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Determinants of customers' intention to adopt last mile-attended service points

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Abstract This study investigates the determinants influencing consumer intention relating to attended service points in last-mile delivery, which has received less attention than the unattended model. In this regard, we examine the effects of perceived value, online shopping delivery risk, and environmental concerns on attended service point (ASP) adoption. Survey data were collected from 299 consumers. We used the structural equation modeling approach by using AMOS software for data analysis. The results indicate that hedonic values associated with ASPs, last-mile incentives, and online shopping delivery risk are critical and positively affect customer attitudes, which turn into intentions toward ASPs. From a managerial perspective, this research offers several insights into e-commerce and logistics service provider companies' ASP penetration strategies in emerging markets. This study contributes to the academic body of knowledge by enriching the literature on the ASP model in last-mile delivery and investigating the determinants that impact consumers' attitudes and intentions to use ASPs in an emerging market context.

Keywords Last-mile delivery · Attended service points · Hedonic value · Utilitarian value · Online shopping risk

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1. Introduction

Last mile attended service points (ASPs) serve as shop-in-shop formats in which consumers pay, pick up, and return packages through selected local retail settings, such as petrol stations, shops, convenience stores, or post offices. Unlike unattended automated points (e.g. lockers), the ASP model involves interaction with the staff and shopping environment during pick-up (McKinnon et al., 2015; Duong, 2019). The proposed ASP model provides various benefits to the parties. Customers use service points for transactions, access, and post-benefit convenience (Wang et al., 2019). Because consumers pick up their parcels from a convenient point at their suitable time slots, the waiting time and the home delivery-related problems can be reduced. This is particularly important given that in 2020, roughly 67 million parcels in the UK were not successfully delivered on the first delivery attempt due to recipient absence, resulting in economic losses of $1.1 billion (Song et al., 2024). Therefore, by reducing the number of road trips and the overall distance traveled, the ASP model eliminates one-by-one home deliveries, thereby helping operators to reduce labor and equipment costs. In addition to these economic benefits, reducing home deliveries and related failed attempts, which cost an average of $17.20 per delivery due to an 8% failure rate of first-time deliveries, also saves fuel and lowers CO_2 emissions (Weltevreden, 2008; Loqate, 2018). Parcel delivery at a collection point is found to be the most sustainable option, achieving a 17% CO_2 reduction and reducing transport movements (Kokkinou et al., 2024). On a macro level, these also contribute to the reduction of greenhouse gases and improve urban liveability from societal and environmental perspectives (Yuen et al., 2018; Mommens et al., 2021; Kokkinou et al., 2024). Given that global transportation emissions increased by 80% in 30 years, reaching 8.26 billion tons in 2018 (Statista, 2020a), and road freight accounts for 4.8% of global greenhouse gas emissions (Ritchie and Roser, 2020), sustainable delivery models are crucial and require further investigation (Peppel, Spinler & Winkenbach, 2024).

Retailers serving as attended service delivery points receive a fee for each parcel and rent the inventory space in their shops to stock the parcels. Additionally, increased store traffic boosts revenues from in-store purchases made during pickups and return (Weltevreden, 2008). Collection and delivery point models (CDPs), involving both attended and unattended models, have spread to numerous countries worldwide (e.g., France, Japan, Germany, Poland, the Netherlands, and New Zealand) (Xu and Hong, 2013; Kedia, Kusumastuti & Nicholson, 2017). The greatest demand for collection points occurs in continental Europe, where more than 80% of retailers provide pick-up services in nations including France, Spain, and Italy (Metapack, 2023). In line with this pattern, more than 2.4 million parcel shops and stations are already in operation globally. These parcel shops, which include manned locations similar to convenience stores and parcel lockers, offer safe and practical substitutes for conventional home deliveries (Mohammad et al., 2023). However, in some countries, ASPs do not receive the expected consumer attention because of various market or consumer-related factors, resulting in market penetration failures (Vural and Aktepe, 2021). For instance, the first CDP initiative, which included both attended and unattended service points, launched in Istanbul, Türkiye in 2014, had to cease operations in 2017 due to market conditions after reaching 500 delivery points (Vural and Aktepe, 2021). Some studies attribute these failures to significant consumer skepticism toward novel last-mile delivery models (Morganti et al., 2014; Choo, 2016). This is particularly evident in many Asian countries, where customers show far less interest in these delivery models. A Parcelmonitor survey conducted in 2012 revealed that only 3.28% of packages in Asia are delivered using out-of-home delivery methods (Luong et al., 2024). More specifically, in emerging countries, despite the numerous advantages of self-collection services, the most common last-mile delivery method is still home delivery (Yuen et al., 2018; Mohammad

et al., 2023). Several factors can affect the late adoption of self-collection services in developing countries, and this argument requires further research into novel forms of collection and delivery models. Mostly, the literature is related to technological innovativeness and the adoption of self-service unattended service points (e.g. Blut, Wang & Schoefer, 2016; Vural and Aktepe, 2021; Luong et al., 2024). While some researchers have examined the determinants of consumer choice in self-service parcel delivery systems (Blut et al., 2016; Wang et al., 2018, Chen et al., 2018; Liu et al., 2024), others have discussed how self-service technologies enhance service quality and customer satisfaction (Safaeimanesh et al., 2021; Lai et al., 2022; Sohani and Sharma, 2024). Despite detailed studies on unattended service points, only a few studies exist for ASPs. Wang et al. (2024) highlighted how attended pickup points offer greater trust and security, particularly for high-value purchases and for shoppers who prioritize control over collection time. Additionally, Tsikada et al. (2024) explored consumers' preferences for collection points by focusing on factors like delivery time, convenience, cost implications, technical innovation, and consumer loyalty. Vural and Aktepe (2021) revealed the effects of supply chain contingencies (e.g. customer and distribution network, information technology integration) and market contingencies (e.g. consumer-market characteristics, regulatory environment) on the adoption of self-collection options. Some other researchers found that factors related to infrastructure (e.g. ASP network density, parking options, location) (Kedia et al., 2017) and demographics (e.g. online shopping age, online shopping frequency) can be influential in the service point decisions (Xu and Hong, 2013). Thus, herein, we aim to investigate the determinants affecting consumers' attitudes and intentions toward ASPs. Our purpose is to elicit the effects of perceived values, online shopping delivery risk, and environmental concerns on the adoption of ASPs.

The contribution of this study is fourfold. This study (1) provides an understanding of perceived values that are influential for ASP perception: utilitarian values through the effects of accessibility and last-mile incentives and hedonic values through exploration and intrinsic gratification aspects; (2) explores the effect of online shopping delivery risk on ASP adoption by highlighting the possible consumer effort to eliminate the last step of home delivery for risk reduction; (3) investigates the effect of environmental concern on consumer attitude and intention regarding ASPs; (4) contributes to the ASP side of the last-mile logistics literature, which has received limited attention compared to the unattended model. Besides, the existing delivery point services studies mostly focus on developed European countries and markets where the service is in the maturity stage (Weltevreden, 2008; Beckers and Verhetsel, 2021; El Moussaoui et al., 2023). On the other hand, self-service collection and delivery services in emerging markets are still in their infancy. Despite some studies existing for the novel forms of last-mile delivery in emerging markets (e.g. Upadhyay, Tiwari & Tiwari, 2022), more studies are needed. In this sense, the study is positioned to provide theoretical insights as well as effective and efficient management of transitional stages.

We begin by providing the theoretical framework for hypothesis development. Then, in the methodology part, we present detailed information regarding data collection and sampling. Subsequently, we elaborate on the analysis results in the finding section. Lastly, in conclusion, we underscore the managerial and theoretical implications by also addressing future research avenues and limitations.

2. Theoretical background and research hypotheses

In the area of consumer behavior, the theory of reasoned action (Ajzen and Fishbein, 1980) links the notions of knowledge, concern, belief, attitudes, and behavior. Behavior is influenced by intention, and intentions are formed by attitudes (Ajzen and Fishbein, 1980). Attitudes are the overall evaluations of a

specified behavior that are determined by beliefs regarding the results of behavior (Ajzen and Fishbein, 1975). By partly drawing on the theory of reasoned action, we aim to develop a deeper understanding of the determinants of attitude and intention by investigating the values associated with the ASP, environmental concerns and the perceived online shopping delivery risk factors, as they form background factors and shape consumers' expectations for outcomes they might experience if they perform the behavior (Fishbein and Ajzen, 2011). These constructs may indirectly determine intention by influencing attitudes.

Considering the multidimensional attribute of the value phenomenon (Babin, Darden & Griffin, 1994; Holbrook, 1999), customer values can be either hedonic (multisensory or emotional elements such as entertainment, social interaction, exploration, intrinsic enjoyment, relaxation, pleasure, participation) or utilitarian (e.g. efficiency, cost/value ratio, functionality) (Hirschman and Holbrook, 1982; Babin et al., 1994; Sánchez-Fernández, Iniesta-Bonillo & Holbrook, 2009; Martínez-López et al., 2016; Xu et al., 2017). Self-collection from service points requires additional consumer effort when compared with full home delivery service; thus, consumers evaluate the benefits or perceived value of the practice (Wang et al., 2021a). Tedjo, Tee & Ahmad (2022) addressed the factors of time convenience and cost efficiency in addition to access convenience for smart lockers and revealed its impact on customer experience. The following theories are arranged in line with the arguments:

H1) Access convenience has a positive effect on the attitude toward ASPs.

The payment alternatives, ability to combine with other purchasing activities, and simplicity and convenience of the service were found to be effective in the preference for ASPs (e.g. Weltevreden, 2008; Xu and Hong, 2013). As stated by Kokkinou et al. (2024), customers can be extrinsically motivated to select a more sustainable option by offering financial incentives, especially in the form of discounts. In similar lines, in the study of Zhou et al. (2024), to increase consumers' readiness to pick up and lower overall operating expenses, financial incentives, which come in a variety of forms, including cash, postal discounts, and locker storage reductions, are crucial. Lastly, in a qualitative study, Paker (2021a) addressed the effects of transportation time and cost, discount coupons, discovering a new place, being a part of daily routine, contribution to tradesmen, interaction, and physical environment. In line with these studies, we propose that consumers seek utilitarian values in the attended service delivery model. As they benefit from the convenience of ASPs and last-mile incentives (free shipping, gift vouchers, or discounts), their attitudes toward ASPs will become more favorable. The following hypotheses are formulated in accordance with the arguments:

H2) Last-mile incentives have a positive effect on attitudes toward ASPs.

In addition to consumers' utility benefit assessments of self-collection, some scholars also evaluate affective service qualities (enjoyment, assurance, customization) (Wang et al., 2018). In the field of online shopping, many studies exist for the exploration of hedonic-utilitarian values and behavioral responses in the forms of intention and loyalty (e.g., Chiu et al., 2005; Lin, 2010). In parallel to customer shopping intention studies (e.g., Jones, Reynolds & Arnold; Overby and Lee, 2006), we advocate that a consumer's higher level of hedonic value perception may lead to favorable attitudes toward ASPs. The following hypothesis is posited in accordance with the argument:

H3) Hedonic value has a positive effect on the attitude toward ASPs.

Studies on delivery risks have revealed that the perception of delivery risk has a detrimental impact on consumers' views about online purchases (Naiyi, 2004; Javadi et al., 2012). Huseynov and Yıldırım (2016) and Giuffrida, Jiang & Mangiaracina (2021) noted that many customers were concerned about late or damaged

products and parcel deliveries. In a qualitative study by Paker (2021b), the types of perceived risks (e.g., physical, employee service, quality, privacy, technical, regulations, time, and hygiene) and their effects on the customer decision process regarding last-mile delivery options were investigated. Thus, consumers may have favorable attitudes toward ASPs if they have a high perception of delivery risk for online retailers in general. The depiction of this proposal derives from the premises of The Cognitive Dissonance Theory (Festinger, 1957). According to this theory, consumers strive to establish internal harmony and consistency among their cognitions and attitudes (Osgood and Tannenbaum, 1955; Festinger, 1957). Thus, we believe that consumers tend to reduce their cognitive dissonance due to shopping online by exhibiting risk-reducing behavior and developing favorable attitudes toward the attended service model. Consumers may tend to cut the delivery process in the last mile part by picking up from the service points and may reduce the perceived delivery risks by eliminating the last step of home delivery handling, which is mostly done by cargo companies. Therefore, we propose the following hypothesis:

H4) Online delivery risk perception has a positive effect on attitudes toward ASPs.

According to the literature, customers have a great propensity to favor green transportation services (Schniederjans and Starkey, 2014), and the environmental concerns of customers directly impact their behavioral intentions (Sajid et al., 2021; Gaspar et al., 2023). Supporting this, some researchers found that those who value protecting the environment and have environmental concerns are more likely to choose self-collection services (both attended and unattended) because they are known to be more environmentally friendly options than home delivery (Yuen et al., 2018, Gatta et al., 2018). Likewise, customers' intentions to use the attended services are highly influenced by their perceptions of the service's environmental impact (Milioti, Pramatari & Kelepouri, 2020). In line with these arguments, we suggest that high environmental concerns will result in more favorable attitudes toward this specific last-mile option:

H5) If consumers have high environmental concerns, they will have a positive attitude toward ASPs.

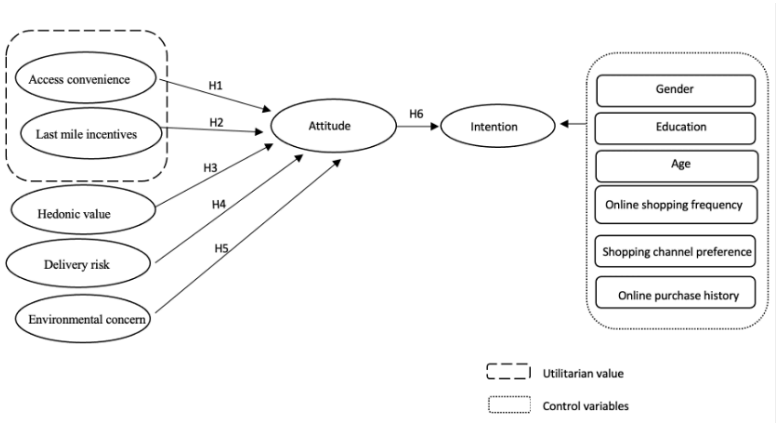
Lastly, in line with the theoretical framework, we propose that the attitude toward ASPs affects intention for ASP use, and the related hypothesis is as follows:

H6) Attitude toward attended service points has a positive effect on intention toward ASPs.

By applying the aforementioned theories and constructs, we conceptualized a model for hypothesis testing (Figure 1).

Figure 1

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3. Methods

3.1. Research design and sampling

Due to targeting online shoppers, we conducted an online survey to gather information. Through online convenience sampling, we reached the targeted population through various social networks (e.g. Facebook, LinkedIn) with Google Forms invitation links. According to the membership on these pages, the population was around 1500, and 303 responses were received, equating to a 20% response rate, which is the acceptable threshold (Pillania, 2008). Because incomplete responses can jeopardize the validity and reliability of survey-based research by excluding crucial information or failing to address essential issues, we eliminated four of the responses. It is usual practice to exclude such responses to maintain data integrity and provide a reliable study (Wu et al., 2023). To determine the minimum acceptable sample size, the G*Power technique (Faul et al., 2007; Hair et al., 2019) was employed. The test used an alpha value of 0.05, a power of 0.95, and a medium effect size of ($f2 = 0.15$) and reported that the minimum sample size needed with this effect size was 146 participants. Thus, the sample size obtained in this study reached more than the required sample level.

In Türkiye, revenue in the e-commerce market is projected to reach US$18.75 bn in 2023, and the number of users is anticipated to rise to 66.10 million by 2027 (Statista, 2023). Although a continuous growth curve is observed in the e-commerce sector in the Turkish market, delivery-point services and the acceptance of ASPs are still in their infancy. Therefore, Türkiye was chosen as the research context, and the data were assembled in 2022 using a structured, closed-ended questionnaire with consent and information forms. The questionnaire was divided into three sections. In the first part, we explained the purpose of the research and gave the definitions of online marketplaces and ASPs to better achieve construct validity. We also informed the participants about the confidentiality of the responses. The second part of the survey conveyed demographic information on age, gender, education, online shopping frequency, online shopping history, and shopping channel preference. Finally, the third part of the survey included measurement items (Table 1). The original items were translated into Turkish by an academician, and with a pilot study including 15 participants, which was found sufficient (Chien and Norman, 2004). The format, readability, understandability, and general design were examined in this pilot study. This ensured content validity by ensuring question clarity and preventing misinterpretation of respondents. After the feedback, slight corrections were made in the survey[1].

3.2. Operationalization of the constructs

Under utilitarian values, we assessed access convenience based on physical location, operating hours, and availability (Seiders et al., 2007). Additionally, we examined last-mile incentives, such as discounts, promotions, and free shipping, that retailers use to retain customers (Liu et al., 2011). For hedonic values, we incorporated intrinsic gratification and exploration to represent search activities such as browsing a variety of shops in a shopping area (Avello et al., 2010). We also address online shopping delivery risks, referring to delivery loss due to damages or wrong address deliveries (Masoud, 2013). Environmental concern was defined by public awareness of environmental issues, reflected in attitudes, recognition, and responses (Weigel and Weigel, 1978), with a focus on transportation modes and carbon emissions.

[1] Survey link: https://docs.google.com/forms/d/e/1FAIpQLSdkg1ufhcisGFC6QtglkGiQxfoZamACAcmh8eRX6vI0TByNJw/viewform?fbzx=-1359115138833776279

Measurements were adapted from the literature: four items for access convenience (Seiders et al., 2007), three items each for hedonic values (Avello et al., 2010), last-mile incentives (Liu et al., 2011), delivery risks (Masoud, 2013), and environmental concerns (Wu et al., 2019). Attitude and intention constructs were both measured using a three-item scale (Tsai and Tiwasing, 2021). All items were evaluated on a five-point Likert scale (1- "Strongly disagree" and 5- "Strongly agree").

Table 1

Constructs, measurement items, and sources

Construct	Measure	Items	Source
Access Convenience (ACCON)	**ACCON1**	I am able to get to the local store quickly and easily.	Seiders et al. (2007)
	ACCON2	Collection and delivery points offer convenient parking.	
	ACCON3	Collection and delivery points offer convenient locations.	
	ACCON4	Collection and delivery points offer convenient store hours.	
Hedonic Value (HEDON)	**HEDON1**	I feel good when I go shopping at the collection and delivery points.	Avello et al. (2010)
	HEDON2	I would like to browse the collection and delivery points.	
	HEDON3	I like to window shop.	
Last mile Incentives(LMINC)	**LMINC1**	Collection and delivery points provide rewards for continued purchases.	Liu et al. (2011)
	LMINC2	I can receive free shipping with collection and delivery points.	
	LMINC3	Collection and delivery points provide promotions and discounts.	
Delivery Risk (DRSK)	**DRSK1**	If I purchased from an online store, I would be concerned about whether the product would be delivered to the wrong address.	Masoud (2013)
	DRSK2	If I purchased from an online store, I would be concerned about whether the product would be lost during delivery.	
	DRSK3	If I purchased from an online store, I would be concerned about whether the wrong product would be delivered.	
Environmental concerns (ENVC)	**ENVC1**	I am very concerned about current environmental pollution and its impact on human health.	Wu et al. (2019)
	ENVC2	Automobile exhaust emissions are one of the primary sources of air pollution.	
	ENVC3	I have the responsibility to adopt a low-carbon travel mode.	
Attitude (ATT)	**ATT1**	I feel that using the collection and delivery points is interesting.	Tsai and Tiwasing (2021)
	ATT2	I look forward to using the collection and delivery points when purchasing online.	
	ATT3	Overall, my attitude toward using collection and delivery points to receive parcels is that they are useful.	
	INT1	I intend to use collection and delivery points to receive parcels in the future.	Tsai and Tiwasing (2021)

Construct	Measure	Items	Source
Behavioral Intention (INT)	**INT2**	I would recommend collection and delivery points to my friends.	
	INT3	I am planning to use collection and delivery points often.	

3.3. Sample

We received 299 valid responses. Three age groups, namely, 18–28, 29–39, and 40–59, were represented in the sample, with a predominance of younger people (between 18 and 28 years). Participants comprised more than 60% of the women. In addition, more than 40% of the participants shop online several times a month, in line with the TUIK data (2021). The majority of participants had higher education, with 70.20% having a university degree. In addition, most of the participants preferred the Internet as a shopping channel (44.5%), and their online purchase history was mostly between 3 and 5 years (33.8%) (Table 2).

Self-collection is still in its infancy in Türkiye, and most last-mile operations are being deployed as home deliveries. Therefore, Türkiye, with its transitional structure in last-mile operations, was selected as the study context.

Table 2

Sample statistics

		Frequency	Percentage
Gender	Female	191	63.9
	Male	108	36.1
	Total	299	100
Education	High School	11	3.7
	Bachelor's Degree	210	70.2
	Master's Degree	63	21.1
	Ph. D.	15	5
	Total	299	100
Age	18-28	237	79.3
	29-39	51	17.1
	40-59	11	3.7
	Total	299	100
Online Shopping Frequency	Several times a week,	45	15.1
	Once a week,	31	10.4
	Several times a month,	131	43.8
	Once a month,	36	12
	Seldom	56	18.7
	Total	299	100
Shopping Channel Preference	Store	89	29.8
	Mobile	77	25.8
	Internet	133	44.5
	Total	299	100
	Less than 1 year	9	3.0

		Frequency	Percentage
Online Shopping History	1-3 years	90	30.1
	3-5 years	101	33.8
	5-7 years	58	19.4
	More than 7 years	41	13.7
	Total	299	100

4. Results

Confirmatory factor analysis results (CFA)

The statistical tools SPSS 28 and AMOS 28 were used for data analysis. In structural equation modeling (SEM) using AMOS, several fit indices assess the model's goodness-of-fit, helping to determine how well the theoretical model aligns with the observed data (Harzen et al., 2015). The following values provide the fundamental indication of the fit. The absolute indices, The Chi-square, the root mean square error of approximation (RMSEA), the goodness of fit index (GFI), and the adjusted goodness of fit index (AGFI), are measures of how well the model fits in comparison to no model at all. Normed fit index (NFI), Tucker-Lewis Index (TLI,) and comparative fit index (CFI) are incremental or comparative fit indices that compare the chi-square value to a baseline model (Jöreskog and Sörbom, 1982; McDonald and Ho, 2002). The model fit was evaluated using CFA (Table 3). The normed chi-squared value was x2/df: 2.212 based on the findings (df: 188, p: 0.000). The additional fit indices were as follows: CFI: 0.945; GFI: 0.885; NFI: 0.904; TLI: 0.932; and AGFI: 0.846. The RMSEA was recorded as 0.064. All values indicated good levels of fit.

All factor loadings are above the indicated threshold of 0.5 (Fornell and Larcker, 1981), with a minimum value of 0.6. Convergent and discriminant validity were validated when the average variance extracted (AVE) values for all constructs exceeded the 0.5 threshold—except for one construct, which was assessed at 0.498. However, an AVE value less than 0.5 is considered acceptable when the composite reliability (CR) exceeds 0.60 (Fornell and Larcker, 1981); thus, this criterion can be applied to the concept in question. Furthermore, the square root of the AVE values was bigger than the correlation coefficients between the constructs, indicating discriminant validity (Fornell and Larcker, 1981). Furthermore, all constructs had composite reliability values higher than the required 0.60 level (Bagozzi and Yi, 1988) (Table 4).

Due to using the survey technique and asking for independent and dependent measure items in one survey, Harman's one-factor test was employed for common method bias (CMB). One factor accounted for 34.075 % of the variance and was below the suggested threshold (Podsakoff and Organ, 1986).

Table 3

Regression Weights, R^2 Values, and T-Values Summary

	Regression weight	R^2	T-value
Access Convenience			
ACON1	0.762	0.58	
ACON2	0.648	0.42	10.346
ACON3	0.768	0.59	12.095
ACON4	0.7	0.490	11.156
Last Mile Incentives			

	Regression weight	R^2	T-value
INCEN1	0.686	0.47	
INCEN2	0.611	0.373	8.782
INCEN3	0.806	0.65	10.249
Hedonic Value			
HEDON1	0.84	0.705	
HEDON2	0.94	0.885	21.409
HEDON3	0.902	0.814	20.302
Environmental Concern			
ENVON1	0.826	0.683	
ENVON2	0.872	0.761	15.627
ENVON3	0.755	0.57	13.848
Delivery Risk			
RISK1	0.802	0.643	
RISK2	0.88	0.774	13.512
RISK3	0.686	0.47	11.796
Attitude			
ATTI1	0.637	0.406	
ATTI2	0.833	0.693	11.423
ATTI3	0.834	0.696	11.437
Behavioral Intention			
BEHAV1	0.904	0.817	
BEHAV2	0.95	0.903	28.429
BEHAV3	0.938	0.881	27.544

Note: All t-values are significant at p <0.001

Table 4

Correlation matrix, average variance extracted, and composite reliability

	CR	AVE	ACCON	LMINC	HEDON	ENVC	DRSK	ATT	INT
ACCON	0.812	0.520	0.721						
LMINC	0.746	0.498	0.436	0.705					
HEDON	0.923	0.801	0.461	0.476	0.895				
ENVC	0.859	0.671	0.307	0.387	0.371	0.812			
DRSK	0.835	0.629	0.188	0.227	0.21	0.329	0.793		
ATT	0.815	0.598	0.407	0.459	0.535	0.349	0.317	0.773	
INT	0.951	0.867	0.415	0.453	0.515	0.318	0.241	0.713	0.931

ACCON: Access convenience, DRSK: Delivery risk, LMINC: Last-mile incentives, HEDON: Hedonic value, ENVC= Environmental concern, ATT: Attitude, INT: Intention, CR: Composite reliability, AVE: Average variance extracted

4.1. Path analysis

Following the CFA, a path analysis was conducted using structural equation modeling. The normed chi-square ($\chi 2/df$) was found as 2.181 (df:193, p: 0.000). The other indices (GFI: 0.885, RMSEA: 0.063, AGFI: 0.849, CFI: 0.945, NFI: 0.903; TLI: 0.934) indicated a desirable fit.

H1 suggested that access convenience has a positive effect on attitude toward attended shipment points. Interestingly, this hypothesis was not supported (β: 0.087; e: 0.057; p: 0.127). H2 proposed that last-mile incentives have a positive effect on attitude toward self-collection in local service points, and this hypothesis was supported (β: 0.272; e: 0.071; p: 0.000). Additionally, the findings indicated that hedonic value has a positive effect on attitude toward self-collection in ASPs (β: 0.245; e: 0.049; p: 0.000). Therefore, H3 was also accepted. In hypothesis 4, it was proposed that online shopping delivery risk perception has a positive effect on attitude toward ASPs, and according to the results H4 was supported (β: 0.110; e: 0.043; p: 0.01). Hypothesis 5 suggests that if consumers have high environmental concerns, they will have a positive attitude toward ASPs. Interestingly, the results indicate that there is no significant relationship among the constructs (β: −0.015; e: 0.046; p:0.743); thus, H5 was rejected. In line with the theory, with hypothesis 6, we assumed that attitude toward ASPs has a positive effect on intention toward ASPs, and this hypothesis was also supported (β: 1.277; e: 0.118; p: 0.000) (Table 5).

Table 5

Path analysis results

			Estimate	S.E.	C.r.	p
H1:ACCON	→	ATT	0.087	0.057	1.526	0.127
H2: LMINC	→	ATT	0.272	0.071	3.820	0.000
H3:HEDON	→	ATT	0.245	0.049	4.987	0.000
H4: DRSK	→	ATT	0.110	0.043	2.567	0.01
H5: ENVC	→	ATT	−0.015	0.046	−0.328	0.743
H6: ATT	→	INT	1.277	0.118	10.813	0.000
			R^2			
Attitude **0.504** Intention 0.697						

ACCON: Access convenience, DRSK: Delivery risk, LMINC: Last mile incentives, HEDON: Hedonic value, ENVC= Environmental concern, ATT: Attitude, S.E.: Standard Error, C.r: Critical Ratio Value, p: significance value

To control the confounding effects that might occur, we added gender, education, age, online shopping frequency, shopping channel preference, and online purchase history as control variables into our model. Only age had a negative effect on attitude (β: −0.155; e: 0.068, p:0.022). As age increases, the attitude toward ASPs may decrease. This finding is logical because young people are more likely to prefer using ASPs and are willing to travel a longer distance to access them. In addition, they are more inclined to enjoy the overall shopping environment. Nonetheless, we observed no difference in the hypothesized relationships when we controlled for demographic variables.

5. Discussion and conclusion

5.1. Theoretical implications

Home delivery is the most commonly employed last-mile delivery model in developing countries (Yuen et al., 2018). This study contributes to the academic body of knowledge by enriching the literature by focusing on the ASP model in last-mile delivery and investigating the determinants that impact consumers' attitudes and intentions to use ASPs. Our empirically tested model provides a better understanding of consumer attitudes and intentions toward ASPs.

Our findings indicate that access convenience perception does not have a significant effect on attitudes toward ASPs. This can be attributed to several reasons. In Türkiye, the re-delivery of failed shipments, workplace delivery, and placing down to the neighbors are common practices that may hinder the accessibility value of the ASPs. Thus, consumers may perceive the self-service logic of ASPs as an additional cost and effort because they need to walk or drive to pick up a parcel. This finding is in line with previous literature (e.g. McKinnon and Tallam, 2003; Vural and Aktepe, 2021) stating that CDPs are perceived as a burden that reduces the convenience of home shopping and are accepted by only a small portion of online shoppers as complementary to existing home delivery in case of absence at the given time slots.

Previous research has found a link between price sensitivity, promotion, and online shopping motivations (e.g. Pappas et al., 2017; Sheehan et al., 2019; Wang et al., 2021b). For the last-mile delivery part, Barker and Brau (2020) found the effects of shipping surcharges on logistics service quality satisfaction and explored the amplification effect of those surcharges on perception. Novel to the literature, we found that offering last-mile monetary incentives for ASP use has a positive effect on attitude. The findings indicate that as consumers get discounts, free shipping offers, or any kind of reward regarding the last-mile option, they develop more favorable attitudes.

In our study, hedonic values in the body of exploration and gratification had significant positive effects on attitudes toward ASP use. Based on this finding, we elicited the importance of the hedonic value perception of the ASP model. Since the attended model relies on the shop-in-shop concept, consumers want to explore or window shop to feel the gratification of shopping. Consumers may plan their shopping activity around the picking-up activity. A pick-up trip or the time spent during that activity can become a means of exploration and joy for the consumer. There are some studies that emphasize the hedonic value effect on the retail shopping experience (e.g., Jones et al., 2006; Marzocchi and Zammit, 2006; Amirtha and Sivakumar, 2022) and self-collection through automated parcel stations in an unattended way (Wang et al., 2018). However, the attended model lacks the investigation of this hedonic effect on consumer attitudes and intention.

As an interesting finding, we also revealed that online shopping delivery risk perception positively affects attitudes toward ASPs. In the literature, several studies exist regarding perceived risks in online shopping (e.g. Naiyi, 2004; Javadi et al., 2012; Huseynov and Yıldırım, 2016). However, limited research exists on self-service last-mile logistics and risk perception (e.g. Risher, Harrison & LeMay, 2020; Paker, 2021b; Safaeimanesh et al., 2021). By extending the studies related to risk perception in the last mile in diverse models, such as drop boxes (e.g. Risher et al., 2020; Paker, 2021b), we investigated the risk perception phenomenon from a different point by grounding on The Cognitive Dissonance Theory (Festinger, 1957). Results of the study show that delivery risk perception is an important factor in the ASP model. This finding requires attention due to addressing consumers who fear loss of cargo or wrong address deliveries. In line with Cognitive Dissonance Theory, consumers may develop favorable attitudes toward ASPs to reduce the dissonance between their

actualized online shopping and risk perception. Despite the perceived risks, consumers continue to shop online. However, they may tend to cut the delivery process in the last mile phase by opting to pick up their orders from service points.

Our hypothesis suggested that high environmental concern would result in more favorable attitudes toward ASP use since the emissions are reduced by the elimination of home delivery. However, no significant relationship was found between environmental concern and attitudes toward ASP. Similar previous studies supported our findings, such as Rai, Verlinde & Macharis (2021) and Ma, Teo & Wong (2022). However, evidence exists to counter this argument (Lemke, Iwan & Korczak, 2016; Ek Styvén and Mariani, 2020; Klein and Popp, 2022). The level of consumer environmental unawareness can explain this finding. It has been demonstrated that a normative attitude (such as environmental consciousness) leads to actual behavior only when beneficial outcomes are visible (Verplanken and Holland, 2002). Yet, in Türkiye, environmental benefits have not been widely disseminated. In this regard, if companies properly communicate their environmental efforts in ASPs and lighten users' concerns about the negative impacts of traditional last-mile delivery methods, customers will likely support such initiatives, as stated in other studies (e.g., Yang et al., 2023; Ganjipour and Edrisi, 2023; Gaspar et al., 2023).

5.2. Managerial implications

This study contributes to the practice by shedding light on important points. Online retailers offering ASPs should be aware of the utilization of this last-mile option is highly dependent on the level of benefits offered in terms of incentives and hedonism. Last-mile incentives are important for ASPs' consumer attitude formation. We recommend online retailers to augment their offerings in the incentive category, both in number and in context. In this way, convincing consumers can be possible. Points, discounts, and free shipping options can be combined to create a better incentive offer mix. In addition, specific service point discounts for the serving shops can also be integrated to diversify the incentive options.

While forming last-mile marketing offers, e-tailers, including online marketplaces, should elaborate on the hedonic part of consumption. Seemingly, consumers seek gratification or exploration when deciding among last-mile options. This finding demonstrates the importance of psychological value in the last-mile experience. An attended self-collection trip is not considered solely as a logistics activity; rather, consumers perceive it as a social activity with entertainment. Selection of the service points can be performed based on the entertainment or exploration criterion that prioritizes the availability of other stores or the high assortment/variety within the store. Integrating convenience stores, supermarkets, or nearby shopping mall service points can profoundly contribute to the enhancement of hedonic value.

Logistics strategies can never disregard risk factors (Naclerio and De Giovanni, 2022), and e-retailers should consider consumers' perceived delivery risk when making last-mile strategies. According to our findings, when the perceived delivery risk in online shopping is high, consumers have more favorable attitudes toward the attended model, indicating the risk elimination efforts for the home delivery phase. This can indicate a layered risk perception on the consumer side. There are risks that consumers foresee and expect in the last-mile home delivery process arising from cargo company errors in addition to the ones that may occur due to online retailer operations (e.g. in the supply or warehousing process). When they perceive the online delivery risk as high, they tend to develop more favorable attitudes toward ASPs to lower the perceived risk. Regarding this, companies may highlight the risk diminishing attributes of ASPs in their communication efforts to boost ASP utilization on the consumer side.

Interestingly, no significant relationship was found between environmental concerns and ASP attitudes. To generate consumer environmental unawareness, e-retailers should communicate the negative environmental effects of delivery processes by emphasizing the harm in the home delivery phase. E-commerce websites can generate last-mile eco-labels for information provision and raising awareness. In addition, to create an association between access convenience and ASP attitude, companies should provide wider distribution networks with more service points to maximize accessibility for consumers. Although designing larger supply chains with more service points would create complexities regarding network and customer relationship management, information technology integration among partnering institutions can diminish the complexity of operating with this distribution model. In addition, promoting service points would enable the facilitation of point searches and contribute to ASP consumer awareness.

5.3. Limitations and directions for further research

This study investigated the selected variables. However, more studies in this area are required to examine other determinants affecting the intention or behavior to use ASPs. In this regard, personality traits and other psychological factors can also be addressed by considering situational needs. As another research avenue, it would be valuable to investigate the necessary methods and frameworks for promoting and communicating ASP models to increase consumer awareness and provide information regarding consumer and sustainability benefits. For example, the effect of psychological factors and personality traits on ASP adoption could be investigated by experimental research in which participants are exposed to different scenarios to assess their adoption intentions or longitudinal analysis to track behavioral changes over time. Furthermore, qualitative methods such as focus groups and in-depth interviews might offer more profound understanding of consumer skepticism in developing countries. These qualitative techniques allow for direct interaction, exposing social or cultural factors that surveys overlook.

Future studies should also investigate the B2B context to investigate the intention of business buyers toward ASPs. This may yield valuable insights into understanding the business model among service-point retailers and online retailers serving with ASP options. Moreover, research avenues on other forms of self-collection remain open. Simulation models or pilot studies can be used to evaluate the viability and consumer acceptance of various self-collection methods such as drones and crowdsourcing. Herein, while simulation models can test different variables (e.g., delivery speed, cost, reliability) to predict consumer behavior and system performance, pilot studies involve small-scale trials in which consumers directly interact with these methods, providing feedback on their experience, and identifying potential barriers or benefits for wider adoption. To sum up, with more research, we believe that deeper insights will be developed to understand how market structures and consumer behavior in emerging markets impact the adoption of novel last-mile delivery options.

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