	7.75	< 0.001

² Supporting H1-H2, a simple mediation analysis (PROCESS MODEL 4) was performed, in which delivery option (no, yes) was the independent variable, reuse intention (1 = not at all likely; 7 = very likely) was the dependent variable, and satisfaction (1 = not at all satisfied; 7 = very satisfied) was set as the mediator. The results were consistent with the moderated mediation analysis (PROCESS MODEL 7) and show that the direct effect of delivery option on consumer reuse intention is significant ($b = 0.37, s.e. = 0.06, t = 5.58, p > .001$). However, when adding the satisfaction mediator, the direct effect of delivery option on customer reuse intention becomes no longer significant ($b = -0.05, s.e. = 0.06, t = -0.87, p = .38$). In confirming the mediation, the 5,000 bootstrap procedure found a significant indirect effect (CI = 0.32, 0.52), indicating that customer satisfaction fully mediates the link between delivery options and consumer reuse intention.

deviate from the average consumer image can be given different experiences and services without jeopardizing their satisfaction and loyalty; this refers to rural e-consumers who, following logic and a handful of available studies, could be characterized by different needs and behavioral responses than urban e-consumers. Such an approach would enable tailoring and optimizing not just product and price ranges but also the intensity and diversity of associated services, thereby benefiting both the consumer experience and operational efficiency. Consumers' mental accounts (i.e., time, convenience, money) are traditionally accepted as decision-making nodes that influence preferences for certain delivery options; these accounts are then moderated by the context in which the purchase is conducted (Nguyen et al., 2019). Mediators such as contextual or demographic factors are often accounted for in research, appearing as gender, nationality, income level, shopping behavior, level of technology acceptance (Brand et al., 2020; Ashraf et al., 2014; Lissitsa and Kol, 2016; Punj, 2012; Hjort et al., 2013), and other parameters. However, few studies have tested these mediators in the empirical setting of e-commerce logistics. Furthermore, the empirical implications of previous research have fallen short because most e-commerce delivery-service configurations neglect the specifics of given consumer pools. In practice, this means logistics service offerings are set by e-retailers based on the attractiveness of the terms offered by logistics parties and usual market delivery practices. Rarely (if ever) will outsourced delivery services be offered based on the characteristics and needs of target consumer groups. Common factors regarding the appropriation of services are commonly limited to national geographical specifications based on market traditions (e.g., specific delivery modes and return algorithms in given countries).

According to our results, e-consumers from rural and urban residential areas differ in their response to different levels of logistics service offerings (e.g., service range). For e-consumers from rural areas, service diversity had no effect on satisfaction level, and following the mediation of customer reuse intention, we conclude that rural and urban e-consumers indeed differ in their responses and preferences, opening a potential new approach to e-consumer segmentation and tailoring service offerings without diminishing customer satisfaction. The implications of these findings, if executed strategically, can favor all actors directly involved. Service offering modification can be favorable for both market actors and consumers. On the one hand, e-retailers and logistics service providers have the possibility of cutting costs by omitting one-size-fits-all service offerings and adjusting service ranges according to consumer needs and operational demands. On the other hand, rural e-consumers could gain higher service availability (i.e., delivery networks could spread if only one type of delivery were deployed) in exchange for service diversity.

Regarding the efficiency of rural market services, two core strategy groups exist: customer value propositions and modeling last-mile fulfillment systems (Sousa et al., 2020). Customer value propositions call for product-assortment and delivery-service-level adaptation, additional delivery fee use, and clear communication of value propositions, while fulfillment operations are best focused on the reconfiguration of pick-up locations and transport operations. Our findings confirm these recommendations and extend current knowledge primarily by providing consumer insights regarding service-level fit, which has implications for the communication of value propositions and purposeful (re)design of the logistics service blueprint, which could concern pick-up locations, delivery distances, and frequencies.

7.1. Managerial implications

Our findings also contribute to several managerial decision-making nodes for different actors. First, e-retailers (the decision-makers for actual service configurations as purchasers of logistics and/or fulfillment services) now have empirical evidence that for rural e-consumers, variety in delivery service offerings does not translate into higher satisfaction, whereas it increases urban e-consumers' satisfaction levels

and reuse intention. To adopt and incorporate this knowledge, e-retailers are recommended to take the following steps:

Step 1: Segment consumers based on residential-area type. This could be done by requesting consumers' postal codes during order placement or the first step of the transaction to enable service offering customization.

Step 2: Per Sousa et al. (2020), communicate offerings and value propositions to the consumer during order placement. This assures value is translated and communicated to the consumer without misconceptions of consumer-group discrimination based on service levels.

Step 3: Limit the delivery service options for rural residential areas. As the rural consumer group does not require delivery service diversity, limiting the offerings provides an opportunity to decrease the price of outsourced service contracts, potentially increasing service quality. Recommending decreased delivery speed and providing minimal delivery options will not jeopardize customer satisfaction in rural areas. If the new service strategy is integrated with logistics service providers, the new service configuration can lessen the gap in delivery costs per parcel between rural areas and cities (Cárdenas et al., 2017). Consequently, one existing strategy with complementary rural delivery fees could be discarded to avoid price discrimination. This study's findings provide e-retailers that broadly identify with the rural market or work specifically facing this segment with the grounds to limit delivery service diversity and, instead, focus on customer reach and service availability.

Second, the findings enable logistics service providers to treat urban and rural areas as areas with different service requirements for their customers (i.e., e-retailers) with the following implications:

- (1) Logistics and fulfillment service providers can tailor their service offerings and contracts with e-retailers to optimize their rural operations by limiting the service range.
- (2) Service offering redefinition and the subsequent cost savings enable the implementation of new service strategies, particularly those beneficial to rural residential areas (e.g., service availability). By offering fewer delivery options, focusing on collective delivery points, and avoiding rapid deliveries, logistics service providers could expand their delivery networks via both attended and unattended delivery points, whereby unattended delivery stations could be operated either by third parties or the logistics service providers themselves, and infrastructure maintenance and management approached by either market actors or rural communities as a way of investing in the local infrastructure. The attended delivery points could function as traditional merged delivery hubs based on existing retail outlets (e.g., gas stations or retail kiosks) or rely on innovative solutions discovered and tested in rural areas (e.g., libraries, churches, and communal centers).
- (3) Finally, limiting service diversity enables logistics service providers to select the most suitable transport strategies. For rural areas, characterized by long distances, low population density, and simpler infrastructure, the most cost- and operation-efficient approaches are point-to-point distribution, using big loads and bigger vehicles, and outsourcing and partnerships with small local service establishments.

Third, the adaptation of the aforementioned strategies by e-retailers and/or logistics service providers creates opportunities for other actors, namely, legislators, municipalities, real-estate owners, and operators, who now have evidence and grounds for sustainable establishment and operations in rural locations, which would benefit both their businesses and rural communities. Furthermore, rural communities, through their governing bodies or other initiators, could invest in creating local delivery points to support infrastructure enabling delivery services. Such initiatives would be feasible only in partnerships with delivery companies, which would have to integrate the new delivery points into their

existing structures.

7.2. Research implications

This study contributes to existing knowledge in several ways and lays the groundwork for further research. First, the findings contribute to the consumer-segmentation domain in the growing field of e-commerce, particularly e-retail. This study addresses a new segmentation dimension meant to highlight areas—residential-area type and delivery-service design—that are likely to result in service unbalance and unnecessary costs if neglected, given the current urban-centered approach to service appropriation and growing global e-consumption.

Second, this study provides a narrow yet substantial contribution to the field of logistics, shown to be characterized by a major knowledge gap. The findings offer insights into the domains of rural supply-chain management and delivery service offerings and implications for delivery-network design. More importantly, they link logistics, retail, and marketing research in the context of e-commerce.

Third, our findings contribute to the field of rural studies. While previous studies have investigated various aspects of the rural environment (e.g., rural SME performance, social dynamics, agricultural sector, and governance matters), rural supply-chain management and distribution have not received their fair share of academic attention (Evangelista et al., 2020).

8. Conclusions

This study has examined differences between e-consumers from rural and urban residential areas, specifically, their responses to different numbers of delivery options. The results showed that having more delivery service options is only linked to customer satisfaction and reuse intention for the e-consumers from urban residential areas; the hypothesis did not hold for rural residents. The results of the intuition pre-study indicated higher satisfaction with multiple delivery options among e-consumers from both rural and urban areas when compared against a single delivery option, while showing different overall satisfaction levels between the two groups. The survey-based investigation, however, wherein e-consumers reflected on their last online retail experience and the associated delivery service, demonstrated how having a single delivery option does not compromise the satisfaction and retention intention among the rural consumers.

Our core contribution is investigating and enabling the differentiation of rural e-consumers from urban ones, thus supporting operationally and financially viable delivery service fitting.

Like all studies, this one entails certain limitations, which represent prospects for future research. First, this study was conducted in Sweden, which, while representing developed economies and mature e-commerce markets, does not necessarily represent all types of market settings and rural–urban differences among e-consumer groups. This calls for further tests in other settings. Next, this study focused on one feature of logistics service, which offers limited insights for setting optimal e-retail service levels. Thus, further research is required to investigate various service offerings and their combinations to cover a broader range of consumer experience touchpoints. Finally, future studies should use bigger samples and investigate various consumer features. This study relied on a limited sample representing the total research population, had a high response rate from three rural areas, and was appropriate for statistical tests. Nevertheless, further studies should cover larger consumer groups to increase the validity and generalizability of the findings and provide deeper insights into the behavioral responses in specific consumer groups.

CRedit authorship contribution statement

Yulia Vakulenko: Conceptualization, Funding acquisition, Data curation, Writing - original draft, Writing - review & editing,

Visualization, Investigation, Validation, Formal analysis, Methodology, Supervision, Resources, Project administration. **Jasenko Arsenovic:** Conceptualization, Funding acquisition, Data curation, Writing - original draft, Writing - review & editing, Visualization, Investigation, Validation, Formal analysis, Methodology, Resources. **Daniel Hellström:** Conceptualization, Funding acquisition, Data curation, Writing - original draft, Writing - review & editing, Investigation, Validation, Formal analysis, Methodology, Supervision, Resources. **Poja Shams:** Conceptualization, Funding acquisition, Data curation, Writing - original draft, Investigation, Validation, Formal analysis, Methodology, Supervision, Resources.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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