

**Gender and generational differences in omnichannel shopping travel decisions
What drives consumer choices to pick up in-store or ship direct?**

Joshi, Aparna; Pani, Agnivesh; Sahu, Prasanta K.; Majumdar, Bandhan Bandhu; Tavasszy, Lóránt

DOI

[10.1016/j.retrec.2023.101403](https://doi.org/10.1016/j.retrec.2023.101403)

Publication date

2023

Document Version

Final published version

Published in

Research in Transportation Economics

Citation (APA)

Joshi, A., Pani, A., Sahu, P. K., Majumdar, B. B., & Tavasszy, L. (2023). Gender and generational differences in omnichannel shopping travel decisions: What drives consumer choices to pick up in-store or ship direct? *Research in Transportation Economics*, 103, Article 101403.
<https://doi.org/10.1016/j.retrec.2023.101403>

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

Green Open Access added to TU Delft Institutional Repository

'You share, we take care!' - Taverne project

<https://www.openaccess.nl/en/you-share-we-take-care>

Otherwise as indicated in the copyright section: the publisher is the copyright holder of this work and the author uses the Dutch legislation to make this work public.



Research paper

Gender and generational differences in omnichannel shopping travel decisions: What drives consumer choices to pick up in-store or ship direct?

Aparna Joshi^a, Agnivesh Pani^b, Prasanta K. Sahu^{a,*}, Bandhan Bandhu Majumdar^c,
Lóránt Tavasszy^d

^a Department of Civil Engineering, Birla Institute of Technology and Science Pilani, Hyderabad, Telangana, 500078, India

^b Department of Civil Engineering, Indian Institute of Technology (BHU) Varanasi, Varanasi, Uttar Pradesh, 221005, India

^c Department of Civil Engineering, National Institute of Technology Durgapur, 713209, India

^d Faculty of Technology, Policy and Management (TPM), Delft University of Technology (TU Delft), PO Box 5015, 2600 GA, Delft, the Netherlands

ARTICLE INFO

JEL classification:

R41

C12

and C51

Keywords:

Omnichannel

Consumer behavior

Intention to use

Socio-demographic characteristics

Ordered logit regression

Non-parametric tests

ABSTRACT

Omnichannel distribution is a retail innovation that provides a seamless purchasing experience to customers through cohesive experience across channels, cross-channel integration, and integrated assistance. Blurring the lines between offline and online shopping, concepts like “Buy-Online-Pickup-In-Store” (BOPIS) and “Buy-In-Store-SHIP-Direct” (BSSD) are increasingly becoming accepted in retail operations. While many retailers are still in a nascent phase of integrating online channels and physical stores, consumer-centric studies are called for to investigate the diffusion of these new strategies in the evolving marketplace. Our study explores the key adoption determinants of these new omnichannel strategies, focusing on the case of India. A detailed online survey was used to collect data for a sample of 311 Indian consumers. Econometric analysis reveals the main purchase influencing factors. We find that a quick purchase process, elimination of product delivery delays, delivery and shipping costs, ease of receiving product, retail system reliability and, trust in retailer are key adoption determinants. Purchase returnability is only weakly associated with BOPIS purchase choices while payment security has no significant effect. Among six demographic variables, only gender and age are found to differ significantly between the two concepts. These insights from this study should be useful for retailers to design omnichannel strategies and for transport policy makers to predict the future growth of e-commerce related transport movements.

1. Introduction

In the aftermath of COVID-19 pandemic, a lot of opportunities are opened for brick-and-mortar retailers as well as e-tailers to go beyond their traditional customer fulfillment patterns. The continuous rise in internet users which stood at 718.74 million in 2019 and has the potential to reach 835 million by 2023 in the post-COVID times, signifies a major rise in digital literacy in developing countries like India (Indian Brand Equity Foundation, 2020). The online retail market in India is projected to achieve a value of \$200 billion by 2025, experiencing a yearly growth rate of 35% between 2020 and 2025. The online retail and online marketplace segments are experiencing rapid growth in India's e-commerce industry, with their size more than doubling every two years (Report, 2014). The demand for online shopping has been further

accelerated by the implementation of social distancing measures during the pandemic and the increased uncertainty regarding product availability in physical stores (Economic Times, 2020). As of 2020, the current penetration of the e-commerce market stands at 4.1%, with the online retail sector experiencing a growth rate of 7.3% (Koch, Frommeyer, & Schewe, 2020). Hence, the growth of the e-commerce sector in India can be attributed to several factors, such as the increasing number of internet users, the widespread adoption of modern technology, and the availability of alternative payment methods provided by sellers. The rise of internet-driven commerce has helped new digital customers to interact with brands through many channels irrespective of their location. In the infancy of multi-channel retailing, several channels such as stores, catalogues, TV advertisements, websites, mobile applications, call centers and direct mail were operated separately by the retailers.

* Corresponding author. Department of Civil Engineering Birla Institute of Technology and Science Pilani Hyderabad, Telangana, 500078, India.

E-mail addresses: aparnajoshi49243@gmail.com (A. Joshi), agniveshpani@gmail.com (A. Pani), prasantsahu222@gmail.com (P.K. Sahu), bandyolkolkata@gmail.com (B.B. Majumdar), L.A.Tavasszy@tudelft.nl (L. Tavasszy).

<https://doi.org/10.1016/j.retrec.2023.101403>

Received 7 February 2022; Received in revised form 2 October 2023; Accepted 18 December 2023

Available online 27 December 2023

0739-8859/© 2023 Elsevier Ltd. All rights reserved.

Blurring the lines between offline and online shopping, an evolution has taken place towards the concurrent use of multiple sales channels by the consumers, before making a final purchase. This retailing concept is known as Omnichannel retailing. It integrates the customer touchpoints seamlessly and, in turn, creates a unified brand experience irrespective of the channel used by the customers (Cummins, Peltier, & Dixon, 2016). Previous studies have established that omnichannel retailing is distinguished by providing uninterrupted and seamless interactions across channels (Adam, 2022; Huré, Picot-Coupey, & Ackermann, 2017; Saghiri, Wilding, Mena, & Bourlakis, 2017; Verhoef, Kannan, & Inman, 2015).

While retailers are still in a nascent phase of integrating online channels and physical stores in India (Banerjee, 2019), a successful execution of omnichannel can be seen worldwide, where countries such as the U.S., U.K., Australia, Denmark, and Canada have outperformed other 19 countries by being in the top 5 in the Global Omnichannel Retail Index (GORI) (Schmaus, Maekelburger, & Bovensiepen, 2015). The development of the GORI aimed to create a measure for assessing the level of maturity in omnichannel retailing based on four metrics: consumer behavior, degree of digitalization, omnichannel potential and infrastructure. Consumer behavior is defined as the degree to which customers in specific countries already engage in retail purchases through an omnichannel approach, as reflected in their consumer behavior. The extent to which sales channels have been digitized indicates the degree of digitization. The growth potential of internet and mobile retailing depicts the potential for expansion of omnichannel. The infrastructure metric comprises four sub metrics: the percentage of households with broadband penetration, as well as the penetration rates of mobile, smartphone, and tablet usage as a percentage of the population. With an index of 31 on a scale of 1–100, India stood at 17th position among 19 countries, U.S. being the number one with an index of 50 (Schmaus, Maekelburger, & Bovensiepen, 2015). This clearly indicates that omnichannel trade is increasingly adopted globally and to achieve a competitive edge in its emerging market, India needs to create potent inroads in omnichannel retail. Such a retail revolution will increase customer retention, improve customer loyalty, and expand sales to achieve profitable business in an emerging market like India (Lazaris, Sarantopoulos, Vrechopoulos, & Doukidis, 2021; Robert, Sander, & Alexander, 2023).

In the past, brick-and-mortar retail stores were unique in allowing consumers to touch and feel merchandise and provide instant satisfaction. This strategy is an example of single-channel retailing because a single channel or contact point (brick-and-mortar) is used for interaction between retailers and customers. A channel means a contact point or a medium through which the customer and the trader interact (Beck & Rygl, 2015). With the advancement in technology, more and more customers began to find it convenient to shop on their desktop or mobile devices which led to the advent of multichannel retail. In multi-channel retailing, retailers interact with customers through multiple contact points (websites, physical stores, catalogs, internet kiosks, mobile apps) and one channel is completely separated from another channel (i.e., no passing of data between channels). Omnichannel is a more recent phenomenon and takes the multi-channel approach a step further.

The omnichannel phenomenon can be facilitated using different combinations of information and fulfillment options, as outlined by Bell, Gallino, and Moreno (2014), which focuses on how a customer can access the information about the product before making a purchase decision as well as how an order can be fulfilled. Two of the most widespread omnichannel scenarios which can be seen into operation are as follows (Murfield, Boone, Rutner, & Thomas, 2017); (i) obtaining product information online and picking it at store (Bell et al., 2014), termed “Buy-Online-Pickup-In-Store” (BOPIS) and (ii) visiting store to access the product information and make a payment while delivering the product direct to the customer, termed “Buy-In-Store-Skip-Direct” (BSSD). BOPIS being a widely practiced strategy among both consumers as well as retailers, it is considered as one of the most crucial

omnichannel options. For retailers, its adoption can expand sales due to growing traffic in store, followed by increase in profits owing to the effect of cross-selling (Bell et al., 2014). From the consumer point of view, BOPIS can overcome the disadvantages of online shopping such as substantial delivery costs, delayed delivery and returns management process. It offers advantages such as the possibility of a product quality check during pick-up at the store and no waiting at home for delivery, which provides a time-saving shopping experience. BSSD is a comparably new omnichannel strategy, relevant mostly for goods requiring a feel and touch before the purchase decision. It can be a win-win situation for both sellers and buyers as it focuses on saving their time while enhancing convenience and satisfaction of consumers.

Being a consumer-centric approach, the success of this retail revolution is mainly driven by consumers' changing needs and shopping behavior. In response to it, exploration has been done around the globe from consumers' point of view in an omnichannel environment by environmental evaluation of shopping trips of six omnichannel shopper profiles in Belgium (Rai, Mommens, Verlinde, & Macharis, 2019); effect of devices in omnichannel retail on the basis of human traits (Rodríguez-Torrico, San José Cabezudo, & San-Martín, 2017) and identification of omni-shoppers segments based on their behavior in Spain (Mosquera, Ayensa, Pascual, & Murillo, 2019); perception of consumers about channel integration in China (Zhang, Ren, Wang, & He, 2018) and so on. However, there aren't adequate studies present in the Global South, especially in Southeast Asian countries like India with unique shopping patterns. An evident and pertinent research need, therefore, exists in to identifying the key drivers underlying consumers' intention to use the emerging hybrid omnichannel phenomenon (i.e., BOPIS and BSSD). Previous studies have addressed the pivotal role of gender and generational differences to understand customer behavior in an omnichannel environment (Mosquera et al., 2018a, 2018b). In the context of purchase intention and marketing practice, customer gender is highlighted as a key variable, which has been oftentimes used as a market segmentation strategy (Walsh, Schaarschmidt, & Ivens, 2017). Additionally, the use of generational cohorts has gained favor to understand customer needs within retailing research. Millennials tend to prefer electronic touchpoints and accepts omni-retailing more than Generation X and baby boomers (Ameen, Tarhini, Shah, & Nusair, 2021). Hence, the study outcomes will help to unfold diversity in consumer outlook for becoming an omni-shopper and assist the retailers in effectively tailoring the omnichannel strategies to meet targeted segment needs. To fulfill this research need, this paper identifies the critical factors from behavioral perspective and examine the influence of selected factors on omnichannel behavior adoption for both scenarios. Since knowledge of heterogeneity is an essential insight to influence consumers' uptake of omnichannel, this study also attempts to explore heterogeneity in users' perception across BOPIS and BSSD for the selected attributes, followed by investigation of gender and generational differences within each omnichannel scenario.

The rest of the paper is constructed as follows: Second section outlines literature study which includes revealing critical factors from consumer-centric omnichannel studies and presenting adopted research techniques and Section 3 includes questionnaire design and data set; Section 4 presents the descriptive analysis and Section 5 presents the analytical approach adopted; Section 6 reports the model results; Last section addresses the conclusions with some limitations and further research avenues.

2. Research Background

2.1. Implementation of omnichannel retail and transition in consumer behavior

Omnichannel behavior is an emerging shift in the now existing retailing industry where the consumers communicate with the brand through multiple integrated channels. This unique form of retail

environment allows the customers to obtain product information using both online and offline channels and fulfills their demands via delivery or in stores (Bell et al., 2014). To remove the boundaries between disparate channels, the retailers are introducing and experimenting with different hybrid omnichannel models and two such models are BOPIS (buy-online-pickup-in-store) and BSSD (buy-in-store-ship-direct). While retailers are willing to provide a seamless blend of online and offline channels, a successful execution is possible if the retail model is in line with customer expectations (Petersen, 2015).

As a consequence of growth of omnichannel retailing, Spanish consumers are changing their habits and shopping behavior (Juane-da-Ayensa, Mosquera, & Sierra Murillo, 2016). A considerable number of researchers studied the consumer perspective within the omnichannel operations. Rodríguez-Torrico et al. (2017) analyzed the influence of impulsiveness and need for touch on the use of online (PC/laptop) and mobile channels (smartphone/tablet) by digital Spanish shoppers of a Spanish clothing industry. Impulsive individuals indulged themselves in the mobile omnichannel process whereas high need for touch individuals preferred using online channels. Mosquera et al. (2019) carried out segmentation of Spanish omni-shoppers on the basis of perceived usefulness, shopping enjoyment, and social influence. The behavior of these segments was significantly different in terms of the number of channels used by them during the consumer journey. Being widely adopted tools of information technology acceptance, in recent years, the researchers have incorporated Technology Acceptance Model (TAM) (Silva, Martins, & Sousa, 2018) and Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) framework (Kazancoglu & Aydin, 2018; Kim, Han, Jang, & Shin, 2020) within the realms of omnichannel consumer behavior. These studies outline the need to undertake customer-centric research approach to shift to omnichannel retailing.

2.2. Identifying attributes in the omnichannel approach

Various studies have investigated the different dimensions of attributes in the omnichannel context. Findings of focus group discussion carried out by Kazancoglu and Aydin (2018) showed that speed expectancy determines the performance of the shopping channel and therefore a quick purchase process has an influence on purchase intention of Turkish respondents. Silva et al. (2018) investigated the efficiency of purchase system in terms of how fast the Portuguese consumer's need can be met under perceived utility construct. Users of click and drive model considered 'time-saving' as an important motivator to use the model (Colla & Lapoule, 2012). The advantage of quick ordering and reduced time in collecting process act as the success factors to meet customer expectations. Product delivery delays is another crucial concern which assess the purchase decision in an e-commerce environment. Kazancoglu and Aydin (2018) found majority of focus group Turkish participants to be anxious about the possible delivery delays as they had an unpleasant shopping experience in omnichannel context. Consumers with high waiting time cost are less likely to switch channels and hence prefer to complete purchase offline. Chatterjee (2010) also concluded that retailers offer BOPIS to attract shoppers with short purchase horizon who wish to receive their products early.

Investigating how the dynamics of customer returns behavior change with the diffusion of BOPIS and BSSD can be a notable research opportunity as returns handling is a costly phenomenon for retailers. Although, research on consumer returns is largely centered around single-channel firms (Nageswaran, Cho, & Scheller-Wolf, 2020), some studies have added this dimension in an omnichannel setting. Nageswaran et al. (2020) studied full refund and partial refund pricing decisions of an American omnichannel retailer. Regarding consumer return behavior, return location and return price are important attributes as Belgian consumers prefer to return products at a pick-up point over retail store and seek for free order returns (Buldeo Rai, Verlinde, & Macharis, 2018). For returns, Spanish consumers tend to use 85.71%

and 14.29% of online and mobile channel in omnichannel retail (Rodríguez-Torrico et al., 2017). These studies explain that returns management is an integral part of retailing, affecting customer behavior transition in changing retail environment.

For consumers, delivery costs act like a barrier to use a particular shopping model which makes it a critical determinant to study. Turkish consumers expect cargo company to charge negligible or no shipping and delivery costs so as to affect their shopping intentions towards omnichannel (Kazancoglu & Aydin, 2018). To avoid paying additional charges, customers prefer to use in-store pickup and consider it as an important feature of the system (Mahar, Salzarulo, & Daniel Wright, 2012). Buldeo Rai et al. (2019) identified delivery price as the most sensitive predictor that explains Belgian consumers' choice about last-mile options in omnichannel retailing. Findings showed highest preference for free delivery, followed by minimal purchase cost of €25 that permits free delivery. Price-conscious purchasers are more likely to visit different shopping channels, therefore favoring usage of BOPIS to save shipping costs (Chatterjee, 2010).

With the growing environmental concerns in B2C e-commerce, sustainability of last-mile is being explored in this study (i.e., in BOPIS). Past literature has revealed that Belgian consumers have low interest in sustainability of last-mile delivery (Buldeo Rai et al., 2018). As a consequence, environmental sustainability of omnichannel is explored by evaluating consumers' willingness to combine pickup trips with other travelling activities. In the context of type of delivery method in omnichannel, consumers have a greater willingness to use the service if they feel it requires less efforts. Based on the efforts needed to fulfill the order, consumers choose a particular retail channel for order fulfillment stage. Consumers are less likely to switch channels if the effort costs are high, but the study by Chatterjee (2010) gave opposite results as student respondents did not find trip to store as effortful in BOPIS due to its reachable distance from campus. Exploratory research by Kazancoglu and Aydin (2018) revealed effort expectancy as one of the most important themes in omnichannel adoption in apparel sector. However, the effort here was associated not just with delivery stage but with the use of various phases in omnichannel as a whole. Silva et al. (2018) examined ease of omnichannel use to explain the adoption of system and found it a good determinant of usage intention. In contrast to it, effort expectancy had no crucial effect on purchasing process in the BOPIS service (Kim et al., 2020). Therefore, in order to understand this factor, opinion towards ease of delivery method and effort prospect in omnichannel system on the whole is studied individually in this research.

'Anxiety about the system' was elicited as a new determinant of purchase intentions of omnichannel shopping (Kazancoglu & Aydin, 2018). Participants of the study who had no omnichannel shopping experience, felt anxious about the performance of various activities involved namely product authenticity, data entering speed, technical reliability and reserving a product in store. Yuen, Wang, Ma, and Wong (2019) adapted reliability, a resource matching attribute in the context of smart lockers and concluded its strong positive influence on Chinese customer's intent to use lockers. As purchasers expect convenience across all touchpoints, directing omnichannel investment call to meet their elevated expectations will result in higher customer satisfaction and trust in the omnichannel system. Omnichannel American customers consider time-bound delivery a critical driver of customer satisfaction and loyalty (Murfield et al., 2017). Consumer's trust in the omnichannel concept is necessary as it may affect their choice of channel (Kazancoglu & Aydin, 2018). Payment security is a crucial feature of omnichannel for its continued development and has proved to be of high value in consumer behavior literature. Juaneda-Ayensa et al. (2016) investigated security attribute of the online channels and hypothesized it to positively affect omnichannel purchase intention of Spanish consumers. Issues with payment system is often experienced during omnichannel shopping, therefore making cash on delivery a better and preferred payment alternative (Kazancoglu & Aydin, 2018).

Additionally, several authors have investigated socio-demographic

attributes within the realms of consumer-focused omnichannel research. Table 1 recapitulates relevant studies, investigating pivotal role of individual characteristics to identify omni-shoppers. In a gender-based study in UK and UAE by Ameen et al. (2021), millennial female purchasers considered privacy and aesthetics important in shopping mall based omnichannel experience, while their male counterparts emphasized on convenience, peer interaction, personalization and service excellence. Women segment is more opportunistic than men as internet and store characteristics are profitable for women during various decision-making stages (Heitz-Spahn, Yildiz, & Belaud, 2018). Ieva and Ziliani (2018) revealed an association between geographic area of residence and omnichannel touchpoints exposure as well as found Italian males and older segment to be more exposed to higher number of channels with higher frequency. Mosquera et al. (2019) identified three segments of omni-shoppers and found significant differences in their omnichannel behavior based on income level, gender, and age. Piercy (2012) investigated cross-channel behavior and found it to be negatively influenced by increased age, occupation and education. While the researches mentioned in the table have illustrated the significance of socio-demographic attributes to understand different consumer segments' preferences towards omnichannel shopping, no study examines the diversity in consumers' perception based on socio-demographic factors solely for BOPIS and BSSD. In conclusion, past literature reveals the need to closely examine the relationship between demographic characteristics and omnichannel behavior within BOPIS and BSSD phenomenon.

Our literature review illustrates the need for a consumer-oriented approach for the diffusion of BOPIS and BSSD strategies in the Indian retail environment. Two research questions arise.

- What are the factors influencing the adoption of BOPIS and BSSD scenarios in India?
- Is it possible to identify the omnichannel market for the aforesaid scenarios, on the basis of socio-demographic evaluation?

To answer these questions, this study investigates the influence of attributes of retail models on their intended usage. We use an ordered logistic regression method to account for the ordinal nature of the collected customer-intent data. The heterogeneity in consumer responses is tested using non-parametric tests. We describe the survey approach and data in the following.

3. Questionnaire Design and Data Set

3.1. Survey instrument development

The survey questionnaire consisted of 9 components as illustrated in

Fig. 1. The first component contained information about the background of the research, handling of their responses and a consent letter. The second section aimed at collecting socio-demographic profile of respondents such as gender, age, marital status, employment status, annual income and education level. Based on the information regarding vehicle ownership, driver's license availability and travel time to visit stores, travel characteristics of users was captured, followed by in-stores and online shopping frequency data in the fourth section. In order to explain the customer purchasing journey in BOPIS approach, the respondents were presented with a hypothetical setting of purchasing a pair of sunglasses in fifth section using pictorial technique. The following and main section consisted of questions from the selected factors that might influence participants' intention to use BOPIS. The responses for each independent variable as well as dependent variable (i.e., intention to use BOPIS) in this section were measured using a five-point Likert scale, varying from 1 ('strongly disagree') to 5 ('strongly agree'), which are given in the form of statements in Table 2. A similar approach was adopted for BSSD (i.e., a description sheet and attitudinal questions) in seventh and eighth section. Lastly, participants were provided with an open-ended section to optionally submit any feedback or comments.

3.2. Survey implementation, data collection procedures and sample description

Survey data was collected through a web-based approach using a non-probabilistic sampling method. In November 2020, the questionnaire was pre-tested on 33 acquaintances of the researcher which belonged to different age groups. Due to the convenience of telephonic reviews, the pilot activity was succeeded by phone conversations in which the respondents were encouraged to emphasize any obstacles or ambiguity with the survey instrument. While the questions wording was proper and measured the opinions accurately, most of the partakers felt the questionnaire to be lengthy, resulting in fatigue. Along with BOPIS and BSSD, the initial questionnaire also aimed at investigating most commonly used conventional retailing model, Buy-Online-Deliver-Home (BODH). However, the pilot survey feedback revealed its widespread acceptance and practice among Indian consumers. Given its established presence (Bharucha, 2017; Sinha & Kim, 2012), we opted to prioritize the investigation of BSSD and BOPIS, which had comparatively limited prior research within the Indian market. Hence, to ensure the effectiveness of survey, BODH was omitted from the study which also improved the final survey by reducing average time from 11 min to 7 min. The main data collection took place in January 2021 over a period of 4 weeks, mainly in India, with few responses collected from emigrant Indians living in other countries. The researchers distributed the questionnaire on various social platforms and spread it via contacts.

Table 1
Socio-demographic attributes revealed in the past research on omnichannel retailing.

Author (Year)	Socio-demographic attributes							
	Gender	Age	Income	Marital status	Education	Employment status	Household members	Urbanization
Ameen et al. (2021)	✓	✓						
Mosquera, Juaneda-Ayensa, Olarte-Pascual, and Pelegrín-Borondo (2018)		✓						
Heitz-Spahn et al. (2018)	✓	✓				✓		
Konuş et al. (2008)	✓	✓			✓		✓	✓
Mosquera et al. (2019)	✓	✓	✓		✓			
Mosquera, Olarte-Pascual, Ayensa, & Murillo, 2018	✓							
Ieva and Ziliani (2018)	✓	✓	✓				✓	✓
Madden, Banerjee, Rappoport, and Suenaga (2017)		✓	✓					
Rodríguez-Torrico et al. (2017)		✓				✓		
Maggioni et al. (2020)	✓	✓	✓				✓	
Dahana, Shin, and Katsumata (2018)	✓	✓		✓				
Piercy (2012)	✓	✓	✓		✓	✓		
This study	✓	✓	✓	✓	✓	✓	✓	

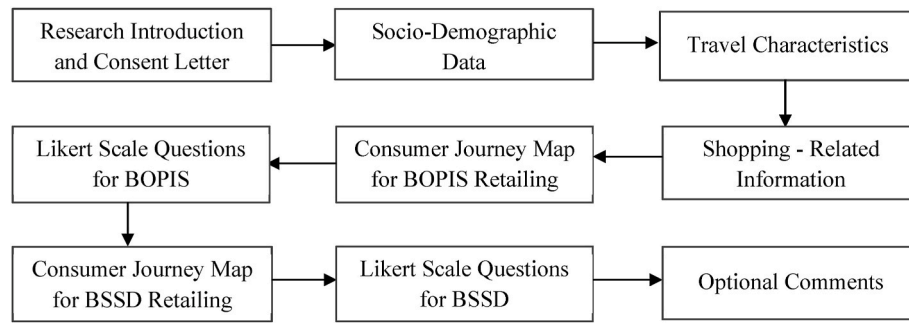


Fig. 1. Survey questionnaire structure.

Table 2

Consumers' perception related to omnichannel behavior (on 5-point Likert scale).

	Attribute Indicators (Outcome and Predictor)	Statement Explanation
Outcome Attribute Predictor Attributes	A_0	I intend to use BOPIS/BSSD to buy a product in near future
	A_1	BOPIS/BSSD will result in quick purchasing
	A_2	BOPIS/BSSD will eliminate product delivery
	A_3	BOPIS/BSSD will reduce return of products
	A_4++	BOPIS will be beneficial due to zero delivery and shipping costs
	A_4	BSSD will be beneficial irrespective of extra delivery and shipping costs
	A_5+	Combining in-store pickup with other (work/shopping/travelling) activities will be of added value to me
	A_6++	I will find it easy to pick-up my parcel from store
	A_6	I will find it easy to get the parcel delivered at home
	A_7	BOPIS/BSSD will be easy and understandable to use for my purchases
	A_8	I think BOPIS/BSSD is reliable
	A_9	I think BOPIS/BSSD puts customer's convenience first
	A_10++	Making payments online in BOPIS is safe
	A_10	Making payments in shop in BSSD is safe

Note: '++' = Statement different for BOPIS and BSSD, '+' = Statement included only in BOPIS.

A total of 605 responses were collected, out of which 290 were eliminated due to unfinished responses. Hence, with a response rate of nearly 52%, 315 useable responses were obtained. After data cleaning, a sample size of 311 instead of 315 was used for the analysis to obtain reliable results.

Table 3 presents summary statistics of the respondents based on the demographic characteristics. The gender distribution of 311 responses shows that 66% of the respondents are male and 34% are female. The majority of respondents (47%) belonged to the 18–24 age group as opposed to 2.8% (lowest percentage) in age group 44–54. The collected data had a share of 74% for single respondents while married were holding a percentage of 26%. Another demographic attribute investigated is employment status, where 44% of the participants had full-time employment, followed by students, holding a share of 43%. Out of the monthly income data collected, the highest percentage of respondents (24%) had an income above 1.2 lakhs* (1605.3 USD) whereas 8.4% had an earning below ₹20,000 (267.5 USD). Furthermore, 47% was holding a post graduate as highest qualification while 39% had a graduate degree.

This paper focuses on the population of interest, which consists of

Table 3

Breakdown of the sample based on socio-economic data (n = 311).

Variable	Categories	Total Sample	
		Count	Percentage (%)
Gender	Male	206	66.2
	Female	105	33.8
Age	18–24	147	47.3
	25–34	119	38.3
	35–44	17	5.5
	45–54	9	2.8
	55 and above	19	6.1
Marital Status	Married	80	25.7
	Single	231	74.3
Employment Status	Full-time employment	138	44.4
	Part-time employment	8	2.6
	Seeking work	21	6.8
	Retired	9	2.9
	Student	133	42.7
Monthly Household Income*	Unable to work	2	0.6
	Less than ₹20,000	26	8.4
	₹20,001 – ₹39,999	53	17
	₹40,000 – ₹59,999	40	12.9
	₹60,000 – ₹80,000	37	11.9
	₹80,000 – ₹99,999	34	10.9
	₹1 Lakh – ₹1.2 Lakhs	48	15.4
Highest Qualification	More than ₹1.2 Lakhs	73	23.5
	12th Standard or below	19	6.1
	Graduate	121	38.9
	Post Graduate	146	47
	Above Post Graduate	25	8

Note: (₹1 = 0.013 USD, 1 Lakh = 100,000).

individuals participating in omnichannel shopping in India. However, it's important to note that Indian census data does not offer any insights into the socio-demographic characteristics of omnichannel shoppers. The sample statistics reveal that 66.2% of the respondents are males while 33.8% are females in the 18+ age group. In contrast, the sex ratio of the overall population of India, as per the latest Census Manual 2001, shows that 51% are males and 49% are females in the age group above 18 (Office of the Registrar General & Census Commissioner India, 2011). This disparity between the sample and the country's demographic profile can be attributed to the India's gendered digital divide and internet usage. According to the NFHS Report, internet usage has been reported by 57.1 percent of males and 33.3 percent of females in the population aged 15 and older. Consequently, the sample skews towards male respondents as compared to the females (Ministry of Health and Family Welfare Government of India, 2021).

Unfortunately, due to the lack of additional socio-economic information in the census data, a comparison of other socio-economic characteristics could not be conducted. As a result, direct assessment of sample representativeness is not possible. Nevertheless, to gain a deeper understanding, we have compared the sample with the population

statistics of India. Hence, final comprehensive sample size for this research, which is 311, significantly exceeds the minimum sample size requirement of 273 for a representative representation of an infinite or unknown population. In this paper, with a 90% confidence level, the minimum sample size needed for an analysis based on an infinite population can be approximated as 273. Additionally, out of the 605 responses gathered, 290 were discarded due to being incomplete. Notably, over 70% of these incomplete responses were provided by female participants which could be attributed to several possible reasons such as survey length, time constraints, and privacy concerns.

4. Descriptive Analysis

This section presents the preliminary analysis of the perception of respondents across predictor attributes, using Likert scale statements adopted for BOPIS and BSSD. As represented in Fig. 2, respondents expressed strong agreement to A_4 (24%), highlighting the extreme importance of zero delivery costs within BOPIS retail system. Among 311 participants, 22% strongly believed that BOPIS focuses on convenience of customers (A_9) and also eliminates product delivery related delays (A_2). Furthermore, 22% respondents are willing to combine the product pick-up trip with their other travel activities within BOPIS (A_5). On the other hand, respondents (6.8%) expressed a strong disagreement to pick-up their parcel from store in BOPIS.

For BSSD (Fig. 3), strong agreement was observed for A_3 (33%) as majority of the respondents believed that use of BSSD can reduce the return of their products. After A_3, home-delivery of products was strongly preferred by 29% of the participants followed by a strong agreement towards in-store payment safety (28%). Contrarily, participants (7.7%) expressed strong disagreement towards the elimination of product delivery delays in BSSD.

5. Analytical Approach

5.1. Ordered logistic model

An ordered logistic model is a regression model used for ordered levels of dependent variable and its application is often seen within consumer perception studies (Soopramanien & Robertson, 2007). To account for ordinal response variables in the dataset, two ordered logistic models are estimated to better comprehend the relevant factors

which affect purchasers' intention to use BOPIS and BSSD. Ordered logistic model assumes that y_i^* linearly depends on x_i as shown in equation (1).

$$y_i^* = \beta x_i + \varepsilon_i, E(\varepsilon_i) = 0; \text{Var}(\varepsilon_i) = 1 \quad (1)$$

where $i = 1, 2, \dots, n$; n represents the sample size. In the above model, y_i^* is the latent (or unobserved) variable, β is unknown parameter, x_i denotes vector of explanatory variable which contains values of observation i and ε_i is a random error parameter that follows logistic distribution across observations. β is the ordered log-odds coefficient of regression and its sign helps to explain the model directly. The interpretation of a positive sign of β is that as the independent variables increases, the set of alternative probabilities deviates to higher categories. Since y_i^* isn't the discrete observed variable, the relationship between y_i^* and observed variable y_i can be obtained according to the following:

$$y_i = 1 \text{ if } -\infty \leq y_i^* < \mu_1 \quad (2)$$

$$y_i = 2 \text{ if } \mu_1 \leq y_i^* < \mu_2$$

$$y_i = 3 \text{ if } \mu_2 \leq y_i^* < \mu_3$$

$$y_i = K \text{ if } \mu_{K-1} \leq y_i^* < \infty$$

The parameters μ_i are called cut-points (also referred to as threshold values) that define observed variables. In our case, y_i range from strongly disagree to strongly agree. The proposed model is shown in Fig. 4.

5.2. Non-parametric modelling techniques

To investigate the differences within respondents' perception towards selected attributes based on their demographic characteristics, two non-parametric statistical tests are performed; Mann-Whitney-U-Test to compare two group differences in gender and marital status and Kruskal-Wallis-H-Test to check multiple group differences in age, employment status, monthly income, and qualification.

The Mann-Whitney-U-Test is based on the comparison of two independent groups by testing the null hypothesis that two groups have the same median (or come from the same population) against a variable.

For a sample of n_x observations $\{x_1, x_2, \dots, x_n\}$ in one group and n_y $\{y_1, y_2, \dots, y_n\}$ observations in another group, the test compares every

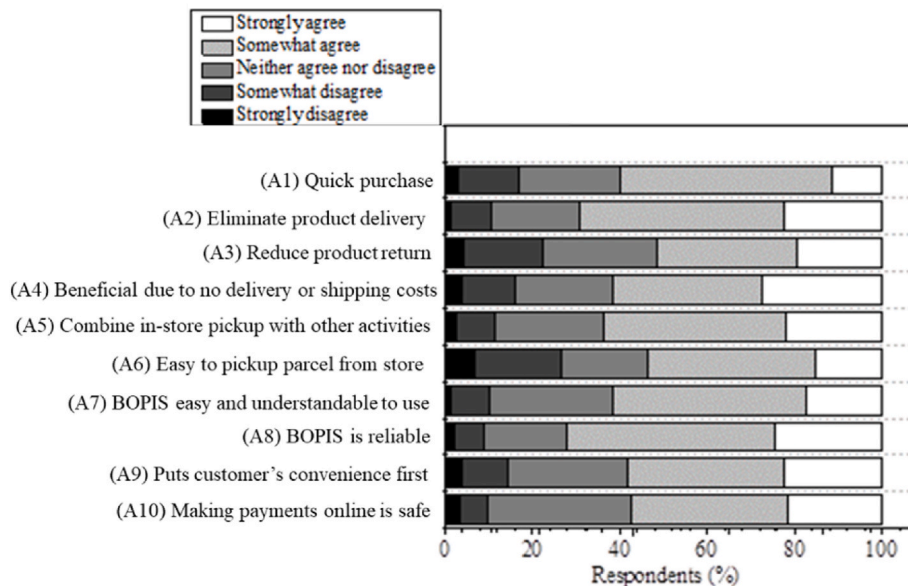


Fig. 2. Attitude towards selected attributes for BOPIS.

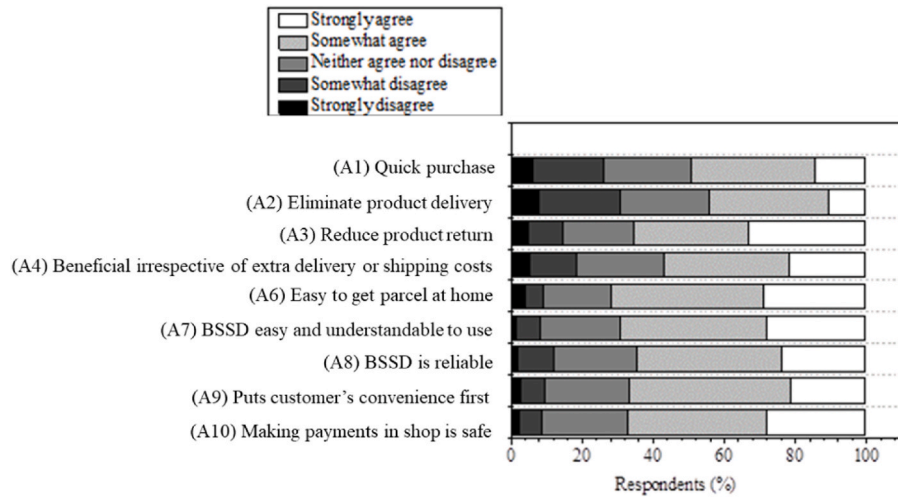


Fig. 3. Attitude towards selected attributes for BSSD.

observation x_i in the first group with every other observation y_i in the second group, leading to total $n_x n_y$ number of pairwise comparisons. The U test statistic can be given as:

$$U = n_x n_y + n_y \frac{(n_y + 1)}{2} - \sum_{i=n_x+1}^{n_y} R_i \quad (3)$$

where, R_i are the ranks.

The Kruskal-Wallis-H-Test is a rank-based non-parametric test which is used to check statistically significant differences between three or more independent groups. Similar to MWUT, it is also a test of medians difference and can be considered a multiple group extension of two sample MWUT. It tests the null hypothesis that the median score against a variable is same for all the subgroups of a population. The alternate hypothesis states that the median score against a variable is not same for all the subgroups of a population. The test statistic H for Kruskal-Wallis-H-Test can be given as:

$$H = \frac{12}{n(n+1)} \sum \frac{R_k^2}{n_k} - 3(n+1) \quad (4)$$

where n is total number of samples; n_k is number of respondents in sample k ; R_k is rank sum for sample k . If the p -value or asymptotic significance obtained from each test statistic is less than 0.05, the null hypothesis is rejected, hence revealing the presence of heterogeneity among participants' responses in our study.

6. Results

The description of the results of the study is divided into two parts: firstly, the assessment of predictor attributes using ordered logistic regression is briefly discussed and reported in Tables 4 and 5; secondly, non-parametric tests are carried out on socio-demographic characteristics (Table 6), followed by further development of ordered logit models for selected demographic attributes (Tables 7–10).

6.1. Ordered logit model results for predictor attributes

Table 4 provides a detailed overview of the ordered logistic regression results for BOPIS and BSSD. Since the independent variables are determined by the similar group of respondents, variations across logit model estimations are applicable to the difference in outcome variable across the models, that is, intention to use BOPIS and intention to use BSSD.

For both the studied retail scenarios, a good model fit is indicated as

the McFadden Pseudo R-squared value is 0.263 and 0.284 for BOPIS and BSSD respectively. Most of the attributes except for A_3 (for BSSD only) and A_10 are statistically significant determinants of usage intention, with a sign as expected. A significant positive coefficient implies that with an increase in predictor variable, there is an increased likelihood of respondents to associate with omnichannel shopping (outcome variable here).

6.1.1. Key observations and summary based on ordered logit model results

Quick purchase system is positively associated with a higher intention to use both the omnichannel models. This finding reveals that consumers will indulge in omnichannel shopping only if the purchase system quickly meets their expectations and needs. This finding is in line with the literature (Kazancoglu & Aydin, 2018) where expectancy in speed is found to be an important determinant of usage intention in the context of omnichannel. However, this attribute has a stronger association with usage intention in case of BSSD ($\beta = 0.507, \alpha < 0.01$) than in BOPIS ($\beta = 0.352, \alpha < 0.05$). The analysis results show a somewhat similar picture for BOPIS and BSSD with respect to delays in product delivery (A_2) as the estimate for BOPIS is slightly higher than BSSD. The coefficient of A_2 is statistically significant (both at $\alpha < 0.05$) and positive indicating that an omnichannel shopping model is more likely to be used by respondents if it can successfully eliminate product delivery delays, which is also agreed by past literature (Kazancoglu & Aydin, 2018).

For the two studied omnichannel scenarios, fairly dissimilar findings are observed with respect to product returns (A_3) as it is a significant positive determinant of usage intention only in BOPIS. Individuals believe that reduction in return of products within BOPIS structure can result in high chances of using it for their future purchases. Customers often face uncertainty around product characteristics while purchasing it online which result in high return rates. The major disadvantage of returns management in online shopping can be reduced by implementing BOPIS as it offers quality check during product pick-up. Through his study, Nageswaran et al. (2020) also stated the need of practicing convenient return process to achieve overall profits.

The results also indicate the significant and positive role of delivery and shipping costs (A_4) in determining consumers' omnichannel purchase decision towards the two purchase models. Consumers who consider BOPIS a beneficial retail concept due to zero shipping and delivery costs, intend to use BOPIS. Similarly, Chatterjee (2010) found that consumers are likely to complete their purchase using BOPIS in order to save money on shipping costs. However, consumers tend to agree that BSSD is a beneficial purchase method irrespective of additional costs being incurred, which further increase the propensity to use

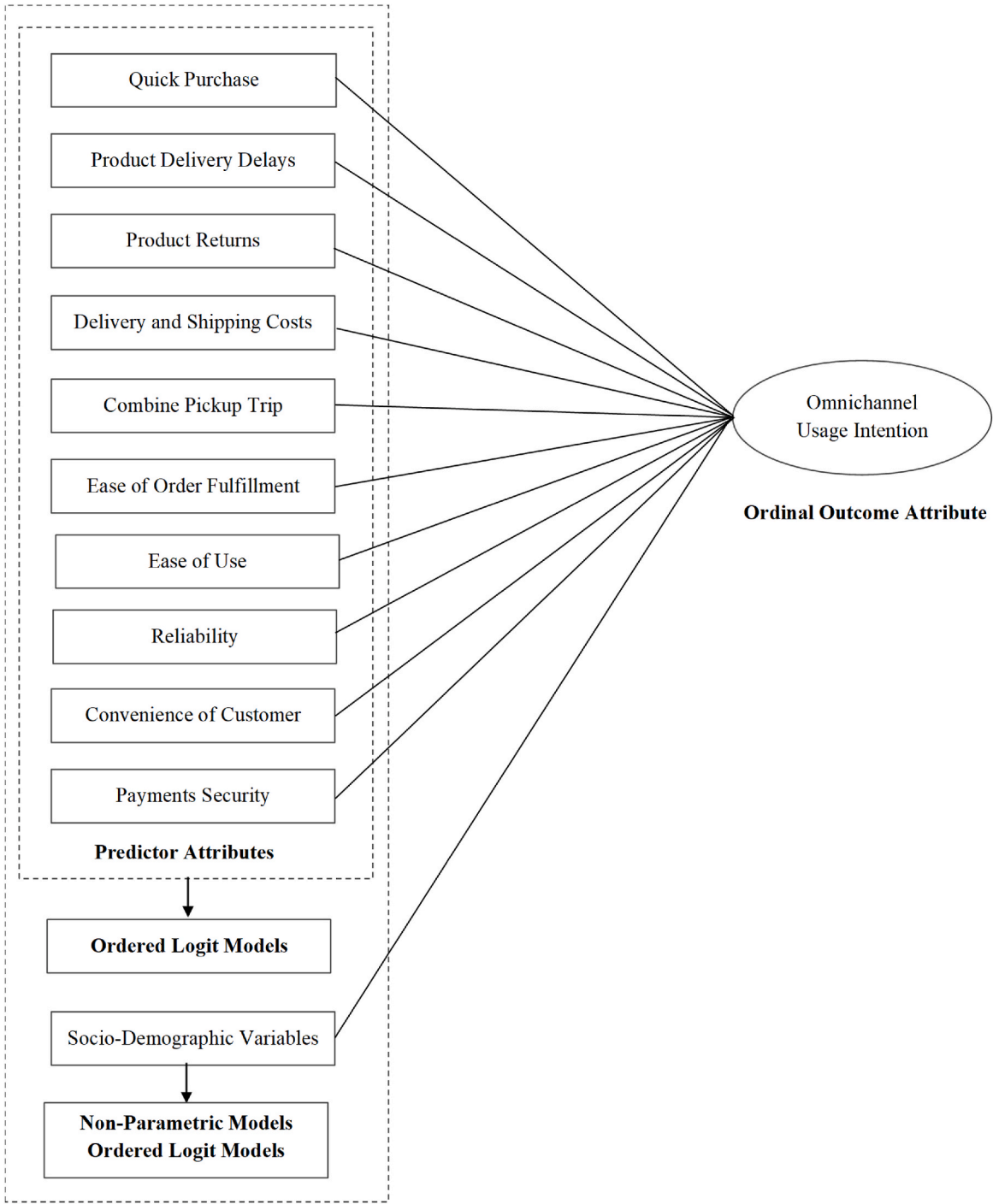


Fig. 4. Modelling approach.

it. Lack of touch and feel tend to hold back the Indian consumers from shopping online. Since BSSD provide appropriate product fit due to touch and feel advantage which is relevant especially for apparel and eyewear (in our case, a hypothetical setting of purchasing sunglasses was given), respondents consider BSSD as advantageous regardless of extra costs. It can also be concluded that people are likely to use BOPIS if they can easily combine their pickup trip with other daily trips ($\beta = 0.336, \alpha < 0.05$), which proves to be a sustainable activity in last mile transport.

Other attributes such as ease of receiving product (A_6), easy and understandable purchase system (A_7), reliable retail model (A_8), and trust in system for putting ahead consumer's convenience (A_9), are

significant motivators and indicate a positive association with intention to use both the omnichannel models. Finally, it is interesting to note that payment security is an insignificant determinant of omnichannel customer behavior in India for BOPIS as well as BSSD. Similar observations were made by [Juaneda-Ayensa et al. \(2016\)](#) where the online payment security did not influence purchase intention of Spanish shoppers within the omnichannel context.

6.2. Non-parametric tests results

The Mann-Whitney-U-Test results ([Table 6](#)) reveal significant differences within gender, age, and marital status only.

Table 4
Results of ordered logit models for usage intention of BOPIS and BSSD.

Predictor attributes	Usage intention of BOPIS			Usage intention of BSSD		
	Coef.	Std. Error	t-stat	Coef.	Std. Error	t-stat
It will result in quick purchasing (A_1)	.352**	.142	2.48	.507***	.131	3.86
It will eliminate product delivery delays (A_2)	.356**	.141	2.52	.313**	.125	2.51
It will reduce return of products (A_3)	.207*	.112	1.84	†	†	†
BOPIS will be beneficial due to zero delivery and shipping costs (A_4)	.312**	.130	2.39	–	–	–
BSSD will be beneficial irrespective of extra delivery and shipping costs (A_4)	–	–	–	.366***	.132	2.78
Combining in-store pickup with other work/ shopping/ travelling) activities in BOPIS will be of added value to me (A_5)	.336**	.155	2.17	–	–	–
I will find it easy to pick-up my parcel from store (A_6)	.479***	.136	3.52	–	–	–
I will find it easy to get the parcel delivered at home (A_6)	–	–	–	.303*	.156	1.95
It will be easy and understandable to use for my purchases (A_7)	.474***	.178	2.66	.869***	.185	4.71
I think it is reliable (A_8)	.272*	.145	1.87	.318**	.143	2.23
I think it puts customer's convenience first (A_9)	.291**	.137	2.13	.368**	.148	2.49
Making payments online in BOPIS is safe (A_10)	†	†	†	–	–	–
Making payments in shop in BSSD is safe (A_10)	–	–	–	†	†	†
Summary Statistics						
Constant	–3.41***	.606	–5.63	–2.41***	.541	–4.46
Pseudo-R ²	.263	–	–	.284	–	–

Note: ***, **, * = => Significance at 1%, 5%, 10% level; † = insignificant; '–' = not applicable.

6.2.1. Key observations and summary based on non-parametric tests results

For gender (only in BOPIS), the p value of quick purchase process, and delivery and shipping costs is 0.009 and 0.004 respectively, which is less than the significance level ($\alpha < 0.05$), indicating presence of heterogeneity in user perception among male and female as well as among married and single group. On the other hand, only A_1 came out to be significant for marital status only in BSSD, with a p-value of 0.002. So, the null hypothesis is rejected i.e., quick purchase process significantly

differs with respect to marital status. Subsequent Kruskal-Wallis-H-Test results (Table 6) with an asymptotic significance of $\alpha = 0.05$ show that there are significant differences present in BOPIS (for factors A_1 and A_2) and BSSD (for factors A_9 and A_10). However, no significant differences are found with respect to all the adopted dimensions on the basis of other demographic variables such as consumers' employment status, monthly income, and qualification. Since these results provide clear evidence of variation in consumer behavior for few attributes with respect to gender, marital status and age, detailed investigation is further performed for all the predictor factors for male, female, married, single and age dataset. Non-parametric tests do not take into account the effect the multiple variables. As a result, the influence of independent factors towards usage intention of BOPIS and BSSD is separately observed within the aforementioned categories using ordered logit modelling. The analysis results are discussed below in the following section.

6.3. Ordered logit model results for socio-demographic attributes

The results of ordered logistic regression for selected demographic variables are reported separately for BOPIS and BSSD in Tables 7–10 and are discussed below.

6.3.1. Key observations and summary of omnichannel usage intention by gender for BOPIS

For BOPIS, inter-group differences are found within gender as the influence of independent factors on omnichannel purchase behavior fairly differs for male and female. Both the models for male and female explain 28.6% and 28.4% (Pseudo-R² value) of variance respectively, in the usage intention of BOPIS, indicating a good predictive capacity. According to Table 7, only two attributes i.e., ease of parcel pick-up from store and understandable purchase system has a significant positive effect on usage intention of BOPIS for both the groups. However, omnichannel system reliability and payment security are not associated with omnichannel purchase intention for male and female shoppers. To the contrary, the results clearly indicate a dissimilar omnichannel behavior between male and females with respect to quick purchase process (A_1), product delivery delays (A_2), product returns (A_3), delivery and shipping costs (A_4), combining pick-up trips (A_5), and customer's convenience (A_9). For male consumers, A_1, A_2, A_4 and A_9 are significant determinants of their engagement in shopping using BOPIS, while A_3 and A_5 are significant attributes for female consumers. Findings highlight that male consumers are concerned about product delivery delays and reflect a price-conscious trait while using BOPIS. They also seek convenience and look for a quick purchase journey as opposed to females. However, the latter group can be encouraged to use BOPIS by reducing purchase returns and they also behave opportunistically by showing will to combine their pick-up trips. The moderating role of gender on product returns was studied by Powers and Jack (2015) for Walmart and Target customers which reported higher return rate for women than men. Our findings are consistent with the aforementioned study regarding product returns attribute.

6.3.2. Key observations and summary of omnichannel usage intention by gender for BSSD

Similar to BOPIS, males and females are different in terms of the effect of predictor attributes on their intention to use BSSD (Table 8). For both the categories, a good model fit is indicated as the McFadden Pseudo R-squared value is 0.267 and 0.338 for males and females respectively. Based on the results, quick purchase process (A_1), delivery and shipping costs (A_4), and understandable purchase system (A_7) will increase the probability of using BSSD retail system by male and female consumers. Findings suggest that male shoppers' omnichannel behavior is positively associated with A_2, A_6 and A_9. However, no significant effect of these factors is found for female group. Increase in system reliability (A_8) and payment security (A_10) contributes to increased

Table 5
Marginal effects of ordered logit model for BOPIS and BSSD.

Outcome attribute	Predictor attributes	Marginal effects for each level of Likert scale (%)				
		Level 1	Level 2	Level 3	Level 4	Level 5
Usage intention of BOPIS	A_1	−0.328**	−1.509**	−5.160**	4.602**	2.395**
	A_2	−0.325**	−1.493**	−5.108**	4.556**	2.371**
	A_3	−0.199*	−0.916*	−3.132*	2.793*	1.454*
	A_4	−0.27**	−1.240**	−4.242**	3.783**	1.969**
	A_5	−0.323**	−1.486**	−5.083**	4.533**	2.359**
	A_6	−0.441***	−2.026***	−6.930***	6.180***	3.216***
	A_7	−0.420**	−1.928**	−6.596**	5.882**	3.061**
	A_8	−0.223*	−1.027*	−3.512*	3.132*	1.630*
	A_9	−0.224*	−1.028*	−3.515*	3.134*	1.631*
	A_10	†	†	†	†	†
Usage intention of BSSD	A_1	−0.181***	−2.228***	−8.274***	5.825***	4.858***
	A_2	−0.112**	−1.379**	−5.121**	3.605**	3.007**
	A_3	†	†	†	†	†
	A_4	−0.130**	−1.602***	−5.951***	4.189**	3.494**
	A_5	−	−	−	−	−
	A_6	−0.107*	−1.318*	−4.896*	3.447*	2.875*
	A_7	−0.304***	−3.73***	−13.851***	9.752***	8.133***
	A_8	−0.105**	−1.285**	−4.772**	3.360**	2.802**
	A_9	−0.129**	−1.590**	−5.904**	4.157**	3.467**
	A_10	†	†	†	†	†

Note: ***, **, * = => Significance at 1%, 5%, 10% level; † = insignificant; '−' = not applicable.

Table 6
Results of heterogeneity investigation among user response towards the selected attributes.

Demographic Characteristics		Test Statistic	A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8	A_9	A_10
Gender	BOPIS	U-stat	9000	9632.5	10058	8736	9438.5	10517.5	9865.5	10432	10304.5	10353
		p-value	0.009*	0.092	0.297	0.004*	0.053	0.680	0.178	0.584	0.478	0.518
	BSSD	U-stat	9948	10061	9943.5	10295	−	10280	10578	9913.5	10444	10074
		p-value	0.231	0.298	0.226	0.472	−	0.450	0.739	0.206	0.599	0.299
Marital Status	BOPIS	U-stat	8701	8832.5	8836	8749	9079.5	8578	9209.5	8902	8707	8006
		p-value	0.405	0.530	0.547	0.462	0.807	0.320	0.963	0.601	0.423	0.062
	BSSD	U-stat	7150	8098.5	9125.5	8725	−	9134.5	9073.5	9146.5	9123	8903
		p-value	0.002*	0.088	0.863	0.441	−	0.872	0.800	0.887	0.857	0.609
Age	BOPIS	χ^2	3.296	3.210	3.048	3.388	1.225	5.491	3.347	4.978	13.459	15.317
		p-value	0.510	0.523	0.550	0.495	0.874	0.241	0.501	0.290	0.009*	0.004*
	BSSD	χ^2	13.416	14.891	3.410	6.976	−	2.832	2.078	1.312	4.00	2.850
		p-value	0.009*	0.005*	0.492	0.137	−	0.586	0.721	0.859	0.406	0.583
Employment Status	BOPIS	χ^2	1.030	8.944	1.297	4.399	1.966	6.133	4.396	3.278	4.753	9.743
		p-value	0.960	0.111	0.935	0.493	0.854	0.294	0.494	0.657	0.447	0.083
	BSSD	χ^2	5.835	10.329	5.555	4.490	−	4.489	4.709	3.771	3.050	4.766
		p-value	0.323	0.066	0.352	0.481	−	0.481	0.452	0.583	0.692	0.445
Monthly Income	BOPIS	χ^2	1.765	4.896	8.685	7.768	7.849	4.949	7.186	2.659	6.197	10.038
		p-value	0.940	0.557	0.192	0.256	0.249	0.550	0.304	0.850	0.401	0.123
	BSSD	χ^2	2.512	7.225	12.048	4.408	−	11.985	60160	3.476	6.792	5.484
		p-value	0.867	0.301	0.053	0.622	−	0.062	0.405	0.747	0.340	0.483
Qualification	BOPIS	χ^2	1.669	0.114	7.276	0.324	1.1716	4.281	4.177	4.409	2.811	6.187
		p-value	0.644	0.990	0.064	0.955	0.633	0.233	0.243	0.221	0.422	0.103
	BSSD	χ^2	2.969	1.266	3.401	2.064	−	2.103	5.037	0.433	7.244	1.470
		p-value	0.396	0.737	0.334	.559	−	0.551	0.169	0.933	0.065	0.689

Note: p - value = Significance level; * Significant at 5%; '−' = not applicable.
U-stat from Mann-Whitney-U-Test; χ^2 (Chi-square) from Kruskal-Wallis-H-Test.

likelihood of using BSSD by female shopper contrary to their male counterparts. Male shoppers within BSSD consider home delivery as an easy method of receiving products. On the other hand, system reliability and traditional method of payment in store are the factors that develop female shoppers' intention to use BSSD.

6.3.3. Omnichannel usage intention by marital status

A separate logistic regression is estimated to investigate the similarities or differences in married and single consumers' omnichannel behavior. Nonetheless, the segmented dataset does not yield an evidence of association of marital status with predictor dimensions towards concluding omnichannel shopping behavior and therefore, the models are not reported here. Past literature has less often seen marital status

affecting consumer behavior significantly (Dahana et al., 2018), which support findings from our study.

6.3.4. Key observations and summary of omnichannel usage intention by generation for BOPIS

The complete dataset was divided into two categories, 18–24 group (named as Gen Z) and 25–40 group (Gen Y/Millennials). Since there was lower representativeness of the remaining age groups (i.e., 40 respondents), no further categorization was performed. This resulted in retention of 147 responses in Gen Z and 124 in Gen Y for further analysis.

Table 9 summarizes the influence of each attribute on the dependent variable within BOPIS for each category. Differences can be seen within

Table 7

Results of Ordered Logit models for usage intention of BOPIS on the basis of gender.

Predictor attributes	Usage intention by male			Usage intention by female		
	Coef.	Std. Error	t-stat	Coef.	Std. Error	t-stat
It will result in quick purchasing (A_1)	.490***	.175	2.79	†	†	†
It will eliminate product delivery delays (A_2)	.520***	.166	3.14	†	†	†
It will reduce return of products (A_3)	†	†	†	.502**	.215	2.33
BOPIS will be beneficial due to zero delivery and shipping costs (A_4)	.528***	.153	3.45	†	†	†
Combining in-store pickup with other work/ shopping/ travelling) activities in BOPIS will be of added value to me (A_5)	†	†	†	.804**	.332	2.42
I will find it easy to pick-up my parcel from store (A_6)	.317*	.169	1.88	.879***	.251	3.50
It will be easy and understandable to use for my purchases (A_7)	.641***	.200	3.2	.589*	.326	1.80
I think it is reliable (A_8)	†	†	†	†	†	†
I think it puts customer's convenience first (A_9)	.578***	.154	3.75	†	†	†
Making payments online in BOPIS is safe (A_10)	†	†	†	†	†	†
Summary Statistics						
Constant	−3.10***	.654	−4.74	−2.29**	.972	−2.36
Pseudo-R ²	.286	–	–	.274	–	–

Note: ***, **, * => Significance at 1%, 5%, 10% level; † = insignificant; '–' = not applicable.

Gen Y and Gen Z with respect to all the factors except for product delivery delays (A_2), combining pick-up trip (A_5), and easy purchase system (A_7), as these three factors have a significant positive estimate. The research explains that quick purchasing (A_1), return of products (A_3), customer's convenience (A_9), and payment security (A_10) are the predictors of intention to use BOPIS for only young consumers (Gen Z) and are found to be positively associated with the outcome variable. While ease of parcel pick-up (A_6) and retail system reliability (A_8) were found to be significant and positive constructs affecting usage intention for older customers (Gen Y), they have no significant impact on Gen Z consumers. Young consumers (Gen Z) find BOPIS successful in reducing their product returns and consider it a quick purchase system. Additionally, they seek convenience from retailers and want secure online payment services. In contrast to it, Gen Y consumers prefers store pick-up as a last-mile option and their intention to use BOPIS is shaped by system reliability. Ordered logit model for Gen Z and Gen Y holds a good predictive power as the pseudo- R² value obtained is 0.288 and 0.280 respectively.

Table 8

Results of Ordered Logit models for usage intention of BSSD on the basis of gender.

Predictor attributes	Usage intention by male			Usage intention by female		
	Coef.	Std. Error	t-stat	Coef.	Std. Error	t-stat
It will result in quick purchasing (A_1)	.471***	.163	2.89	.625***	.208	3.00
It will eliminate product delivery delays (A_2)	.475***	.149	3.18	†	†	†
It will reduce return of products (A_3)	†	†	†	†	†	†
BSSD will be beneficial irrespective of extra delivery and shipping costs (A_4)	.279*	.168	1.66	.560***	.206	2.71
I will find it easy to get the parcel delivered at home (A_6)	.426**	.189	2.25	†	†	†
It will be easy and understandable to use for my purchases (A_7)	.806***	.223	3.61	1.11***	.293	3.80
I think it is reliable (A_8)	†	†	†	.728**	.283	2.57
I think it puts customer's convenience first (A_9)	.400**	.173	2.31	†	†	†
Making payments in shop in BSSD is safe (A_10)	†	†	†	.543*	.286	1.90
Summary Statistics						
Constant	−2.14***	.665	−3.22	−3.41***	1.06	−3.20
Pseudo-R ²	.267	–	–	.338	–	–

Note: ***, **, * => Significance at 1%, 5%, 10% level; † = insignificant; '–' = not applicable.

6.3.5. Key observations and summary of omnichannel usage intention by generation for BSSD

Within BSSD, generation-based cohorts identify a similar behavior of young consumers as in BOPIS, as quick purchasing, elimination of product delivery delays, understandable to use, customer's convenience and payment safety in store are significant determinants of their usage intention. Return of products and ease of home-delivery played no role in influencing omnichannel behavior for both the groups (Table 10). Elimination of delivery delays, and payment safety can significantly increase the uptake of BSSD among young consumers. Contrastingly, with an increase in reliable system experience, it is likely for Gen Y to use BSSD for their purchase. Unlike Gen Y, Gen Z are ready to pay extra last-mile delivery costs to seek the benefits of BSSD. However, for Gen Y shoppers, the only possible significant construct in contrast to Gen Z is system reliability. The only similitude found uniting the two groups are in terms of preferring a quick and understandable purchase system, which works at customers' convenience. With a pseudo- R² value of 0.317 and 0.254, the results indicate a good model fit for Gen Z and Gen Y respectively.

7. Planning and Policy Implications

Understanding the drivers of omnichannel shopping is of interest for policy makers concerned about the externalities of last mile delivery.

Table 9

Results of Ordered Logit models for usage intention of BOPIS on the basis of generation.

Predictor attributes	Usage intention by Gen Z			Usage intention by Gen Y		
	Coef.	Std. Error	t-stat	Coef.	Std. Error	t-stat
It will result in quick purchasing (A_1)	.357*	.214	1.67	†	†	†
It will eliminate product delivery delays (A_2)	.481**	.213	2.25	.588***	.191	3.09
It will reduce return of products (A_3)	.363**	.166	2.19	†	†	†
BOPIS will be beneficial due to zero delivery and shipping costs (A_4)	†	†	†	†	†	†
Combining in-store pickup with other work/ shopping/ travelling) activities in BOPIS will be of added value to me (A_5)	.860***	.230	3.73	.534***	.220	2.42
I will find it easy to pick-up my parcel from store (A_6)	†	†	†	.709***	.229	3.09
It will be easy and understandable to use for my purchases (A_7)	.462*	.266	1.73	.692***	.247	2.80
I think it is reliable (A_8)	†	†	†	.419*	.222	1.89
I think it puts customer's convenience first (A_9)	.533***	.204	2.61	†	†	†
Making payments online in BOPIS is safe (A_10)	.340*	.201	1.69	†	†	†
Summary Statistics						
Constant	−3.47***	.917	−3.79	−3.27***	.871	−3.75
Pseudo-R ²	.288	–	–	.280	–	–

Note: ***, **, * => Significance at 1%, 5%, 10% level; † = insignificant; '-' = not applicable.

Insights and inferences from the consumer omnichannel behavior analysis is useful for business practitioners to develop supply chain strategies for making it responsive, yet effective. Considering the results from the proposed methodology, our research has relevant recommendations to better meet receiver demands and facilitate an effective shopping experience.

Our results confirm that trust in retailer plays an important role in the usage of BOPIS and BSSD by a potential customer. It is worth suggesting to retailers that they should adopt consumer-centric culture throughout the purchase journey to increase reliability of the omnichannel model and should focus on customer service excellence ahead of anything else. Businesses working with store pickup option needs to tackle the challenge of smooth pickup experience by improving pickup efficiency, enhancing professional support and deploying coordinated schedules. An attempt to reduce the delivery failures and enhancing transport efficiency is crucial for supply chain managers within both the models. Planners focusing on externalities reduction methods in last mile logistics can consider solutions such as subsidies on electric

Table 10

Results of Ordered Logit models for usage intention of BSSD on the basis of generation.

Predictor attributes	Usage intention by Gen Z			Usage intention by Gen Y		
	Coef.	Std. Error	t-stat	Coef.	Std. Error	t-stat
It will result in quick purchasing (A_1)	.395**	.183	2.16	.517***	.185	2.79
It will eliminate product delivery delays (A_2)	.509***	.174	2.92	†	†	†
It will reduce return of products (A_3)	†	†	†	†	†	†
BSSD will be beneficial irrespective of extra delivery and shipping costs (A_4)	.433**	.192	2.25	†	†	†
I will find it easy to get the parcel delivered at home (A_6)	†	†	†	†	†	†
It will be easy and understandable to use for my purchases (A_7)	1.22***	.246	4.94	.640**	.248	2.57
I think it is reliable (A_8)	†	†	†	.777***	.237	3.27
I think it puts customer's convenience first (A_9)	.490**	.203	2.41	.569**	.225	2.53
Making payments in shop in BSSD is safe (A_10)	.482**	.19	2.53	†	†	†
Summary Statistics						
Constant	−3.39***	.845	−4.00	−1.64**	.759	−2.16
Pseudo-R ²	.317	–	–	.254	–	–

Note: ***, **, * => Significance at 1%, 5%, 10% level; † = insignificant; '-' = not applicable.

vehicles for delivery and regulations on delivery hours or reduced transport fee during off-peak hours. As buyers are willing to combine their shopping and daily travel trips, it is of interest to policy makers and practitioners to take into account the spatial and temporal organization of the pickup schedules. Within BOPIS, companies can incorporate AR (augmented reality) virtual try-on tools-based shopping experiences in online channels to provide accurate product information, which in turn can reduce purchase returns. This will help in minimizing the negative externalities arising from reverse logistics.

Analyzing the results by age and gender, practitioners should adopt attractive value rewards and pricing strategies within BOPIS to foster loyalty among male group. As female customers focus on minimized product returns within BOPIS, companies should resolve their uncertainty around the product evaluation during the product researching phase. The integration of 3D ecommerce presents a potential solution to address the issue of returns by reducing return rates and potentially eliminating the problem altogether. 3D ecommerce encompasses the utilization of virtual reality (VR) and AR technologies on websites and mobile apps to enable the visualization of high-quality 3D graphics along with interactive features and support. This can bridge the gap between online and offline stores, along with increasing user engagement and experience. Males form a price-conscious segment and are interested in maximum possible savings associated with the delivery costs. Therefore, from managerial perspective, retailers should take a proactive step in incentivizing last-mile delivery costs. As female shoppers are willing to combine their daily trips and shopping trips, managers are recommended to provide safe pickup locations and flexible

pickup schedules to them. In addition to it, transport operators should prioritize resources to enhance accessibility to stores by connecting it efficiently to public transport networks. As women prefer in-store payments in BSSD, this can be seen as an opportunity to evoke a high level of trust with the female segment while collecting payments, by building a well-designed website check for crashes and errors, by implementing security measures to avoid cyber-attacks and by collecting only necessary customer information. As old consumer base seeks a convenient purchase experience in BOPIS, retailers should strive to develop an inclusive purchase experience by designing easily navigable websites and providing volunteers to assist them in collecting the parcel. Additionally, in both the models, Gen Z pay attention to the transaction safety and hence, retailers can avoid financial fraud by performing regular systems scans. Finally, an efficient and timely home delivery method should be ensured by the practitioners to meet the expectations of the millennials.

8. Conclusions, Limitations, and Further Research

Omnichannel retailing is still a young concept and little is known about the factors promoting its usage. This study aims to assess the success factors for adoption of the “Buy-Online-Pickup-In-Store” (BOPIS) and “Buy-In-Store-SHIP-Direct” (BSSD) propositions by Indian consumers. This paper also addresses heterogeneity in consumers’ attitude on the basis of socio-demographic variables, towards using the abovementioned retail scenarios.

A main finding from our study is that a quick purchase journey positively affects the uptake of both models by Indian consumers. This attribute has a more intense effect on intention to use BSSD than on BOPIS. Elimination of delays in product delivery also has a strong effect on purchase decisions, under both scenarios. Reduction in purchase returns plays a significant role in increasing the use of BOPIS but does not significantly affect the use of BSSD. This is supported by the fact that return rate is generally high for products ordered online as compared to stores, due to various reasons such as receiving a damaged, different or a wrong product. Therefore, if retailers aim to attract public to use BOPIS, vague or unclear product description on online channels should be prevented to address aforesaid issues. It is worth mentioning that last-mile costs play a prominent role in omnichannel shopping adoption. Indian consumers perceive zero delivery costs as an important trait of BOPIS which attracts them to use it. Surprisingly, paying extra delivery charges isn’t the factor they care the most about in BSSD which still makes it as a beneficial option. Supported by the relevant literature, one can speculate that delivery fee is not a unique factor to offline market where a customer visits a shop and make a purchase. Moreover, BSSD offers the major benefits of physical store such as product experience, trying the product, which seems to supersede the cost dimension for Indian shoppers. Within BOPIS, opportunistic consumer behavior can be seen as they are willing to combine their product pick-up trip with other daily travel trips, which eventually can reduce the externalities of last-mile delivery. Ease of receiving product, either by visiting a shop or delivering at home, is another key element to the intention of using omnichannel system. However, its greater impact can be seen in the case of BOPIS than BSSD which stresses on providing easy-to-find pickup location and hassle-free pickup experience to public. Expectedly, consumers are more likely to use both the retail system if it is reliable and understandable to use. Furthermore, consumers expect retailers to have a consumer-first mindset by putting ahead their convenience throughout the purchase journey of BOPIS and BSSD. This expectancy by consumers reveals the subject of ‘trust in retailer’, which is an important attribute to increase the usage intention of BOPIS and BSSD. Consequently, secure payment services are not a significant predictor for any of the omnichannel retail models.

In the analysis of data based on demographic variables, our non-parametric tests show significant differences in consumers’ perception for attributes such as quick purchase process, product delivery delays,

delivery and shipping costs, customer’s convenience, and payments safety with respect to gender, marital status and age, which implies that the consumer is no more a single homogeneous category and shows different motivational patterns. This suggests that retailers should consider age, gender and marital status as important variables while identifying their target audience to use omnichannel retailing. No differences in attitude within the consumer sample is found on the basis of their employment status, monthly income, and qualification. Further investigation of the dataset using ordered logistic regression reveals inter-group differences by gender and age, without evidence for the relevance of marital status, however. With regard to the male segment who enjoy quick purchase journey within BOPIS, these prefer a timely home delivery of products, and expect retailers to put ahead their convenience. Here, retailers should seamlessly integrate various customer journey activities that cover researching, purchasing, receiving and returning, to enhance the customer purchase journey. Resources should be dedicated to provide the male profile with on-time home delivery of orders, while committing to their convenience. From an operational approach, males are price-conscious shoppers who are likely to use BOPIS to counter last-mile costs. Reduction in purchase returns will increase the likelihood of using BOPIS by female shoppers. Retailers can focus their efforts towards shoppers’ concerns such as receiving a defective product, finding a better product or price elsewhere, and create hassle-free return policies. Female shoppers are willing to combine the pick-up trip with their other daily trips, which suggests that retailers should provide flexible pickup schedules as well convenient pickup locations. Females also find in-store pickup an easy order fulfillment method. This is a significant factor among males as well, but at a much lower level.

From a strategic perspective, retail managers within BSSD setting should provide an easy, understandable and quick pre-purchase, purchase, and post-purchase experience to male and female segments. It is interesting to note that, compared to men, women are ready to pay additional last-mile charges if provided with the best customer experience. Retailers can retain this particular group by working on their delivery services to guarantee a timely order fulfillment. Flexible and safe payment options on delivery and key shipping services such as same day or next day delivery and on-demand deliveries can be offered to maintain loyalty and long-term relationships. With regard to monetary transaction behavior, women still prefer store payment options, which advises the retail managers to provide an enhanced store experience as most of the financial transactions occur in store within BSSD. Highly reliable BSSD plays a major role in increasing its usage intention by women. This emphasizes the importance of heightening the reliability in terms of transmitting correct product, payment, delivery, and return information. Finally, the results also reveal that men pay attention to product delivery issues, seek a convenient purchase experience and consider home delivery as an easy last-mile option.

Analyzing the results by generation in our study, retailers adopting BOPIS should prepare for upcoming Gen Z by providing them with a quick purchase experience and looking out for their convenience throughout the journey. Younger consumers are willing to use BOPIS as it can significantly reduce the product returns. Hence, retailers are expected to display correct product information on online channels and can better communicate the details by adopting Augmented Reality or Virtual Reality. As the younger generation is tech-savvy and embraces online payment more than any other generation, Gen Z is somewhat more payment security-conscious and demands digital safety. Retail generation gaps can be seen as Gen Y (Millennials) prefer picking their parcel from the store and considers BOPIS as a reliable omnichannel option, in contrast to Gen Z. A noteworthy point is that both the generations consider combining their daily travel activities and pickup activity as an added advantage of BOPIS. A hassle-free pickup experience should be offered to them by the retail managers in BOPIS as customers expect no delays in order procurement. Focusing on BSSD system, Gen Z is again demanding in financial security and expects a safe in-store

payment system from store management team. Retailers are advised to facilitate an easy and quick shopping journey to Gen Z and Gen Y. Providing the younger generation with a well-timed home delivery is important and can increase the uptake of BSSD by them. Interestingly, this segment is willing to spend more on last-mile costs for home-delivery, which reveals that they see value in receiving orders quickly.

Overall, an improved understanding of consumer's attitudes towards using BOPIS and BSSD can help retailers to articulate their retailing strategies to meet consumer needs and expectations. The analysis on socio-demographic factors provides strong insights to marketers to target the potential consumer group and expand their business. Although this research has provided necessary insights to understand omnichannel behavior adoption in India, the study has its own limitations. Smaller or larger samples size might result in changes in the statistical significance of attributes. Additionally, the data was collected only via online methods which arises biases towards mobile and internet users. We recommend future researchers to investigate various sample sizes and randomized collection, using offline as well as online channels to ensure representation of the entire population. Additionally, authors recognize the importance of studying the impacts of BOPIS and BSSD on transportation networks, including vehicle kilometers traveled and energy savings, as such an investigation was beyond the scope of this research and presents a valuable avenue for future studies in the Indian context. In a related study conducted in Belgium, an environmental assessment of omnichannel-related transport and logistics revealed that 'online shoppers' who make purchases online and receive deliveries at home or collection points exhibit the lowest environmental impact (Buldeo Rai et al., 2019). Conversely, 'showroomers,' characterized by physical store visits before e-purchases (a type of omnichannel shopper profile), incurred double the external CO2 costs compared to 'traditional shoppers' who shop exclusively in-store. Moreover, the CO2 costs for 'showroomers' exceeded those for 'online shoppers' by more than eightfold. In future research, it might also be worthwhile to investigate a similar customer omnichannel approach for different type of products (such as groceries, electronics, and clothing), as the behavior could vary product-wise. A consumer-centric approach was adopted in this study to examine the success factors for BOPIS and BSSD in India. It could be interesting to examine the retailer's perspective as well. In addition to the concepts of BSSD and BOPIS that we specifically evaluated in our study, it is important to acknowledge the broader landscape of Omnichannel solutions. There are other commonly used concepts, such as personalized recommendations, virtual assistants, and social media integration, that play a significant role in enhancing the customer experience and driving business success. Future research could explore the effectiveness of these additional concepts in achieving seamless integration and improved customer satisfaction within the Omnichannel context. Finally, we believe it is also imperative to examine whether the findings of this study are transferable to other developing countries in the Global South.

CRediT authorship contribution statement

Aparna Joshi: Data curation, Formal analysis, Writing – original draft. **Agnivesh Pani:** Conceptualization, Methodology, Writing – review & editing. **Prasanta K. Sahu:** Conceptualization, Methodology, Supervision, Writing – review & editing. **Bandhan Bandhu Majumdar:** Formal analysis, Writing – review & editing. **Lóránt Tavasszy:** Writing – review & editing.

Declaration of competing interest

None.

Data availability

Data will be made available on request.

References

- Adam, B. (2022). *Has ecommerce acceleration pushed retail closer to the omnichannel ideal?*. Retrieved from <https://sunrise.co/wp-content/uploads/2022/01/RTP-Omnichannel-benchmark-report.pdf>. (Accessed 16 June 2023).
- Ameen, N., Tarhini, A., Shah, M. H., & Nusair, K. (2021). A cross cultural study of gender differences in omnichannel retailing contexts. *Journal of Retailing and Consumer Services*, 58. <https://doi.org/10.1016/j.jretconser.2020.102265>. Article 102265.
- Banerjee, M. (2019). Development of Omnichannel in India: Retail Landscape, Drivers and Challenges. In W. Piotrowicz, & R. Cuthbertson (Eds.), *Exploring Omnichannel Retailing*. Cham: Springer. https://doi.org/10.1007/978-3-319-98273-1_6.
- Beck, N., & Rygl, D. (2015). Categorization of multiple channel retailing in Multi-, Cross-, and Omnichannel Retailing for retailers and retailing. *Journal of Retailing and Consumer Services*, 27, 170–178. <https://doi.org/10.1016/j.jretconser.2015.08.001>.
- Bell, D. R., Gallino, S., & Moreno, A. (2014). How to win in an omnichannel world. *MIT Sloan Management Review*, 56(1), 45–53.
- Bharucha, J. (2017). Issues in the home delivery model in India. *International Journal of Supply Chain Management*, 6(3), 145–151.
- Buldeo Rai, H., Mommens, K., Verlinde, S., & Macharis, C. (2019). How does consumers' omnichannel shopping behaviour translate into travel and transport impacts? Case-study of a footwear retailer in Belgium. *Sustainability*, 11(9), 2534. <https://doi.org/10.3390/su11092534>. MDPI AG.
- Buldeo Rai, H., Verlinde, S., & Macharis, C. (2018). The 'next day, free delivery' myth unravelled: Possibilities for sustainable last mile transport in an omnichannel environment. *International Journal of Retail & Distribution Management*, 47(1), 39–54. <https://doi.org/10.1108/IJRDM-06-2018-0104>.
- Chatterjee, P. (2010). Causes and consequences of 'order online pick up in-store' shopping behavior. *International Review of Retail Distribution & Consumer Research*, 20(4), 431–448. <https://doi.org/10.1080/09593969.2010.504009>.
- Colla, E., & Lapoule, P. (2012). E-commerce: Exploring the critical success factors. *International Journal of Retail & Distribution Management*, 40(11), 842–864. <https://doi.org/10.1108/09590551211267601>.
- Cummins, S., Peltier, J. W., & Dixon, A. (2016). Omnichannel research framework in the context of personal selling and sales management: A review and research extensions. *The Journal of Research in Indian Medicine*, 10(1), 2–16. <https://doi.org/10.1108/JRIM-12-2015-0094>.
- Dahana, W. D., Shin, H. J., & Katsumata, S. (2018). Influence of individual characteristics on whether and how much consumers engage in showrooming behavior. *Electronic Commerce Research*, 18(4), 665–692. <https://doi.org/10.1007/s10660-017-9277-4>.
- Economic Times. (2020). *E-tailing to become \$200 billion opportunity by 2025*. The Economic Times. Retrieved from <https://retail.economictimes.indiatimes.com/news/e-commerce/e-tailing/e-tailing-to-become-200-billion-opportunity-by-2025-report/78800089>. (Accessed 17 June 2023).
- Heitz-Spahn, S., Yildiz, H., & Belaud, L. (2018). Investigating the factors driving channel choice and retailer choice in an omnichannel environment. *Projectics/Proyética / Projectique*, 21(3), 43. <https://doi.org/10.3917/proj.021.0043>.
- Huré, E., Picot-Coupey, K., & Ackermann, C.-L. (2017). Understanding omni-channel shopping value: A mixed-method study. *Journal of Retailing and Consumer Services*, 39, 314–330. <https://doi.org/10.1016/j.jretconser.2017.08.011>.
- Ieva, M., & Ziliani, C. (2018). Mapping touchpoint exposure in retailing: Implications for developing an omnichannel customer experience. *International Journal of Retail & Distribution Management*, 46(3), 304–322. <https://doi.org/10.1108/IJRDM-04-2017-0097>.
- Indian Brand Equity Foundation. (2020). *E-Commerce*. Retrieved from <https://www.ibef.org/download/E-Commerce-July-2020.pdf>. (Accessed 4 October 2020).
- Juaneda-Ayensa, E., Mosquera, A., & Sierra Murillo, Y. (2016). Omnichannel customer behavior: Key drivers of technology acceptance and use and their effects on purchase intention. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2016.01117>.
- Kazancoglu, I., & Aydin, H. (2018). An investigation of consumers' purchase intentions towards omnichannel shopping: A qualitative exploratory study. *International Journal of Retail & Distribution Management*, 46(10), 959–976. <https://doi.org/10.1108/IJRDM-04-2018-0074>.
- Kim, K., Han, S.-L., Jang, Y.-Y., & Shin, Y.-C. (2020). The effects of the antecedents of 'buy-online-pick-up-in-store' service on consumer's BOPIS choice behaviour. *Sustainability*, 12(23). <https://doi.org/10.3390/su12239989>. Article 9989.
- Koch, J., Frommeyer, B., & Schewe, G. (2020). Online shopping motives during the COVID-19 pandemic: Lessons from the crisis. *Sustainability*, 12(24), 1–20. <https://doi.org/10.3390/su122410247>.
- Lazaris, C., Sarantopoulos, P., Vrechopoulos, A., & Doukidis, G. (2021). Effects of increased omnichannel integration on customer satisfaction and loyalty intentions. *International Journal of Electronic Commerce*, 25(4), 440–468. <https://doi.org/10.1080/10864415.2021.1967005>.
- Madden, G., Banerjee, A., Rappoport, P. N., & Suenaga, H. (2017). E-commerce transactions, the installed base of credit cards, and the potential mobile E-commerce adoption. *Applied Economics*, 49(1), 21–32. <https://doi.org/10.1080/00036846.2016.1189507>.
- Maggioni, I., Sands, S. J., Ferraro, C. R., Pallant, J. I., Pallant, J. L., Shedd, L., et al. (2020). Consumer cross-channel behaviour: Is it always planned? *International Journal of Retail & Distribution Management*, 48(12), 1357–1375. <https://doi.org/10.1108/IJRDM-03-2020-0103>.
- Mahar, S., Salzarulo, P. A., & Daniel Wright, P. (2012). Using online pickup site inclusion policies to manage demand in retail/E-tail organizations. *Computers & Operations Research*, 39(5), 991–999. <https://doi.org/10.1016/j.cor.2011.06.011>.
- Ministry of Health and Family Welfare, Government of India. (2021). *National family Health survey-5 2019-21*. Retrieved from http://rchiips.org/nfhs/NFHS-5_FCTS/India.pdf. (Accessed 24 September 2023).

- Mosquera, A., Ayensa, E. J., Pascual, C. O., & Murillo, Y. S. (2019). Omnichannel shopper segmentation in the fashion industry. *Journal of Promotion Management*. Routledge, 25 (5), 681–699. <https://doi.org/10.1080/10496491.2019.1585599>
- Mosquera, A., Juaneda-Ayensa, E., Olarte-Pascual, C., & Pelegrín-Borondo, J. (2018). Key factors for in-store smartphone use in an omnichannel experience: Millennials vs. nonmillennials. Complexity. <https://doi.org/10.1155/2018/1057356>, 2018.
- Murfield, M., Boone, C. A., Rutner, P., & Thomas, R. (2017). Investigating logistics service quality in omnichannel retailing. *International Journal of Physical Distribution & Logistics Management*, 47(4), 263–296. <https://doi.org/10.1108/IJPDLM-06-2016-0161>
- Nageswaran, L., Cho, S. H., & Scheller-Wolf, A. (2020). Consumer return policies in omnichannel operations. *Management Science*, 66(12), 5558–5575. <https://doi.org/10.1287/mnsc.2019.3492>
- Office of the Registrar General & Census Commissioner, India. (2011). C-14: Population in five year age group by residence and sex, India – 2011. Retrieved from <https://censusindia.gov.in/nada/index.php/catalog/1541>. (Accessed 24 September 2023).
- Mosquera, A., Olarte-Pascual, C., Ayensa, E. J., & Murillo, Y. S. (2018). The role of technology in an omnichannel physical store: Assessing the moderating effect of gender. *Spanish Journal of Marketing*, 22, 63–82. <https://doi.org/10.1108/SJME-03-2018-008>.
- Petersen, C., Click and collect: A hat trick retailers can't pull off? Retail Customer Experience(2015). Retrieved from <https://www.retailcustomerexperience.com/blogs/click-and-collect-a-hat-trick-retailers-cant-pull-off/>. (Accessed 15 January 2021).
- Piercy, N. (2012). Positive and negative cross-channel shopping behaviour. *Marketing Intelligence & Planning*, 30(1), 83–104. <https://doi.org/10.1108/02634501211193930>
- Powers, T. L., & Jack, E. P. (2015). Understanding the causes of retail product returns. *International Journal of Retail & Distribution Management*, 43(12), 1182–1202. <https://doi.org/10.1108/IJRDM-02-2014-0023>
- Rai, H. B., Mommsen, K., Verlinde, S., & Macharis, C. (2019). How does consumers' omnichannel shopping behaviour translate into travel and transport impacts? Case-Study of a footwear retailer in Belgium. *Sustainability*, 11(9). <https://doi.org/10.3390/su11092534>
- Report, P. C. (2014). *eCommerce in India accelerating growth*. Retrieved from <https://www.pwc.in/assets/pdfs/publications/2015/e-commerce-in-india-accelerating-growth.pdf>. (Accessed 17 June 2023).
- Robert, R., Sander, L., & Alexander, H. (2023). Advancing the marketing-operations interface in omnichannel retail. *Journal of Operations Management*, 69(2), 188–196. <https://doi.org/10.1002/joom.1241>
- Rodríguez-Torrico, P., San José Cabeza, R., & San-Martín, S. (2017). Tell me what they are like and I will tell you where they buy. An analysis of omnichannel consumer behavior. *Computers in Human Behavior*, 68, 465–471. <https://doi.org/10.1016/j.chb.2016.11.064>
- Saghiri, S., Wilding, R., Mena, C., & Bourlakis, M. (2017). Toward a three-dimensional framework for omni-channel. *Journal of Business Research*, 77, 53–67. <https://doi.org/10.1016/j.jbusres.2017.03.025>
- Silva, S. C. e, Martins, C. C., & Sousa, J. M. de (2018). Omnichannel approach: Factors affecting consumer acceptance. *Journal of Marketing Channels*, 25(1–2), 73–84. <https://doi.org/10.1080/1046669x.2019.1647910>
- Sinha, J., & Kim, J. (2012). Factors affecting Indian consumers' online buying behavior. *Innovative Marketing*, 8(2). <https://www.proquest.com/scholarly-journals/factors-affecting-indian-consumers-online-buying/docview/2622624441/se-2>.
- Soopramanien, D. G. R., & Robertson, A. (2007). Adoption and usage of online shopping: An empirical analysis of the characteristics of 'buyers' 'browsers' and 'non-internet shoppers'. *Journal of Retailing and Consumer Services*, 14(1), 73–82. <https://doi.org/10.1016/j.jretconser.2006.04.002>
- Verhoef, P. C., Kannan, P., & Inman, J. J. (2015). From multi-channel retailing to omni-channel retailing: Introduction to the special issue on multi-channel retailing. *Journal of Retailing*, 91(2), 174–181. <https://doi.org/10.1016/j.jretai.2015.02.005>
- Walsh, G., Schaarschmidt, M., & Ivens, S. (2017). Effects of customer-based corporate reputation on perceived risk and relational outcomes: Empirical evidence from gender moderation in fashion retailing. *The Journal of Product and Brand Management*, 26(3), 227–238. <https://doi.org/10.1108/JPB-07-2016-1267>
- Yuen, K. F., Wang, X., Ma, F., & Wong, Y. D. (2019). The determinants of customers' intention to use smart lockers for last-mile deliveries. *Journal of Retailing and Consumer Services*, 49, 316–326. <https://doi.org/10.1016/j.jretconser.2019.03.022>
- Zhang, M., Ren, C., Wang, G. A., & He, Z. (2018). The impact of channel integration on consumer responses in omnichannel retailing: The mediating effect of consumer empowerment. *Electronic Commerce Research and Applications*, 28, 181–193. <https://doi.org/10.1016/j.elerap.2018.02.002>
- Schmaus, B., Maekelburger, B., & Bovensiepen, G. (2015). The 2015 Global Omnichannel Retail Index: The future of shopping has arrived. Strategy 2015. Retrieved from <http://www.pwc.com/gr/en/publications/2015-global-omnichannel-retail-index-the-future-of-shopping.pdf> (Accessed 20 October 2020).