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Course of Understanding the Consumer

"Consumer behavior in Online Grocery Shopping and the related antecedents for engagement in the service in Norway"

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Abstract

Online grocery shopping is expected to be the next way to shop for groceries. Nevertheless, the service brings with it some different antecedents related to engagement compared to shopping in physical grocery stores. In recent years, studies examining the subject have been carried out in, e.g., the U.S., U.K., and Asia. In the northern markets, on the other hand, there has not been any research trying to identify the antecedents affecting engagement to the service. This work will therefore attempt to contribute to a conceptual extension of the antecedents that lead/lead not to engagement in online grocery shopping in Norway. This paper modifies Ram and Sheth´s (1989) theoretical framework to fit the Norwegian market and combines functional, psychological, and demographical variables. A multiple linear regression model was used to test the theoretical framework. Findings show that the theory provides a suitable framework to model engagement in online grocery shopping in the north. Further, this research contributes to (1) a more comprehensive understanding of consumer behavior in online grocery shopping across markets, (2) illustrates that the Ram and Sheth (1989) model can also be used to identify positive antecedents (not only barriers), and (3) what antecedents managers should consider making consumers engage in the service.

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1.0 Introduction

Our society has seen a considerable change in buying patterns and consumer behavior in online shopping in recent years, where e-commerce has become a crucial part of the global retail structure. In fact, over two billion people purchased goods or services online in 2020, resulting in a 4.2 trillion U.S. dollars revenue (Coppola, 2021). Consumers use e-commerce for everything, such as fashion, groceries, and pharmaceutical products, where apparel, accessories, and footwear are the number one e-commerce sector globally. In fact, it reached 749.5 billion dollars in market value in 2020 (Orendorff, 2022).
The global online grocery shopping market, on the other hand, reached a significantly smaller amount, touching 198.5 billion dollars in 2020 (ResearchAndMarkets.com, 2020). The global food & retail market size in 2020 was worth 12.29 trillion dollars (Market Study Report, 2021), meaning that only 1.62% of the total turnover in the market is generated by online shopping. Because of the Covid-19 pandemic, more consumers have adopted online grocery shopping as a service (Eriksson & Stenius, 2022). Also, based on a survey completed by McKinsey & Company (2020), it comes to light that about 15 percent of the surveyed EU-5 consumers (France, Germany, Italy, Spain, and the United Kingdom) shopped for groceries on a website that they were not familiar with. And among these consumers, more than 50 percent opinioned that they will continue using online grocery shopping after the pandemic (McKinsey & Company, 2020).

Furthermore, the online grocery industry is experiencing tremendous growth in businesses. It regularly pops up new services such as Uber Eats, Oda (a Norwegian company that went international in 2021), Foodora Market, and Glovo. Even though the rise in services occurs, many consumers are not satisfied with online grocery shopping. The majority still hold on to their old habits, and physically visits grocery stores. For example, in Italy, France, and Germany, only 13-16 percent of the McKinsey & Company (2020) report respondents were very satisfied with online grocery shopping. Also, even though many customers in these countries are happy with online grocery

shopping, they still refer to it as a temporary measure and plan to return to physical stores when the pandemic is over. Nevertheless, is this measure the same in developed northern countries such as Norway, Sweden, and Denmark? These countries score very high on the network readiness index (2020), indicating that online grocery shopping should be an act of ease for the population.

Lastly, studies over the past years have discovered several reasons for adoption. For example, Park et al. (1996), Morganosky and Cude (2000), and Raijas (2002) revealed perceived convenience and time-saving as the main reason for adoption. Further, Rogus et al. (2020) identified three cornerstones for not engaging in the service: cost, quality control (risk), and a general feeling of untrust. However, no recent studies regarding engagement in online grocery shopping have been carried out in developed countries in the north.

Therefore, the present research will investigate the antecedents influencing engagement in online grocery shopping in Norway.

The study is structured as follows: First, it will review the relevant literature and discuss both positive and negative antecedents leading to/not leading to engagement in the service. After that, it proposes a theoretical framework and hypotheses based on the Ram and Sheth (1989) model, including variables identified by Rogus et al. (2020). Then the methodology will be discussed, followed by the hypotheses and the study's validity. Lastly, the results, implications, and limitations will be presented.

2.0 Literature review

2.1 Online grocery shopping

Online grocery shopping (hereinafter referred to as OGS) is a type of e-commerce that provides customers and organizations with food-related products such as bread, milk, and pasta in exchange for money (Driediger & Bhatiasevi, 2019, pp. 224-237). The ordering

of products often takes place on websites or apps, but there are also existing options for calling and texting to tell the supplier what the consumer wants. The delivery process varies. A few companies deliver on the same day, even within an hour, and some provide delivery on specific days such as Mondays, Wednesdays, and Fridays.

2.2 Innovation adoption and resistance

Innovation adoption processes can be described as "*the process through which an individual or other decision-making unit passes from first knowledge to an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and confirmation of the decision"* (Rogers, 1962). Further, diffusion of innovation studies can generally be classified into research around innovation adoption (Rogers, 1962) and consumer resistance to innovation (Ram & Sheth, 1989). Over the last years, there have been different opinions about adoption and resistance towards innovations and whether the antecedents overlap or are distinct. For example, where Garcia et al. (2007) argues that resistance factors are separate antecedents, Day and Herbig (1992) claim that the factors can overlap. Therefore, it is sufficient to investigate both negative and positive antecedents affecting consumer engagement in OGS.

2.2.1 Why people adopt online grocery shopping services

Research in OGS has taken place for a long time, beginning in the late 90s (Driediger & Bhatiasevi, 2019). As a result, several reasons why consumers adopt the service have been discovered. For example, Park et al. (1996) found that high-tech baby boomers adopt the service for increased convenience and to streamline their lives. Further, a wide range of theoretical approaches has been used in the current years to understand why (or why not) a consumer is adopting OGS. The Technology Acceptance Model, Theory of Planned Behavior, and customer experience are the most widely used theoretical approaches to find answers to the adoption. For example, Driediger et al. (2019) used the Technology Acceptance Model as their theoretical framework for the adoption of OGS in

Thailand. Here the authors uncovered perceived ease of use, perceived usefulness, intention to use, subjective norm, and perceived enjoyment to have a significant relationship to engagement in OGS.

Furthermore, a principal component and two-stage cluster analysis done by Brand et al. (2020) identified five well-defined and highly interpretable segments according to their attitudes, norms, perceptions, and beliefs. They profiled the segments by their socio-economic and grocery shopping characteristics. From those 'super-shoppers' (Flynn & Goldsmith, 2015) who are attracted to the online experience and want more to those who appear resistant to engagement in online shopping. The key distinguishing features of these segments suggest that consumers adopt OGS because of convenience, perceived benefits, technology effect, time pressures, and social and environmental dimensions of personal norms and beliefs.

Also, recent research on online customer experiences focuses on consequences rather than the experience (Bilgihan, 2016) (Kawaf & Tagg, 2017) (Rose, Clark, Samouel, & Hair, 2012). Wolfinbarger & Gilly (2003) argue that online shopping experiences involve more than this interface. They state that it includes the experience with the website, the welcoming of ordered goods, delivery on time, and effective customer experience. In the same research, Wolfinbarger & Gilly (2003) contends that OGS and these characteristics are closely related to the core values of online customer experiences. Online grocery shoppers are well-informed, and their online shopping experiences consist of interaction with the website, products, and their experience with customer service.

Despite the numerous businesses providing OGS in Norway, most Norwegians visit grocery stores physically. However, The COVID-19 pandemic has spread rapidly over the last two years, creating different guidelines for how consumers should live. COVID-19 policies regarding safety, physical distancing, closure, lockdown, and other restrictions have urged consumers to shop online. Habib and Hamadneh (2021) claim that as a result of the e-commerce growth under the pandemic, the grocery industry has also

been “forced” to equip itself with advanced technologies such as the Internet of Things (IoT), cloud computing, and blockchain technology. In the same research, the authors claim that consumers feel that shopping for groceries online is tiresome compared to other items such as clothes and that they are skeptical about engaging with it. Further, Alaimo et al. (2020) identified in their research characteristics related to the satisfaction level of OGS during the pandemic. They argue that consumers familiar with buying food online prior to the pandemic, have a higher educational level, and consider food online channels easy to use appear more satisfied with the experience. Thus, due to the pandemic, people have been influenced to use OGS, which could have shaped new antecedents to engage in OGS.

2.2.2 Why people resist online grocery shopping

Consumer resistance can be explained as a resistance to change caused by an innovation (Ram, 1987). Consumers may resist innovations “*either because it poses potential changes from a satisfactory status quo or because it conflicts with their belief structure*” (Ram & Sheth, 1989).

Trust has been identified as a major barrier in the adoption of e-commerce (Chang, Cheung, & Tang, 2013), and a consumer’s anxiety about an online vendor´s trustworthiness is among the most crucial elements in distinguishing online buyers from non-buyers (Kim & Park, 2013). Further, McKnight & Chervany (2001) analyzed and interpreted all the existing trust definitions. They established that trust definitions could be split into two broad classes. The first class are different conceptual types and refers to what type of concept trust is. Examples are attitudes, beliefs, and behaviors. The second class they identified is different referents, which refers to the object of trust. Regarding online trust, it involves the whole process and system related to e-commerce in which the consumer carries out a transaction (Lee & Turban, 2001).

Another barrier leading to resistance is the perceived uncertainty (risk) related to OGS. According to Jacoby and Kaplan (1972), there are seven different domains related to risk: financial, performance, physical, psychological, social, time, and opportunity cost. In their study, they give definitions to five of the risks, as presented below:

- Financial risk: "*What are the chances that you stand to lose money if you try an unfamiliar brand of __ (either because it won't work at all or because it costs more than it should to keep it in good shape)?"* (Jacoby & Kaplan, 1972, Table 1)
- Performance risk: *"What is the likelihood that there will be something wrong with an unfamiliar brand of __ or that it will not work properly?"* (Jacoby & Kaplan, 1972, Table 1).
- Physical risk: *"What are the chances that an unfamiliar brand of __ may not be safe, i.e., may be (or become) harmful or injurious to your health?"* (Jacoby & Kaplan, 1972, Table 1)
- Psychological risk: *"What are the chances that an unfamiliar brand of __ will not fit in well with your self-image or self-concept (i.e., the way you think about yourself)?"* (Jacoby & Kaplan, 1972, Table 1)
- Social risk: *"What are the chances that an unfamiliar brand of __ will affect the way others think of you?"* (Jacoby & Kaplan, 1972, Table 1**)**

The psychological barriers identified by Ram and Sheth (1989), on the other hand, take place when a consumer experiences that the innovation requires them to change their already existing beliefs or traditions (Antioco & Kleijnen, 2010). This could for example be traditional variables. The barriers related to traditions may occur when the consumer finds the innovation to break with their traditions. This is highly relevant for OGS engagement, as using it will break the habit of going shopping at the local store, meeting friends, interacting with staff, etc. Thus, breaking this tradition can result in solid unfavorable reactions (such as negative word of mouth) towards OGS (Kulviwat, Bruner, & Al-Shuridah, 2009), forcing people not to be using it.

Research done by Anderson et al. (2003) proposes that consumers living in non-urban areas will adopt online shopping more frequently because they have limited in-store shopping opportunities. This hypothesis is empirically confirmed by a range of studies at the individual level. For example, Krizek, Li and Handy (2005) discovered that people living outside city centers have a higher probability of using e-shopping. At the regional level, households in less developed cities with few local stores usually require more effort for shopping travel (e.g., more travel time and costs). Thus, they may prefer to use OGS to reduce the number of trips (Ren & Kwan, 2009). Further, trustworthy sources claim that Norway has the most grocery shops per citizen among the northern countries, with 3840 stores spread around the country (SIFO, 2019) (Nielsen, 2019)**.** Therefore, based on previous research related to the subject, it can be assumed that the Norwegian population is not engaged in OGS because of the high offering of in-store shopping opportunities located within the short range of their homes.

From a consumer's perspective, the value barrier can be explained as the perceived performance-to-price ratios of innovations compared with already existing similar products (Molesworth & Suortti, 2002). In other words, the perceived performance and ability OGS is delivering for its price. Qualitative research has explained that regarding IoT devices and services, consumers are concerned about the additional costs associated with the technology/innovation (e.g., delivery fee, installation, etc.) (Balta-Ozkan, Davidson, Bicket, & Whitmarsh, 2013). In other words, concerning technological innovations in services, the high price perception is the most common barrier to resistance to innovations (Laukkanen, 2016) (Laukkanen, Sinkkonen, & Laukkanen, 2008). For example, Rogus et al., (2020) claim that perceptions about the costs of purchasing groceries online were a resistance barrier for most of their participants. Further, they discovered that the perceived higher cost associated with buying groceries online contributed to negative attitudes towards the practice and that the indicated negative attitudes about price might outweigh the positive attitudes (e.g., convenience).

Lastly, according to many researchers and studies, for example, Laukkanen (2016), Rogers (1995), and Venkatesh et al., (2003) are consumer demographics essential elements in decisions for engagement in innovations. In fact, Laukkanen (2016) claims that the most frequently used user demographics in past research regarding electronic services, such as OGS, are age and gender. Further, it has been found that the elderly are less likely to adopt OGS based on technological understanding and security risks (Hiser, Nayga, & Capps, 1999) (Morganosky & Cude, 2000) (Raijas, 2002).

3.0 Framework and hypotheses

3.1 The theoretical skeleton of the research: The Ram and Sheth (1989) model

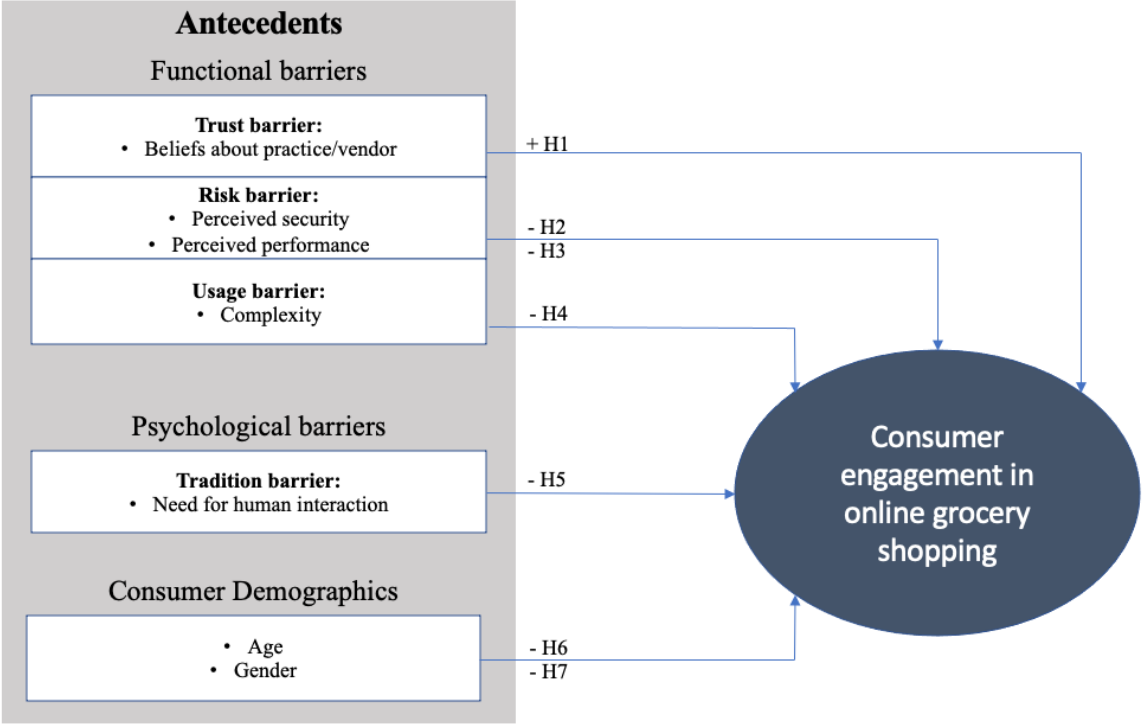
Numerous theoretical models have been developed in the marketing literature to better understand the precursors of consumer engagement toward OGS. For example, the Technology Acceptance Model and Theory of Planned Behavior model. However, Ram and Sheth (1989) propose a conceptual framework based on barriers that endorse resistance, where the model identifies two categories of consumer resistance to innovations: (1) functional barriers and (2) psychological barriers. Their model state that barriers arise if consumers perceive significant changes from adopting the innovation (Ram & Sheth, 1989).

3.1.2 Modification of the model

Studies examining resistance to innovations in services generally use the Ram and Sheth (1989) model as a theoretical framework to identify relevant barriers to engagement. The model has been extended and modified in several previous studies regarding consumer resistance to innovations in services. For example, Mani and Chouk (2018) extended the model to examine the barriers resulting in consumer resistance to smart services as an innovation. They proposed (including the functional and psychological barriers) an

inclusion of three types of barriers: technological vulnerability barriers, ideological barriers, and individual barriers.

Further, Rogus et al. (2020) identified cost, quality control of perishable fresh food (risk), and a general feeling of untrust in the process itself as barriers for not adopting OGS. However, the value barrier (cost) will not be included in this model. This is because Oda (a company offering online grocery shopping in Norway) is cheaper than all the physical stores in Norway. In fact, a shopping cart from Oda, compared to the most affordable grocery stores in Norway, was 5% cheaper (including the same items). The ascertained barriers Rogus et al. (2020) claim to impact the adoption of OGS (except cost), will be the epitome of the modified model of Ram and Sheth´s (1989) framework. In addition, the tradition and consumer demographic extension from Mani and Chouk (2018) will also be included. Implementing the findings in these studies to the model makes it both reliable and valid as a conceptual framework for the present study. Lastly, the present study and framework are in line with current marketing literature on consumer engagement to innovation in services, for example, the work of Joachim, Spieth, and Heidenreich (2018), as well as Laukkanen (2016). The following conceptual framework is therefore proposed:



3.2. Justification of antecedents and hypotheses

3.2.1 Trust barrier

Several studies have claimed that satisfaction (Shim, Eastlick, Lotz, & Warrington, 2001) (Nesset, Nervik, & Helgesen, 2011) and trust (McCole, Ramsey, & Williams, 2010) (Toufaily, Souiden, & Ladhari, 2013) are the most influential originators of customers´ repurchase intentions in online shopping. The importance of trust is further emphasized in an online transaction context, particularly involving consumables like food and groceries (Citrin, Stem Jr., Spangenberg, & Clark, 2003), and is a crucial condition for the success of an online grocer (Pavlou & Fygenson, 2006) (Toufaily, Souiden, & Ladhari, 2013). The inclination to trust is a crucial element of consumers' attitudes, and if it is established, it triggers an increase in a consumer's intention to shop online (Chen & Barnes, 2007) (Gefen, Karahanna, & Straub, 2003). In the research done by Gefen et al. (2003), they also found that consumer trust as a concept is as important to online commerce as the Technology Acceptance Model. In the same research, they provide evidence that online trust is based through:

1. A belief that the vendor has nothing to gain by cheating
2. A belief that there are safety mechanisms built into the website
3. By having a typical interface
4. The system is easy to use

With regards to OGS, the buyers are ordering different sorts of food, such as fresh meat and perishable fruits, where they must trust that the retailer picks the best quality products for them. In addition, they must trust that the goods are delivered promptly without damaging the products. Suppose the customer doesn't trust the process and believes the vendors will put their interest before the customers´. In that case, it most likely will be a barrier resisting consumers from engaging in OGS. Based on previous studies that identify trust as an important factor to engage in a technological service, the following hypothesis is proposed:

H1: *Trust in online grocery vendors has a positive effect on consumer engagement in online grocery shopping*

3.2.2. Risk barrier

Risk has been identified as a leading contributor to why consumers do not adopt OGS. Actually, Lee & Turban (2001) claim trust is related to risk, that shoppers will evaluate their level of trust towards their perceived risk during an OGS experience. When a consumer chooses to shop for groceries online, it is argued that customers will weigh their levels of trust against their levels of perceived risk (Mortimer, Fazal e Hasan, Andrews, & Martin, 2016). This is because when a customer is not physically present in the store, it is not possible to verify the quality of the products. In return, uncertainty and risk arise, and the need for trust in the vendor grows (McKnight & Chervany, 2001). Thus, there is not sufficient to measure trust alone because perceived risk influence and determine the level of trust (Soopramanien, 2011) (Bianchi & Andrews, 2012). Simply, the consumers who trust the e-retailer will perceive less risk during the OGS process.

Also, Hansen (2006) and Soopramanien (2011) argues that perceived risk is a particularly relevant construct because of its close ties to the intention to repurchase. Perceived risk has also been identified as a barrier to online purchasing, regardless of new technology and the competence of consumers on the internet (Belanche, Casaló, & Guinalíu, 2012) (Bianchi & Andrews, 2012). It is proposed that during an OGS process, the customer may develop negative feelings such as displeasure, disappointment, sadness, anxiety, anger, or frustration over the process, increasing perceived risk towards OGS, which in turn results in resistance towards the service.

In the service context where OGS takes place, security risk, which is defined as *"Unauthorized third-party access of consumer´s personal and financial information*" (Miyazaki & Fernandez, 2001), has been identified as the risk with the most vital impact on consumer behavior (Laukkanen, 2016). Driediger & Bhatiasevi (2019) claim in their study that consumers reported a high risk associated with OGS. More specifically, the consumers expressed concerns about the quality of the products because they do not have the option to pick products themselves.

The perceived performance risk, defined by Grewal et al. (1994) as *"the possibility of the product malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefits,"* can therefore be said to play a significant role in terms of engagement in OGS. Thus, the following hypotheses are proposed:

H2: *Perceived security risk has a negative effect on consumer engagement in online grocery shopping*
H3: *Perceived performance risk has a negative effect on consumer engagement in online grocery shopping*

3.2.3 Usage barrier

In relation to OGS (arguably a technological innovation), the usage barrier can be comparable to the perceived complexity a consumer is experiencing related to the technology. More specifically, Rogers (1995) refers to complexity as the *"degree to which an innovation is perceived as difficult to understand and use."* Further, Ram (1987) claims that the usage barrier stems from two dimensions: (1) the complexity of the idea (easy to understand) and the complexity of the implementation (easy to use).
The influence of usage barriers on consumers' resistance to technological innovations is well documented and understood. Various studies indicate that the perception of the complexity of using technological innovations such as OGS (both on websites and apps) makes consumers inclined to reject new services/products (Antioco & Kleijnen, 2010) (Kuisma, Luakkanen, & Hiltunen, 2007) (Laukkanen, 2016). For example, Bruner & Kumar (2005) claim that entering text is troublesome because mobile devices have small screens, thus, entering and reading data can be difficult. Therefore, based on previous studies that have identified complexity as an essential barrier to resistance to technology in services such as OGS, the following hypothesis is presented:

H4: *Perceived complexity has a negative effect on consumer engagement in online grocery shopping*

3.2.4 Tradition barrier

The tradition barrier comes to play when innovations are incompatible with a consumer's existing norms, beliefs, values, and past experiences (Ram & Sheth, 1989). In compliance with Dabholkar & Bagozzi (2002), the need for human interaction can be defined as *"the importance of human interaction to customers in service encounters."*
A transaction can be seen as an opportunity to meet and interact with personnel and other customers in relation to grocery shopping. Existing literature emphasizes that the need for interaction is a crucial consumer characteristic that establishes a fundamental dimension of the service experience (Evanschitzky, Iyer, Pillai, Kenning, & Schütte, 2015) (Walker

& Johnson, 2006). Research has also noted that a dominant need for human interaction may hinder consumers from implementing self-service technologies such as OGS (Marr & Prendergast, 1993) in their daily life, as well as negatively influence their decision to use (Walker & Johnson, 2006) and/or continue using (Evanschitzky, Iyer, Pillai, Kenning, & Schütte, 2015). It has also been claimed that some consumers may only require human interaction on specific incidents, e.g., making a complaint or getting an answer to a particular question or problem (Walker & Johnson, 2006). Thus, based on previous literature, the following hypothesis is proposed:

H5: *The need for human interaction has a negative effect on consumer engagement in online grocery shopping*

3.2.5 Consumer demographic

The existing literature also suggests that there are differences between gender and age regarding adoption of innovations in services. For example, Brand et al., (2020) identified in their research that the group "*Intensive Urbanites,"* which include more men (56% vs. 44%) and younger shoppers (avg. age 37 against 48 years, with only 4% aged 65 years or older), tend to be the most positive about OGS compared to other groups. Lastly, Laukkanen (2016) also found in his research that men are nearly twice as probable to use services based on technology compared to females, as well as elderly consumers are more resistant to technology-based services compared to young people. Based on past claims and examinations of consumer demographics related to online services, the following hypotheses are proposed:

H6: *Gender (women) has a negative effect on consumer engagement in online grocery shopping*

H7: *Age (elderly) has a negative effect on consumer engagement in online grocery shopping*

Presentation and Justification of the antecedents selected

Barrier			Justification		
			Academic study		
Concept	Construct	Definition	Source	Nature of Study	Relevant findings
Trust Barrier	Beliefs about practice/vendor	*Trust can be split into two classes. The first class are conceptual types and what trust is (e.g., beliefs). The second class are different referents (e.g., trust in something or something)* (McKnight & Chervnay, 2001)	Gefen et al. (2003)	Quantitative / Field study	Online trust is based through a belief that the vendor has nothing to gain by cheating
			Chen & Barnes (2007)	Quantitative / Survey	The inclination to trust is a crucial element of consumers' attitudes, and if it is established, it triggers an increase in a consumer's intentions shop online
Risk Barrier	Perceived security risk	*"Unauthorized third-party access of consumer´s personal and financial*	Laukkanen, T. (2016)	Quantitative / Survey	Security risk has been identified as the facet of risk that has the most significant effect on consumer

		information" (Miyazaki & Fernandez, 2001)			behavior in the service context
	Perceived performance risk	*"The possibility of the product malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefits" (Grewal et al., 1994)*	Driediger and Bhatiasevi (2019)	Quantitative / Survey	Consumers reported a high risk associated to online grocery shopping, where they expressed concerns towards quality of the products because they do not have the option to pick products themselves
Usage Barrier	Perceived complexity	*"Degree to which an innovation is perceived as difficult to understand and use*" (Rogers, 1995)	Antico & Kleijnen (2010) Kuisma et al. (2007)	Quantitative / Survey Qualitative / Interviews Quantitative / Survey	Perception of complexity of usage of technological innovations makes consumer inclined to reject the service

Tradition Barrier	Need for human interaction	*"The importance of human interactionin service encounters"* (Dabholkar & Bagozzi, 2002)	Evanschitzky et al. (2015)	Qualitative / Interviews	Human interaction is a crucial characteristic of the service experience
			Walker & Johnson (2006)	Qualitative / Interviews	The need for human interaction may negatively influence consumers decision to use self-service services
Consumer Demographics	Age and Gender of the consumer	*The age-group and gender that are more likely to resist online grocery shopping*	Brand et al. (2020)	Quantitative / Survey	"*Intensive Urbanities"* (majority of men and younger people) tend to be more positive to online grocery shopping
			Laukkanen (2016)	Quantitative / Survey	Men are nearly twice as probable to use services based on technology compared to females

4.0 Research objective and contribution

While the existing literature certainly provides a comprehensive overview to explain OGS acceptance in the U.S., U.K., and the Asian markets, further research is necessary to test the ability to explain the environment of markets in the north, such as Norway. Current academic literature mainly investigates the engagement in OGS and what influences it by using different acceptance models, such as the Theory of Planned Behavior (TPB) (Hansen, 2008) (Hansen, Jensen, & Solgaard, 2004) (Ramus & Nielsen, 2005), the Theory of Reasoned Action (TRA) (Hansen, Jensen, & Solgaard, 2004) and the Technology Acceptance Model (TAM) (Childers, Carr, Peck, & Carson, 2001) (Chien, Kurnia, & Westarp, 2003).

The countries located in the north, such as Sweden, Denmark, and Norway, all receive a high score on the network readiness index, indicating that the northern countries are among the world´s most network-ready societies. In fact, Sweden is in 2nd place, Denmark in 3rd, and Norway in 9th (Network readiness index / World Information Technology and Service Alliance, 2020)**.** Therefore, using TAM and TPB to explain the relevant antecedents for Norwegian customers will most likely not give a valid result. To fill the current research gap in the academic literature and gain more knowledge about OGS engagement in developed northern countries, this study will investigate the anticenters related to OGS in Norway. This will be done by modifying the Ram and Sheth (1989) model with variables relevant to Norwegian customers.

Thus, the present research will address the following research objectives:

1. Increase the understanding of antecedents hindering and leading to engagement in OGS in Norway (and other northern countries).
2. Enriching existing literature in the field, as well as identifying if other theoretical models fit to explain OGS engagement.
3. Form managerial guidance and recommendations regarding what antecedents must be considered to engage people in OGS.

5.0 Research methodology

To answer the research question, as well as to provide sufficient results for the research objective, a survey research design through an online survey was used. More specifically, an interview method with a questionnaire was sent to respondents on different digital platforms (e.g., Facebook) to obtain a significant amount of data. Since the study targets Norwegian consumers, the questionnaire allowed the respondent to choose between English and Norwegian language. A native Norwegian speaker did the translation to verify the questionnaire's accuracy. In particular, the study was executed by looking at several antecedents related to consumer engagement in OGS for the Norwegian population. This was done by asking the respondents several questions related to trust, risk, usage, tradition, and demographic (age and gender).

Further, to ensure validity, scale and items were derived from existing literature investigating related subjects. Apart from a few questions, such as descriptive characteristics, all items pertaining to the antecedents were measured using a seven-point Likert scale, ranging from (1) strongly disagree/unlikely to (7) strongly agree/likely.

5.1 Measures

To measure the different antecedents affecting consumer engagement in OGS in Norway, items were adapted from existing research in the same field. To measure the antecedent *Trust,* the scale proposed by Lee & Turban (2001) and used by Rose et al. (2012), in addition to items from Gefen et al.´s (2003) scale was adapted. Further, Andrews et al.´s (2007) scale used by Bianchi & Andrews (2012) was adapted to measure the *risk* antecedents. Regarding the *Tradition* construct, the need for human interaction scale proposed by Dabholkar (1996) and used by Mani & Chouk (2018) was adapted. The usage antecedent related to *Complexity* was adapted from Mani & Chouk´s (2018) work, where they used the scale of Moore & Benbasat (1991). Consumer *Engagement in* OGS was also adapted from the work of Mani & Chouk (2018), where they measured

resistance towards technology innovations through items from the work of Wiedmann et al. (2011), Szmigin & Foxall (1998), and Kleijnen et al. (2009).

The reason for choosing resistance items as an engagement measure was to include both users and non-users of OGS. This made every participant in the survey capable to answer all the questions. To be able to run analyses of the items in the engagement construct using resistance questions, the items got reverse coded. To measure the different constructs, a seven-point Likert scale from 1 (strongly disagree/extremely unlikely) to 7 (strongly agree/extremely likely) got chosen for the items measuring the different antecedents. To validate the reliability of the constructs/antecedents, a Cronbach's alpha test, average variance extracted (AVE), and composite reliability (CR) were carried out, which all gave satisfactory numbers (see Table 2.). Concerning the demographic variables, age and gender were operationalized as dichotomous variables (gender: 1 = men / 2 = women) (age: "Old" consumers ≥ 59 years / "Young" consumers < 59 years).

5.2 Data collection

To obtain as many respondents as possible, an online survey was shared on different social forums, such as Facebook and LinkedIn. All the groups where the survey was shared were made sure only consist of Norwegian citizens. The survey was split into two sections, where the first part focused on the trust and risk items, and the last part focused on the usage and tradition items. The data got collected in April 2022, and 234 completed questionnaires (incomplete ones got removed) were involved in the data analysis. 57.6% of the respondents were men, and 42.4% were female. The respondents ranged from 19 to 89, with an average age of 43. 50.8% had tried OGS before.

5.3 Quality of constructs

To test the quality of the constructs and determine the number of items to each factor, a confirmatory factor analysis using SPSS software was conducted. More specifically, a principal component analysis with varimax rotation was used. The reason for choosing a

confirmatory factor analysis was because the constructs were adopted from earlier research in related fields. The cut-off value for the analysis was set to .50. The output from the analysis showed that some of the constructs cross-loaded, and the items didn't measure the planned construct. The items related to *"Performance_risk"* loaded above .500 on the same construct as the trust items and cross-loaded with more than .20 towards other constructs. Therefore, the construct got removed from further analysis.

A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity was carried out to check if the remaining items were appropriate to conduct a factor analysis with. KMO examines the strength of the partial correlation between the variables, where the Bartlett's Test of Sphericity checks if variables are related and ideal for factor analysis. A value of .50 or more in the KMO test indicates that the number of samples taken for the factor analysis is sufficient, whereas a significant result in Bartlett´s Test of Sphericity indicates that the dataset is convenient for the factor analysis (Agkul, 2005) (Kalayci, 2010). As Table 1. shows, the KMO measure (.669) and Bartlett´s Test of Sphericity (<.001) indicated validity and that the data was suitable for factor analysis. Thus, the factor analysis was conducted with the variables, where all the items loaded highly on the respective constructs (see Table 2.).

Lastly, some of the constructs consist of only two items. It is well known that a factor should contain three (or more) items, but several studies over the past years argue that factors can consist of only two items. For example, Worthington & Whittaker (2006) argues that researchers should retain a factor only if they can interpret it in a meaningful way. Further, the same authors argue that it is possible to maintain a factor with only two items if they both have a factor score above .70 and are uncorrelated with other variables (Worthington & Whittaker, 2006). Further, Yong & Pearce (2013) also states that a factor with two variables is only reliable when the variables are highly correlated with each other (>.70) and relatively uncorrelated with other variables. The item's factor scores are

above .70 and are relatively uncorrelated with items related to other constructs. Thus, based on previous research, it can be justified to go on with only two items.

Also, the procedure suggested by Fornell & Larcker (1981) regarding evaluating the measurement model was considered. Before testing significant relationships, the validity and reliability of the measurement must be checked, which was done with convergent and discriminant validity (Tables 2. and 3.)

Table 1. KMO & Bartlett´s Test

KMO and Barlett´s Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.669
Barlett´s test of Sphecicity	Approx. Chi-Square	1269.999
	df	78
	Sig.	<.001

Table 2. Factor Analysis, Reliability, and Convergent Validity

Items	**Loading**	**t-value**
Trust (AVE .755; α .880; CR .902)		
I believe that the vendors providing online grocery shopping practices has nothing to gain by cheating	.870	39.982
In general, there are no uncertainties related to online grocery shopping and the practice is reliable and can be trusted	.880	46.440
I can rely on grocery shopping companies to deliver their promises	.856	41.042
Security Risk (AVE .826; α .865; CR .905)		
It feels safe to give personal data such as address, name, email, phone number, etc., to an online grocery shopping vendor	.921	47.161
It feels safe to use my credit card online to buy groceries	.897	50.106
Tradition (AVE .675; α .763; CR .899)		
Personal attention by the staff in grocery stores is not very important to me (R)	-.726	29.336
I like interacting with the staff in grocery stores	.924	29.906
The social part of buying groceries makes the process enjoyable	.803	25.633
Usage_Complexity (AVE .659; α .707; CR .794)		
Learning online grocery shopping systems/apps/web sites was/will be easy for me	.839	63.775
It is easy for me to obtain the results that I desire from online grocery shopping practices	.783	41.341
Engagement (AVE .586; α .705; CR .806)		
In general, online grocery shopping is a service that is not for me (R)	.834	33.348
In sum, I am likely to be opposed to the use of online grocery shopping (R)	.845	35.002
The amount of grocery stores close to where I live are so big making online grocery shopping unnecessary (R)	.590	26.084

AVE: average variance extraced, a: Cronbach´s alpha, CR: composite realiaility, (R): Reverse coded

5.3.1 Convergent validity

To test if the items that theoretically should be related are related, convergent validity was carried out. Two different conditions were met:

1. The latent variables and the links between their indicators must be significant. The *one-sample t-test* results in Table 2 confirm that all the items within each factor are significant at $p = 0.001$.
2. Also, the mean variance shared between the latent variables, and their related indicators must be greater than 50%. This means that the AVE must be greater than .50. When the AVE is greater than this threshold, the variance explained by the items is larger than the variance due to measurement error. This condition is also confirmed in Table 2.

5.3.2 Discriminant validity

A comparison of the correlation between the latent variables and the square root of the average variance extracted (AVE) was conducted to test discriminant validity. This was done to demonstrate that the variance each construct shares with its items is greater than the variance it shares with other constructs. In other words, discriminant validity was carried out to test if the different concepts that are not supposed to be related are unrelated. This was done by merging the related items to the different constructs (identified in the factory analysis). Then, another factor analysis with the merged items were carried out. The method used to find the correlation between the variables was to check the Anti-Image Matrices concerning correlation. Results from the discriminant validity analysis show that AVE's square root is greater than the inter-construct correlations (Table 3). Lastly, an oblique rotation method using SPSS was also carried out to attain a correlation matrix. This was done to test if there was a correlation between the different factors. The correlation matrix (Table 4) shows that the correlation between variables does not exceed .70 (Yong & Pearce, 2013). Thus, discriminant validity is achieved.

Table 3. Square Root of AVE

Factors	1	2	3	4	5	6	7
1- Trust	**.869**						
2-Security risk	-.270	**.909**					
3-Tradition	-.169	0.081	**.822**				
4-Usage_Complexity	-.096	-.184	-.237	**.812**			
5-Engagement	-.243	-.024	.235	-.168	**.766**		
6-Age	.037	-.046	.017	.175	-.011	n.a	
7-Gender	-.072	-.062	.039	.035	.085	-.045	n.a

Note: Bold elements represents the square root of the variance extracted

Table 4. Factor Correlation Matrix

Component	1	2	3	4	5
1- Trust	1.000	.090	.220	.229	.167
2-Tradition	.090	1.000	-0.66	-.005	-.079
3- Engagement	.220	-.066	1.000	.131	.098
4-Security_risk	.229	-.005	.131	1.000	.149
5-Usage_complexity	1.167	-.079	.098	.149	1.000

Extraction Method: Principal Axis Factoring
Rotation Method: Oblimin with Kaiser Normalization

6.0 Results

6.1 Test of the research model

A multiple linear regression analysis was used to test the theoretical model by looking at R-Square (R^2). As Table 5. shows, the model summary of the regression model against engagement showed R^2 = .191. Accordingly, the R^2 should be high with respect to the research discipline. Anyway, since this paper is social research with the aim to explain consumer behavior, a high value of R^2 does not necessarily imply a real causal impact (Moksony, 1999). In fact, Moksony (1999) claims that in research where the aim is to explain or test a theory, a low R^2 reveals simply that the dependent variable is also affected by other factors in addition to the ones included in the model. Further, he argues that a low R^2 is irrelevant given that the objective is to establish a causal relationship, not to formulate a complete list of the causes of the phenomenon (Moksony, 1999). Further, a low R^2 can also be justified from the work of Falk & Miller (1992). They argue for and

recommend coefficients to be greater than .10, suggesting that the present structural model presents sufficient explanatory power. Lastly, Hair et al. (2011) argue that R^2 results of .20 are considered high in disciplines such as consumer behavior. Thus, an R-Square = .191 indicates a good model fit.

6.2 Result of regression

Multiple linear regression was used to test if the chosen antecedents significantly explained engagement toward OGS. The overall regression was statistically significant with R^2 = .191, F (2, 229) = 9,025, and p = <.001.

With regards to the antecedents towards engagement in OGS in Norway, the results indicate that *Trust* has a significant positive impact on engagement (β = .244, t = *3.676,* p < .001). This indicates that when trust towards a vendor is established it is more likely that the consumer will engage in the service. Thus, H1 is supported.

Regarding H2, the hypothesis is not supported as the influence of *Security_risk* on engagement in OGS is not statistically significant (β = .027, t = .400*,* p = 689). The result imply that consumers are not perceiving risk regarding security (e.g., personal information) when engaging in the service.

Further, *Tradition* (human interaction) has a negative significant effect on consumer engagement in OGS (β = -.333, t = -3.666*,* p < .001). This means that the importance of human interaction hinders people to use the service, creating a negative effect to engagement. This result support H3.

Perceived *Usage_complexity* has a positive significant effect on engagement in OGS (β = .300, t = 4.069*,* p < .001). This is the opposite of the predicted effect, meaning that the complexity of the solution (e.g., the technological part) motivate consumers to engage in the service. In other words, it has a positive effect on consumer engagement. Therefore, H4 is not supported.

Finally, with respect to the demographic variables *Gender* and *Age,* the results do not show a significant relationship towards engagement. This imply that what age or

gender the consumer has does not hinder or motivate to engage in the service. Thus, H5 and H6 are not supported.

Table 5. Regression analysis

Dependent variable: Engagement	Overall model (n = 234)			
Model summary	***B***	**SE**	*t*	*p*
R^2	.191			
Adjusted R^2	.170			
SE	1.435			
Variables				
Constant	2.499	.554	4.513	<.001
Trust	.244	.066	3.676	<.001
Security_Risk	.027	.066	.400	.689
Tradition	-.333	.091	-3.666	<.001
Usage_Complexity	.300	.074	4.069	<.001
Old	-.088	.265	-.332	.740
Female	-.238	.189	-1.262	.208

7.0 Discussion

The main goal of this paper was to investigate the antecedents related to engagement in OGS in Norway. Consequently, this paper´s conceptual model took advantage of Mani & Chouk´s (2018) work, which extended the Ram & Sheth (1989) theoretical framework. More specifically, the Ram & Sheth (1989) model was modified to explain engagement in OGS in Norway. Thus, the present model included *Trust, Risk (security* and *performance), usage (abundance* and *complexity), Tradition (human interaction),* and *demographic (female and mature persons more resistant)*. Overall, the outcome of the research provides sufficient results to support the conceptual model:

The outcome of the regression analysis identified *Trust* as an essential antecedent for engaging in OGS in Norway (B = .244). This result is in line with similar studies regarding e-adoption. For example, Citrin et al. (2003) emphasizes the importance of

trust in an online context, especially in contexts involving consumables like food and groceries. The inclination to trust is also a crucial element of consumers' attitudes, and if it is established, it triggers an increase in a consumer's intentions to shop online (Chen & Barnes, 2007) (Gefen, Karahanna & Straub, 2003). Indeed, in an online grocery service transaction, the consumer leaves all the effort on the vendor providing the service. The consumer cannot choose which specific product they will receive (e.g., the freshness of the fruit) and must trust that the best possible products are picked and delivered to them at the agreed time. Thus, if they trust the process and the vendor, it is more likely that they will engage in the service.

With regards to perceived security risk, the construct was not significantly related to engagement in OGS. This result was contrary to the expectations of the construct as well as it is not in line with former research on the topic. For example, (Rudolph, Rosenbloom, & Tillmann, 2004) claims security risk is the main reason for not purchasing items on the internet. Anyway, the result can be explained by the high level of trust among Norwegian consumers toward OGS. As pointed out before, studies in the field argue that trust is related to risk (Lee & Turban, 2001) and that shoppers will evaluate their level of trust towards their perceived risk during an OGS experience. Simply, the consumers who trust the e-retailer, which is the case in Norway, will perceive less risk during the OGS process. And because the COVID-19 pandemic has "forced" consumers to shop online, it is natural that perceived risk associated with OGS will disappear, as the consumers will feel safer for each time they use the service.

The research also empirically confirms the relationship between the variable tradition (human interaction) and engagement in OGS. Actually, the need for human interaction is a major barrier to engagement towards OGS (B = -.333) and is the antecedent identified to have the most considerable effect in Norway. This result is in line with prior studies that have identified the need for human interaction as a barrier to the adoption of self-service technologies (Marr & Prendergast, 1993) and the decision to use or continue to

use (Walker & Johnson, 2006; Evanschitzky, Iyer, Pillai, Kenning, & Schütte, 2015). This can be explained by the fact that consumers in Norway are used to going to the grocery shops and see it as an opportunity to meet friends and be social. It is also easier to file complaints (e.g., about products) physically than online, making the human interaction construct an important factor to not engage in the service.

Moreover, contrary to the expectations, the perceived usage complexity did not have a negative effect on engagement in OGS. In fact, the antecedent had a major positive effect on engagement (B = .300), which can be explained by several reasons. First of all, this result indicates that Norwegians tend to adopt, understand and use OGS easily. This phenomenon makes sense based on Norway's high network readiness index, meaning Norwegians are of high technological competence. Further, when the consumers feel they get the hold of using a technological service perceived as complex, they will get motivated to engage in the service. This is because the usage will lead to a feeling of mastery, which again brings joy and excitement. And when a consumer is enjoyed and excited when shopping for groceries online, it will have a spillover effect towards engagement in the service.

Lastly, the relationship between age and gender in engagement in OGS was not significant. These findings may be explained by the fact that Norwegians are wealthy people, where both males, females, and old and young consumers have access to the internet and interact with it regularly. In fact, in 2018, most elderly in Norway used the internet daily, where 74% in the age group 61-70 years, 65% in the 71-80, and 52% in the 81-100 years used it daily (Johnson, 2021). Also, since the data was collected through an online survey, it can be argued that since the respondent managed to complete the form, they will also to able to fill up an electronic shopping cart with products and order it home.

7.1 Implications

The present research contributes to the existing literature on the antecedents (both negative and positive) leading to engagement in OGS in developed northern countries (in this case, Norway). The existing literature mainly focuses on acceptance and resistance in the U.S., U.K., and Asia. Also, current academic literature explores engagement through acceptance models, such as TPB and TAM (Hansen, 2008) (Hansen, Jensen, & Solgaard, 2004) (Ramus & Nielsen, 2005) (Childers, Carr, Peck, & Carson, 2001) (Chien, Kurnia, & Westarp, 2003), this research is based on the theoretical model used by Mani & Chouk (2018). This model is often used in resistance to innovations in various respects, such as online banking, but has not been used in the field of OGS. Thus, this paper is contributing to several implications:

7.1.1 Theoretical implications

First, the research deepens academic literature with respect to the antecedent leading to engagement in the service in developed northern countries. Online environments offer similar experiences across countries, but how the consumers experience them differs. Prior research argues that culture influences the values consumers have (Hofstede, 1984), what ambitions they chase (Hazel & Shinobu, 1991), and how they understand, classify, and reason about environments (Nisbett, Choi, Peng, & Norenzayan, 2001). There are plenty of examples of services that have had massive success in one country but failed with the same formula, for example, eBay in China and Tesco and Walmart in Japan (Shavitt & Barnes, 2020). Therefore, it is crucial to enrich prior literature to expand consumer behavior in OGS in other geographical markets and identify which antecedents lead to engagement. As the present study shows, complexity positively affects engagement in OGS, which is the opposite of geographical areas in the U.S., UK, and Asia. There was no significant relationship between risk and the demographic variables, which has been argued to be substantial barriers in other countries. Therefore, the present research contributes to a more comprehensive understanding of consumer behavior in OGS in general.

Second, as this research uses the original variables by Ram & Seth (1989) (excluding the value barrier), the study enriches existing literature by adapting it to OGS. This model is usually used as a theoretical framework when the aim is to find reasons for *resistance* to innovation (Antioco and Kleijnen, 2010; Laukkanen, 2016; Laukkanen et al., 2008). This paper has proven that the model can also be used to identify positive antecedents to engagement. Also, this paper enhances the literature as the model was modified to fit the northern countries, where the antecedent trust got added, and value got removed. This was based on the fact that trust has been identified to be an important factor in engagement in e-shopping (Chen & Barnes, 2007) (Gefen, Karahanna, & Straub, 2003), as well as that OGS in Norway is considered cheap.

Third, prior research in OGS looks at acceptance models, whereas the present study identifies antecedents by using a theoretical model focusing on resistance to technological innovations. This was done because the current research investigates the effect of both negative and positive antecedents on engagement, as well as Norway´s high network readiness. By doing so, the paper proves that not only acceptance models, but also other theoretical models are sufficient to use when investigating antecedents to OGS.

7.1.2 Managerial implications

As there has not been any paper investigating the Nordic markets regarding OGS, it helps managers in the northern markets better understand the antecedents they must overcome/use to make consumers engage in the service. More specifically, this paper has proven that companies must reinforce the level of trust consumers have towards their service, as it significantly affects engagement. If the companies offering the service lose their customers' trust, the customers will not engage in the service. Companies located in northern countries must provide their customers with excellent customer service and deliver their promises. Otherwise, they will lose their customers to physical stores.

The findings also show that even though all age and gender groups are familiar with using this technological service, the need for human interaction plays an important role. Therefore, companies should offer a hybrid experience that fluctuates the use of the online service and human interaction when necessary. This can be done by having an office where customers can come to deliver back their wrong products and receive the right ones right away, having a click and collect service, or a place where customers can file a complaint and receive cashback. Moreover, thanks to today´s algorithms, personal contact can also be offered by providing personalized and real-time offers, making the consumer feel they are being seen and valued.

Lastly, as the research identified complexity to impact engagement to OGS positively, companies need to consider the customers´ self-image and aim to make them feel that the technology provided is harmonious with their habits and competence in technology. By doing so, the consumer will get the feeling of achievement and joy when interacting with the app/website, resulting in motivation to use OGS.

7.2 Conclusion, limitations, and future research

Even though OGS is experiencing rapid growth globally, academic research does not genuinely explain all the factors leading to/not leading to engagement in the service. The present study contributes to a more comprehensive understanding of consumer behavior and the antecedent related to the behavior in OGS. This is in line with the invitation to further research in service innovations, as well as it investigates antecedents in markets that have not been studied before (Mani & Chouk, 2018). Further, the research also included both already experiencing users and non-experienced users, which has been requested by other papers (Chien, Kurnia, & Westarp, 2003). Lastly, Habib & Hamadneh (2021) invites future research for follow-up studies to broaden surveys across countries to analyze differences in online purchase intentions across economies and cultures, which is what this specific study does.

Although the findings in the research have exciting implications from a theoretical and managerial view, there are still some limitations. First, the model presented did not find any significant relationship between security risk and demographic variables to engagement in OGS. This can be because 50% of the respondents had already tried the service, which could have resulted in biased results. Since this study measured engagement on a self-reporting bias, it would be interesting to conduct an experiment on actual usage rather than an online survey to see if perceived security risk and demographic variables would affect engagement. Thus, future research should focus on the real use of OGS, examine the observed engagement, and obtain data from firms offering the service. Furthermore, the research aimed to create an overview of the Norwegian market. However, as the survey got shared in online social groups, mainly including people from larger cities (such as Oslo and Stavanger), it is unclear how the hypothesis testing would have changed if more people living outside the cities had participated.

Lastly, as seen in the model testing, the performance risk variable did not come out with satisfactory factor loading. Thus, it got removed from the analysis. This specific variable has been identified as a barrier to engagement by prior research. Therefore, future research should also implement this variable to see if it impacts engagement. For this purpose, as well as to find additional factors than can explain engagement, it might be essential to conduct qualitative research in order to discover unknown antecedents.

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Appendix

The questions used in the analysis form the survey with sources:

Construct	Source	Original item	Modified item	Scale
General	-	Have you tried online grocery shopping?		
Trust	Rose et al. (2012)	Internet shopping can be trusted, there are no uncertainties.	Online grocery shopping can be trusted, there are no uncertainties.	Likert-scale
Trust	Rose et al. (2012)	In general, I can rely on Internet shopping websites to keep the promises that they make	I can rely on the websites/apps providing online grocery service to deliver their promises	Likert-scale
Trust	Gefen et al (2003)		I believe that the vendors providing online grocery services has nothing to gain by “cheating”	Likert Scale
Risk	Bianchi and Andrews (2012)	There is too much uncertainty associated with using the internet to make purchases	There is too much uncertainty related to online grocery shopping to make a purchase (e.g, risk of receiving wrong products, perishable products, etc.)	Likert-scale

Risk	Bianchi and Andrews (2012)	Compared with other ways of making purchases, I think that using the internet is more risky	Compared to buying groceries physically in stores, I think online grocery shopping is more risky	Likert-scale
Risk	Bianchi and Andrews (2012)	I feel safe giving my personal details to an Internet shopping website if requested	It feels safe to give personal details such as address, name, email, phone number, etc. to an online grocery service company.	Likert-scale
Risk	Bianchi and Andrews (2012)	I feel safe making purchases on the internet using my credit card	It feels safe to use my credit card online to buy groceries	Likert-scale
Usage Barrier	Mani e Chouk (2018)	Learning smart bank services will be easy for me	Learning online grocery shopping systems/apps/web sites was/will be easy for me	Likert-scale
Usage Barrier	Mani e Chouk (2018)	It is easy to get results that I desire from smart bank services	It is easy for me to get the products I desire from online grocery shopping services	Likert-scale
Tradition barrier	Mani e Chouk (2018)	Human contact in providing services makes the process enjoyable for the customer	The social part of buying groceries makes the process enjoyable	

Tradition barrier	Mani e Chouk (2018)	I like interacting with the person who provides the service	I like interacting with the staff in grocery stores	
Tradition barrier	Mani e Chouk (2018)	Personal attention by the service employee is not very important to me	Personal attention by the staff in grocery stores is not very important to me	
Resistance (engagement)	Mani and Chouk (2018)	I'm likely to be opposed to the use of smart bank service	I'm likely to be opposed to the use of online grocery shopping	Likert-scale
Resistance (engagement)	Mani e Chouk (2018)	The smart bank services are not for me	The online grocery shopping service is not for me	Likert-scale
Engagement	-	The amount of physical grocery stores is so big, making online grocery shopping unnecessary		Likert-scale
General	-	What's your age?		
General	-	What's your gender?		

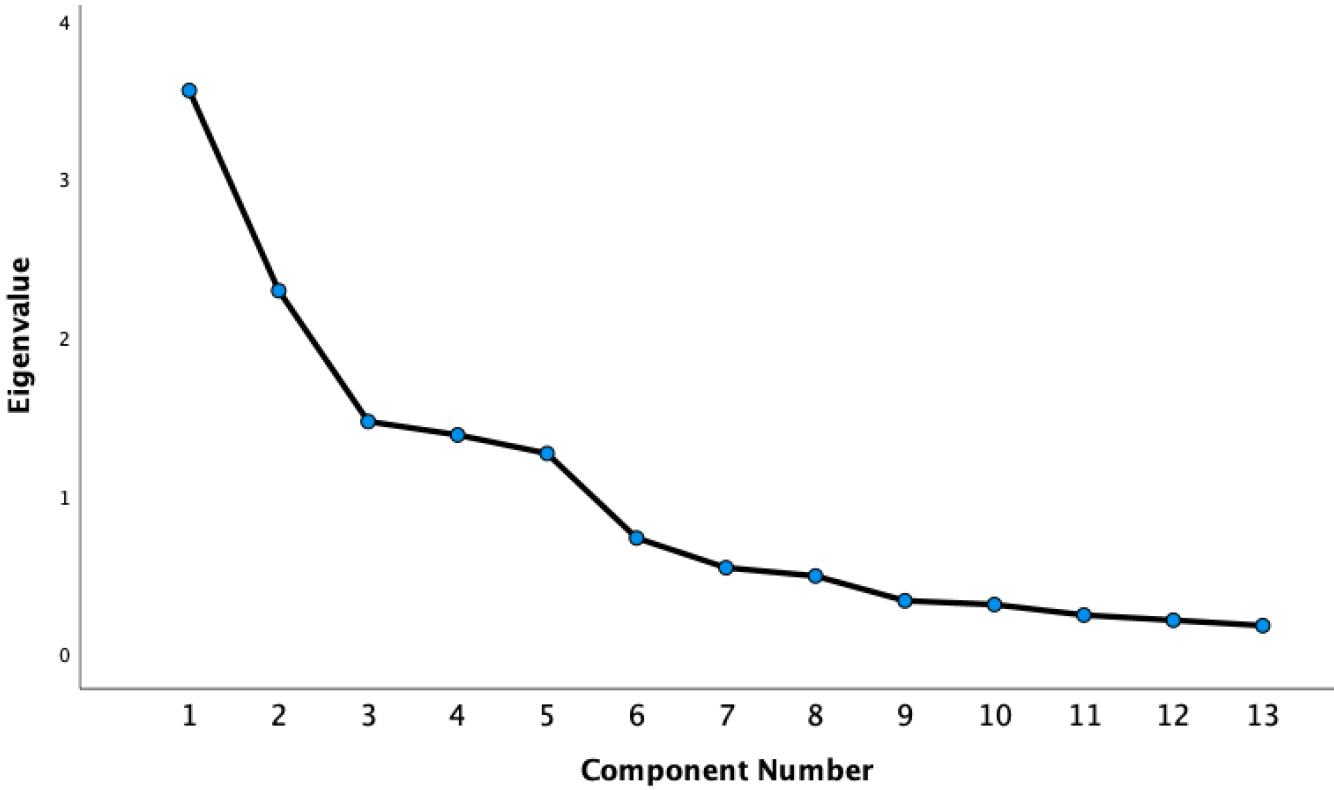
Descriptive statistics

Sample statistics		*n=234*
Gender	Male	57.6%
Age	19-30	30 %
	31-40	20 %
	41-50	15.2%
	51-60	15.2%
	60+	19.6%
Number of people who has used OGS	Yes	50.8%

Factor loadings before and after dropping

Items	**All item**	**After dropping**
Trust		
I believe that the vendors providing online grocery shopping practices has nothing to gain by cheating	.805	.870
In general, there are no uncertainties related to online grocery shopping and the practice is reliable and can be trusted	.834	.880
I can rely on grocery shopping companies to deliver their promises	.837	.856
I can rely on webistes / apps provided by the online grocery companies	.812	Dropped
Security Risk		
It feels safe to give personal data such as address, name, email, phone number, etc., to an online grocery shopping vendor	.762	.921
It feels safe to use my credit card online to buy groceries	.713	.897
Performance risk		
There is too much uncertainty related to online grocery shopping to make a purchase (e.g, risk of receiving wrong products, perishable products, etc.)	.430	Dropped
Compared to buying groceries physically in stores, I think online grocery shopping is more risky	.327	Dropped
Tradition		
Personal attention by the staff in grocery stores is not very important to me (R)	-.713	-.726
I like interacting with the staff in grocery stores	.907	.924
The social part of buying groceries makes the process enjoyable	.730	.803
Usage_Complexity		
Learning online grocery shopping systems/apps/web sites was/will be easy for me	.795	.839
It is easy for me to obtain the results that I desire from online grocery shopping practices	.592	.783
Engagement		
In general, online grocery shopping is a service that is not for me (R)	.731	.834
In sum, I am likely to be opposed to the use of online grocery shopping (R)	.790	.845
The amount of grocery stores close to where I live are so big making online grocery shopping unnecessary (R)	.652	.590

Scree plot



T-tests

Items	t-value	df	Significance
Trust (AVE .755; α .880; CR .902)			
I believe that the vendors providing online grocery shopping practices has nothing to gain by cheating	39.982	235	<.001
In general, there are no uncertainties related to online grocery shopping and the practice is reliable and can be trusted	46.440	235	<.001
I can rely on grocery shopping companies to deliver their promises	41.042	235	<.001
Security Risk (AVE .826; α .865; CR .905)			
It feels safe to give personal data such as address, name, email, phone number, etc., to an online grocery shopping vendor	47.161	235	<.001
It feels safe to use my credit card online to buy groceries	50.106	235	<.001
Tradition (AVE .675; α .763; CR .899)			
Personal attention by the staff in grocery stores is not very important to me (R)	29.336	235	<.001
I like interacting with the staff in grocery stores	29.906	235	<.001
The social part of buying groceries makes the process enjoyable	25.633	235	<.001
Usage_Complexity (AVE .659; α .707; CR .794)			
Learning online grocery shopping systems/apps/web sites was/will be easy for me	63.775	235	<.001
It is easy for me to obtain the results that I desire from online grocery shopping practices	41.341	235	<.001
Engagement (AVE .586; α .705; CR .806)			
In general, online grocery shopping is a service that is not for me (R)	33.348	235	<.001
In sum, I am likely to be opposed to the use of online grocery shopping (R)	35.002	235	<.001
The amount of grocery stores close to where I live are so big making online grocery shopping unnecessary (R)	26.084	235	<.001

ANOVA analysis

Dependent variable: Engagement	Overall model (n = 234)			
Source	**Type III sum of squares**	**MS**	**F**	***p***
Corrected model	550.526	2.898	3.997	.001
Intercept	1540.624	1540.624	2125.4300	.001
Trust	38.295	2.553	3.552	.003
Securtiy_risk	23.540	2.354	3.247	.001
Usage_complexity	32.614	2.718	3.749	.003
*Trust * Security_risk*	2.769	2.769	3.820	0.057
*Trust * Tradition*	5.323	1.774	2.448	.076
*Trust * Usage_complexity*	5.476	2.738	3.777	.030
*Securtiy_risk * Tradition*	.000	.	.	.
*Securtiy_risk * Usage_complexity*	.000	.	.	.
*Tradition * Usage_complexity*	.157	.079	.109	.897
*Trust * Security_risk * Tradition*	.000	.	.	.
*Trust * Security_risk * Usage_complexity*	.000	.	.	.
*Trust * Tradition * Usage_Complexity*	.000	.	.	.
*Security_risk * Tradition * Usage_complexity*	.000	.	.	.
*Trust * Security_risk * Tradition * Usage_complexity*	.000	.	.	.
Error	32.620	.725		
Total	4531.778			
Corrected Total	583.183			

R Squared = .944 (Adjusted R Squared = .708)

Summary

Our society has seen a considerable change in buying patterns and consumer behavior in online shopping in recent years. E-commerce has become a crucial part of the global retail structure. In fact, over two billion people purchased goods or services online in 2020, resulting in a 4.2 trillion U.S. dollars revenue (Coppola, 2021). Consumers use e-commerce for everything, such as fashion, groceries, and pharmaceutical products, where apparel, accessories, and footwear are the number one e-commerce sector globally. The global online grocery market, on the other hand, reached a significantly smaller amount, touching 198.5 billion dollars in 2020 (ResearchAndMarkets.com, 2020). The global food & grocery retail market size in 2020 was worth 12.29 trillion dollars (Market Study Report, 2021), meaning that only 1.62% of the total turnover in the market is generated by online shopping. Based on a survey completed by McKinsey & Company (2020), it comes to light that about 15 percent of the surveyed EU-5 consumers (France, Germany, Italy, Spain, and the United Kingdom) shopped for groceries on a website that they were not familiar with during the COVID-19 pandemic. Among these consumers, more than 50 percent opinioned that they will continue using online grocery shopping after the pandemic (McKinsey & Company, 2020). It regularly pops up new services such as Uber Eats, Oda (a Norwegian company that went international in 2021), Foodora Market, and Glovo. Even though the rise in services occurs, many consumers are not satisfied with online grocery shopping. The majority still hold on to their old habit and physically visit grocery stores. For example, in Italy, France, and Germany, only 13 - 16 percent of the McKinsey & Company (2020) report respondents were very satisfied with online grocery shopping. Nevertheless, is this measure the same in developed northern countries such as Norway, Sweden, and Denmark? These countries score very high on the network readiness index (2020), indicating that online grocery shopping should be an act of ease for the population. However, no recent studies regarding engagement in online grocery shopping have been carried out in developed countries in the north.
Therefore, the present research will investigate the positive and negative antecedents influencing the intention to engage with online grocery shopping in Norway.

Literature review

Online grocery shopping (hereinafter referred to as OGS) is a type of e-commerce that provides customers and organizations with food-related products such as bread, milk, and pasta in exchange for money (Driediger & Bhatiasevi, 2019, pp. 224-237). The ordering of products often takes place on websites or apps, but there are also existing options for calling and texting to tell the supplier what the consumer wants.

Innovation adoption and resistance

Innovation adoption processes can be described as "*the process through which an individual or other decision-making unit passes from first knowledge to an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and confirmation of the decision"* (Rogers, 1962). Over the last years, there have been different opinions about adoption and resistance towards innovations and whether the antecedents overlap or are distinct. For example, where Garcia et al. (2007) argues that resistance factors are separate antecedents, Day and Herbig (1992) claim that the factors can overlap. Therefore, it is sufficient to investigate both negative and positive antecedents affecting consumer engagement in OGS.

Why people adopt online grocery shopping services

Research in OGS has taken place for a long time, beginning in the late 90s (Driediger & Bhatiasevi, 2019). As a result, several reasons why consumers adopt the service have been discovered, and a wide range of theoretical approaches has been used in the current years to understand why (or why not) a consumer is adopting OGS. For example, the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and customer experience are the most widely used theoretical approaches to find answers to the adoption. Driediger et al. (2019) used the TAM as their theoretical framework for the adoption of OGS in Thailand. Here the authors uncovered perceived ease of use, perceived usefulness, intention to use, subjective norm, and perceived enjoyment to have a significant relationship to engagement in OGS.

Furthermore, a principal component and two-stage cluster analysis done by Brand et al. (2020) identified five well-defined and highly interpretable segments according to their attitudes, norms, perceptions, and beliefs. They profiled the segments by their socio-economic and grocery shopping characteristics. From those 'super-shoppers' (Flynn & Goldsmith, 2015) who are attracted to the online experience and want more to those who appear resistant to engagement in online shopping. The key distinguishing features of these segments suggest that consumers adopt OGS because of convenience, perceived benefits, technology effect, time pressures, and social and environmental dimensions of personal norms and beliefs.

Why people resist online grocery shopping

Consumer resistance can be explained as a resistance to change caused by an innovation (Ram, 1987). Consumers may resist innovations "*either because it poses potential changes from a satisfactory status quo or because it conflicts with their belief structure*" (Ram & Sheth, 1989).

Trust has been identified as a major barrier in the adoption of e-commerce (Chang, Cheung, & Tang, 2013), and a consumer's anxiety about an online vendor´s trustworthiness is among the most crucial elements in distinguishing online buyers from non-buyers (Kim & Park, 2013). Further, McKnight & Chervany (2001) analyzed and interpreted all the existing trust definitions. They established that trust definitions could be split into two broad classes. The first class are different conceptual types and refers to what type of concept trust is. Examples are attitudes, beliefs, and behaviors. The second class they identified is different referents, which refers to the object of trust. Regarding online trust, it involves the whole process and system related to e-commerce in which the consumer carries out a transaction (Lee & Turban, 2001).

Another barrier leading to resistance is the perceived uncertainty (risk) related to OGS. According to Jacoby and Kaplan (1972), there are seven different domains related to risk: financial, performance, physical, psychological, social, time, and opportunity cost.

The psychological barriers identified by Ram and Sheth (1989), on the other hand, take place when a consumer experiences that the innovation requires them to change their already existing beliefs or traditions (Antioco & Kleijnen, 2010). This could for example be traditional variables. The barriers related to traditions may occur when the consumer finds the innovation to break with their traditions. This is highly relevant for OGS engagement, as using it will break the habit of going shopping at the local store, meeting friends, interacting with staff, etc. Thus, breaking this tradition can result in solid unfavorable reactions (such as negative word of mouth) towards OGS (Kulviwat, Bruner, & Al-Shuridah, 2009), forcing people not to be using it.

Research done by Anderson et al. (2003) proposes that consumers living in non-urban areas will adopt online shopping more frequently because they have limited in-store shopping opportunities. This hypothesis is empirically confirmed by a range of studies at the individual level. For example, Krizek, Li and Handy (2005) discovered that people living outside city centers have a higher probability of using e-shopping. At the regional level, households in less developed cities with few local stores usually require more effort for shopping travel (e.g., more travel time and costs). Thus, they may prefer to use OGS to reduce the number of trips (Ren & Kwan, 2009). Further, trustworthy sources claim that Norway has the most grocery shops per citizen among the northern countries, with 3840 stores spread around the country (SIFO, 2019) (Nielsen, 2019)**.** Therefore, based on previous research related to the subject, it can be assumed that the Norwegian population is not engaged in OGS because of the high offering of in-store shopping opportunities located within the short range of their homes.

Lastly, according to many researchers and studies, for example, Laukkanen (2016), Rogers (1995), and Venkatesh et al., (2003) are consumer demographics essential elements in decisions for engagement in innovations. In fact, Laukkanen (2016) claims that the most frequently used user demographics in past research regarding electronic services, such as OGS, are age and gender. Further, it has been found that the elderly are less likely to adopt OGS based on technological understanding and security risks (Hiser, Nayga, & Capps, 1999) (Morganosky & Cude, 2000) (Raijas, 2002).

Framework and hypotheses

The theoretical skeleton of the research: The Ram and Sheth (1989) model

Numerous theoretical models have been developed in the marketing literature to better understand the precursors of consumer engagement toward OGS. However, Ram and Sheth (1989) propose a conceptual framework based on barriers that endorse resistance, where the model identifies two categories of consumer resistance to innovations: (1) functional barriers and (2) psychological barriers. Their model state that barriers arise if consumers perceive significant changes from adopting the innovation (Ram & Sheth, 1989).

Modification of the model

Studies examining resistance to innovations in services generally use the Ram and Sheth (1989) model as a theoretical framework to identify relevant barriers to engagement. The model has been extended and modified in several previous studies regarding consumer resistance to innovations in services. For example, Mani and Chouk (2018) extended the model to examine the barriers resulting in consumer resistance to smart services as an innovation. They proposed (including the functional and psychological barriers) an inclusion of three types of barriers: technological vulnerability barriers, ideological barriers, and individual barriers.

Further, Rogus et al. (2020) identified cost, quality control of perishable fresh food (risk), and a general feeling of untrust in the process itself as barriers for not adopting OGS. However, the value barrier (cost) will not be included in this model. This is because Oda (a company offering online grocery shopping in Norway) is cheaper than all the physical stores in Norway. In fact, a shopping cart from Oda, compared to the most affordable grocery stores in Norway, was 5% cheaper (including the same items). The ascertained barriers Rogus et al. (2020) claim to impact the adoption of OGS (except cost), will be the epitome of the modified model of Ram and Sheth´s (1989) framework. In addition, the tradition and consumer demographic extension from Mani and Chouk (2018) will also be included. Implementing the findings in these studies to the model

makes it both reliable and valid as a conceptual framework for the present study. Lastly, the present study and framework are in line with current marketing literature on consumer engagement to innovation in services, for example, the work of Joachim, Spieth, and Heidenreich (2018), as well as Laukkanen (2016).

Justification of antecedents and hypotheses

Trust barrier

Several studies have claimed that satisfaction (Shim, Eastlick, Lotz, & Warrington, 2001) (Nesset, Nervik, & Helgesen, 2011) and trust (McCole, Ramsey, & Williams, 2010) (Toufaily, Souiden, & Ladhari, 2013) are the most influential originators of customers´ repurchase intentions in online shopping. The importance of trust is further emphasized in an online transaction context, particularly involving consumables like food and groceries (Citrin, Stem Jr., Spangenberg, & Clark, 2003), and is a crucial condition for the success of an online grocer (Pavlou & Fygenson, 2006) (Toufaily, Souiden, & Ladhari, 2013). The inclination to trust is a crucial element of consumers' attitudes, and if it is established, it triggers an increase in a consumer's intention to shop online (Chen & Barnes, 2007) (Gefen, Karahanna, & Straub, 2003). In the research done by Gefen et al. (2003), they also found that consumer trust as a concept is as important to online commerce as the Technology Acceptance Model. With regards to OGS, the buyers are ordering different sorts of food, such as fresh meat and perishable fruits, where they must trust that the retailer picks the best quality products for them. In addition, they must trust that the goods are delivered promptly without damaging the products. Suppose the customer doesn't trust the process and believes the vendors will put their interest before the customers´. In that case, it most likely will be a barrier resisting consumers from engaging in OGS. Based on previous studies that identify trust as an important factor to engage in a technological service, the following hypothesis is proposed:

H1: *Trust in online grocery vendors has a positive impact on consumer engagement in online grocery shopping*

Risk barrier

Risk has been identified as a leading contributor to why consumers do not adopt OGS. Actually, Lee & Turban (2001) claim trust is related to risk, and past studies argue that shoppers will evaluate their level of trust towards their perceived risk during an OGS experience. Thus, there is not sufficient to measure trust alone because perceived risk influence and determine the level of trust (Soopramanien, 2011) (Bianchi & Andrews, 2012). Simply, the consumers who trust the e-retailer will perceive less risk during the OGS process. It is proposed that during an OGS process, the customer may develop negative feelings such as displeasure, disappointment, sadness, anxiety, anger, or frustration over the process, increasing perceived risk towards OGS, which in turn results in resistance towards the service.

In the service context where OGS takes place, security risk, which is defined as *"Unauthorized third-party access of consumer´s personal and financial information*" (Miyazaki & Fernandez, 2001), has been identified as the risk with the most vital impact on consumer behavior (Laukkanen, 2016). Also, Driediger & Bhatiasevi (2019) claim in their OGS in Thailand study that consumers reported a high risk associated with OGS. More specifically, the consumers expressed concerns about the quality of the products because they do not have the option to pick products themselves. Thus, the following hypotheses are proposed:

H2: *Perceived security risk has a negative impact on consumer engagement in online grocery shopping*

H3: *Perceived performance risk has a negative impact on consumer engagement in online grocery shopping*

Usage barrier

In relation to OGS (arguably a technological innovation), the usage barrier can be comparable to the perceived complexity a consumer is experiencing related to the technology. More specifically, Rogers (1995) refers to complexity as the *"degree to*

which an innovation is perceived as difficult to understand and use." Further, Ram (1987) claims that the usage barrier stems from two dimensions: (1) the complexity of the idea (easy to understand) and the complexity of the implementation (easy to use).
The influence of usage barriers on consumers' resistance to technological innovations is well documented and understood. Various studies indicate that the perception of the complexity of using technological innovations such as OGS (both on websites and apps) makes consumers inclined to reject new services/products (Antioco & Kleijnen, 2010) (Kuisma, Luakkanen, & Hiltunen, 2007) (Laukkanen, 2016). Therefore, based on previous studies that have identified complexity as an essential barrier to resistance to technology in services such as OGS, the following hypothesis is presented:

H4: *Perceived complexity has a negative impact on consumer engagement in online grocery shopping*

Tradition barrier
The tradition barrier comes to play when innovations are incompatible with a consumer's existing norms, beliefs, values, and past experiences (Ram & Sheth, 1989). In compliance with Dabholkar & Bagozzi (2002), the need for human interaction can be defined as *"the importance of human interaction to customers in service encounters."*
A transaction can be seen as an opportunity to meet and interact with personnel and other customers in relation to grocery shopping. Research has noted that a dominant need for human interaction may hinder consumers from implementing self-service technologies such as OGS (Marr & Prendergast, 1993) in their daily life. It has also been claimed that some consumers may only require human interaction on specific incidents, e.g., making a complaint or getting an answer to a particular question or problem (Walker & Johnson, 2006). Thus, based on previous literature, the following hypothesis is proposed:

H5: *The need for human interaction has a negative impact on consumer engagement in online grocery shopping*

Consumer demographic

The existing literature also suggests that there are differences between gender and age regarding adoption of innovations in services. For example, Laukkanen (2016) found in his research that men are nearly twice as probable to use services based on technology compared to females, as well as elderly consumers are more resistant to technology-based services compared to young people. Thus, the following hypotheses are proposed:

H6: *Gender (women) has a negative effect on consumer engagement in online grocery shopping*

H7: *Age (elderly) has a negative effect on consumer engagement in online grocery shopping*

Methodology and results

Quality of constructs

To test the quality of the constructs and determine the number of items to each factor, a confirmatory factor analysis using SPSS software was conducted. More specifically, a principal component analysis with varimax rotation was used. The reason for choosing a confirmatory factor analysis was because the constructs were adopted from earlier research in related fields. The cut-off value for the analysis was set to .50. The output from the analysis showed that some of the constructs cross-loaded, and the items didn't measure the planned construct. The items related to *"Performance_risk"* loaded above .500 on the same construct as the trust items and cross-loaded with more than .20 towards other constructs. Therefore, the construct got removed from further analysis.

A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity was carried out to check if the remaining items were appropriate to conduct a factor analysis with. KMO examines the strength of the partial correlation between the variables, where the Bartlett's Test of Sphericity checks if variables are related and ideal for factor analysis. A value of .50 or more in the KMO test indicates that the number of

samples taken for the factor analysis is sufficient, whereas a significant result in Bartlett´s Test of Sphericity indicates that the dataset is convenient for the factor analysis (Agkul, 2005) (Kalayci, 2010). As Table 1. shows, the KMO measure (.669) and Bartlett´s Test of Sphericity (<.001) indicated validity and that the data was suitable for factor analysis. Thus, the factor analysis was conducted with the variables, where all the items loaded highly on the respective constructs (see Table 2.).

Lastly, some of the constructs consist of only two items. It is well known that a factor should contain three (or more) items, but several studies over the past years argue that factors can consist of only two items. For example, Worthington & Whittaker (2006) argues that researchers should retain a factor only if they can interpret it in a meaningful way. Further, the same authors argue that it is possible to maintain a factor with only two items if they both have a factor score above .70 and are uncorrelated with other variables (Worthington & Whittaker, 2006). Further, Yong & Pearce (2013) also states that a factor with two variables is only reliable when the variables are highly correlated with each other (>.70) and relatively uncorrelated with other variables. The item's factor scores are above .70 and are relatively uncorrelated with items related to other constructs. Thus, based on previous research on the topic, it can be justified to go on with only two items.

Test of the research model

A multiple linear regression analysis was used to test the theoretical model by looking at R-Square (R^2). As Table 5. shows, the model summary of the regression model against engagement showed R^2 = .191. Accordingly, the R^2 should be high with respect to the research discipline. Anyway, since this paper is social research with the aim to explain consumer behavior, a high value of R^2 does not necessarily imply a real causal impact (Moksony, 1999). In fact, Moksony (1999) claims that in research where the aim is to explain or test a theory, a low R^2 reveals simply that the dependent variable is also affected by other factors in addition to the ones included in the model. Further, a low R^2 can also be justified from the work of Falk & Miller (1992). They argue for and

recommend coefficients to be greater than .10, suggesting that the present structural model presents sufficient explanatory power. Lastly, Hair et al. (2011) argue that R^2 results of .20 are considered high in disciplines such as consumer behavior. Thus, an R-Square = .191 indicates a good model fit.

Result of regression

Multiple linear regression was used to test if the chosen antecedents significantly explained engagement toward OGS. The overall regression was statistically significant with R^2 = .191, F (2, 229) = 9,025, and p = <.001. With regards to the antecedents towards engagement in OGS in Norway, the results indicate that *Trust* has a significant positive impact on engagement (β = .244, t = *3.676,* p < .001). Thus, H1 is supported. Regarding H2, the hypothesis is not supported as the influence of *Security_risk* on engagement in OGS is not statistically significant (β = .027, t = .400*,* p = 689). This can be explained by Norway's high network readiness index, making Norwegians feel safe about using online services. Further, *Tradition* (human interaction) has a negative significant effect on consumer engagement in OGS (β = -.333, t = -3.666*,* p < .001). This result support H3. Perceived *Usage_complexity* has a positive significant effect on engagement in OGS β = .300, t = 4.069*,* p < .001). Therefore, H4 is not supported. Finally, with respect to the demographic variables *Gender* and *Age,* the results do not show a significant relationship towards engagement. Thus, H5 and H6 are not supported.

Discussion

The main goal of this paper was to investigate the antecedents related to engagement in OGS in Norway. This was done by adding variables found in former research in OGS to the Ram & Sheth (1989) model. Thus, the present model included *Trust, Risk (security* and *performance), usage (abundance* and *complexity), Tradition (human interaction),* and *demographic (female and mature persons more resistant)*. Overall, the outcome of the research provides sufficient results to support the conceptual model:

The outcome of the regression analysis identified *Trust* as an essential antecedent for engaging in OGS in Norway (B = .244). This result is in line with similar studies regarding e-adoption. For example, Citrin et al. (2003) emphasizes the importance of trust in an online context, especially in contexts involving consumables like food and groceries. The inclination to trust is also a crucial element of consumers' attitudes, and if it is established, it triggers an increase in a consumer's intentions to shop online (Chen & Barnes, 2007) (Gefen, Karahanna & Straub, 2003). Indeed, in an online grocery service transaction, the consumer leaves all the effort on the vendor providing the service. The consumer cannot choose which specific product they will receive (e.g., the freshness of the fruit) and must trust that the best possible products are picked and delivered to them at the agreed time. Thus, if they trust the process and the vendor, it is more likely that they will engage in the service.

With regards to perceived security risk, the construct was not significantly related to engagement in OGS. This result was contrary to the expectations of the constructs as well as it is not in line with former research on the topic. For example, (Rudolph, Rosenbloom, & Tillmann, 2004) claims security risk is the main reason for not purchasing items on the internet. Anyway, the result can be explained by the high level of trust among Norwegian consumers toward OGS and the high network readiness index in the country. As pointed out before, studies in the field argue that trust is related to risk (Lee & Turban, 2001) and that shoppers will evaluate their level of trust towards their perceived risk during an OGS experience. Simply, the consumers who trust the e-retailer, which is the case in Norway, will perceive less risk during the OGS process.

The research also empirically confirms the relationship between the variable tradition (human interaction) and engagement in OGS. Actually, the need for human interaction is a major barrier to engagement towards OGS (B = -.333) and is the antecedent identified to have the most considerable effect in Norway. This result is in line with prior studies that have identified the need for human interaction as a barrier to the adoption of self-

service technologies (Marr & Prendergast, 1993) and the decision to use or continue to use (Walker & Johnson, 2006; Evanschitzky, Iyer, Pillai, Kenning, & Schütte, 2015).

Moreover, contrary to the expectations, the perceived usage complexity did not have a negative effect on engagement in OGS. In fact, the antecedent had a major positive effect on engagement (B = .300), which can be explained by several reasons. First of all, this result indicates that Norwegians tend to adopt, understand and use OGS easily. This phenomenon makes sense based on Norway's high network readiness index, which means Norwegian consumers are of high technological competence. Because, when the consumers feel they get the hold of using a technological service perceived as complex, they will get motivated to engage in the service. When being able to use a complex technology/service it will bring the feeling of joy, excitement, and achievement resulting in a positive effect on engaging in OGS.

Lastly, the relationship between age and gender in engagement in OGS was not significant. These findings may be explained by the fact that Norwegians are wealthy people, where both males, females, and old and young consumers have access to the internet and interact with it regularly. In fact, in 2018, most elderly in Norway used the internet daily, where 74% in the age group 61-70 years, 65% in the 71-80, and 52% in the 81-100 years used it daily.

Implications

This paper is contributing to several implications. First, the current research fills the academic literature with respect to the antecedent leading to engagement in the service in developed northern countries. Online environments offer similar experiences across countries, but how the consumers experience them differs. Prior research argues that culture influences the values consumers have (Hofstede, 1984), what ambitions they chase (Hazel & Shinobu, 1991), and how they understand, classify, and reason about environments (Nisbett, Choi, Peng, & Norenzayan, 2001). There are plenty of examples

of services that have had massive success in one country but failed with the same formula, for example, eBay in China and Tesco and Walmart in Japan (Shavitt & Barnes, 2020). Therefore, it is crucial to enrich prior literature to expand consumer behavior in OGS in other geographical markets and identify which antecedents lead to engagement. As the present study shows, complexity positively affects engagement in OGS, which is the opposite of geographical areas in the U.S., UK, and Asia. There was no significant relationship between risk and the demographic variables, which has been argued to be substantial barriers in other countries. Therefore, the present research contributes to a more comprehensive understanding of consumer behavior in OGS in general.

Second, as this research uses the original variables by Ram & Seth (1989) (excluding the value barrier), the study enriches existing literature by adapting it to OGS. This model is usually used as a theoretical framework when the aim is to find reasons for *resistance* to innovation (Antioco and Kleijnen, 2010; Laukkanen, 2016; Laukkanen et al., 2008). This paper has proven that the model, with its original variables, can also be used to identify positive antecedents to engagement.

Third, prior research in OGS looks at acceptance models, whereas the present study identifies antecedents by using a theoretical model focusing on resistance to technological innovations. This was done because the current research investigates the effect of both negative and positive antecedents on engagement. By doing so, the paper proves that not only acceptance models, but also other theoretical models are sufficient to use when investigating antecedents to OGS.

Fourth, as there has not been any paper investigating the Nordic markets regarding OGS, it helps managers in the northern markets better understand the antecedents they must overcome/use to make consumers engage in the service. More specifically, this paper has proven that companies must reinforce the level of trust consumers have towards their service, as it significantly affects engagement. If the companies offering the service lose

their customers' trust, the customers will not engage in the service. Companies located in northern countries must provide their customers with excellent customer service and deliver their promises. Otherwise, they will lose their customers to physical stores.

Fifth, the findings show that even though all age and gender groups are familiar with using this technological service, the need for human interaction plays an important role. Therefore, companies should offer a hybrid experience that fluctuates the use of the online service and human interaction when necessary. Moreover, thanks to today´s algorithms, personal contact can also be offered by providing personalized and real-time offers, making the consumer feel they are being seen and valued. Lastly, as the research identified complexity to impact engagement to OGS positively, companies need to consider the customers´ self-image and aim to make them feel that the technology is harmonious with their habits and competence in technology. This means that the companies should create the feeling of achievement and joy by using the service, which results in motivation to use OGS.

Conclusion, limitations, and future research

Even though OGS is experiencing rapid growth globally, academic research does not genuinely explain all the factors leading to/not leading to engagement in the service. The present study contributes to a more comprehensive understanding of consumer behavior and the antecedent related to the behavior in OGS by using the Ram & Sheth (1989) model. This is in line with the invitation to further research in service innovations, as well as it investigates antecedents in markets that have not been studied before (Mani & Chouk, 2018). Further, the research also included both already experiencing users and non-experienced users, which has been requested (Chien, Kurnia, & Westarp, 2003). Lastly, Habib & Hamadneh (2021) invites future research for follow-up studies to broaden surveys across countries to analyze differences in online purchase intentions across economies and cultures, which is what this specific study does.

Although the findings in the research have exciting implications from a theoretical and managerial view, there are still some limitations. First, the model presented did not find any significant relationship between risk and demographic variables to engagement in OGS. This can be because many of the respondents had already tried the service, which could have resulted in biased results. Since this study measured engagement on a self-reporting bias, it would be interesting to conduct an experiment on actual usage rather than an online survey to see if perceived security risk and demographic variables would affect engagement. Thus, future research should focus on the real use of OGS, examine the observed engagement, and obtain data from firms offering the service.

Furthermore, the research aimed to create an overview of the Norwegian market. However, as the survey got shared in online social groups, mainly including people from larger cities (such as Oslo and Stavanger), it is unclear how the hypothesis testing would have changed if more people living outside the cities had participated. The consumer behavior would likely change when moving out from cities (due to logistical challenges in OGS) where infrastructure is less developed. Lastly, as seen in the model testing, the performance risk variable did not come out with satisfactory factor loading. Thus, it got removed from the analysis. This specific variable has been identified as a barrier to engagement by prior research. Therefore, future research should also implement this variable to see if it impacts engagement. For this purpose, as well as to find additional factors than can explain engagement, it might be essential to conduct qualitative research in order to discover unknown antecedents.