Received 29 October 2022
Revised 18 July 2023
Accepted 25 July 2023

Exploring channel switching in the aftermath of the Covid-19 pandemic: Are shoppers all driven by the same motivations?

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Abstract

Purpose – The pandemic impacted consumers' shopping processes, leading them to approach the online channel for grocery shopping for the first time. The paper contributes to the retailing literature by identifying different grocery shopper segments willing to switch online moved by heterogeneous motivations. Integrating the technology acceptance model 2 (TAM-2) and the protection motivation theory (PMT), this study identifies technology-related and Covid-related motivations jointly impacting channel switching.

Design/methodology/approach – A mixture regression model was estimated on the 370 valid questionnaires, filled out by Italian shoppers, delivering four internally consistent segments.

Findings – The results reveal the existence of four segments willing to switch towards the online channel for grocery shopping in the aftermath of the pandemic. Utilitarian shoppers would switch online as they consider the online channel useful and easy to use. Responsive shoppers will prefer the online channel driven by the fear of being infected in-store. Novel enthusiasts show interest in the online channel to not catch the virus and cope with emotional fear, although they consider online shopping as an enjoyable and useful activity as well. Smart shoppers consider online shopping as an easy-to-use alternative for their grocery purchases.

Originality/value – This paper identifies technology-related and Covid-related motivations jointly impacting shoppers' channel switching to online and presents a novel method – i.e. mixture regression – allowing for the identification of shopper segments motivated by different reasons, both emotional and utilitarian, to switch towards the online channel for their grocery shopping. Among other motivations, the fear of Covid-19 is identified as a relevant motivation to switch to online.

Keywords Online switching, Grocery shopping, Consumers' motivations, Covid-19 pandemic, Mixture regression

Paper type Research paper

The authors confirm this manuscript has not been published elsewhere and is not under consideration in the same or substantially similar form by another journal. Moreover, they have approved the manuscript and agree with its submission to the *International Journal of Retail & Distribution Management*.

Authors Contribution: Francesca De Canio: 1. Introduction; 2. Theoretical background; 6. Limitations and further research direction. Maria Fuentes-Blasco: 3. Research methodology; formal analysis, and 4. Results. Elisa Martinelli: 3.1 Survey design and data collection; 5. Conclusions and implications.

International Journal of Retail & Distribution Management
Vol. 51 No. 12, 2023
pp. 1656-1676
Emerald Publishing Limited
0959-0552
DOI 10.1108/IJRDM-10-2022-0414

1. Introduction

Since the spread of online channels, consumers are increasingly using retailers' websites and apps for their shopping (De Canio and Fuentes-Blasco, 2021). The spread of the Covid-19 pandemic has accelerated this phenomenon, creating an unexpected "surge of digitalisation of the ping activities" (Wang *et al.*, 2022a, p. 1053). Compared to other product categories, this phenomenon is becoming increasingly common also for groceries. Due to continuous lockdowns and a greater risk of contagion from Covid-19, shoppers have begun to approach the online channel also for food purchases. Online fresh food shopping frequency rose by 71.2% during the pandemic (Lu *et al.*, 2021). To cope with the governmental restrictions and reduce the spread of the virus, customers adjusted their shopping behaviour, reducing the number of shopping expeditions and starting to shop for groceries online (Laato *et al.*, 2020). The online channel began to be chosen by consumers due to the fear to get infected in-store by other customers and in-store employees (Grashuis *et al.*, 2020), also from those new and/or reluctant to shop online. The impact of Covid-19 on consumer purchasing behaviour has been so brutal and uncontrollable for consumers that some authors define the need to switch online as a somewhat coercive choice (*i.e.* Prasad and Srivastava, 2021).

This paper contributes to the retailing literature by analysing grocery shoppers' intention to switch from offline to online channels. We investigate an ample set of motivations, including how Covid-19 impacted consumers' channel switching. Theoretically, this research integrates the technology acceptance model 2 (TAM-2) (Wang *et al.*, 2022b) and the protection motivation theory (PMT) (Rogers and Prentice-Dunn, 1997) to understand technology-related and Covid-related motivations jointly impacting consumers channel switching for grocery shopping. Analysing consumers' post-Covid-19 behaviour, this research aims to shed some light on emerging consumers' purchasing habits determined by Covid-19 (Sheth, 2020). By analysing several motivations usually connected with online shopping behaviour, namely, shopping enjoyment, perceived ease-of-use, and perceived usefulness, and several motivations emerging due to the pandemic spread, namely response efficacy to Covid-19, emotional and symptomatic fears, this paper aims at identifying different segments of grocery shoppers preferring the online channel to buy groceries in the aftermath of the pandemic.

Furthermore, this work contributes to the literature by adopting a novel method - based on a *post-hoc* segmentation procedure - useful to identify shopper segments driven by different motivations. Applying a mixture regression model technique on 370 structured questionnaires filled out by a sample of Italian grocery shoppers, we identify four segments characterised by a different set of motivations both related to the online channel characteristics, as well as determined by the pandemic contagious spread. In doing so, the study contributes to the recent literature that is highlighting increasingly heterogeneous behaviours in consumers (*e.g.* Frasquet *et al.*, 2021; Marín-García *et al.*, 2023; Higueras-Castillo *et al.*, 2023; Scarpi *et al.*, 2023).

The results provide both theoretical and managerial contributions. Theoretically, findings contribute to shedding light on the even more relevant online shopping phenomenon, showing how different motivations may lead to shoppers' intention to switch towards online grocery shopping, considering also the additional motivations created by the spread of the Covid-19 pandemic, whose psychological and behavioural shopping effects can be long-lasting, at least for some clusters of shoppers. Managerially, this paper supports retailers' multichannel strategy, in a retailing context that nowadays is full of opportunities and challenges determined by the pandemic. Retail marketing strategies and operational policies should be shaped based on various motivations driving the different clusters of shoppers identified by this research. In this way, retailers may implement actionable strategies and tactics to promote multichannel shopping behaviour and encounter the increasing need for online shopping also by neophyte or reluctant consumers.

2. Theoretical background

2.1 Online grocery shopping switching

Switching behaviours are typical in consumers. Thus, store-switching, retailer-switching, and brand-switching behaviours are key topics in the retailing and consumer behaviour literature. Since the spread of online channels, the literature started to focus on the migration process towards the online - both electronic and mobile channels - trying to understand drivers and barriers behind the emerging shopping process (Table 1). Consumers dynamically select their preferred channel by switching from offline to online and vice versa based on temporary and changing shopping conditions (Pookulangara *et al.*, 2011a). Overall, the online shopping experience is widely recognised as enjoyable and with no time and space constraints (Singh, 2019; Tyrväinen and Karjaluoto, 2022). Switching costs and an initial complexity in channel usage are, on the contrary, the main barriers (Li *et al.*, 2018). However, widespread price discrimination, a high level of retailers' customer service and peer word-of-mouth may facilitate its adoption (Singh and Rosengren, 2020; Van Nguyen *et al.*, 2022).

The shopping journey and purchase processes may be different for specific product categories (Agrawal, 2023). As highlighted by Frasquet *et al.* (2021), initially the literature focused on durable products and the main results in the literature were related to non-grocery products. The high purchase frequency, the need for sensoriality, and a general perception of risk discouraged the consumer from buying groceries online (De Canio and Fuentes-Blasco, 2021).

The spread of Covid-19 has undermined these considerations and, to deal with the risk of contagion and mobility restrictions, consumers started buying groceries online (Fuentes *et al.*, 2022). The channel selection was a merge between both utilitarian and hedonic motivations, and health-related and Covid-related psychological motivations (Fuentes *et al.*, 2022; Wang *et al.*, 2022a). Consumers started adopting heterogeneous single vs multi-channel - if not omnichannel - purchasing behaviours (Frasquet *et al.*, 2021), guided by heterogeneous motivational settings (Higueras-Castillo *et al.*, 2023).

Also theoretically, the widespread use of the TPB - as well as its technological-theoretical twin TAM – was increasingly associated with the PMT (*e.g.* Youn *et al.*, 2021; Wang *et al.*, 2022a). Thus, Covid-19 has accelerated the process of adopting the new online channel for grocery purchases, generating new purchasing habits among consumers (Sheth, 2020).

2.2 Hypotheses and model development

2.2.1 Shopping enjoyment (ENJ). Perceived enjoyment plays a major role in shaping consumer online behaviours. Since its inclusion in TAM, perceived enjoyment was considered one of the main intrinsic motivations driving users to interact with a technological system and a powerful instrument to influence their usage acceptance (Davis *et al.*, 1992). "The activity [to interact with the] technology is perceived to be enjoyable in its own right" (Davis *et al.*, 1992, p. 1113).

The spread of online shopping gave new light on the concept of perceived enjoyment. Shopping enjoyment is usually defined as the fun and pleasure shoppers may derive from the online shopping task and the interaction with the online retailing platform, both a website and a retailing app (De Canio and Fuentes-Blasco, 2021). Feeling a sense of pleasure and enjoyment, the shopper experiences a sense of positive attitude towards the online retailing channels. The positive mood derived from shopping enjoyment exerts a positive impact on consumer buying behaviour (Beatty and Ferrell, 1998; Caboni and Hagberg, 2019; Wolfinbarger and Gilly, 2001). That is the reason why retailers increasingly develop enjoyable retailing interfaces to enhance the feeling of enjoyment in their customers to improve their shopping activity and increase the time customers spend on the retailing digital platform (De Canio *et al.*, 2021). Shopping enjoyment is key when consumers intend to switch

Reference	Theory	Country	Type of data	Method	Main results
Pourabedin *et al.* (2016)	Theory of planned behaviour (TPB)	n.a	Self-reported	Structural equation modelling	Utilitarian and epistemic values were generally associated with attitude towards channel-switching, while emotional values were not. Switching costs had a negative moderating impact between utilitarian values and attitudes towards switching online for shopping
Li *et al.* (2018)	Push, pull, and mooring framework (PPM)	China	Self-reported	Structural equation modelling	Retailer uncertainty, identity attractiveness, and switching costs play instrumental roles in shaping consumer reactions to Cross-Channel Integration. Despite being the strongest driver of customer retention, identity attractiveness (pull effect) is the weakest predictor of customer switch behaviour
Singh (2019)	Experiential value typologies	n.a	Qualitative	Netnography and critical incident analysis	Shoppers are looking for a frictionless and pleasurable experience in online grocery shopping. They want their retailers to fulfil their promises efficiently and provide excellent service
Singh and Rosengren (2020)	Push, pull, and mooring framework (PPM)	United States	Self-reported	Structural equation modelling	Customer service, issues with delivered products, technical issues, high price perception (Push factors) and WOM and alternative attraction (Pull factors) have significant direct effects on switching. Furthermore, switching cost and prior switching behaviour (mooring factors) moderate switching
Youn *et al.* (2021)	Theory of planned behaviour (TPB), Protection motivation theory (PMT)	United States	Self-reported	Structural equation modelling	Consumer assessments of perceived severity and altruistic fear of Covid-19 and response efficacy and self-efficacy of channel switching increased their beliefs (*i.e.* attitude, perceived behaviour control, subjective norm) and intentions to switch shopping channels to online

(*continued*)

Table 1.
Literature review on online shopping and channel-switching behaviour

Reference	Theory	Country	Type of data	Method	Main results
Frasquet *et al.* (2021)	n.a	Spain	Behavioural	Latent Class Analysis	Results show that consumers behave heterogeneously when a new retailing channel is introduced. The authors identify 7 segments of consumers with different omnichannel behaviours
Fuentes *et al.* (2022)	Practice Theory (PT)	Sweden	Qualitative	Ethnographic interviews	Online grocery shopping has radically changed due to the pandemic. Consumers switched online to cope with health issues and infectious diseases. Both technological and pandemic risk motivations led consumers to switch online for grocery purchases
Tyrväinen and Karjaluoto (2022)	Theory of planned behaviour (TPB), Technology Acceptance Model (TAM), Unified theory of acceptance and use of technology (UTUAT/ UTUAT2)	n.a	Qualitative	Structural equation modelling	Perceived usefulness, ease-of-use, positive emotions, trust, price value, subjective norms, social influence, and attitude are positive drivers of online grocery purchase intentions
Van Nguyen *et al.* (2022)	Social Cognitive Theory (SCT)	China	Qualitative	Content Analysis	Among the main reasons for channel switching behaviour there are i) influence from social groups; ii) channel-related aspects (augmentation – *e.g.* reputation, service, location); iii) confidence and beliefs to make the right decision; iv) benefits (*e.g.* economic, sensorial); v) perceived risk; vi) channel attractiveness
Wang *et al.* (2022a)	Theory of planned behaviour (TPB), Protection motivation theory (PMT)	n.a	Self-reported	Structural Equation Modelling	The pandemic-induced adjustments in consumers' perceptions (*i.e.* response efficacy) are among the main consumers' changing habits caused by Covid-19

Table 1. (*continued*)

Reference	Theory	Country	Type of data	Method	Main results
Agrawal (2023)	Consumer Shopping Motives Framework (CSM)	India	Self-reported/ Behavioural	Logistic Regression	Five key post-Covid-19 shopping behavioural shifts among Gen Z consumers: desire for mitigating social isolation, risk and vulnerability, rational purchase decisions, conscious and cautious consumption and "the sacrifice of personal grit, idealism and psychology"
Higueras-Castillo *et al.* (2023)	Unified Theory of Acceptance and Use of Technology 2 (UTUAT2)	Portugal and Spain	Self-reported	Hierarchical Three-bases Regression - CHAID method	The authors identify four segments of consumers with different intentions to switch to the online channel for their shopping

Source(s): Developed by the authors

Table 1.

online (Singh, 2019) to buy groceries (Tyrväinen and Karjaluoto, 2022). We can accordingly postulate that.

H1. Shopping enjoyment positively impacts consumers' intention to switch towards the online channel.

2.2.2 Perceived ease-of-use (PEU) and perceived usefulness (PU). Perceived ease-of-use (PEU) and perceived usefulness (PU) are usually considered relevant drivers for the acceptance and adoption of the technology (TAM/TAM-2; Wang *et al.*, 2022b). Jointly with perceived enjoyment, the perceived ease-of-use and the perceived usefulness were considered the main intrinsic motivations behind online shopping intention (Tyrväinen and Karjaluoto, 2022). Perceived ease-of-use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). "Perceived usefulness is defined as a person's expectation that using the computer will result in improved job performance" (Davis *et al.*, 1992, p. 1112).

When shopping online consumers look for an easy interface to interact with – especially in the product search and transaction phases – (Perceived ease-of-use), and several benefits of online shopping, such as convenience and reduced shopping efforts (Perceived usefulness). Thus, it follows that perceived ease-of-use and usefulness are interconnected (Wang *et al.*, 2022b). Analysing consumers' satisfaction with online food shopping during the pandemic, Alaimo *et al.* (2022) confirmed the positive relationship between perceived ease-of-use and perceived usefulness and consumers' intention to shop for groceries online. Soares *et al.* (2023) showed a positive and direct impact of both variables on consumers' online purchase intentions, highlighting how both perceived ease-of-use and perceived usefulness are strategic aspects to make the experience easy and accessible and facilitate the process of switching to online (Singh, 2019). The above overall theory supports the following hypotheses.

H2. Perceived ease-of-use positively impacts consumers' intention to switch towards the online channel.

H3. Perceived usefulness positively impacts consumers' intention to switch towards the online channel.

2.2.3 Response efficacy (RE). In the context of crises and threats, people develop and implement several cognitive processes to cope with dangerous situations. The protection motivation theory (PMT) (Rogers and Prentice-Dunn, 1997) defines the cognitive processes implemented by individuals to react to the negativity in the coping appraisal process. Principally, response efficacy refers to "how effective the coping response is in avoiding the threat" (Youn *et al.*, 2021, p. 141). Thus, the response efficacy defines people's beliefs about the efficacy of their coping mechanism in preventing or reducing the threat (Ruan *et al.*, 2020). When considering the retailing sector, response efficacy to Covid-19 may be defined as individuals believing that shopping online prevents them from catching the virus. Analysing the clothes retailing context, Youn *et al.* (2021) found perceived response efficacy to exert a positive indirect effect on channel switching intention. Similar results were found by Wang *et al.* (2022a) analysing Indian online grocery buying intention. Accordingly, the following hypothesis can be suggested.

H4. Response efficacy to Covid-19 positively impacts consumers' intention to switch towards the online channel.

2.2.4 Emotional fear (EF) and symptomatic fear (SF). Since the spread of the pandemic, the feeling of anxiety and fear have been widely investigated as aspects influencing consumers' behaviour. Overall, the fear to contract the Covid-19 during any activity in daily life has radically changed individuals' behaviour in everyday life. The fear of catching the virus and its implications was extreme in individuals (Youn *et al.*, 2021), producing a high level of stress and leading them to radically change their buying patterns (Bitan *et al.*, 2020). We assisted in impulse buying patterns growth or stockpiling (Fischer *et al.*, 2021).

The sense of risk and vulnerability are among the main motivations leading consumers to buy physical products online due to Covid-19 diffusion (Agrawal, 2023). Analysing changes in consumers' buying patterns during the first wave of Covid-19, scholars showed an increase in online sales determined by both governmental restrictions on mobility and social interaction and the fear to contract the virus during shopping (Scarpi *et al.*, 2023).

"Symptomology fear includes physiological dimensions such as sweating, palpitations, and insomnia and may lead to the development of common mental disorders, such as depression, anxiety, and substance use disorders. Conversely, emotional fear assembles all the psychological dimensions of fear such as anxiety and concern and can predict positive behaviour change (*e.g.* improved hand hygiene, social distancing)" (Martinelli *et al.*, 2021, p. 35). Analysing the grocery retailing context, the authors found symptomatic fear to positively influence consumers' intention to switch online and a negative impact of the emotional fear (Martinelli *et al.*, 2021). Accordingly, we can postulate the following hypotheses.

H5. Covid-19 Emotional fear negatively impacts consumers' intention to switch towards the online channel.

H6. Covid-19 Symptomatic fear positively impacts consumers' intention to switch towards the online channel.

2.2.5 Heterogeneous motivations behind consumer behaviour. Analysing consumer behaviour, scholars assume *a-priori* the existence of heterogeneity in groups based on single variables (*e.g.* demographic, or psychographic variables) not considering the opportunity of heterogeneity among groups homogeneous within them by a set of variables (Sarstedt, 2008). The use of deterministic techniques (hierarchical and non-hierarchical cluster analysis) and of *a-priori* analysis (multigroup analysis) have been widely employed (Fuentes-Blasco *et al.*, 2017). These methodologies show clear limitations concerning most recent *post-hoc* segmentation procedures such as latent modelling. In the last decade, academics have been calling for research to advance in this methodological line (Marín-García *et al.*, 2023).

For example, in analysing customer satisfaction with industrial goods, Sarstedt (2008) identified two groups driven differently by the reliability of machines/systems, the accuracy of machines/systems and the cost/performance ratio of machines/systems. Desarbo *et al.* (2001), analysing customer value of physical buyers based on the impact of service quality and price identified three segments homogeneous in terms of their response parameters. In the Indian online context, Gehrt *et al.* (2012) identified three segments based on alternative shopping orientations. Subsequently, Prashar *et al.* (2019) identified five groups of online shoppers basing their analysis on both shopping values (hedonic and utilitarian) and website characteristics (entertainment, informativeness, and effectiveness of information). Recently, Maggioni *et al.* (2020), analysing cross-channel behaviours identified three segments led by alternative motivations.

To advance this research field, we guess that also in the aftermath of the pandemic, there may exist different segments of consumers intending to switch online driven by a different set of motivations. Thus, this hypothesis proposes to find consumers' segments where several subjective variables such as perceptions about shopping enjoyment, perceived ease-of-use, and perceived usefulness, together with specific variables related to response efficacy to Covid-19, emotional and symptomatic fear show an uneven impact on the intention to switch from offline to online shopping channel. It is assumed that the effect of these motivations for channel switching will vary across consumer segments. The following hypothesis is postulated.

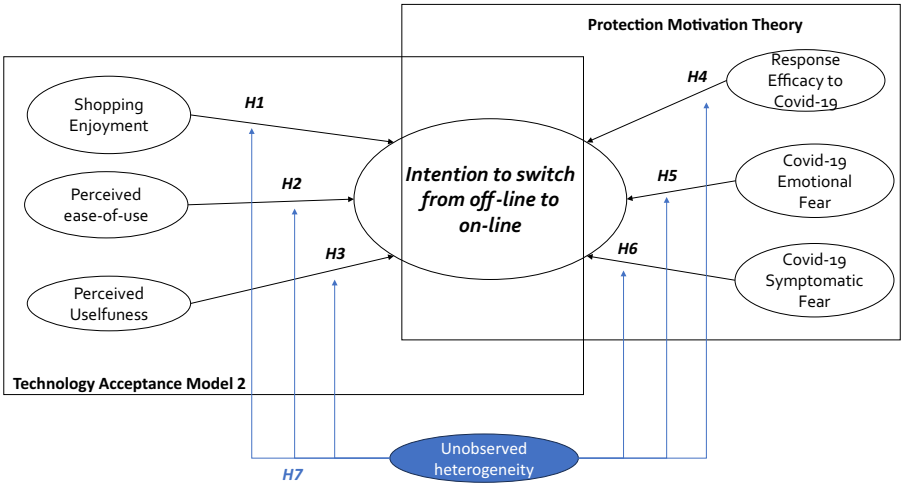
H7. The strengths of the relationship between previous motivations and consumers' intention to switch towards the online channel are different among segments.

Figure 1 graphically represents the theoretical model whereby a set of six motivations, namely shopping enjoyment, perceived ease of use, perceived usefulness, response efficacy, emotional fear, and symptomatic fear jointly drive consumers to switch towards the online channel for their grocery shopping.

3. Research methodology

3.1 Survey design and data collection

To explore the pandemic impact on the consumer channel switching towards online, we developed a survey which employed a structured questionnaire. Differently from other



Source(s): Developed by the authors

Figure 1.
Theoretical model and hypotheses

countries where a shift to online grocery shopping is already an acquired phenomenon, Italy was chosen for the empirical study to explore a country where, especially for groceries, online is not widespread, both from cultural and retailing reasons due to (1) the Italians-food relationship, (2) the Italian shopping culture, more prone to off-line shopping, (3) the impact of the Covid-19 pandemic in altering the way people shop; (4) retailers are largely investing in digital efficiency (from 2020 2.5% of their turnover) (Artusi *et al.*, 2020; Osservatori.net, 2022; Martinelli *et al.*, 2021).

To intercept grocery shoppers the link to the online survey was posted on 35 food and grocery shopping thematic pages on Facebook. The choice of Facebook is justified as (1) it is the most popular social network in Italy–in 2021, the number of users was 38,550,000, which increased by 6.7% compared to the previous year (Statista, 2023); (2) despite the important increase in the use of Facebook in the food retail industry, the study of the analysis of consumer's motivations and perceptions about food retailers with a presence on this social network is scarce to date (Ladhari *et al.*, 2019); (3) we respond to the call for research on understanding the specific consumers' patterns of behaviour, such as food purchasing, through the metrics of social networks (Scarpi *et al.*, 2023).

The full launch of the survey, developed on a snowball data collection, had the potential to reach around 290,000 subjects - equal to the number of followers of the 35 selected pages. A total of 441 completed and valid questionnaires were collected in two weeks in September 2021.

A check question was included in the questionnaire to screen those directly involved in shopping for groceries for their household, leading us to exclude 71 responses. A final dataset of 370 answers was used for the scope of our analysis.

The questionnaire was developed in two main sections: the former aimed at collecting socio-demographic information from respondents, the latter was based mainly on psychometric scales aimed at empirically testing the theoretical model.

3.2 Sample description

Among the 370 individuals participating in our study, 81.6% were female. In terms of age, the largest cluster is that of respondents between 26 and 35 years (31.9%), of age, followed by the 36–50 years segment (24.1%). The segment aged 18–25 represents 20% of the overall sample, while the oldest clusters show lower sample numbers (51–65 years – 15.9%; older than 65 years (8.1%). On average, respondents have a high educational level. The monthly household income, presented in Table 2, shows that mainly respondents have a monthly income between 1,301–2,600€ (33.3% of respondents) and between 2,601 and 3,600€ (22.1% of respondents).

The overall sample is mainly based on couples (32.4%) and families composed of three people (27.3%). Singles represent 20.3% of the sample and big families 20% of the sample. No respondent pertains to a family of five or more components. A minority of respondents uses the online channel always (0.8%) or often (7.6%) for their grocery purchases, with 21.1% buying online sometimes. Generally, respondents use the online channel occasionally (27.0%) or have never used it, although considering it an alternative for their purchases (43.5%).

3.3 Measures

All the measures included in the structured questionnaire were evaluated on a 7-point Likert scale, (1 = strongly disagree and 7 = strongly agree). Items were derived from the main retailing literature and are presented in Table 3.

Three items were used to measure the shopping enjoyment constructs following the previous studies of Davis *et al.* (1992) and De Canio *et al.* (2021). Perceived usefulness and perceived ease-of-use scales were adapted from the original paper of Davis *et al.* (1992) and

	%		%
Gender		*Age*	
Male	18.4	18–25 years	20.0
Female	81.6	26–35 years	31.9
		36–50 years	24.1
		51–65 years	15.9
		>65 years	8.1
Education		*Monthly household income*	
Below high school	5.1	0–600€	3.2
High school	39.7	601–1,300€	12.9
Bachelor	20.3	1,301–2,600€	33.3
Master/PhD	34.8	2,601–3,600€	22.1
		3,601–5,000€	15.5
		>5,000€	12.9
Family		*Monthly online shopping*	
Single	20.3	Never	43.5
Couple	32.4	Occasionally	27.0
3 members	27.3	Sometimes	21.1
4 members	20.0	Often	7.6
5 or more members	0	Always	0.8

Source(s): Developed by the authors

Table 2.
Sample profile

measured both on five-item scales. Response efficacy to the Covid-19 scale was adapted from scales developed by Youn *et al.* (2021) and measured using three items. Covid-19 emotional and symptomatic fear scales were both derived from Bitan *et al.* (2020) and measured using four and three items respectively. Intention to switch from offline to online was measured on a three-item scale derived from Pookulangara *et al.* (2011b).

A first-order measurement model was estimated using robust maximum likelihood to analyse internal consistency and validity of the measurement scales. In terms of scale refinement, two items were removed from the perceived usefulness scale, considerably increasing the Cronbach-α reliability index. The fit statistics showed that the model presented an optimal fit (Table 3).

As all composite reliability coefficients (CR) were above 0.7 (Anderson and Gerbing, 1988) and AVE values exceeded 0.5 (Fornell and Larcker, 1981), the measurement scales reached adequate levels of internal consistency (Table 3). All factors' loadings also are significant to their latent construct, confirming the convergent validity of measurement scales (Table 3).

Based on Fornell and Larcker (1981)'s criterion, the measurement scales showed discriminant validity since the square root of each construct's AVE value was greater than the linear correlation between each pair of constructs (Table 4).

3.4 Mixture regression modelling

The complex variety of consumer behaviour, even more since the COVID-19 pandemic (Timotius and Octavius, 2021), may lead to an overestimation of future intentions, showing an unrealistic approach to the aggregate market (Becker *et al.*, 2013). Several studies (*e.g.* Floh *et al.*, 2014; Fuentes-Blasco *et al.*, 2017; Marín-García *et al.*, 2023) point out the importance of identifying unobserved heterogeneity based on subjective criteria such as attitudes, motivations, and perceptions. For that reason, a mixture regression model was estimated to contrast the research hypotheses. This modelling makes it possible to estimate jointly the relationships between the six independent variables on intention to switch from offline to online, and to analyse the potential unobserved heterogeneity since individuals are assigned

Constructs	Item statements	Loading (t-Stat)	
Shopping Enjoyment (ENJ)	Grocery shopping is fun	*0.960*	
CR = 0.942; AVE = 0.844	Grocery shopping is enjoyable	0.963**	(35.23)
	Grocery shopping is a leisure activity	0.827**	(27.22)
Perceived ease-of-use (PEU)	For me, online shopping platforms are easy to use	*0.800*	
CR = 0.897; AVE = 0.638	Grocery online shopping does not require too much mental effort from me	0.894**	(23.13)
	It is easy for me to find on the net the goods/services I need	0.816**	(19.40)
	It is easy for me to compare products/services online	0.686**	(14.37)
	It is easy to become skilful at using Online Grocery Shopping	0.784**	(19.18)
Perceived Usefulness (PU)	Online shopping facilitates my purchase decision process	*0.772*	
CR = 0.906; AVE = 0.661	Online grocery shopping saves me money	0.697**	(15.62)
	Online grocery shopping saves me time	0.876**	(22.03)
	Online shopping helps me to satisfy my needs and desires better than shopping in brick-and-mortar stores	0.852**	(19.43)
	I like being able to shop for groceries at any time of the day (24/7)	0.853**	(20.03)
Response Efficacy to Covid-19 (RE)	Shopping for groceries online works for not catching COVID-19	*0.956*	
CR = 0.932; AVE = 0.820	Shopping for groceries online can limit the spread of COVID-19	0.940**	(32.87)
	When shopping for groceries online, protection from catching COVID-19 is more likely to be guaranteed	0.815**	(26.74)
Covid-19 Emotional Fear (EF)	It makes me uncomfortable to think about coronavirus-19	*0.852*	
CR = 0.927; AVE = 0.760	I am most afraid of coronavirus-19	0.920**	(27.18)
	Thinking about COVID-19 makes me anxious	0.932**	(30.31)
	Thinking about COVID-19 makes me depressed	0.775**	(18.93)
Covid-19 Symptomatic Fear (SF)	My heart races or palpitates when I think about getting coronavirus-19	*0.856*	
CR = 0.907; AVE = 0.766	My hands become clammy when I think about coronavirus-19	0.916**	(19.33)
	I have sleeping problems because I'm worried about getting coronavirus-19	0.852**	(13.97)
Intention to switch from offline to online (SW)	I intend to switch from offline stores to online shopping platforms to meet my shopping needs	*0.774*	
CR = 0.865	In the future, I will search directly online when I need a product/service	0.876**	(19.01)
AVE = 0.681	Next time I am shopping, I will get my groceries delivered to my house	0.823**	(15.45)

Note(s): $Chi^2_{Sat\text{-}B}$ (df = 278) = 541.74; RMSEA = 0.051; CFI = 0.964; IFI = 0.965; GFI = 0.876; BB-NFI = 0.930; BB-NNFI = 0.958
CR = composite reliability; AVE = average variance extracted
**: significant at 99% level
Source(s): Developed by the authors

Table 3.
Items statement and measurement model estimation

to different segments based on the probability of belonging using parameter estimation for each density function (Wedel and Kamakura, 2000).

The model assumes that the sample of individuals i (i = 1, . . . , 370) comes from an unknown number of latent segments s (s = 1, . . . , S) with unknown probabilities of membership or proportion $\{\pi_s\}_{s\in S}$. It is expressed (y,x) where y is the observation of intention to switch from offline to online (dependent construct) and x is the vector of the observations of

	1	2	3	4	5	6	7
1. ENJ	*0.919*						
2. PEU	0.148	*0.799*					
3. PU	0.299	0.748	*0.813*				
4. RE	0.215	0.445	0.404	*0.906*			
5. EF	0.183	0.116	0.138	0.349	*0.872*		
6. SF	0.039	0.070	0.028	0.121	0.742	*0.875*	
7. SW	0.118	0.706	0.539	0.383	0.169	0.210	*0.825*

Note(s): Elements on the main diagonal show the square root of the AVE. Correlations between latent factors are shown below the diagonal
Source(s): Developed by the authors

Table 4. Measurement scales correlations

the six independent constructs (shopping enjoyment, perceived ease-of-use, perceived usefulness, response efficacy to Covid-19, Covid-19 emotional fear, and Covid-19 symptomatic fear). As each individual i comes from segment s, their intention to switch from offline to online, y_i is estimated by the vector of six coefficients βs together with the intercept. The density function conditional on belonging to the segment $f(y|x, \theta_s)$, follows a normal distribution with mean $x'\beta_s$ and variance σ_s^2.

The unconditional probability function for consumer i for S segments will be determined by:

$$g(y|x, \Phi) = \sum_{s=1}^{S} \pi_s f(y|x, \theta_s)$$

where $\Phi = (\pi_s, \theta_s)$ is the vector of population parameters for each segment s; $0 \leq \pi_s \leq 1$; $\sum_{s=1}^{S} \pi_s = 1$ The estimation $\widehat{\Phi}$ for the 370 observations $\{(y_i, x_i)\}_{i=1,\ldots,370}$ is carried out using the two-stage estimation-maximisation algorithm proposed by Dempster *et al.* (1977). From this estimate, the posterior membership probability that consumer i comes from segment s is calculated as:

$$\widehat{p_{is}} = \frac{f_s(y|x, \widehat{\theta_s})\widehat{\pi_s}}{\sum_{s=1}^{S} f_s(y|x, \widehat{\theta_s})\widehat{\pi_s}}$$

To avoid a local maximum, the iterative process was carried out by increasing initial random values and iterative limits in the two-stage estimation-maximisation (EM) algorithm.

4. Results

The model was estimated from s = 1 (no heterogeneity or aggregate model) to s = 5 (five latent segments). Table 5 shows the summary of the estimation and the criteria for each of the five models. The indexes that assess the model's parsimony (lowest BIC and CAIC statistics) showed that the best estimate was obtained with the model that includes four latent classes (Vermunt and Magidson, 2003). The four latent segments have a size of $\pi_1 = 47.3\%$, $\pi_2 = 13.2\%$, $\pi_3 = 9.5\%$, and $\pi_3 = 30.0\%$, respectively.

Table 6 shows the estimation of the parameters for the aggregated model and the model with four latent segments. The results – without considering the heterogeneity – indicate that perceived ease-of-use, response efficacy to Covid-19, Covid-19 emotional fear and Covid-19

symptomatic fear have a positive and significant effect on consumer's intention to switch towards the online channel, at least at 90% level, confirming the hypotheses H2, H4, H5 and H6.

The results also indicate that the influence of the antecedents of intention to switch online varies along the four latent segments (Table 6). Perceived ease-of-use has a significant effect on consumer's intention to switch towards online channels in segments 1 and 4 but there is not a significant influence in the other segments. Similarly, response efficacy to Covid-19 (positive effect) and Covid-19 Symptomatic fear (negative effect) also show a significant influence on intention to switch in two of the four identified groups. On the other hand, shopping enjoyment, perceived usefulness and Covid-19 emotional fear only exert a significant impact on consumers' intention to switch from offline to online channels in one of the segments. Overall, these results allow us to confirm affirmatively H7.

To complete the composition of the four segments, all profiles are analysed according to the information from descriptive variables. Table 7 displays the composition of each segment concerning these criteria.

Segment 1, called "utilitarian shoppers", is the largest group (n = 175, 47.3% of the sample). It is characterised by the influence of the perceived ease-of-use and usefulness on the intention to switch from offline to online shopping channels. This group shows the highest percentage of males (24.6%), in the 26–50 age range (70.5%) and two-person household (38.3%).

Segment 2, which is called "responsive shoppers" (n = 49, 13.2%), shows the highest significant and positive effects of perceived response efficacy to Covid-19 and Covid-19 emotional fear on the intention to switch from offline to the online shopping channel. This group is also characterised by the significant and negative influence of Covid-19 symptomatic fear at the 1% level of the four segments. These variables achieve the best explanation of the intention to switch shopping channels (R^2 = 0.899). It is the youngest group (44.9% between the 18–25 age range), with the lowest size of household (28.6% of 1-person household). All the consumers in this segment are educated below the bachelor's degree level.

The third segment is the smallest group (n = 35, 9.5% of the sample). It is called "novel enthusiasts" since shopping enjoyment shows a significant and positive impact on the intention to switch to online shopping channels. The influence of perceived response efficacy to Covid-19 on intent to switch is also significant, but quite a bit lower than this effect in the second group. The dependent variable is better explained than in the first and the fourth latent segments (R^2 = 0.879). This group is made up mainly of women, with the lowest percentage of consumers over 65 years old (2.9%) and a predominance of a higher education level (80% between bachelor's and master's degree). Furthermore, 62.9% of consumers in the group live in households with, at least, 3 members.

Lastly, the fourth segment (n = 111; 30% of the sample) is called "smart shoppers" since the only significant effect on the intention to switch to an online shopping channel is the

Model	-LL	AIC	BIC	Entropy	Segment size	Free parameters
1- Class	590.28	1196.56	1227.87			8
2- Classes	573.03	1186.05	1264.32	0.380	198//172	20
3- Classes	538.79	1141.57	1266.80	0.640	195//129//46	32
4- Classes	515.87	1097.57	1291.93	0.656	175//49//35//111	44
5- Classes	492.78	1119.74	1316.73	0.679	97//70//84//85//34	56

Note(s): -LL: log-Likelihood; AIC: Akaike Information Criteria; BIC: Bayesian Information Criteria
Source(s): Developed by the authors

Table 5. Number of latent segments determination

SW	Aggregate model		Utilitarian shoppers Segment 1 (47.3%)		Responsive shoppers Segment 2 (13.2%)		Novel enthusiasts Segment 3 (9.5%)		Smart shoppers Segment 4 (30.0%)	
	SEst	SEst./SE	SEst	SEst./SE	SEst	SEst./SE	SEst	SEst./SE	SEst	SEst./SE
ENJ	−0.021	−0.501	0.002	0.027	0.061	0.584	0.329**	3.254	−0.070	−0.615
PEU	0.522**	7.804	0.664**	4.742	−0.090	−1.434	0.151	0.850	0.555**	4.388
PU	0.084	1.235	0.287+	1.908	0.014	0.157	0.508**	3.651	−0.163	−1.227
RE	0.122**	2.607	−0.085	−0.900	0.856**	13.688	0.414**	3.950	−0.016	−0.140
EF	0.220**	3.378	0.114	1.406	1.245**	15.802	0.187	1.332	0.144	0.882
SF	−0.113+	−1.740	0.103	1.073	−1.298**	−11.273	−0.302+	−1.923	0.119	0.611
R^2	0.439**		0.829**		0.899**		0.879**		0.299**	

Note(s): SEst.: standardised estimate coefficient, Est./SE: standardised estimate coefficient/Standard error of the parameter estimate
**: p-value<0.001; *: p-value<0.05; +: p-value<0.1
Source(s): Developed by the authors

Table 6.
Estimation of mixture regression model

	Global (N = 370)	Utilitarian Shoppers (N = 175)	Responsive Shoppers (N = 49)	Novel Enthusiasts (N = 35)	Smart Shoppers (N = 111)
Gender					
X^2 (df = 3) = 13.91** (*p*-value = 0.003)					
Male	18.4%	24.6%	20.4%	20.0%	7.2%
Female	81.6%	75.4%	79.6%	80.0%	92.8%
Age					
X^2 (df = 12) = 29.69** (*p*-value = 0.003)					
18–25 years	20.0%	13.7%	44.9%	17.1%	19.8%
26–35 years	31.9%	35.4%	20.4%	34.3%	30.6%
36–50 years	24.1%	25.1%	24.5%	22.9%	22.5%
51–65 years	15.9%	15.4%	6.1%	22.9%	18.9%
>65 years	8.1%	10.3%	4.1%	2.9%	8.1%
Education					
X^2 (df = 12) = 152.51** (*p* value < 0.0001)					
Below high school	5.1%	0.6%	34.7%	0.0%	0.9%
High school	39.7%	36.0%	65.3%	20.0%	40.5%
Bachelor	20.3%	26.3%	0.0%	40.0%	13.5%
Master/PhD	33.2%	35.4%	0.0%	40.0%	42.3%
Below high school	1.6%	1.7%	0.0%	0.0%	2.7%
Num. Household members					
X^2 (df = 9) = 26.30** (*p* value = 0.002)					
Single	20.3%	23.4%	28.6%	8.6%	15.3%
Couple	32.4%	38.3%	30.6%	28.6%	25.2%
3 members	27.3%	24.6%	28.6%	40.0%	27.0%
4 members	20%	13.7%	12.2%	22.9%	32.4%

Table 7.
Segments profile

Source(s): Developed by the authors

perceived ease-of-use. This is the group where the percentage of females is higher than in the rest of the segments (92.8%). It is also characterised by the higher proportion of consumers with, at least, a master's degree level of education and larger household size (32.4% with 4 members).

5. Conclusions and implications

5.1 Conclusions and discussion

The Covid-19 pandemic has dramatically reshaped the retailing scenario opening-up opportunities and challenges in the sector. The shopping process has suffered enormous upshots due to the pandemic. Results of the studies of the last two years show evidence of anomalies and non-linear consumer behaviours. We assisted in panic buying or stockpiling provoked by the initial wave of the pandemic and the lockdowns (Fischer *et al.*, 2021). The psychological and behavioural consequences determined by the Covid-19 spread opened up new opportunities and challenges for retailers. Indeed, even consumers new to the online channel have begun to consider retailers' websites and mobile applications as a valid alternative to in-store shopping (Laato *et al.*, 2020). Online shopping began to represent a valid option to reduce the contagion risk (Grashuis *et al.*, 2020), leading to double-digit growth in food products online sales (Lu *et al.*, 2021).

However, albeit the emergence of a market environment more prone to online shopping, the consumer buying process in the last couple of years has become much more complex. Recent studies showed that, since the spread of Covid-19, consumers increasingly integrate health-related motivations into their shopping choices (Wang *et al.*, 2022a). Accordingly, this paper investigates both online shopping-related and health-related motivations to segment consumers intending to switch towards the online channels for their grocery shopping in the aftermath of the pandemic.

5.2 Theoretical implications

The main contribution of the present study lies in identifying potential segments driven to switch from offline to online channels due to a mix of motivations both connected with the shopping channel itself (*i.e.* shopping enjoyment, perceived ease-of-use, perceived usefulness) and the spread of the Covid-19 pandemic (*i.e.* response efficacy, emotional and symptomatic fear). In doing so, this paper contributes to the retailing literature by implementing an integration between the TAM-2 and the PTM to support retailers in the implementation of innovative channel strategies, proposing a theoretical and empirical conceptualisation of a set of motivations behind the consumers' intention to switch towards online shopping.

Findings show that also in the context of grocery shopping consumers evaluate the opportunity to switch towards the online channel as an opportunity to cope with the virus. Results confirm previous findings evidencing that "perceived usefulness or response efficacy can be seen as performance expectancy" to cope with a threat situation (Sun *et al.*, 2013, p. 188). In line with the main application of TAM in the online retailing context, shopping enjoyment and perceived ease-of-use were confirmed as positive predictors of consumers' intention to switch online (De Canio *et al.*, 2021). Finally, our findings corroborate the preliminary results of Martinelli *et al.* (2021) showing evidence of the positive impact of symptomatic fear on consumers' intention to switch towards the online channel, while presenting a negative impact of emotional fear.

An additional contribution of our work to current academic knowledge lies in the use of a novel method to identify shopper segments prone to online channel switching. The results of the mixture modelling regression show the existence of four segments driven by a set of alternative motivations: *utilitarian shoppers, responsive shoppers, novel enthusiasts,* and *smart shoppers*. Utilitarian shoppers consider the online channel useful and easy-to-use. Those two aspects are the main positive drivers for their intention to switch towards the online channel to buy groceries. Conversely, responsive shoppers seem to be very sensitive to the pandemic and are driven by fear motivations. They consider online shopping a good way to effectively respond to the risk of being infected, confirming the previous findings of Wang *et al.* (2022a). The emotional fear turns out to be a negative motivation of novel enthusiasts, generating overall anxiety and a feeling of depression in shoppers. While the symptomatic fear positively influences their intention to switch online, emotional fear plays a negative role. To compensate for the negativity of emotional fear, the intention to switch towards the online channel of novel enthusiasts is supported by the idea that shopping online is a good way to avoid becoming infected in-store. Novel enthusiasts consider the online channel as a useful and enjoyable opportunity to buy their groceries. Finally, smart shoppers show interest in online grocery shopping as they consider retailers' websites and retailing apps as easy-to-use.

5.3 Managerial implications

The results of the present study offer guidelines for retailers approaching the online channel in the aftermath of Covid-19, as recent studies showed that although the pandemic has offered ample opportunities for retailers grappling with the implementation of the online channel, the lack of professionalism of brick-and-mortar retailers can nullify the opportunities opened by Covid-19 for their online sales (Beckers *et al.*, 2021). On the one hand, customers found

themselves forced to move online for their shopping to protect themselves from the virus and to cope with governmental restrictions (Prasad and Srivastava, 2021). On the other hand, brick-and-mortar retailers found themselves in operational troubles and had to decide if reach customers also with online channels, particularly in Italy, where pre-Covid online sales were still limited, especially in the grocery sector. This is confirmed by 43% of our sample who declare that they have never used the online channel for grocery purchases yet. However, it should be noted that Covid-19 has opened the mindset of neophyte or reluctant consumers to evaluate the online channels for their purchases. Consequently, developing the online channel option and passing to a brick-and-click or *phygital* approach can be an opportunity to strongly pursue in the aftermath of the Covid-19 pandemic.

Considering that our findings indicate that consumers have now developed additional motivations related to health concerns driving their channel choices because of the experience acquired during the pandemic, retailers aiming at being successful in their online offer should take advantage of this acknowledgement and segment their channel strategies and operational policies accordingly. As our results revealed that coping appraisal strategies developed by shoppers to avoid the threat of being infected by the Covid-19 virus and the related emotional and symptomatic fear are driving the switching behaviour of shoppers, albeit differently because of the different clusters identified, retail strategic marketing should include these factors in the segmentation phase. Not all consumers respond to the psychological and behavioural effects of the spread of the Covid-19 pandemic in the same way; consequently, retail marketing strategies and operational policies should be shaped based on the different motivations driving the different clusters of shoppers identified by this study. Our findings show the existence of heterogeneity in consumers' motivation to switch online requiring as many strategies as possible to facilitate multi-channel purchasing in these segments. Utilitarian and smart shoppers require e-stores and apps that are easy-to-use, with the former also positively evaluating the usefulness of online channels. To stimulate online purchases in these two segments, retailers are called to develop highly interactive digital interfaces with easy product search systems and to communicate the relevant advantages of online shopping, such as saving time in purchases, accessibility 24/7 and a reduction in the purchasing effort dictated by the receipt of the goods at home. To spur responsive shoppers towards online purchases, retailers should leverage the ability of online channels to drastically reduce contact with other customers and sales staff with evident effectiveness of websites and sales apps to affect the reduction of the diffusion of Covid-19. Finally, novel enthusiasts, while representing the smallest segment, show a high sensitivity to many aspects. Using strategies proposed for the other segments and implementing increasingly playful and interactive online stores, retailers could easily entice this target to online channels as well.

Our findings can also help international retailers interested in operating in Italy, to properly approach the cultural dynamics and the retailing structure and meet the local demand. A potential advantage lies in the important but slow response of incumbent local retailers to the online requests of Italian shoppers. Thanks to the online experience acquired in more advanced retailing contexts, they can offer an innovative and more engaging online shopping experience supported by *ad-hoc* distribution and delivery centres. Results can also be useful from a teaching point of view, as the four identified clusters of shoppers prone to switching to online grocery shopping can be used in consumer behaviour and retail marketing classes and textbooks to highlight changes in shoppers' motivations.

In sum, our results might help retailers to better understand the strategies and operational policies to respond to consumer coping strategies, such as switching shopping channels for grocery shopping. Online or bricks-and-clicks retailers wishing to take advantage of the positive inclination of consumers to purchase online created by the spread of the pandemic should stress its role in terms of individual safety – physical and emotional – and not only in terms of functionality but differentiating their out-of-store communication strategies based

on the four targets of shoppers identified by this work. Deploying the role of social media could be particularly effective in this regard (Naeem, 2021), as well as using differentiated TV and radio advertising spots at a national and local level.

Findings can also support policymakers in helping their citizens to accomplish their well-being and safety senses, together with the search for utilitarian and hedonistic shopping experiences. This can result in a wider set of channels to choose from, such as the online one, representing a good way to improve their quality of life and society.

6. Limitations and further research directions

The present study shows how a potential segment of novel online shoppers should be driven towards their online experience by supporting their main motivations to switch to online. Although contributing to the retailing literature by presenting shopper segments identified by an innovative mix of motivations based on an innovative method of processing data, this work presents some main limits that should be addressed in future studies.

First, the present empirical research was conducted using a snowball technique. Although data collection using Facebook's thematic pages is increasingly common and was almost the only way to collect data during the pandemic, it has the limit of not being able to reach a homogeneous and representative sample. In our case, there is an over-representation of female respondents, which does not allow for the generalisation of the results but offers only a partial illustration of the phenomenon. Second, while the segment of the novel enthusiasts is the most relevant both theoretically and managerially, it resulted as the smallest segment in our findings, requiring further exploration.

Although considering various health-related motivations, the findings of the present study are preliminary, and future research should explore in depth the contrary effects played by symptomatic and emotional fears. Thus, for example, the findings of the present study show that emotional fear plays a negative role in consumers' intention to switch online of both responsive shoppers and novel enthusiasts. Further studies should explore how the overall anxiety and depression provoked by Covid-19 have impacted the overall shopping process, independently of the shopping channel.

Furthermore, this study considers only a few main aspects related to Covid fear and online shopping, and further studies including more variables should be conducted to better understand the subject within the identified segments. Future studies should also consider other utilitarian aspects usually related to online shopping, such as shopping convenience, price convenience, delivery, shopping engagement and retailers' post-sale service. Furthermore, in line with recent studies (*e.g.* Moliner-Velá zquez *et al.*, 2021; Marín-García *et al.*, 2023), we also propose to include some descriptive variables as active covariates to improve the operational capacity of the segments through a more specific identification.

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