Understanding the role of situational factors on online grocery shopping among older adults

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ABSTRACT

This paper seeks to identify the situational factors that drive the adoption of online grocery shopping among older adults. A two-step research process is employed. First, exploratory qualitative research is carried out to identify situational factors that older adults take into account when deciding whether to buy groceries online. This is followed by a conjoint experiment to determine which situational factors are considered most important when making such a decision. The sample consisted of 9 participants in the in-depth individual interviews and 206 respondents in the conjoint experiment. The findings indicate that health, mobility issues, and distance to a store are the most important situational factors driving older adults to buy groceries online. Moreover, the findings confirm that the adoption of online grocery shopping among older adults is a result of a complex trade-off of situational variables. The findings contribute to managerial practice by providing online grocery retailers with insight that can be applied when designing promotional programs targeted at older adults.

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1. Introduction

Advancing age brings about changes in people's needs, wants, and abilities (Meneely et al., 2009). One basic need that is common to everyone regardless of age is food. The importance of food is evident at any age but becomes even more so as people get older. Food has been identified as an important factor in healthy aging (Bernstein and Munoz, 2012). Ensuring access to food that contributes to a healthy diet among older adults is therefore crucial (Huang et al., 2012; Ishikawa et al., 2016). Food access refers to the location of the food supply (e.g., grocery stores) and the ease of getting to that location (Caspi et al., 2012).

While many older adults continue to visit grocery stores, those in poorer health may experience difficulties accessing grocery stores with a view to meeting their nutritional needs. Age-related physiological changes and declining health (e.g., walking difficulties, poor eyesight) make grocery shopping more challenging for some older adults (Huang et al., 2012; Thompson et al., 2011). In addition to these obstacles, the store environment may also create barriers to older adults' ability to access food (Kohijoki, 2011; Yin et al., 2013). Some of the barriers in the store environment that have been reported are a large shopping cart, small label displays, shelf height (too high or too low), and carrying a heavy basket (Kohijoki, 2011; Yin et al., 2013). Furthermore, not driving a car, distance from home to a grocery store, and not having anyone to help with food shopping are also reported as challenges among older adults (Ishikawa et al., 2016). A combination of these barriers can create a negative impact on the diets and health of older adults. Hence, older adults who experience the greatest difficulties in grocery shopping are more prone to nutritional risk (Herne, 1995).

Alternatives to in-store grocery shopping are clearly needed to improve food access among older adults. One of the alternatives is online grocery shopping. Online grocery shopping entails a consumer purchasing grocery products via a retailer's website and the purchased groceries being delivered directly to the buyer's home (Morganosky and Cude, 2000). This enables older adults to shop at any time without leaving their homes and have the groceries delivered to their door. Online grocery shopping can therefore contribute to healthier diets since it eliminates or reduces the physical effort that is often associated with in-store shopping (Seitz et al., 2017).

The online grocery market in European countries continues to grow (Seitz et al., 2017). Nevertheless, the market share of online grocery shopping in Norway is limited. A survey from 2009 to 2019 shows that

only 14% of Norwegians purchased groceries online (Statista, 2021b). Furthermore, the online grocery figures for 2020 show substantial differences across age groups. The most active online grocery buyers are those aged 35–44 (25%), followed by the age group 25–34 (19%), while older adults make up a relatively small share; ages 55–64 (7%), followed by age group 65–74 (4%) (Statista, 2021a).

Given that online grocery shopping can reduce food access barriers for older adults, it would be reasonable to expect older adults to eagerly embrace online grocery shopping. Surprisingly, only a small percentage of Norwegian older adults buy groceries online. To increase online grocery shopping among older adults, it is important for online grocers to understand in which situations older adults buy their groceries online.

Previous research shows that the factors influencing the adoption and non-adoption of online grocery shopping are related to perceived benefits, barriers, risks, and trust (Bezirgani and Lachapelle, 2021b; Mortimer, Fazal e Hasan, Andrews, & Martin, 2016; Verhoef and Langerak, 2001). While these factors can help explain why consumers are buying or not buying groceries online, they do not explain variations in consumer behavior (sometimes buying in-store, other times at online groceries). One type of factor that can explain variance in consumer behavior is situational factors (Belk, 1975).

Situational factors are highly relevant in shopping as buying behavior occurs within a specific context (Chocarro et al., 2013). The importance of situational factors in the decision to buy groceries online has been described in previous studies (Hand et al., 2009; Robinson et al., 2007), but findings from other contexts can only be used as a starting point. As with any other type of behavior, shopping behavior can be influenced by social norms and cultural background (Ackerman and Tellis, 2001).

Based on the aforementioned reasons, the purpose of this paper is to address the gap in the literature by exploring older adults' online grocery shopping behavior. Specifically, we focus on situational factors. The objectives of this study were: 1) to identify situational factors that drive older adults to buy groceries online, 2) to determine which situational factors are considered important when older adults are deciding whether to buy groceries online.

The paper is structured as follows. First, I present the conceptual framework. In the next section, I describe the method and findings of theexploratory study (qualitative), followed by the method and results of the conjoint experiment (quantitative). Finally, I present the main findings, discussion, limitations, and implications of the study.

2. Conceptual framework

Research in this area has shown that situational factors may be important in shaping and reinforcing online shopping motivations (Hand et al., 2009). This study uses the taxonomy of situational characteristics proposed by Belk (1975) to highlight situational factors that may explain older adults' online grocery shopping behavior. Situational factors refer to "all those factors particular to a time and place of observation which do not follow from a knowledge of personal (intra-individual) and stimulus (choice alternative) attributes" (Belk, 1975).

Based on this framework, situational factors can be categorized into five distinct groups: physical surroundings, social surroundings, temporal perspective, task definition, and antecedent states (Belk, 1975). The *physical surroundings* include geographical and institutional locations in which the choice process occurs. These include distance to store, access to grocery websites, crowdedness, weather, and in-store environment variables (the prices at a nearby store, tidiness, lighting, etc.). The factors related to *social surroundings* include the presence or absence of others at the time of the decision-making and the opportunity for social interaction. The *temporal perspective* refers to the time of day or day of the week, the urgency of purchase, product availability, and time pressures. *Task definition* variables are related to cognitive and motivational elements of the shopping situation. For example, whether consumers are shopping for personal use or buying a gift for someone else.

Antecedent states are temporary conditions such as physical or mental states, mood-related effects (anxiety, pleasure, depression), fatigue, and temporary illness.

The above categorization seems to cover the vast majority of situational factors typically explored within consumer research (Nicholson et al., 2002). Moreover, the Belk (1975) categorization has been used extensively in studies within the context of retail, product choice, and shopping pattern (Chocarro et al., 2013; Hand et al., 2009; Nicholson et al., 2002). I therefore consider it a suitable framework for exploring the situational factors of online grocery shopping in relation to older adults.

3. Methodology

This study was conducted in two phases. In phase 1, Icarried out exploratory qualitative research to identify situational factors considered by older adults when deciding whether to buy groceries online. Following the qualitative research, I designed and executed a conjoint experiment (phase 2) to estimate the value that older adults place on the situational factors (based on findings from phase 1) that drive the adoption of online grocery shopping.

3.1. Phase 1: qualitative study *(what situational factors drive the adoption of online grocery shopping among older adults?)*

3.1.1. Participants

The term "older adult" is used inconsistently in the literature since this group is made up of individuals with different characteristics and preferences. Conventionally, the older adult has been defined by chronological age, but there is no clear consensus on the age ranges (Ahmad, 2002; Moschis et al., 1997). In this paper, An older adult is defined based on the retirement age in Norway. The retirement age is defined here as the minimum age for claiming a state pension (age 62+) (Government. no, 2021). Thus, study eligibility criteria were: participants had to be aged 62 or older and capable of making decisions related to grocery shopping.

3.1.2. Sampling method

Participants were recruited through snowball sampling, starting with a participant close to the researcher. To enhance sample diversity, I began with a set of sufficiently varied respondents so that the sample is not skewed excessively in a particular direction (Morgan, 2008). Following this rationale, I recruited 9 older adults who varied in age, gender, living situation, and geographical area (urban, rural, and islander). The 9 in-depth individual interviews produced an adequate amount of data to study older adults' online grocery shopping behavior in depth. It can thus be suggested that the sample is sufficient to study a phenomenon (online grocery shopping) (Vasileiou et al., 2018). The participants' characteristics are presented in Table 1.

3.1.3. Data collection

Due to the COVID-19 pandemic, I used remote data collection instead of standard face-to-face interviews. Remote data collection is defined as

Table 1
Description of participants' characteristics from in-depth individual interviews.

Participants	Age	Gender	Living situation	Geographical area
Participant 1	74	Female	Alone	Urban
Participant 2	72	Male	Alone	Urban
Participant 3	70	Female	With a spouse	Rural
Participant 4	70	Female	Alone	Rural
Participant 5	73	Female	With a spouse	Islander
Participant 6	69	Male	With a spouse	Urban
Participant 7	70	Female	Alone	Rural
Participant 8	82	Male	With a spouse	Rural
Participant 9	65	Female	With a spouse	Urban

data collection via telephone, online, or other virtual platforms where participants and researchers are physically distanced (Hensen et al., 2021). For this study, we conducted semi-structured, in-depth individual interviews using telephone and video calls in June 2021. The study was reviewed and approved by the Norwegian Centre for Research Data (2019/502106), and oral informed consent was obtained from all participants before the interview. The giving of consent was audio-taped as part of the interview process. On average, the interviews lasted approximately 30–40 min. Notes were taken during the interviews, and all the interviews were audio-taped.

3.1.4. Data analysis

The audio files from the interviews were listened to several times, and all interviews were transcribed verbatim. The data collected were analyzed using content analysis. Content analysis examines data with a view to understanding the meaning behind it (Krippendorff, 2018). As a research technique, it enables researchers to organize and elicit meanings from the data collected and draw a realistic conclusion (Bengtsson, 2016).

The content analysis employed in this study was directed content analysis, inspired by Hsieh and Shannon (2005). Directed content analysis starts with an existing theory or prior research about a phenomenon (Hsieh and Shannon, 2005). With this approach, codes are developed from relevant theory, and defined before and during data analysis (Hsieh and Shannon, 2005). I started the coding process by thoroughly reading the transcripts several times. The aim is to become immersed in the data (Polit and Beck, 2004) and obtain a sense of the whole (Burnard, 1991).

In the next step of the analysis, all the texts that represent situational factors were highlighted.I then coded all the highlighted text using predetermined codes. The code descriptions were discussed during project meetings. Thereafter, the codes were transferred into relevant categories (Belk's taxonomy of situational variables).

3.1.5. Study 1 findings

The content analysis process described above resulted in a number of unique situational factors. Each of the situational factors was organized based on Belk's taxonomy (1975).

3.1.5.1. Category 1: Antecedent states.
Participants' conditions such as health, physical states, and fatigue appeared to be the key triggers for initiating online grocery shopping. These included being sick, not being able to walk far, no longer driving, and having trouble carrying heavy or large amounts of groceries.

"There is a service I can call to get food delivered to the door. It costs a little extra, but I do that when I'm sick. Also, there is an app I can order from, and it costs about NOK60." (P1)

" I can no longer walk too far; I get very tired. I have to have a break every 50m, so it's too much. I can't take a bus. I don't know. It's difficult for me. If I order my groceries, they help me bring them to my kitchen table, so I don't have to go up and down the stairs. I usually order enough food for a couple of weeks." (P2)

" I buy my groceries once a week, but most of the time, I only buy vegetables. They're just too heavy to carry." (P7)

3.1.5.2. Category 2: physical surroundings.

In terms of physical surroundings, participants considered price, distance to the grocery store, and tidiness to be factors that affect their decision on where to shop.

" I go to the new store in the neighborhood; they have lower prices compared to others." (P4)

" We go to the store nearby because I like their brand and they are cheaper than other stores." (P3)

One participant mentioned that they have to buy their groceries in an expensive store because it is the only option available.

" I buy my groceries at the local grocery store because we only have one store here (laughing). It's very expensive, but it's the only store, so sometimes there's no choice. But I prefer to travel into the town when I feel well. " (P5)

Others claimed that weather also impacts on their ability to shop for groceries.

" I buy my groceries in the nearby store, but it depends on the weather. If the weather is nice, I can walk a little bit further, and if the weather is bad, I call for a food delivery." (P7)

" If the weather is good, we drive to the grocery store. But when it is bad weather, I just send my wife. She's healthy." (P8).

3.1.5.3. Category 3: temporal perspective.
The interviews reveal that delivery time is one of the main concerns for ordering groceries online. For example:

" I tried to order my groceries from a website before. It's not good. I ordered on Tuesday, and it says no deliveries until next Wednesday. I can't wait that long without food. Now I order my groceries from a different website. I order today, and I get my groceries tomorrow." (P2)

3.1.5.4. Category 4: social surroundings.
One participant mentioned that in-store shopping provides them with an opportunity for social interaction, while another participant prefers to shop online and isolate himself after becoming a widower.

" We shop at different grocery stores. One of the stores has a coffee shop next to it. We stop to have coffee if we meet people we know so we can chat." (P6)

" I used to walk or drive to the grocery store when my wife was still alive. But now (sigh) she is no longer here, Nah too much. I don't like going out without her. Now I ask the taxi drivers to stop at the grocery store when they drive me back from my doctor's office. But most of the time, I order my groceries from a website." (P2).

The findings of the qualitative study indicate that the situational factors driving the adoption of online grocery shopping among older adults are health, mobility, price, distance to store, delivery time, and social interaction. The section below examines the importance of these situational factors when older adults are deciding whether to buy groceries online.

3.2. Conjoint experiment

A conjoint experiment is an experimental approach developed in marketing to investigate individual preferences (Kamphuis et al., 2015). It assumes that consumers view a product, in our case, an online shopping channel, as a bundle of certain features (*attributes*) which have different values (*levels*) (Green and Srinivasan, 1978). Researchers would then typically offer participants multiple versions of a product that are formed by combining different attributes and levels. One advantage of conjoint experiments is that they present a reasonably straightforward task that more closely resembles a real-world decision, for example, trading off shopping convenience for social interaction opportunities (Green and Srinivasan, 1978).

3.2.1. Selection of attributes

Based on the literature review on the role of situational variables in online grocery shopping, e.g. Hand et al. (2009); Robinson et al. (2007) and the findings of study 1, I selected six situational variables that can influence older adults' decision on whether to purchase groceries online. The six variables selected included two antecedent factors: *health* and *mobility*; two physical factors: *price* and *distance to a nearby store*; one temporal factor: *delivery time*; and one social factor: *social interaction*.

3.2.2. Hypothesis development

3.2.2.1. Situational variables in the antecedent states.
Physical constraints such as *poor health* and *lack of mobility* are among the primary reasons for buying groceries online (Morganosky and Cude, 2000). A similar finding was also confirmed by Hand et al. (2009). This leads to the following hypothesis:

H1. Individual poor health increases the probability of online grocery shopping.

H2. Older adults who have trouble walking and carrying groceries have a higher probability of purchasing groceries online.

3.2.2.2. Situational variables in the physical environment
3.2.2.2.1. Price. Price is unquestionably one of the most important influences on purchasing groceries (DiSantis et al., 2013). The price of groceries may affect older adults' decision-making regardless of whether they buy in-store or online (Lichtenstein et al., 1993). Thus, I hypothesize:

H3. Higher prices in the nearby grocery store increase the probability of online grocery shopping.

3.2.2.2.2. Distance to a nearby store. This variable is traditionally linked to in-store shopping; however, geographical distance from the nearby store can be a relevant factor affecting online retailers (Dominici et al., 2021). The easy accessibility of online grocery shopping can solve the issues related to difficulties of reaching stores that are too far away from consumers (Dominici et al., 2021). This leads to the following hypothesis:

H4. As the distance to a nearby store increases, so does the probability of online purchases.

3.2.2.3. Time-related situational variables
3.2.2.3.1. Delivery time. Delivery time is another important attribute in online grocery shopping. Typically, customers are not willing to wait for a significant amount of time to receive their groceries (de Magalhães, 2021). It is reasonable to assume that if online grocers improve their delivery times, older adults may be more likely to buy their groceries online. Therefore:

H5. The shorter the delivery time, the higher the probability of online grocery shopping.

3.2.2.4. Situational variable in the social dimension
3.2.2.4.1. Social interaction. Another important aspect that has been highlighted for grocery shopping relates to social interactions. It is a widely held view that social interaction is absent when shopping for groceries online (Ramus and Nielsen, 2005). Furthermore, consumers who satisfy their personal and social needs by shopping in grocery stores are likely to consider online grocery shopping as a loss of shopping enjoyment (Ramus and Nielsen, 2005). Although I acknowledge that online grocery shopping may provide a collaborative experience, Iadhere to the literature on traditional in-store shopping with the following hypothesis:

H6. The greater the opportunity for social interaction during in-store shopping, the lower the probability of online grocery shopping.

3.2.3. Determination of attributes level

To test the above hypotheses in a conjoint experiment, I defined levels for the six attributes selected. I used two levels for each attribute in order to limit the possible number of scenarios and reduce cognitive demand from the respondent (Wang and Li, 2002), thereby improving the validity of the data (Wang and Li, 2002). The summary of the attribute and attributes levels is presented in Table 2.

3.2.4. Conjoint experiment design

A straightforward way of organizing stimuli in a conjoint experiment is with full factorial design, which generates all possible combinations of attributes and levels (Huertas-García et al., 2016). However, such a design will typically result in an unrealistically high number of profiles (*scenarios*) (Huertas-García et al., 2016). For example, in this study, a full factorial design for six attributes with two different levels generates a total of 64 scenarios (2^6). This number of alternatives can overwhelm the cognitive ability of any respondent (Green and Srinivasan, 1990). I therefore use an orthogonal design, which contains a fraction of a full factorial design (Huertas-García et al., 2016). This design enables the author to reduce the number of scenarios that each participant has to assess. In this case, I use the statistical package SPSS 26.0 (conjoint module) to generate the orthogonal design. As a result, eight choice scenarios were generated. A within-subject design was used for investigating the situational factors. The eight choice scenarios is shown in Table 3.

3.2.5. Sample

The data presented in the conjoint experiment were collected from 206 older adults throughout Norway. The respondents were recruited using an online panel administered by a market research firm in August 2021, and the questionnaire was distributed to respondents via the firm's digital distribution system. Table 4 presents the characteristics of survey respondents.

3.2.6. Data collection

Before the questionnaire was launched, Iconducted a pilot study with 15 respondents. This led to some minor changes to the layout of the scenario. The questionnaire begins with a consent statement followed by an explanation of what respondents could expect and an assurance of confidentiality. Each respondent was then presented with all the scenarios (8), and asked to select their preference: buying groceries online or in-store. After finishing the choice task, respondents were asked if they had purchased groceries online and purchased other things online. They were also asked to provide some demographic data. To avoid data being omitted, answering every question was a condition of submitting the questionnaire.

3.2.7. Data analysis

I used the statistical package SPSS 26.0 (conjoint module) for all analyses. Based on the completed choice tasks (whether to buy groceries in-store or online), I can estimate each situational factor level's part-worth (utilities). The part-worth reflects the attractiveness of an

Table 2
Attribute and attribute levels for shopping channel decisions.

Attribute	Attribute level 1	Attribute level 2
Health	Feeling well	Feeling unwell
Lack of mobility	Carrying heavy groceries	Not carrying a lot of groceries
Prices at the nearby store	Expensive	Reasonable
Distance to a nearby store	A-5 minutes walk	A-15 min walk
Delivery time	Tomorrow	1–2 days
Social interaction	Meet and talk with others	Not meeting or talking to anyone

Table 3

The choice scenarios.

Scenario	Distance to a nearby store	Prices at the nearby store	Meet and talk with others	Delivery time	Health	Mobility: carrying groceries
1	5 Minutes	Expensive	Yes	Tomorrow	Feeling well	Heavy
2	5 Minutes	Reasonable	No	Tomorrow	Feeling well	Not Heavy
3	15 Minutes	Expensive	No	Tomorrow	Feeling unwell	Heavy
4	5 Minutes	Reasonable	No	1–2 Days	Feeling unwell	Heavy
5	15 Minutes	Expensive	No	1–2 Days	Feeling well	Not Heavy
6	5 Minutes	Expensive	Yes	1–2 Days	Feeling unwell	Not Heavy
7	15 Minutes	Reasonable	Yes	Tomorrow	Feeling unwell	Not Heavy
8	15 Minutes	Reasonable	Yes	1–2 Days	Feeling well	Heavy

Table 4

Characteristics of respondents.

Variables	Categories	Total (N)	Percentage (%)
Gender	Female	97	47.1%
	Male	109	52.9%
Age	Minimum	62 years old	
	Maximum	92 years old	
Employment status	Employed	33	16%
	Unemployed	6	2.9%
	Retired	167	81.1%
Living situation	Alone	52	25.2%
	Spouse	153	74.3%
	Others	1	0.5%

attribute level and preferred direction of a particular factor for supporting online grocery shopping (Pu and Grossklags, 2015). Higher part-worths indicate a greater preference, and positive part-worths increase the probability of online grocery shopping.

In addition, the utility scores can be used to find the relative importance of each factor. The relative importance values of factors refer to the extent to which a particular factor plays a role in the act of buying groceries online (Pu and Grossklags, 2015). Thus, a high value means that the variable is important for determining whether an older adult will buy groceries online or not. In contrast, a low value indicates the least important variable.

In terms of the "goodness of fit" test, Pearson's R and Kendall's tau values provide an indication of how well the model performs.

4. Results

In total, 206 respondents completed questionnaires. However, 95 (46%) questionnaires were not included in the conjoint analysis because their responses formed a monotonous pattern (choosing in-store shopping in all scenarios). After this elimination, the number of questionnaires included in the conjoint analysis was 111 (54%).

Table 5 shows the utility estimates for every level of each situational factor. The positive or negative directions of the utility estimates were

Table 5

Utility estimates of variables' levels.

Utilities			
		Utility estimate	Std. error
DISTANCE	5 MINUTES	-,120	,035
	15 MINUTES	,120	,035
PRICE	EXPENSIVE	,033	,035
	REASONABLE	-,033	,035
MEETTALK	YES	-,015	,035
	NO	,015	,035
DELIVERY	TOMORROW	,042	,035
	1-2 DAYS	-,042	,035
HEALTH	WELL	-,163	,035
	UNWELL	,163	,035
MOBILITY	HEAVY	,120	,035
	NOT HEAVY	-,120	,035
(Constant)		1355	,035

consistent with the author a priori hypotheses (H1-H6) and therefore showed theoretical validity. As noted earlier, the positive part-worths increase the probability of online grocery shopping. Looking at Table 5, it is apparent that poor health and trouble walking and carrying groceries increase the probability of online grocery shopping (H1 and H2 confirmed).

Furthermore, increased distance to a nearby store means that older adults are more likely to select online grocery shopping (H4 confirmed). When it comes to price, if the prices at a nearby store are high, this increases the probability of online grocery shopping (H3 confirmed). Tomorrow is a preferred option in terms of delivery time, and this increases the likelihood of buying groceries online (H5 confirmed). As far as social interaction is concerned, no opportunity for interaction in a store increases the probability of online grocery shopping (H6 confirmed). With that said, the utility estimate for social interaction is the lowest and is close to zero. This result makes the interpretation more complex. To a certain degree, it is plausible to assume that the less social interaction an older adult has at a store, the greater the probability of online grocery shopping. However, since the utility estimate is close to zero, it is uncertain that one-factor level is preferred over the other.

Regarding the relative importance values, the result from the analysis shows that three situational factors are considered most important when older adults make a decision about online grocery shopping. These factors are health, mobility, and distance to a nearby store. The relative importance values are presented in Table 6.

The goodness of fit measures in Table 7 display Pearson's R and Kendall's tau, which correlate the observed and estimated preferences. In this study, the Pearson's R-value is 0.990, indicating a high correlation level between observed preferences and estimated preferences. Similarly, high values of Kendall's tau (1.000) also demonstrate the model's goodness of fit. What follows is the description of the estimated probability of shopping online per scenario (see Table 8).

5. Discussion

This study set out to examine the situational factors that drive older adults to buy groceries online. The results show that nearly half of the respondents were reluctant to buy groceries online despite their situation. On the other hand, some are open to the idea of buying groceries online or are already incorporating online grocery shopping into their regular shopping routines. Furthermore, those willing to consider online grocery shopping stated they had never shopped for groceries online before. This finding is similar to previous studies where in-store grocery shopping is preferable to online shopping (Bezirgani and Lachapelle,

Table 6

Averaged importance score.

Importance values	
DISTANCE	18,24%
PRICE	11,86%
MEETTALK	11,03%
DELIVERY	12,83%
HEALTH	24,85%
MOBILITY	21,17%

Table 7
Correlations between observed and estimated references.

Correlations[a]		
	Value	Sig.
Pearson's R	,990	,000
Kendall's tau	1000	,000

Table 8
Estimated probability of shopping online.

Scenario	Estimated probability of shopping online
Scenario 1	12.6%
Scenario 2	1.5%
Scenario 3	48.1%
Scenario 4	23.8%
Scenario 5	9.7%
Scenario 6	16.5%
Scenario 7	26.7%
Scenario 8	21.4%

2021b; Van Droogenbroeck and Van Hove, 2020). With that said, openness to online grocery shopping can represent an opportunity for online grocery retailers to engage older adults in online grocery shopping. It is therefore critical for grocery retailers to understand in which situations older adults buy groceries online (Hand et al., 2009).

Based on the conjoint analyses, the three most important situational factors determining older adults' decisions to buy groceries online are related to the antecedent states (health and declining mobility) and physical surroundings (distance to a store). While proximity to a nearby store plays an important role, distance alone is not enough to encourage older adults to adopt online grocery shopping. Older adults are more likely to use online grocery shopping when they have health problems, and their ability to walk to a store or carry groceries is impaired. This finding was also reported by Bezirgani and Lachapelle (2021a); Morganosky and Cude (2000).

In terms of delivery time, the result reveals that older adults prefer shorter delivery times. For that reason, more and more online grocery retailers are trying to offer short delivery times, believing that this is the key factor influencing older adults' decision to buy groceries online (Liu and Ling, 2017). Meanwhile, previous research shows that 54.8% of customers were not concerned by delivery times of longer than 24 h, but 70% of customers would be discouraged from buying online if the delivery time was more than three days (Bauerová, 2018). Designing an optimal delivery time is essential, but speed itself may not be enough to encourage older adults to buy groceries online. Other factors also come into play, for example, the delivery precision and quality of food (de Magalhães, 2021). This entails the food being delivered in the same good condition as if the customers had gone to the store and been able to see, touch, and smell the products themselves.

With regard to price, as we expected, the perceived channel (in-store) price influences older adults' decisions on online grocery shopping. The higher the perceived price at a nearby store, the higher the probability of older adults switching to the online channel. This result is consistent with the findings in a study by Yu et al. (2011). However, it is not necessarily the case that higher prices at a nearby store lead to online grocery shopping. Price may influence where people shop, but whether they have other options available (e.g., other stores), what they were willing to pay and what they view as a reasonable price should also be taken into consideration (DiSantis et al., 2013).

One unanticipated result was that social interaction plays the least important role among situational variables when older adults make decisions about buying groceries online. This result is contrary to previous studies, as discussed in Lesakova (2016) and Ramus and Nielsen (2005), for example, which suggested that the social aspect of grocery shopping is considered very important to older adults. This rather

contradictory result may be due to the COVID-19 pandemic. The most important public measure to control the pandemic is to cut off opportunities for human-to-human transmission (Gao et al., 2020). Thus, since the first lockdown, people have been avoiding social interaction to some extent, preferring instead to buy their groceries where it is not crowded (Baarsma and Groenewegen, 2021). Consequently, the opportunity to have social interaction is not currently as important as other factors when older adults are deciding where to buy their groceries.

From the results of the analysis, it is clear that situational factors influence older adults' adoption of online grocery shopping. Moreover, the results suggest that the adoption of online grocery shopping is driven by circumstances rather than by a cognitive elaboration and decision process. This finding was also reported by Hand et al. (2009). Furthermore, this study helps us understand that the situational factors related to health, mobility, and distance to a store are significantly associated with older adults' decisions on whether to buy groceries online.

As was pointed out in the introduction to this paper, it is clear that more online grocery services are becoming available. Whether online grocery shopping has the potential to reduce food access barriers for older adults is still unknown. The results of this study demonstrated that older adults are generally not interested in online grocery shopping unless they have no choice. However, despite relying heavily on in-store shopping when purchasing groceries, many older adults expressed willingness to buy groceries online in specific circumstances. Therefore, online grocery retailers should continue to improve older adults' impressions of online grocery shopping and rethink their existing strategies to attract older adults.

This study entails a few limitations, which are worth mentioning. Firstly, the sample for the conjoint experiment was drawn exclusively from a panel provider. Previous work has suggested that recruitment through panel providers may lead to the over-representation of some groups and under-representation of others (Willems et al., 2006). For instance, the sample may under-represent the non-internet savvy or less computer literate older adults. For that reason, the findings cannot be generalized to represent all older adults. With that said, selecting participants with no internet experience might result in a low prevalence rate of online grocery shopping. Future research could expand the sample to include both online and traditional paper survey samples to examine differences between the two subsamples.

Secondly, not all the situational variables were included in this study. Future studies could include other situational variables in order to broaden the scope in this subject area. Thirdly, this study is solely designed for descriptive purposes. It provides information about respondents' preferences in relation to a shopping channel (online grocery shopping) with an alternative combination of features. Consequently, an accurate prediction of specific point estimates (McClelland, 1998) could not be identified in this study. Future studies should adopt a more holistic framework, such as qualitative comparative analysis (QCA) (Ragin, 2000), that focuses more on predicting and explaining outcomes rather than relationships (Woodside, 2014, 2019). Future studies should also consider carrying out the conjoint experiment with a second set of eight scenarios in order to increase the predictive accuracy.

Despite these limitations, this study makes an important contribution to the existing literature on online grocery shopping. This study helps us understand the circumstances in which older adults are more likely to use online grocery shopping and, to some extent, the role of online grocery shopping in reducing food access barriers. Furthermore, the insights gained from this study may be of assistance to online grocery retailers and potentially to other online retailers. It is evident that the main motives for older adults adopting online grocery shopping relate to personal circumstances that are beyond the control of retailers'. Nevertheless, retailers can take situational factors into consideration when designing promotional programs targeted at older adults.

Declaration of competing interest

The authors declare no potential conflicts of interest with respect to the research, the authorship, and/or publication of this article.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jretconser.2022.103009.

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