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DETERRENTS OF ONLINE GROCERY SHOPPING – A PHENOMENOGRAPHIC STUDY OF FINNISH CONSUMER PERCEPTIONS

JYVÄSKYLÄN YLIOPISTO
INFORMAATIOTEKNOLOGIAN TIEDEKUNTA
2023

ABSTRACT

Mäkelä, Jori
Deterrents of online grocery shopping – A phenomenographic study of Finnish consumer perceptions
Jyväskylä: University of Jyväskylä, 2023, 101 pp.
Information Systems, Master's Thesis
Supervisor: Frank, Lauri

E-commerce is transforming consumer shopping, with customers embracing online channels for their time saving, convenience, wider assortment, and increased price competition. However, online grocery shopping (OGS) has struggled to gain popularity. Despite a surge in adoption during the COVID-19 pandemic, many consumers remain reluctant to buy groceries online. The current paper investigates the factors that deter consumer adoption of OGS. Previous literature is systematically reviewed, and a synthesis of the findings is presented. Theoretical groundwork for the subsequent empirical study is laid out in the literature review. Semi-structured interviews were used to collect qualitative data from a sample of eight Finnish consumers who reject the idea of OGS. The phenomenographic research aimed to understand the participants' perceptions of OGS to answer what deters them from adopting OGS. A combination of inductive and deductive methods were used in a thematic analysis of the empirical data. Key themes that negatively influence participants' intentions and desires to purchase groceries online were derived from the data and presented in a theoretical framework derived from the UTAUT2 model. Findings regarding push, pull, and mooring factors involved in the transition from conventional grocery shopping to OGS are discussed. The current findings corroborate earlier research that a variety of consumer concerns impede OGS adoption. Consumers are concerned about the quality of perishable products and additional service fees when contemplating OGS. Participants also displayed limited knowledge of online grocery services, which may weaken potential pull motivators. Grocery shopping is highly habitual, and participants described routine shopping behaviors. Ingrained habits may function as mooring factors. Some participants had made efforts to optimize their offline grocery shopping. Complacency with conventional grocery shopping was typical, and participants lacked push motivators that would compel them to adopt OGS. Participants could conceive advantages of OGS and viewed it as a potentially useful and valuable service under the right circumstances.

Keywords: online grocery shopping, e-grocery, online grocery services, electronic grocery shopping, customer behavior, technology adoption

TIIVISTELMÄ

Mäkelä, Jori
Ruoan verkko-ostamisen esteet – Fenomenografinen tutkimus suomalaisten kuluttajien mielteistä
Jyväskylä: Jyväskylän yliopisto, 2023, 101 s.
Tietojärjestelmätiede, pro gradu -tutkielma
Ohjaaja: Frank, Lauri

Verkkokauppa mullistaa kuluttajakauppaa ja kuluttajat omaksuvat verkon ostokanavia säästääkseen aikaa, helpottaakseen arkeaan, tavoittaakseen suuremmat valikoimat ja hyötyäkseen verkon hintakilpailusta. Ruoan verkkokauppa on kuitenkin kasvattanut suosiota hitaasti. Huolimatta käyttöönoton lisääntymisestä COVID-19-pandemian aikana, monet kuluttajat ovat edelleen haluttomia ostamaan elintarvikkeita verkosta. Tässä artikkelissa tutkitaan tekijöitä, jotka lannistavat kuluttajia ostamasta ruokaa verkosta. Aikaisempi kirjallisuus katselmoidaan systemaattisessa kirjallisuuskatsauksessa ja löydöksistä esitetään synteesi. Myöhempi empiirinen tutkimus pohjautuu kirjallisuuskatsauksen löytöihin. Kahdeksalla puolistrukturoidulla haastattelulla kerättiin laadullista aineistoa suomalaisista kuluttajista, jotka eivät tee ruokaostoksia verkossa. Fenomenografisen tutkimuksen tavoitteena oli ymmärtää osallistujien käsityksiä ruoan verkkokaupasta ja vastata siihen, minkä tekijöiden takia he eivät tee ruokaostoksia verkossa. Empiirisen datan temaattisessa analyysissä käytettiin induktiivisten ja deduktiivisten menetelmien yhdistelmää. Avainteemat, jotka vaikuttavat epäsuotuisasti osallistujien aikomuksiin ja haluihin ostaa ruokaa verkosta, johdettiin löydöksistä ja esitetään UTAUT2-mallista johdetussa teoreettisessa viitekehyksessä. Havaintoja työntävistä, vetävistä ja ankkuroivista voimista, jotka vaikuttavat osallistujien päätökseen perinteisen ruokaostamisen ja ruoan verkko-ostamisen välillä käsitellään pohdinnoissa. Tutkimuksen löydökset vahvistavat aikaisempaa tutkimusta, jonka mukaan monet huolenaiheet estävät kuluttajia ostamasta ruokaa verkosta. Kuluttajat ovat huolissaan pilaantuvien elintarvikkeiden laadusta ja lisäpalvelumaksuista harkitessaan ruoan verkko-ostamista. Osallistujat myös osoittivat rajallista tietämystä ruoan verkkokaupasta, mikä heikentänee palveluiden potentiaalista vetovoimaa. Ruokaostaminen on erittäin tottumuksellista, ja osallistujat kuvasivat rutiininomaista ostokäyttäytymistä. Syvälle juurtuneet tavat saattavat toimia ankkuroivina tekijöinä. Jotkut osallistujat olivat pyrkineet optimoimaan tavanomaista ruokaostamistaan. Tyytyväisyys tavanomaiseen ruokaostamiseen oli tyypillistä, eivätkä osallistujat kokeneet työntäviä voimia, jotka motivoisivat heitä ostamaan ruokaa verkosta. Osallistujat kykenivät hahmottamaan etuja ruoan verkko-ostamisessa ja pitivät sitä mahdollisesti hyödyllisenä ja arvokkaana palveluna oikeissa olosuhteissa.

Asiasanat: ruoan verkko-ostaminen, ruoan verkkokauppa, ruokaverkkokauppa, kuluttajakäyttäytyminen, teknologian käyttöönotto

FIGURES

TABLES

CONTENTS

1 INTRODUCTION

The current paper presents a study of factors deterring Finnish consumers from shopping groceries online. Consumers have been slow to embrace online grocery shopping (OGS) relative to other product categories in e-commerce. Commerce has been transformed by advances in information and communication technologies, namely the development and commercialization of the internet and the proliferation of personal computers. These developments caused shifts in both the demand and supply of retail services. The buying and selling of goods over the internet became known as electronic commerce or e-commerce. E-commerce became ever more ubiquitous with the arrival of smartphones and wireless networks, which made online shopping accessible from seemingly anywhere at any time.

Economic and marketing theory presents humans as economic actors with unlimited variations of wants, but finite needs (Kotler et al., 2017). Needs are requirements or conditions that are necessary or essential for self-preservation and survival (Ibid.). All humans need food for nourishment. Most modern humans in developed societies acquire food indirectly by earning an income from a specialized job and spending the income on groceries. Grocery trade accounts for a significant share of all retailing, evidence of the endless human need for sustenance.

OGS grew slowly until the COVID-19 pandemic popularized the activity for more consumers (Morgan, 2020; Verdon, 2022). Calls for social distancing and concerns about the safety of public spaces facilitated the growth of the online grocery market. Yet many consumers still choose to visit their local grocery markets instead of shopping for groceries online (Eurostat, 2023b). Some consumers have experimented with OGS but have not made it a regular habit.

The staggering size of the grocery market (for example Eurostat, 2023c; United States Census Bureau, 2022) and the unrelenting growth of e-commerce (for example Baluch & Main, 2023) make OGS an intriguing and important target of research. The role that food and perpetual grocery shopping play in ordinary people's daily lives adds to the gravity of the ongoing transition to OGS. The current paper asks the following primary research question:

- What factors deter consumers' adoption of OGS?

This question is primarily addressed in the empirical section of the study, but first the topic of OGS is contextualized in a literature review. The literature review aims to answer two secondary research questions:

- What are the various customer-facing service elements that differentiate online grocery services?
- What constraints do businesses encounter in designing and delivering online grocery services?

The current paper studies electronic commerce of groceries (i.e. food and supplies sold by grocers in establishments such as supermarkets), otherwise known as e-grocery. Commerce can be understood as trade resulting from the meeting of supply and demand in a market. Households shopping for groceries and contemplating their means for doing so represent the demand side of e-grocery. Businesses operating online grocery services and picking and delivering online orders for the households represent the supply side of e-grocery. Supply and demand interact to arrive at an equilibrium that in this context represents the adoption rate of OGS.

Current online grocery business models and service configurations are investigated briefly to understand what the consumers are encountering in the marketplace and how the supply of services shapes consumers' perceptions and the demand for services. The design of online grocery services is constrained by challenges in the operation and delivery of such services, often originating from the inherently delicate and perishable nature of groceries.

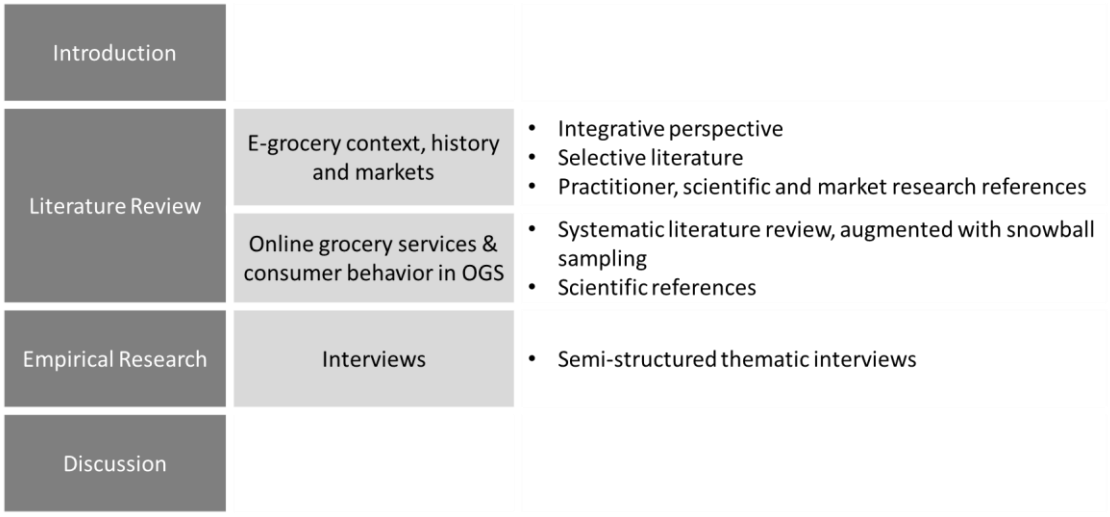
The principles of commerce are investigated and introduced to the reader. The role of retailing within commerce and its implications for the functioning of the economy is presented. Literature is reviewed to understand the current extent of knowledge on the topic of OGS adoption and deterrents thereof.

As previously mentioned, the research in the current paper is divided into two parts. The first part is a literature review of OGS. The second part is an empirical study in which Finnish consumers were interviewed about their perspectives on OGS. The literature review covers three broad areas: 1) background and context of e-grocery, 2) characteristics of online grocery services and 3) customer behavior in relation to OGS. Literature was systematically reviewed but greatly augmented with literature from outside the scope of the systematic review, particularly to provide background and context for evolution of online grocery services.

2 LITERATURE REVIEW METHODOLOGY

The contextual literature section, which does not directly address consumer behavior in OGS, provides an integrative perspective on the background and evolution of e-grocery, both from a consumer perspective and a business perspective. The methodological inspiration comes from integrative reviews. Integrative reviews originated in nursing but have been applied in other fields as well (Kutcher & Lebaron, 2022). Integrative reviews use an array of review methods and various types of source materials to holistically understand the subject phenomenon (Booth et al., 2016). Source material in integrative reviews can include journal articles, computerized databases, grey literature, documentation etc. Incorporated methodologies can include qualitative or quantitative, or experimental or non-experimental research (Kutcher & Lebaron, 2022). FIGURE 1 present a simplified model of the structure of the current paper.

FIGURE 1. Structure of the current paper and types of sources used.



The literature search for the contextual section of the review was exploratory and selective with the aim of presenting the various key concepts necessary to comprehend and appreciate grocery trade as a vast and ubiquitous economic activity.

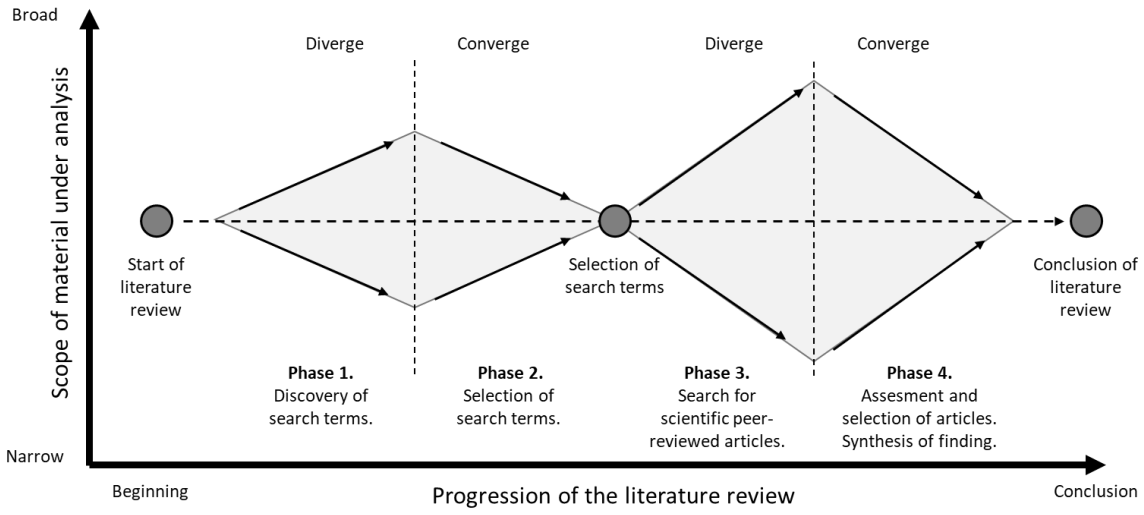
Grocery trade is undergoing a digital transformation, which is shifting the demand and supply of grocery retail services.

A variety of sources were used in addition to scientific literature, including practitioner literature and market research by non-academic research institutions. Similar sources were used by researchers in peer-reviewed articles to motivate and contextualize their OGS research. Particularly analyses about the size of online grocery markets and forecasts about the direction of the industry appeared to come from non-academic sources. Such material is helpful for scoping and quantifying the online grocery market.

The subsequent literature section on consumer behavior in OGS is a systematic literature review. A systematic literature review should aim to be comprehensive with a clear scope, typically with a focus on highest quality evidence available (Booth et al., 2016). The review in the current paper began with an investigation of the terms used by scholars in the literature to discuss OGS. This discovery of search terms was conducted using Google Scholar for speed and simplicity. The initial search terms were naïve guesses hoped to return relevant literature. This method returned some literature concerning OGS. Discovered articles were skimmed and their bibliographies were snowballed for further publications to familiarize the language.

From this initial investigation search terms were determined for a systematic literature search. The terms *online grocery, e-grocery, electronic grocery, virtual grocery* and *grocery e-commerce* were selected. Elsevier's ScienceDirect database was searched for peer-reviewed scientific articles featuring any of these five search terms in the title, abstract or keywords. Not limiting the search to these parts of the articles would have resulted in an unmanageable number of results polluted with irrelevant articles with only passing mentions of OGS. Multiple search variations were tested and the relevance of results in each variation was briefly evaluated. Only articles in written in English were accepted. The preceding method resulted in an acceptable balance between relevancy and comprehensiveness. The search produced 150 article results.

FIGURE 2. Model of the literature review process.



Snowballing (aka. chain-referral sampling) was used as a secondary sampling technique. Snowballing refers to reviewing the bibliographies of relevant, valuable articles for further pertinent literature (Booth et al., 2016, pp. 121, 315). This proved to be a powerful strategy for finding seminal papers and fundamental theory and helped develop an understanding of how knowledge of OGS has compounded and expanded over time. Snowball sampling proved effective for finding literature from other fields which had implications for OGS, e.g. prior online shopping behavior and e-commerce management literature. Snowball sampling also led to the discovery of articles from other databases and digital libraries.

Time and resource constraints limited the current literature search to the database of ScienceDirect. Snowball sampling mitigated this issue. The principle of saturation was considered in the literature review, whereby additional articles were valued for their ability to contribute novel findings to the literature review. Saturation is a valid criterion for scoping qualitative reviews and in theory represent a tradeoff between comprehensiveness and efficiency (Booth et al., 2016). Articles with recurring research problems were briefly skimmed with a focus on their findings, particularly on any divergent results. Articles with recurring themes and convergent findings provide diminishing marginal value and were screened out. Resources were focused on finding and incorporating novel themes and results into the ongoing review to provide a review with the broadest possible perspective.

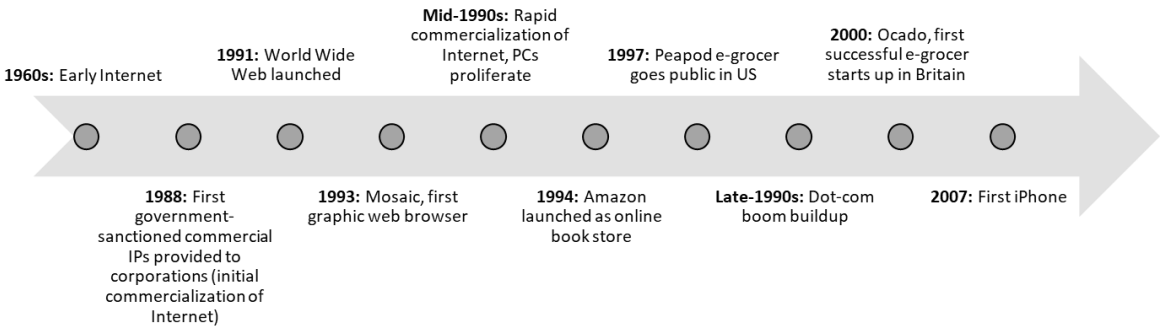
3 EVOLUTION OF E-GROCERY SERVICES AND MARKETS

3.1 Antecedent technologies – internet and personal computers

Commerce, like other industries, has been transformed by advances in information and communication technologies, such as the development and commercialization of the internet and the proliferation of personal computers. These developments caused shifts in both the demand and supply of retail services.

The World Wide Web was first launched in 1991 and became a standard for exchanging information across the internet. The internet is a vast global network of computers originating from the 1960s that opened to commercial interests starting in 1988 (Leiner et al., 2009). The release of the user-friendly Mosaic web browser in 1993 made the World Wide Web accessible to the broader public. Personal computers had already begun appearing in homes in developed countries in the 1980s, or in rare cases earlier, but proliferation accelerated in the mid-1990s (Chinn & Fairlie, 2010) catalyzed by growing access to the internet. Businesses and investors quickly took notice of the new opportunities to reach and serve customers via the internet. The late 1990's saw the rise of the Dot-com bubble, a frenzy of investments into internet-based businesses that saw asset prices and evaluations skyrocket before a prolonged deflation of the bubble in the early 2000s. Likewise, the turn of the millennium saw the rise and fall of numerous e-grocery businesses that failed to solve the complex online grocery fulfillment problem (Farris II & Wilson, 2002). The introduction of the original iPhone in 2007 (Grossman, 2007) ushered in a new era of mobile devices and mobile-optimized services and an astonishing adoption rate ensured that commerce became evermore ubiquitous and ceaseless.

FIGURE 3. Timeline of selected events from emergence of e-commerce and e-grocery (adapted from Bürklin et al., 2019 with additional literature from current subsection).



3.2 Commerce, supply chains and electronic commerce

The preceding advances in technology created new business opportunities and transformed existing business, including commerce. Commerce is the exchange of goods and services on a large scale and includes the wholesale and retail of finished products as well as the trading of unfinished products or intermediate goods within supply chains. Intermediate goods are used in the production of final goods. Supply chains provide the necessary context for understanding and appreciating commerce and the ongoing transition to e-commerce. In essence, commerce connects producers of goods and services with consumers, often through numerous agents in the economy. As such, it is an essential and one of the most universal economic activities practiced worldwide. Commerce does not refer to manufacturing, production, or extraction of raw materials, but to the distribution of commodities, services and products in various stages of refinement.

3.2.1 Supply chains

The modern free-market economy is organized into supply chains in which multiple economic agents collaborate, often sequentially, to produce goods and services and distribute them to end users for final consumption. Individual businesses specialize in fulfilling a limited role in the supply chain and the effort of all supply chain participants is required to satisfy the demand created by consumers. A contemporary textbook defines supply chains followingly:

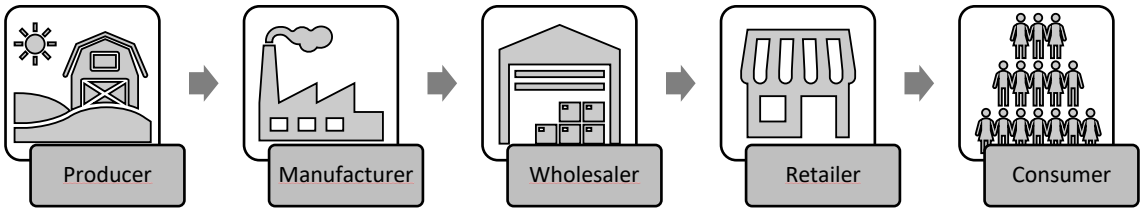
> A supply chain (SC) is a network of organizations and processes wherein a number of various enterprises (suppliers, manufacturers, distributors and retailers) collaborate (cooperate and coordinate) along the entire value chain to acquire raw materials, to convert these raw materials into specified final products, and to deliver these final products to customers (Ivanov et al., 2018).

FIGURE 4 depicts a simple model of a grocery supply chain. Manufacturing is not always involved in supplying groceries to the market, as in the case of

vegetables. Some groceries, such as meat, are cut and packaged, but not specifically manufactured. Other groceries, such as cheese, potato chips, and confectioneries, go through a substantial manufacturing process. More agents can be involved in the supply chain, particularly specialized suppliers that mediate the flow of agricultural commodities from producers to manufacturers.

Each time that supplies or goods change ownership in the supply chain, a transaction occurs. These transactions constitute commerce. Online grocery shopping occurs between retailers and consumers as the final stage of the supply chain. It is at this interface between businesses and households that consumer demand is experienced. This demand shapes business opportunities and drives economic activity in the economy.

FIGURE 4. Simplified model of a grocery supply chain.



3.2.2 Economic function of the retail industry

Retail is the sale of goods or services to end-users, or households, for personal use. It is an essential part of the supply chain and the final stage in the journey of goods from producers or manufacturers to consumers. Retailers are important intermediaries that facilitate commerce and serve manufacturers by distancing them from the innumerable consumers and relieving them of the challenge of maintaining extensive sales channels. Retailers specialize in trading things as opposed to making things. Retailing is a service business because retailers do not make or produce things. Retailers provide four essential distribution services (Wirtz, 2019, p. 76).

First, retailers make shopping easier and more convenient for consumers by offering a wide range of products in a single place or channel, enabling one-stop shopping (Zentes et al., 2011, pp. 7–8). Retailers facilitate commerce by conveying information about customer demand upstream to manufacturers. Retailers procure their assortment from manufacturers or wholesalers and, without product transformation, resell the merchandise, occasionally providing services related to the merchandise, such as installation, configuration, or final assembly (Zentes et al., 2011, p. 7). Retailers also engage in activities that facilitate their sales, such as marketing and warehousing. Retailers can collaborate with manufacturers and producers to stimulate customer demand through marketing activities.

Retailers are typically supplied by wholesalers. Together these agents provide the service of bridging the spatial and temporal gap from manufacturing to household consumption. Bridging space is the process of spatial distribution of

goods from centralized production sites to the vicinity of households. In practice, this implies maintaining a geographically comprehensive network of warehouses and sales outlets close to the consumers for their convenience. Bridging time is the act of holding inventory, i.e. having the desired merchandise available to consumers on demand. Holding inventory ties up capital and is costly. Perishable groceries pose a high inventory risk because the goods in stock depreciate rapidly and become worthless. Intermediaries in the grocery supply chain take inventory risk in exchange for profit.

Lastly, as goods move downstream in the supply chain the various actors involved provide the service of breaking bulk, i.e. dividing large manufacturing lots into progressively smaller batches of goods, culminating in the sale of individual items to consumers. Large manufacturing lots are a standard characteristic of centralized manufacturing operations exploiting economies of scale. In summary, the four essential distribution tasks of retailers are (Wirtz, 2019, p. 76; Zentes et al., 2011, pp. 7–8):

- Procuring assortments
- Bridging space
- Bridging time
- Breaking bulk

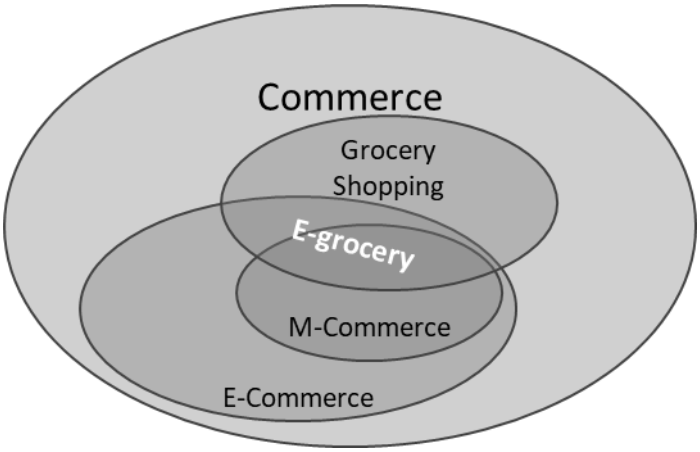
3.2.3 Electronic commerce and mobile commerce

Electronic commerce (e-commerce) predates the web but entered a phase of rapid growth with the web's introduction. A contemporary textbook defines e-commerce as "using the internet and other networks (e.g., intranets) to purchase, sell, transport, or trade data, goods, or service." (Turban et al., 2018, p. 7). E-commerce is a broad concept, and it has been argued that e-commerce is a series of innovations in information communication technologies (Danie et al., 2002). Subsequently individual market participants (businesses or households, buyers or sellers) elect which of these technologies to use.

In the present, e-commerce is conducted mostly over the internet, but previously other networking technologies have been employed. E-commerce has affected how buyers and sellers connect and how markets are formed. Markets are arrangements that people have for trading goods and services, and they have evolved from physical locations to virtual channels and platforms (Dutta, 2006, p. 67).

Mobile commerce (m-commerce) refers to the concept of buying and selling goods and services using mobile devices over wireless networks (Hu et al., 2008). M-commerce is a subset of e-commerce, made possible by the invention and rapid adoption of smartphones and wireless networks. M-commerce has boosted online sales, expanded online markets, and focused attention on the usability of digital services on small handheld devices.

FIGURE 5. The relationship between key e-grocery concepts.



3.2.4 Types of e-commerce

Various economic actors engage in e-commerce. The relationships between the transacting parties serve as a means for classifying e-commerce transactions (Katic & Pusara, 2004; Turban et al., 2018, pp. 9–11; Wirtz, 2019, p. 63). The full set of transaction types is presented in FIGURE 6. Administration in FIGURE 6 refers to public entities, such as the government, government agencies, public school institutions and public healthcare institution etc. (Wirtz, 2019, p. 64). Business-to-business and business-to-consumer are the most important in practice (Wirtz, 2019, p. 63). These two classes, as well as consumer-to-consumer transactions, are hereby presented. The current research focuses on OGS, which is a business-to-consumer transaction, as denoted in FIGURE 6.

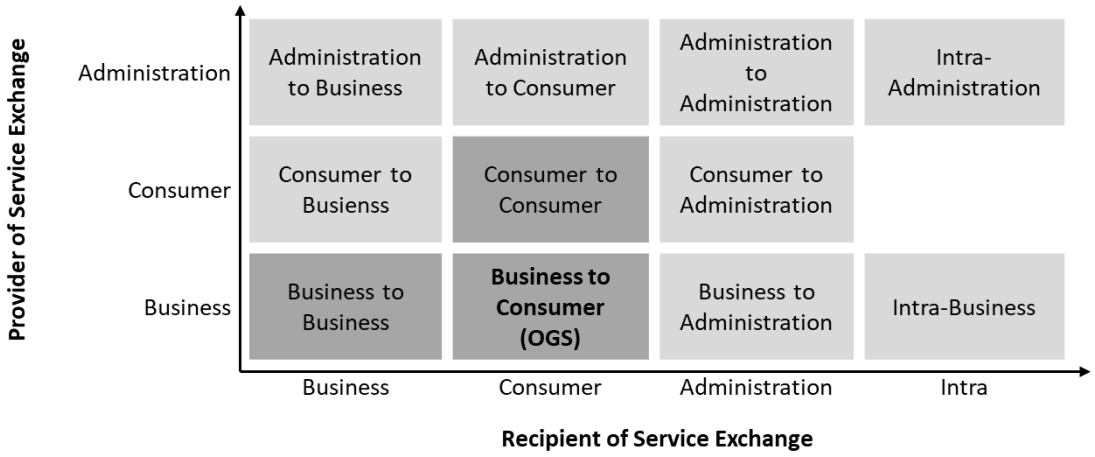
Business-to-business (B2B) transactions involve a business as both the seller and buyer. E-commerce has become very substantial in B2B business with an estimated gross merchandise value of 17,9 trillion $ in 2021 and with a compound annual growth rate of +14,5%, the market is expected to reach 36,2 trillion $ in 2026 (Statista, Senn-Kalb & Mehta, 2022, p. 16). Thereby, the B2B e-commerce market was over 5 times larger than the B2C market in 2021.

Consumer-to-consumer (C2C) transactions occur directly between consumers, who typically trade secondhand goods, such as cars, electronic appliances, books, and other durable goods. E-commerce has facilitated C2C trade by better connecting buyers and sellers. Disintermediation has reduced the need for intermediary businesses, which used to facilitate C2C transactions by acting as trust brokers between strangers. New financial transaction services with escrow features have helped overcome the obstacle of mistrust in C2C payments (Turban et al., 2018, pp. 190–191). C2C trade may experience further growth as interest in the circular economy grows and positive attitudes toward reusing, recycling and other sustainable forms of consumption become more mainstream.

Business-to-consumer (B2C) transactions are retail transactions between businesses (or non-profit organizations) and private consumers, who are the end users of products. The term e-tailing is sometimes used to emphasize this as the retail segment of e-commerce (Wirtz, 2019, pp. 103 & 109). Still, other classes of

e-commerce can be identified, as presented in FIGURE 6, but such cases are electively omitted from this review. The current research studies OGS, which is an online B2C transaction between online grocers (aka. e-grocers) and households representing the end users of groceries.

FIGURE 6. Matrix of interaction patterns in digital business. (Wirtz, 2019, p. 63)



3.2.5 Advantages of e-commerce and OGS

E-commerce offers advantages to both buyers and sellers (Turban et al., 2018, pp. 15–16). Businesses can access greater markets thanks to a global reach, which enables them to serve more customers. This allows them to realize economies of scale in their business operations and drive down costs, improving price competitiveness. Similarly, businesses can procure supplies from a larger set of potential suppliers and increased competition in the procurement market drives down costs. Cost reductions are also achieved through lower cost of information processing, storage, and distribution in electronic information systems. Supply chain improvements are likewise achieved through better availability and quality of information resulting in fewer delays, inventories, and associated costs. In the case of digital products, the cost of distribution is minimal. Advanced digital customer relationship management (CRM) tools enhance customer service, in both pre-sale and after-sale situations. These tools provide a holistic perspective of customers' histories with the company. E-commerce sales channels are open 24/7/365 and closing times do not negatively affect sales.

E-commerce provides consumers with access to vast assortments, unrestricted shopping hours, expedited shopping, better access to information enabling them to compare prices and find the best bargains, real-time delivery of digital products, distancing from aggressive salesclerks, and the ease of shopping from anywhere e.g., the comfort of their homes (Rowley, 1996; Turban et al., 2018, pp. 15–16).

The advantages of OGS are derived from the advantages of general e-commerce, with a few distinctions. OGS shopping has been proposed to save time

and provide convenience, by eliminating shopping trips (Keh & Shieh, 2001; Raijas, 2002; Verhoef & Langerak, 2001). Shopping trips involve traveling, searching for products in the store, and queuing at the checkout, all of which require time and effort. A recent study postulated that OGS may not reduce the number of motorized trips for households, but it could eliminate the need for extra stops at the supermarket along commutes (Berg & Henriksson, 2020).

Literature proposes that independent pure players (see 4.1 Online grocery business models for a definition of the term) could offer fresher produce than traditional grocers because of a more direct supply chain when customer orders are fulfilled directly from distribution centers (Boyer & Hult, 2006; Fisher & Kotha, 2014). Experienced online grocery shoppers have also had this experience (Ramus & Nielsen, 2005). In conventional grocery supply chains products are first distributed to stores for retail display before being passed on to customers through purchases. These steps in the supply chain inevitably result in delays and loss of freshness for perishable goods.

Customers may have access to more grocery retailers and products online, as geographical barriers are mitigated (Verhoef & Langerak, 2001). However, e-grocers are typically localized businesses (Fernie et al., 2010; Keh & Shieh, 2001)(further details on the localized nature of e-grocers in section 3.5 Online grocery services), making this effect smaller than in other e-commerce categories and perhaps even void.

Online shopping facilitates the collection of customer data and enable businesses to build close customer relationships through superior service (Asdemir et al., 2009; Raijas, 2002). Online grocery services function as a means for grocers to deliver additional value to customers and increase customer satisfaction and loyalty (Melis et al., 2016; Saskia et al., 2016). Contrary to what theory suggests, research has observed that in some markets pure online retailers quote higher prices than omnichannel retailers (Fedoseeva et al., 2017). Online shoppers have been shown to be less price sensitive than their offline counterparts (Cebollada et al., 2019; Chu et al., 2010), and these two observations may be related.

FIGURE 7. Advantages of e-commerce to consumers and businesses (adapted from Turban et al., 2018, p. 16).

Advantages to Consumers	Advantages to Businesses
• Huge selection of vendors and products	• Global reach, greater potential customer base
• Shop from anywhere at anytime	• Lower operating expenses
• Increased price transparency and competition, lower price levels	• Access to larger procurement market with increased price competition
• Find best bargains, save money	• Supply chain efficiency improvements
• Digital and information products are delivered in real-time	• Business always open and serving customers
• Self-service, no aggressive salesclerks	• Personalization of service, greater customer loyalty
• Personalized shopping experience	• Lower cost of distribution for digital and information products
• Better availability of information, lower information search cost, online reviews as social proof	• Opportunities for new business models

3.3 Grocery market and the grocery industry

As previously stated, commerce is an essential and universal economic activity. Wholesale and retail are two key components of commerce, and online grocery shopping is part of retail. In the United States the total value of retail sales was estimated at 6 523 billion $ in 2021 (United States Census Bureau, 2022). Grocery store sales constituted 792 billion $ or 12,1% of all retail sales as the second biggest category of retailers behind only motor vehicle and parts dealers (1 208 billion $ or 22,8%)(Ibid.). Direct comparison to EU figures is not possible due to differences in accounting practices by the statistical offices, but some numbers are worth investigating, nonetheless. The annual turnover of the European retail trade excluding motor vehicles and motorcycles for the EU 27 countries was reported at 2 682 billion € in 2020 or 3 063 billion $ at the average exchange rate of 1,1422 for the year (European Central Bank, 2023; Eurostat, 2023c). Retail establishments that predominantly sell food and best fit the characteristics of grocers (classes 47.11 “Retail sale in non-specialised stores with food, beverages or tobacco predominating” and 47.2 “Retail sale of food, beverages and tobacco in specialised stores”, Eurostat, 2008, p. 228) generated a combined turnover of an estimated 1 140 billion € or 1 302 billion $ (at the previously cited exchange rate, Eurostat, 2023c).

Some retailers are among the most valuable companies in the world. As of April 2022, Walmart was the 12th most valuable company in the United States and the 14th most valuable in the world, as measured by market capitalization, with a market valuation of 431,64 billion $ (Forbes, 2022). Amazon is a multi-industry company with numerous lines of business, but among them a significant e-commerce operation and a growing number of other retail businesses. As of the

same time, Amazon was the fourth most valuable company in the United States and fifth worldwide with a market valuation of 1468,5 billion $. Sales-wise Walmart's retail revenues totaled 572,75 billion € whereas 239,15 billion $ of Amazon's total revenue of 469,82 billion $ was retail revenue (Deloitte, 2023, p. 40).

Assessing top European retailers is more difficult, as the continent's two sales leaders, Lidl and Aldi, are privately owned and therefore are not valued on the stock market. Lidl's parent company Schwarz Group (also the parent company of the Kaufland hypermarket chain) is the leading European retailer with retail sales totaling 153,75 billion $ in 2021. Aldi is the consumer-facing brand name for supermarkets operated by two separate companies which diverged in the 1960s. Regardless, the combined sales of Aldi chains were estimated to total 120,95 billion $ in 2021 (Deloitte, 2023, p. 40). Europe's highest valued public grocery retailer is the Dutch Royal Ahold Delhaize N.V. with annual sales of 89,38 billion $ $ (Deloitte, 2023, p. 40) and a market valuation of 30,57 billion $ in 2022 (Forbes, 2022). Ahold Delhaize operates several customer-facing chain brands, most notably Food Lion and Stop & Shop in the United States and Albert Heijn in the Netherlands and Belgium (Ahold Delhaize, 2023)

In the United Stated, the retail industry was the largest industry by jobs, employing 32 million people in 2018, representing 16,0% of all jobs in the US economy (PricewaterhouseCoopers, 2020). The second largest industry by employment was health care and social assistance with 22,6 million jobs. Retail employment generated a trillion dollars of labor income, representing 8,3% of all labor income in the economy. The growth of online grocery shopping will affect jobs in the industry. Some jobs will be discontinued, while new ones will emerge. Employees may need to adapt to new roles. Traditional merchandizer, jobs responsible for managing inventory, stocking shelves and creating product displays in supermarkets will increasingly be replaced by order pickers responsible for fulfilling online orders either in supermarkets or in dedicated online fulfillment centers.

Food and beverages account for a significant share of total household expenditure. FIGURE 8 displays the share of household expenditure on food and non-alcoholic beverages across EU countries. These figures exclude restaurant expenditure, which Eurostat accounts separately. In Romania, almost 25% of household income is spent on food and beverages. In Ireland the respective figure is less than 9% and the EU average is 14,3%. FIGURE 9 displays the breakdown of household expenditure in the EU per consumption categories. Food and non-alcoholic beverages (excluding restaurant expenditure) is the second largest category of spending at the aforementioned figure of 14,3% behind housing and its associated utilities at an even 25%. For reference, transportation is the third largest category of household consumption at 12,1%. The staggering size of the grocery market and the way it touches virtually everyone in society makes the disruptive impact of online grocery shopping consequential and important to study.

FIGURE 8. Household expenditure on food and non-alcoholic beverages in the EU, excluding restaurant expenditure (% of total expenditure), 2021 (Eurostat, 2023a)

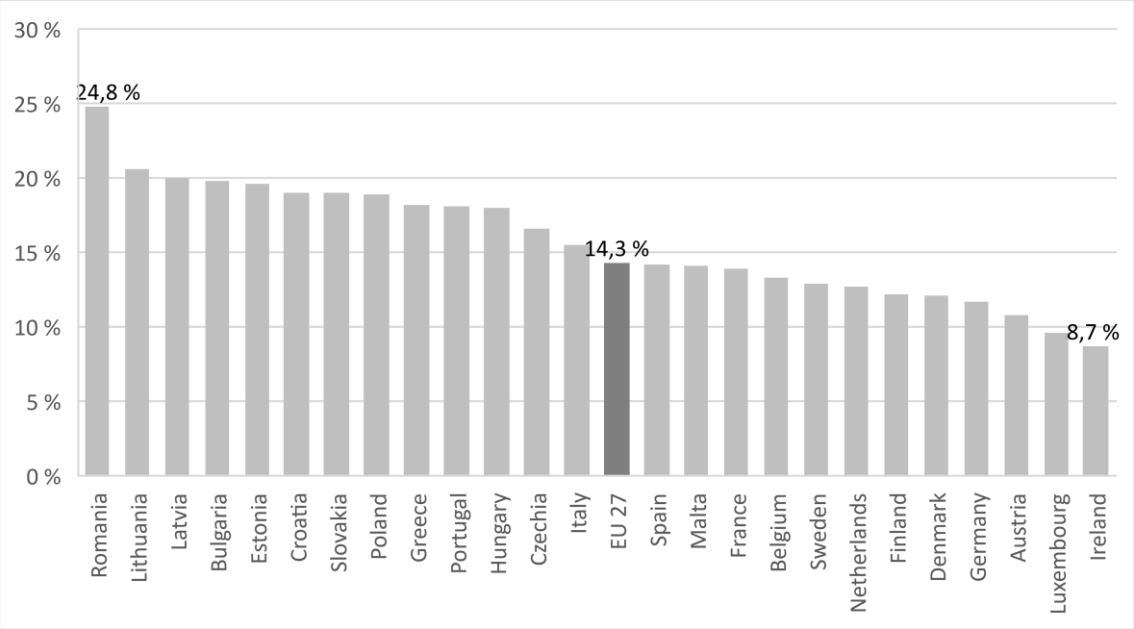
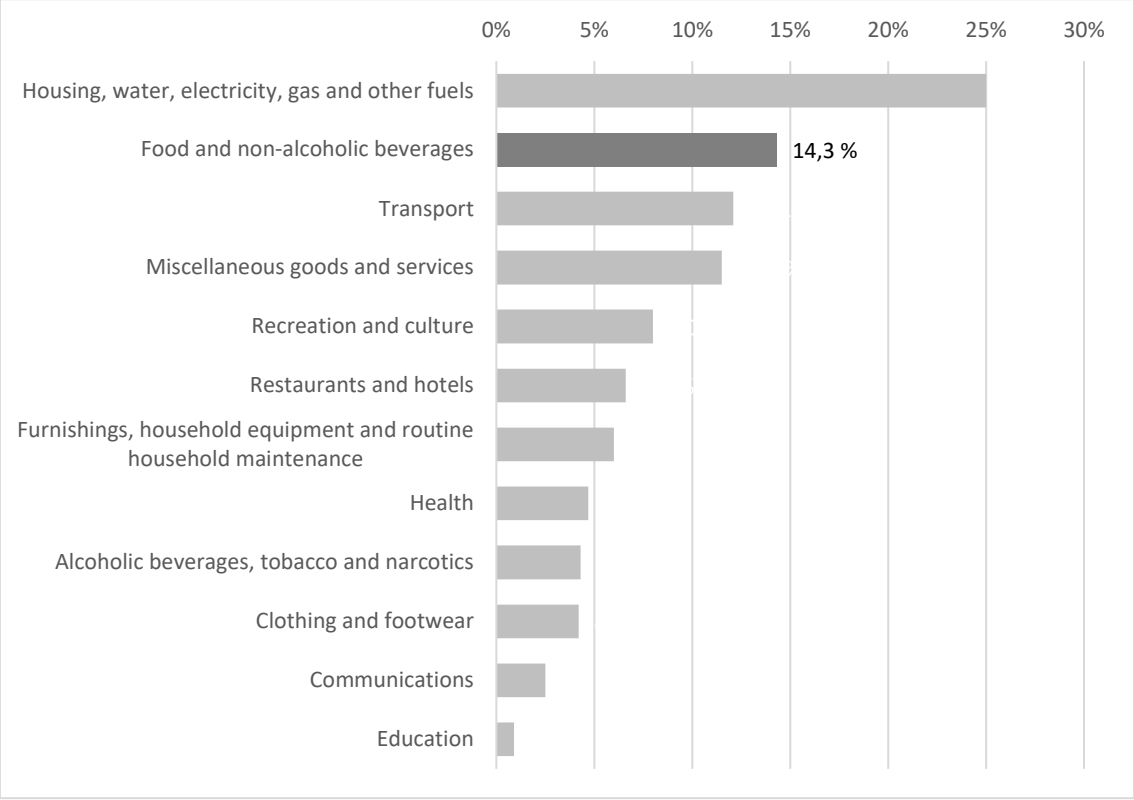


FIGURE 9. Final consumption expenditure of households by consumption purpose in the EU (% of total expenditure), 2021 (Eurostat, 2023a)



3.4 Online grocery shopping

Online grocery shopping (OGS) is the customer perspective or demand side of e-grocery, i.e. the activity of buying groceries over the internet. Online grocery services are offered in various formats by different enterprises across regional markets. OGS is a subset of e-commerce and is synonymous with electronic grocery shopping.

Grocery purchases include both food and other everyday household supplies. Foodstuffs include fresh and perishable items (e.g. vegetables and dairy products) and edibles that have been processed for longer shelf life (e.g. canned and dried foods). Non-food items offered by grocers include, for example, laundry detergents, shampoos, diapers, and pet food. Collectively, these goods are referred to as fast-moving consumer goods (FMCGs). OGS saves time and provides convenience for shoppers (Keh & Shieh, 2001; Raijas, 2002; Verhoef & Langerak, 2001). For a full list of potential benefits see section 3.2.5 Advantages of e-commerce and OGS.

3.5 Online grocery services

Online grocery services provide the supply side of e-grocery and seek to exploit economic opportunities presented by customer demand for OGS. As outlined earlier, technological innovations have triggered a market transformation in which customer demand for groceries is shifting to online channels. Market transformations are potential moments for redistribution of market share and power. They pose threats to established businesses and opportunities for innovative companies and entrepreneurial individuals. On the one hand, businesses in search of greater profits are impelled to provide online grocery services. On the other hand, companies are compelled to offer such services out of competition and fear of losing customers and revenue.

E-grocery is a peculiar form of e-commerce, because unlike other e-tailers, e-grocers tend to be localized (Fernie et al., 2010; Keh & Shieh, 2001). This is due to the challenge of safely delivering perishable and temperature-sensitive groceries over long distances combined with relatively short order lead times. Online grocery services are more common in urban areas, as opposed to rural areas, because delivery efficiency is a major determinant of profitability. Delivery efficiency is a function of customer density, which is typically higher in urban areas where population density is higher (Gevaers et al., 2014; Hübner et al., 2016; Saskia et al., 2016; Sousa et al., 2020).

The business advantages of e-grocery are very similar to general C2C e-commerce (see section 3.2.5 Advantages of e-commerce and OGS). Online retailing enables grocers to reach more customers and collect more customer data to produce personalized shopping experiences. Personalization helps deliver

additional value to the customer, form close customer relationships, and improve customer satisfaction and loyalty.

Increasing overall customer satisfaction and chain loyalty are incentives for traditional grocers to develop their online sales channels (Melis et al., 2016; Saskia et al., 2016). Shoppers who buy groceries online are likely to spend a greater share of their overall grocery budget (online and offline combined) with the chain that they prefer online (Melis et al., 2016). Customers are also more likely to trust companies that have a physical presence in addition to an online service (Aspray et al., 2013). Therefore, a successful online service can increase a grocer's revenue by more than just the value of online sales. OGS presents opportunities for new market entrants because of lower initial investment due to lesser infrastructure requirements (Keh & Shieh, 2001).

E-grocery differs from typical B2C e-commerce in its distinct challenges related to the offered products and the fulfillment of orders. The fundamental challenge of e-grocery is the high cost and complexity of order fulfillment (Asdemir et al., 2009; Aspray et al., 2013; Hübner et al., 2016). Average grocery baskets are relatively low in value (for example compared to apparel or electronics) yet contain numerous items, all of which need to be picked individually (Farris II & Gabaldon, 2020; Fernie et al., 2010). Items vary in size, weight, degree of packaging and durability. Furthermore, the grocery industry operates on very low profit margins, typically only 1% to 3% (Farris II & Gabaldon, 2020; Fisher & Kotha, 2014; Keh & Shieh, 2001). The combination of low order value and small profit margins makes the profitability of individual orders precarious. Unlike products in most other categories, groceries are purchased regularly. This makes e-grocery an enterprise of fulfilling large volumes of inexpensive and variable orders with very thin profit margins.

The industry's low profit margins imply that the grocery business is predominantly a cost-minimization endeavor (Fisher & Kotha, 2014; Keh & Shieh, 2001). Grocery businesses face constant pressure to optimize operations to reduce costs to generate greater profits (Valle et al., 2017). This premise sits poorly with the fact that OGS is once again returning certain responsibilities or tasks from customers back to the business. The proliferation of modern self-service supermarkets turned shoppers into pickers and reduced the retailer's workload. OGS is reversing the situation and e-grocers are once again picking products on behalf of the customer and delivering the orders through various means, frequently to the customer's doorstep (Saphores & Xu, 2021). Households are characterized as overlooking the actual cost of self-service shopping (Raijas, 2002) and sustain substantial expenses as a result (see for example Yrjölä, 2001). Unlike household, businesses are very attentive to costs and will seek reimbursement for order fulfillment expenses.

Expectations in the grocery industry for the growth of OGS have incited intense competition during periods of unprofitability (Saskia et al., 2016). Profits are expected to materialize in the long term, whereas securing a strong market position in the present is considered a necessary antecedent. Multichannel grocers can rely on their brick-and-mortar business to financially support an

unprofitable e-grocery operation for a limited time, but new purely virtual grocers lack this privilege.

The perishable nature and rapid expiration of many common groceries expose e-grocers to an inventory risk. The constant flow of goods in and out of the e-grocery business must be managed. Likewise, many of these same fresh and perishable goods are subject to stringent food safety regulations, including hygiene and cold chain requirements (Fredriksson & Liljestrand, 2015; Saskia et al., 2016). The entire order fulfillment process, from picking to delivery, must be carefully planned and managed to ensure that regulatory standards are met and that customers are satisfied with the quality of the products they receive (Farris II & Gabaldon, 2020). Furthermore, groceries are typically minimally packaged and sometimes not packaged at all (e.g many fruits and vegetables). Items are thus vulnerable to physical damage and must be handled carefully during order fulfillment (Towill, 2001, p. 311). The quality and freshness of perishables is a common concern for shoppers and is often cited as a deterrent to OGS (Geuens et al., 2003; Hurgobin et al., 2020; Raijas, 2002).

Customers must be available to receive their order at the time of delivery. This constrains both the customer and the business and complicates delivery coordination. Effective coordination is critical to profitability. Deliveries costs increases as delivery windows are compressed (Boyer et al., 2009; Fernie et al., 2010; Punakivi & Saranen, 2001).

Summary of the advantages of online grocery shopping for businesses:

- Opportunity for disruption and market share growth.
- Opportunity to improve customer satisfaction and loyalty with personalization and higher service quality.
- Opportunity to increase overall customer spending across channels.
- Lower barrier to enter grocery market (less physical infrastructure).

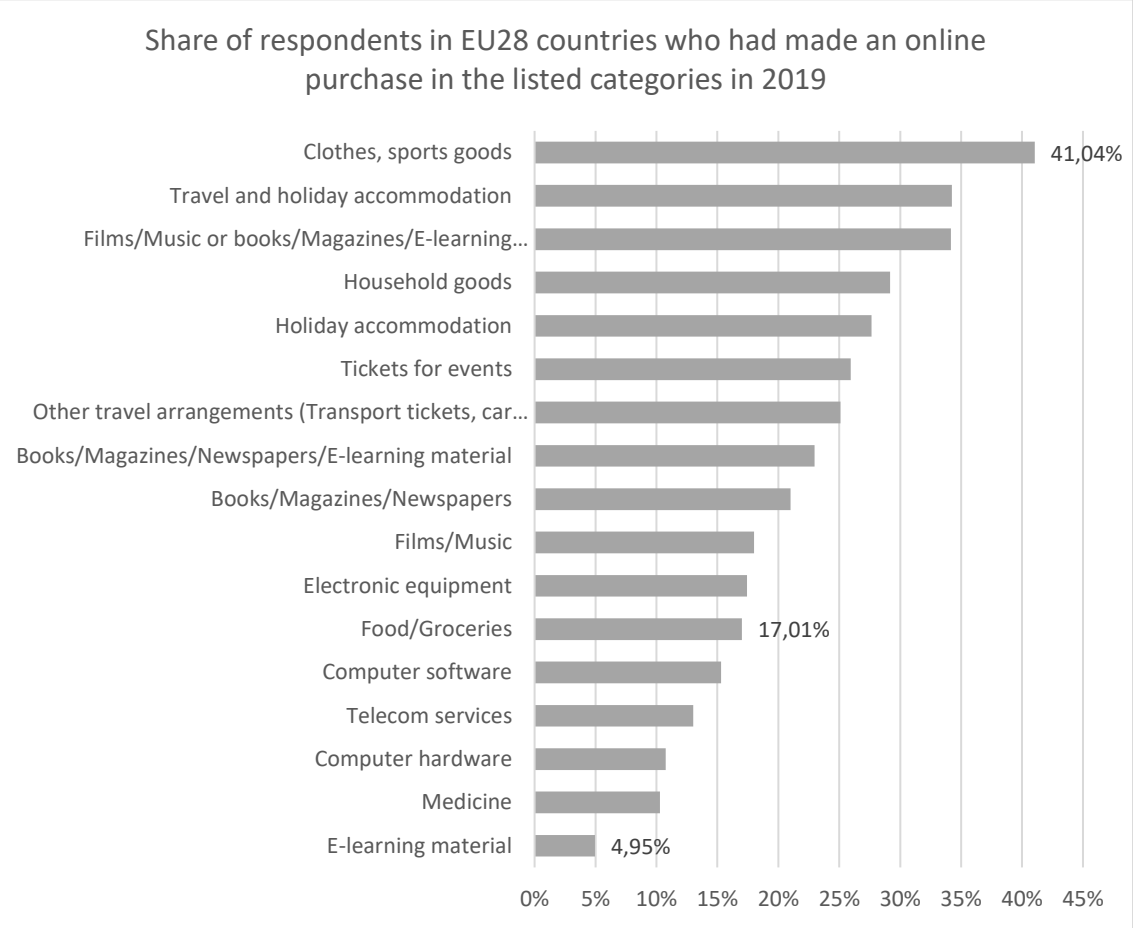
Summary of the disadvantages of online grocery shopping for businesses:

- Low basket value.
- Low profit margins.
- Large volumes of diverse orders (increased picking complexity).
- Business retakes picking and last mile distribution responsibilities from shoppers.
- Cost and complexity of home delivery operations.
    - Balancing customer value and delivery efficiency.
- Inventory risk (lead times undermine last-minute promotions for perishables).
- Cold chain requirements in order fulfillment process.
- Packing groceries for transportation.

3.6 Online grocery market and development

The adoption of OGS has been slow compared to other product categories in e-commerce. In the EU the most popular categories for online shopping prior to the COVID-19 pandemic were clothes, sports goods, hotel bookings, digital content such as films, music and e-books, and household goods (Eurostat, 2023b). Online food purchases ranked among the less popular categories, with only about 17% of respondents in the EU28 countries having made a purchase in this category in the previous twelve months when surveyed in 2019 (Ibid.). The Eurostat accounting system for e-commerce statistics was revised in 2020, preventing direct comparison of Eurostat's pre-pandemic and post-pandemic figures.

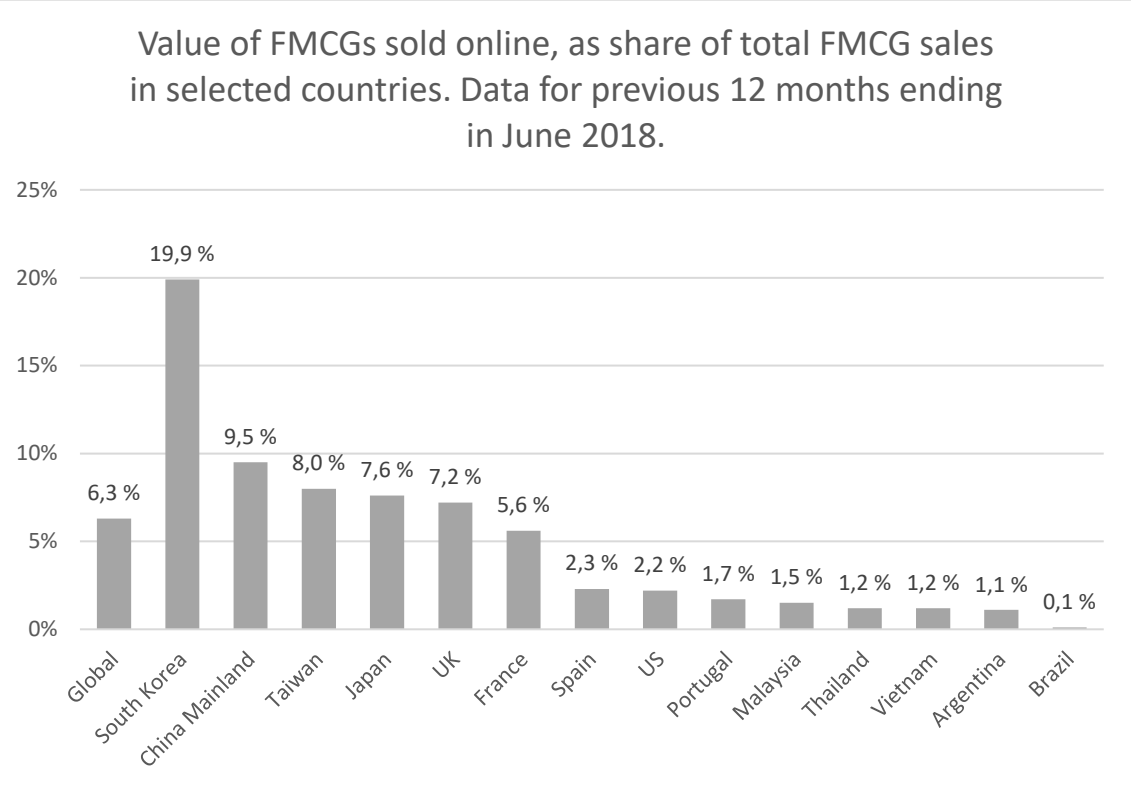
FIGURE 10. Online purchases by individuals per category in EU28 countries in 2019.



Furthermore, the online grocery market has evolved and matured very unevenly across the world. The world's most developed online grocery markets are situated in East Asia evaluated based on the share of FMCGs sold online (Kantar Worldpanel, 2018). The COVID-19 pandemic spurred the growth of online grocery markets, but pre-pandemic figures serve as indicators of how unevenly OGS has developed globally. South Korea was the world's most advanced market in 2018 with 19,9% of FMCG sales coming from online channels. Trailing behind

were mainland China (9,5%), Taiwan (8,0%) and Japan (7,6%) (Kantar Worldpanel, 2018). The UK had the most developed online grocery market in Europe with the respective figure at 7,2%, followed by France with 5,6% and Spain with 2,3%. In the US, only 2,2% of FMCGs were sold online in 2018.

FIGURE 11. Uneven adoption of OGS across the world (Kantar Worldpanel, 2018).



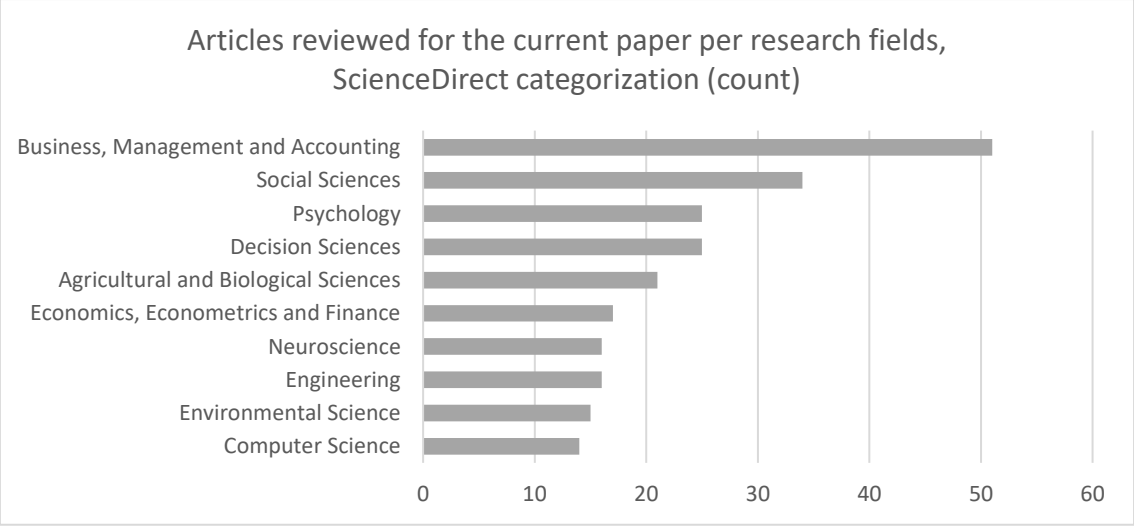
The COVID-19 pandemic came to represent an inflection point in the adoption of OGS. During the pandemic, the grocery category saw the greatest shift in shopping habits with a large number of consumers experiencing their first exposure to online grocery services (Verdon, 2022). During the pandemic the share of American consumers that had ordered groceries online almost reversed with the share that had not. In late 2019, 81% of US consumers had never bought groceries online, but a year later – and well into the pandemic – almost 79% of shoppers had purchased groceries online (Morgan, 2020).

In 2020, the first year of the pandemic, online grocery sales in the US were estimated to have jumped 103% year-over-year to a total of 73,7 billion $ (Verdon, 2022). The next year the total value of food and beverages sold by e-tailers in the United States totaled an estimated 100,7 billion $, that is 11,67% of the total market (Statista, 2023b, 2023a). More than half of American respondents expect to maintain their new online shopping habits post-pandemic (Shivaram & Azevedo, 2023). Statista estimates that the online grocery market in Europe (including home deliveries and click & collect but excluding restaurant meal deliveries) totaled 33,14 billion € in 2019, then jumped 67,9% year-over-year to 50,6 billion € in 2020 and is on the track to reach 80,77 billion € in 2023 (Statista, 2023c).

4 RESEARCH ON ONLINE GROCERY SERVICES

Various research fields have contributed to the study of OGS in an interdisciplinary effort. This is evident from the multitude of research areas represented by the articles reviewed for the current research, as illustrated in FIGURE 12. Note that multiple articles are classified under more than one subject area, resulting in a total count that exceeds the 150 articles found in the literature search (see section 2 Literature review methodology for further details).

FIGURE 12. Breakdown of reviewed articles per research field.



OGS is an evolution of previous business practices and shopping modes, and the OGS literature is rooted in earlier literature. The business of selling groceries online has various aspects and has prompted research from management, logistics, marketing, and organizational perspectives. Business and management-oriented research has focused on issues regarding management and operation of online grocery services, including profitable means of order fulfillment and management of the customer experience. Conceptual research has sought to define e-grocery concepts and provide frameworks to facilitate comprehension and

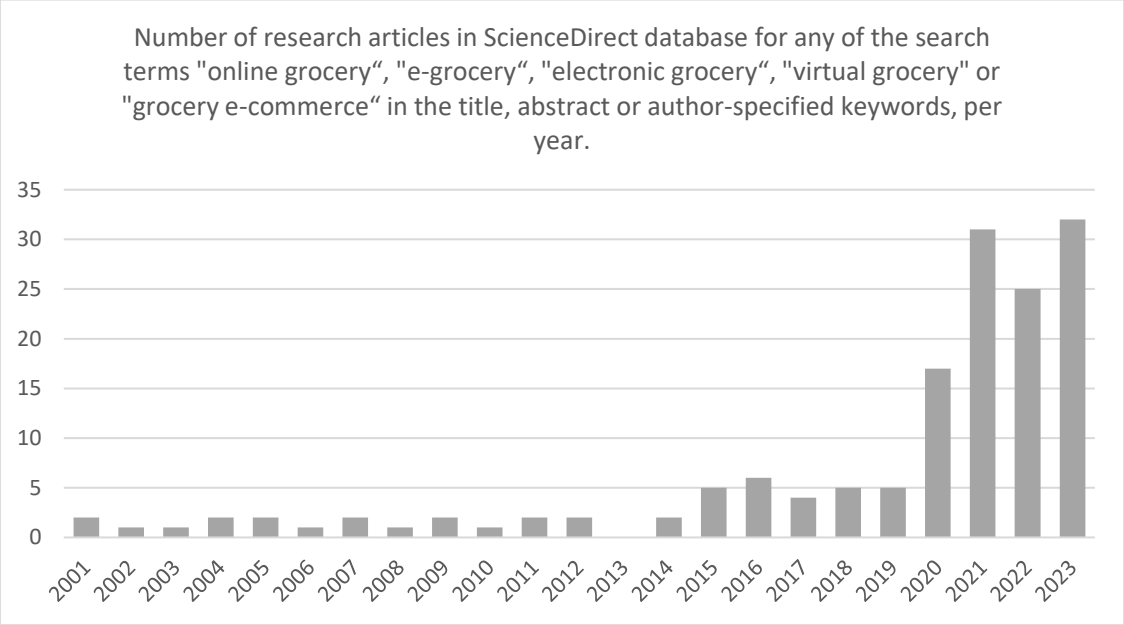
discussion of e-grocery business and operating models. Studies of customer behavior in OGS have provided insights to inform managerial decisions.

Studies in social sciences, psychology, and information systems have investigated customer perceptions and attitudes and their effects on OGS behavior. Information systems science (ISS) is a socio-technical field focused on the interactions between people and information systems. Traditional research topics are adoption, use and impacts of information and communications technologies on users, organizations, and the broader society. In the context of OGS, ISS studies have investigated in particular the use of online grocery services and determinants of attitudes and acceptance of the technology. Acceptance and adoption studies inform researchers and practitioners about how online grocery services must continue to evolve to further penetrate the market. Managers apply this knowledge to gain competitive advantage.

Initial scientific literature on OGS was published in the last years of the 1990s, around the same time that numerous online grocers began operating in the U.S. market (Cude & Morganosky, 2000). OGS literature appears to have evolved from home shopping literature that began investigating the prospect of distance selling groceries based on telephone or fax orders in a pre-web era (for example Kirschling & Linneman, 1997). Because of the evolutionary nature of the literature, it is not possible, nor necessary, to precisely date the first papers in this stream of literature.

The literature review for the current paper (details in section 2 Literature review methodology) indicates that a significant influx of published articles occurred in the years 2020-2023. This likely reflects the growing customer demand and economic significance of OGS. Consequently, demand for scientific knowledge about OGS from both academics and practitioners has increased. OGS underwent unprecedented popularization and social normalization during the COVID-19 pandemic and the associated lockdowns in 2020-2021. The pandemic-induced upheaval may have attracted scientific attention to OGS, but importantly, only one of the twenty articles from 2020 identified in the current literature search mentioned the words “pandemic” or “COVID”, confirming that the surge in publications began in 2020 without the influence of the pandemic. The surge seems to have been imminent and inescapable, perhaps amplified by the pandemic.

FIGURE 13. The surge in scientific research directed at OGS.

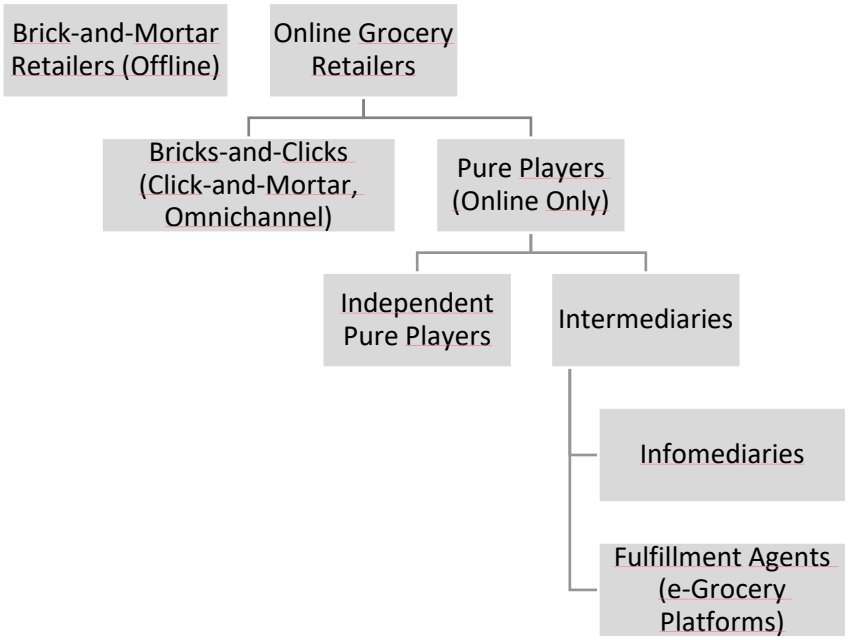


4.1 Online grocery business models

All business models are unique in their details, but scholars have attempted to typologize e-grocery business models based on certain primary characteristics. In more nuanced studies researchers have analyzed deployed operational strategies and service concepts. These analyses have produced frameworks to compare and understand online grocery businesses. These tools cover various perspectives and offer alternative levels of abstraction. Each framework reflects its author's perceptions and ideas of online grocery services. The following is a brief synthesis of the literature on business models in OGS. A model is presented in FIGURE 14 to convey the findings. This typology is useful for understanding the fundamental distinctions across the operational models of online grocery services and it provides crucial context for understanding the opportunities and constraints navigated by online grocery services in designing their service offering. Available service offerings affect the appeal of online grocery services in the eyes of consumers and impact the adoption and use of OGS.

First, it is important to primarily differentiate businesses based on their sales channels. Various terms have been used to denote similar ideas in the literature. We present the various synonyms to aid the reader's comprehension.

FIGURE 14. Types of online grocery businesses (based on Murphy, 2007).



Early literature distinguished three types of e-grocers: 1) bricks and clicks, 2) pure-players, and 3) infomediaries (Murphy, 2007). Note that retailers without online sales channels (i.e. pure brick-and-mortar retailers or "offline retailers") are not included in this categorization. Bricks-and-clicks are traditional grocers that have begun retailing online, exploiting their existing stores for order fulfillment activities. In more recent literature bricks-and-clicks may be denoted as omnichannel retailers or cross-channel retailers. Omnichannel is a business philosophy and strategy of seamlessly and holistically managing customer experience across the various interaction channels (Asmare & Zewdie, 2022). In rare cases pure players may become bricks-and-clicks by opening physical stores to support their online channels. Amazon's Amazon Fresh chain of stores serves as an example of this (Bonifacic, 2020). Both sales channels offer distinct advantages and bricks-and-clicks take advantage of both.

Pure players sell merchandise exclusively online. Pure players are typically new entrants in the grocery industry with no pre-existing stores. Pure players can be subdivided into two groups based on the ownership of the stock they sell.

Intermediaries are digital businesses contracted by existing retailers to provide web ordering and customer management functions (Murphy, 2007). Intermediaries do not own the stock they sell. Rather, their primary responsibility is to pass order, stock and delivery information between the retailer and the customer. These infomediaries specialize in managing and developing the online shopping experience.

Intermediaries can assume total ownership of the e-grocery operation, including order fulfillment. In this model, the intermediary picks orders from its partner's stores and stock and handles the delivery process (García et al., 2022; Sheng, 2005). The literature lacks a definitive term to distinguish such

intermediaries from infomediaries. In FIGURE 14, these businesses are denoted as fulfillment agents. Fulfillment agency can transpire on a bilateral basis, or a fulfillment agent may provide a platform service into which existing retailers can integrate.

Independent pure players are businesses that own the stock which they sell online. Independent pure players enjoy a large degree of independence relative to intermediaries. Independent pure players must construct their own fulfillment centers and procure their own stock.

4.2 Online grocery service characteristics and differentiation

The core of any business model is its value proposition, i.e. the argument for why customers should pay for an offering. E-grocers have numerous methods of differentiating their offerings from those of competitors, resulting in a vast range of potential service configurations. Customers judge the value proposition in their decision to adopt or forego a service. An appealing value proposition aligns with the customer's needs. A comprehensive framework based on a literature review depicting the dimensions of online grocery services is presented in FIGURE 15 (García et al., 2022). Some terms in the framework have been altered to conform with the terminology used in the rest of the current paper.

FIGURE 15. E-grocery value proposition framework (García et al., 2022).

Product	Range	Non-food	Non-food + dry	Non-food + dry + frozen	
	Virtual Store	Single	Multiple choice		
	Order Features	Minimum order	Number of units	Weight	
Logistics Service	Area of Delivery	Local	Regional	National	International
	Delivery Mode	Home Delivery	Click and Collect		
	Lead Time	1 hour or less	Same day / Next day	Two or more days	
	Time Slots	½ hours	Morning / Afternoon	No time slots	
After-Sales Services	Substitutions	Contact customer	Substitution: picker's decision	Remove product from order	
	Returns	Company collects product	Customer returns product	Refund only	
Others	Extra Service	Purchase based on recipes	Subscription	Prime service	Shopping planning

The framework defines the e-grocery value proposition in terms of ten elements, subdivided into four themes. The framework portrays how diverse the field of e-grocery services is. Service variations emerge from diverse customer demand and the need for businesses to specialize and stimulate demand (García et al., 2022). For example, the introduction of instant deliveries to the market could

generate new demand. So far, no single online grocery concept has emerged as an unparalleled success that would scale internationally, or necessarily even nationwide. The optimal service offering depends on conditions in the market, for example customer expectations, competition, and geographical factors. The following is a brief overview of the ten elements of the framework.

Online grocery services differ in the range of offered products. Non-food household supplies and dry groceries are the most trivial to offer due to their simplicity in the fulfillment process. Frozen and refrigerated goods require very special temperature management in fulfillment. Produce is sensitive to bumps and bruises and cannot be allowed to wilt or freeze in fulfillment. These factors create the need for different climate zones in fulfillment and compartmentalization of products based on their temperature sensitivity. The range of household supplies (e.g. toothpaste, toilet paper etc.) can easily be expanded into other consumer goods. Product range is a business choice, but it has implications for the fulfillment process with each additional product category increasing the degree of fulfillment complexity.

The choice of one or many virtual store fronts relates to online grocery platforms operated by intermediary businesses. Intermediaries can offer the assortment of one or many grocers through their virtual storefront. The available assortments can be consolidated in one virtual store or presented in separate virtual stores. The intermediary must institute an order consolidation policy if products are picked from more than one store.

E-grocers may use order features to impose limits on order value, weight, or size. Excessive large or heavy orders may be a problem for certain delivery vehicle types or storage lockers. A minimum order value makes delivery more profitable and moderates demand across delivery windows.

Area of delivery is the geographical area served by an e-grocer. As noted, e-grocers are typically localized businesses due to constraints in delivering perishable goods (Fernie et al., 2010; Keh & Shieh, 2001). Expanding service coverage may require expanding physical fulfillment infrastructure.

Delivery modes are home delivery (HD) and click and collect (C&C), where customers personally collect their online orders from a designated collection point. Demand for HDs is growing at the expense of C&C (Aull et al., 2022), but delivery operations are challenging and costly for the retailer (Asdemir et al., 2009; Saskia et al., 2016). HDs are common among pure players that lack existing sites for organizing collections. C&C is most natural to couple with in-store picking (Saskia et al., 2016) and represent an inexpensive strategy to enter the OGS market (et al., 2013; Fernie et al., 2010; Hübner et al., 2016; Liao et al., 2011).

Lead time refers to the promise of delivery speed. Quick commerce (q-commerce) refers to services that deliver orders typically in less than one hour. Short lead times mandate that orders must be picked relatively close to the delivery address. Multiple small supply points (i.e. picking facilities) may be required, and the area of delivery must be limited.

Time slots (aka. time windows) define the time frame in which an order is promised to be delivered or available for pickup. The time and place of delivery

is agreed between the retailer and the customer during the ordering process. The agreement is binding on both the retailer and the customer. In practice, the retailer predefines an offering of time slots for the customer to choose from. Narrow time slots are desirable for the customer due to higher convenience and minimal ambiguity but are more costly for the business due to inflexibility in delivery coordination (Fernie et al., 2010). Narrow time slots can justify higher service fees, i.e. slot duration can serve as a price discrimination factor. Q-commerce services are likely to deliver orders as soon as possible on an order-by-order basis, where time slots are not employed, and supply is managed otherwise. The offering of time slots impacts customer demand and bears consequences for subsequent delivery process optimization, making it an important business consideration.

Stock-out situations where ordered products are not available at the time of picking are not abnormal in OGS. Stock-outs are caused by demand uncertainty and supply rigidity and are most prevalent in in-store picking where offline shopping unpredictably affects stock. Stock-outs introduce the question of substitution, i.e. whether to replace the unavailable product with a substitute or remove it from the order altogether. Substitution decision may be authorized to the pickers or inquired from the customer. A predefined policy helps manage customer expectations, mitigates negative customer experiences and alleviates process ambiguity for pickers in during fulfillment.

Retailers must institute a policy for product returns. Retailers may conclude that shuttling relatively inexpensive groceries back and forth is unprofitable and instead remotely judge each return claim and issue refunds as necessary. This responsibility is typically assigned to customer service, and in a refund-only policy the customer keeps faulty product. Alternatively, the company can visit the customer to collect the return item, or the customer may be obligated by the terms of the transaction to return the item to the retailer at a designated location.

Extra services differentiate online grocery services and improve customer experience by improving the level of service. They enhance the shopping experience, add value for the customer and help improve customer loyalty and retention. Potential extra services are countless, and the framework presents four of the most common ones (García et al., 2022).

Services are interactions between a service provider and a customer. Customers elect to employe services to achieve subjectively desirable outcomes. The service offering, understood as a preceding outcome, turns into an input in the value co-creation process of the customer (A. V. Hansen, 2019). Value co-creation is affected by the time and context of the service delivery (Morelli et al., 2021). The value proposition, as expressed in the service offering, influences the appeal of a service, and affects the user's intention to use and actual use of a service, thereby providing foundation for the current research question.

To deliver on the promises of the service offering and operate profitably, online grocery services must strategically plan their order fulfillment process to align with the service offering. Conversely, realities and constraints in the fulfillment capabilities of a retailer may set limits on the retailer's value proposition.

For critical analyses of strategic fulfillment considerations of e-grocers, see García et al., 2022 and Hübner et al., 2016.

5 ONLINE GROCERY SHOPPERS

Numerous stakeholders have an interest in understanding grocery shoppers, their behavior, their adoption of OGS, and the factors that shape their shopping patterns. The determinants and motives of OGS have frequently been researched to understand what compels consumers to shop groceries online and, conversely, what discourages other consumers from adopting OGS. Practically all online grocery shoppers also shop in conventional stores, making them cross-channel shoppers (Campo & Breugelmans, 2015). Issues related to this fact are addressed in the omnichannel literature on OGS. Managers in the grocery industry desire to understand customer behavior to influence purchasing decisions to benefit their business.

5.1 Sociodemographic factors

Consumer and user groups are often analyzed in terms of demographics, and OGS is no different as a topic. OGS has been posited as a compelling option for shoppers with families, who presumably are short on time and typically make large orders involving more effort (Raijas, 2002). Larger households, particularly those with children, have been identified as likely online grocery shoppers in more recent years as well (Eriksson & Stenius, 2021).

Surveys have also indicated that online grocery services could be useful for people with physical disabilities and the elderly (Driediger & Bhatiasevi, 2019). Alternatively, OGS has also been suggested to be attractive to young professional and working mothers (Seitz et al., 2017). Different user groups experience the value of using online grocery services in different ways. For example, the elderly or those with physical disabilities no longer need to carry their cumbersome groceries home. However, potentially benefiting from OGS is not the same as actually using online grocery services. Particularly the elderly have been observed to be reluctant to adopt OGS (Aspray et al., 2013). On the contrary, young professionals with disposable income are more likely to shop groceries online (Ibid.).

The COVID-19 pandemic increased the popularity of OGS and introduced the practice to new customer groups. In a study of US consumers, it was concluded that women, car owners, high-earners, and those with health constraints were adopting OGS during the pandemic (Shen et al., 2022). Results also indicated that these groups were planning to maintain the new habit after the pandemic.

As indicated by the earlier literature, disposable income appears to play a role in the proclivity to shop groceries online. Several studies have noted a positive correlation between higher income and higher OGS activity (Eriksson & Stenius, 2023). The correlation between higher income and higher levels of education and acceptance of OGS has been speculated to be due to familiarity with technologies and a higher value placed on personal time (Asgari et al., 2023). Near the other end of the income spectrum, low-income households are barred from OGS because of costs and fees (Ali et al., 2022). The findings regarding the significance of some demographic factors in determining OGS adoption are conflictive, however. For example, one study found women and subjects with higher income were less likely to adopt OGS (Frank & Peschel, 2020).

It has been argued that grocery shopping is an activity that households manage collectively. That is, household members do not shop for their groceries individually but instead someone from the household likely buys groceries for everyone in the household. This line of reasoning suggests that household-level demographic variables may predict and explain OGS adoption better than individual-level variables. Investigating this line of thought, a Belgian study found that household size was not related to probability to adopt OGS as hypothesized (Droogenbroeck & Hove, 2017). However, the composition of the household had a significant positive relationship to OGS adoption if there were young children in the household. Furthermore, households where all adults work full-time were more likely to adopt OGS. That is, having even a single adult in the household who did not work full-time decreased the probability of OGS adoption.

Some early survey studies aimed to understand the popularity of OGS by researching what proportion of respondents had purchased groceries online. Given the continuous nature of grocery consumption, it is important to also examine how often the same consumers purchase groceries online, as this is an important aspect of their consumer behavior. Some studies have examined how households allocate their grocery spending between online and offline channels. One survey study with data from 2017 found that 7 out of 10 US adults who had shopped groceries online did so no more than twice a month (Saphores & Xu, 2021). This implies that OGS is used to complement offline shopping, which remains the primary shopping channel for these subjects. The same analysis concluded that Americans were 24 times more likely to shop for groceries offline than online.

5.2 Online grocery shopping behavior

A Belgian study from the early 2000s found that consumers were quite outright opposed to the idea of buying groceries online (Geuens et al., 2003). Buying fresh products online, even pasteurized milk with a relatively long shelf-life, was out of the question. Another critical concern was order delivery and the commitment to be available in person to receive the delivery. This was a seminal study in establishing consumer reluctancy to shop perishables online. The same issue has been revisited by researchers over the years.

One study with a sample size of 324 individuals tested the willingness of French consumers to buy apples in different scenarios (Hurgobin et al., 2020). Scenarios were differentiated with factors such as price, sales channel (online vs offline), locality of the produce and other qualifications (organic or not, sustainably grown or not, etc.). The study identified three distinct consumers segments of which one is highly relevant for the current research. This segment, the largest of the three, were non-online consumers (n = 154). This group clearly rejected the idea of buying apples online regardless of price or product properties (Hurgobin et al., 2020). This negative attitude towards purchasing fresh produce online exhibited by some consumers warrants further investigation. Apples are a common perishable commodity, yet it might be informative to investigate other perishable products in separate studies.

An older study concluded that the making the first order is painfully slow for new customer and that the learning curve for OGS is more substantial than for other product categories in e-commerce (Boyer & Hult, 2005). A basket of groceries is more complex in the number and diversity of items than most other online orders. Online grocery services have undoubtedly improved since the release of the study and web interfaces, and the entire onboarding process for new customers has been improved to facilitate first-time customers. But the fact may remain that making the first order is a great hurdle in attracting consumers to OGS.

Consumer have been demonstrated to be exhibit lower price sensitivity online than offline (Cebollada et al., 2019; Chu et al., 2010). This finding is consistent with the knowledge that online shopping channels are preferred for their convenience and time savings rather than their price level. One study found that online shoppers were more price sensitive than offline shoppers, but the effect was attributed to differences in sensitivity to price promotions across channels (Degeratu et al., 2000). All other things being equal, the study concluded that online customers are less price sensitive than offline customers. Several demographic and geographic properties influenced price sensitivity. Most importantly, a household's distance to the closest conventional supermarket was inversely related to online price sensitivity, i.e. price sensitivity decreases as distance increases (Cebollada et al., 2019). In addition, large households were identified as more price sensitive. This creates opportunities for e-grocers to optimize their pricing strategies to extract more value from distant households and maximize

profits. The researchers propose a zone pricing model, where the delivery area is divided into zones based on the distance to the nearest store. Zoning, together with traditional pricing factors, would subsequently influence product prices, not service fees (Cebollada et al., 2019). The authors demonstrate that his would substantially increase retailer profits.

The authors aptly discuss that consumers are averse to price discrimination and are unwilling to accept higher prices than their peers. Retailers are also under pressure to maintain their price image. OGS does however offer some opportunities for concealed price discrimination, as customers are typically aware of only the prices that they are presented with, whether personalized or not. Price comparison with other shoppers would require inconvenient coordination. Digital services typically identify their customers through registration and login. Customers are required to provide their address to make home delivery orders. The authors speculate that zone-based product price discrimination could be reserved for certain items of lesser prominence in shopping baskets. Everyday observations suggest that zone pricing is currently typically applied to service fees, i.e. delivery fees, as opposed to product prices.

A seminal OGS study asserted that the importance of brands for online grocery shoppers depend on the product category (Degeratu et al., 2000). Brands were perceived as less important for functional products for which detailed attribute information is available. Conversely, brands were more important for product categories where product attributes cannot be expressed quantitatively. Perishables typically fall into the latter category and therefore brand names could be more important for perishables, although produce typically lacks branding. A related finding in the literature is that mobile grocery shoppers buy familiar products (Wang et al., 2015). Brands could therefore serve as reassurance to mitigate the inherent uncertainty that characterizes online shopping. Unsurprisingly, sensory search attributes have less impact on online purchase decisions because of their unavailability (Degeratu et al., 2000).

In addition to understanding OGS adoption, researchers have also studied the specific issue of repurchase intention, i.e. after a customer has completed an initial transaction with an online grocery service, which elements of their experience with the service function as determinants of a second order. One study found that three factors strongly influence repurchasing intentions (Boyer & Hult, 2005). Firstly, making the order must be easy and comfortable. This issue relates to the digital storefront and the ordering process. Secondly, the quality of the goods received must be satisfactory and the expectations in this regard are high particularly for meats, fruits, and other produce. Lastly, the service quality must be high, i.e. each service touchpoint along the customer's journey must be managed in a way that leaves the customer with a satisfactory service experience. In an online grocery service this concerns especially delivery and pick-up situation, their punctuality and the behavior of customer-facing employees involved.

Consumer behavior literature has conceptualized the **need-for-touch** customer type (NFT), i.e. customers that prefer to obtain information haptically (i.e. by touch). NFT has been proposed to be a personality trait. Customers in this

group have higher than average concerns for quality of produce online. They also display lower than average willingness to pay for produce in online channels (Kühn et al., 2020). Another study differentiated five customer segments based on various polled customer preferences (Brand et al., 2020). The segment that shopped least online (dubbed "resisting and responsible") also preferred most to see and touch groceries before purchase. The NFT-type and other various concepts help understand why some consumers are not compelled to OGS in the first place.

Online shopping can be conceptually divided into mobile shopping and non-mobile shopping. A study concluded that as customers adopt mobile shopping for groceries, their online grocery purchasing frequency increases (Wang et al., 2015). Order sizes increase too, especially for customers who were low spenders prior to mobile shopping adoption. Overall, a customer's value to the online grocer increases. Mobile shopping appears to help make OGS habitual and a reoccurring behavior. An additional discovery from the study was that mobile shoppers tend to purchase habitual items that they are familiar with and that mobile shoppers prefer familiar and trusted product brands. Mobile device screens are limited in size which hinders information search. This may contribute to the observed outcome. These results imply that grocers should invest in their mobile channels to increase overall customer spending, but that mobile channels are not ideal for promoting new products (Wang et al., 2015).

Although research has shown that customers are skeptical of new distribution channels in grocery trade (Seitz et al., 2017), satisfaction in the purchase experience has been demonstrated to improve customers' trust of e-grocery services (Mortimer et al., 2016). Trust reduced perceived risk of using online grocery services, which subsequently increased repurchase intent (Mortimer et al., 2016). Experienced shoppers perceived less risk in general and were more trusting of their service provider. A logical conclusion is that online grocery services should aim to rapidly build trust with new customers to convert infrequent buyers into regular buyers (Mortimer et al., 2016).

One study found that OGS leads to greater food waste by consumers (Ilyuk, 2018). The effect was attributed to two mediating variables: decreased effort to obtain the food (effort perception) and decreased psychological ownership of the food. These results were theorized to apply only to consumers in wealthy industrialized countries where food waste is a growing issue.

5.3 Determinants of online grocery shopping acceptance

Factors affecting OGS acceptance and adoption have been studied repeatedly under various research designs. Studies have applied the Technology Acceptance Model (TAM) or an alternative predictive theory to quantitative data from statistical surveys to understand reasons for adoption and non-adoption. TAM has proved to be popular in OGS adoption studies (Tyrväinen & Karjaluoto, 2022). The limitation of these studies is that the TAM constructs are abstract and only

provide approximate information about user perceptions. For instance, deriving actionable managerial advice from the findings of such studies proves to be challenging.

Other studies have employed qualitative or mixed methods to elicit richer answers. One such study found four major motives or benefits of OGS. These were 1) saving money and finding better prices, 2) saving time, 3) finding more products and brands available, and 4) convenience and ease (Blitstein et al., 2020). Expectations about finding optimal prices motivated OGS in Indonesia as well (Handayani et al., 2020). Expectations about finding optimal prices also motivated OGS in Indonesia (Handayani et al., 2020). These findings support earlier qualitative research that identified convenience, product range and prices are key perceived advantages of OGS in the UK and Denmark (Ramus & Nielsen, 2005).

An older study concluded that consumers who viewed brick-and-mortar grocery shopping as physically laborious or were time-constrained perceived OGS as advantageous (Verhoef & Langerak, 2001). Perceived relative advantage in turn increased the intention to adopt OGS. Subjects that perceived online shopping as complex were less likely to try it. The results showed that consumers who view online shopping as advantageous, easy to use, and compatible with their habits, were highly inclined to shop groceries online (Ibid.).

Several different theories have been applied to predict and explain consumer adoption of OGS. An older study compared the effectiveness of the Theory of Planned Behavior and its precursor, the Theory of Reasoned Action at explaining consumer adoption in OGS (T. Hansen et al., 2004). The Theory of Planned behavior was somewhat more effective, although both theories proved reliable. The same study concluded that respondents' attitude toward OGS was the most important predictor of buying intention. Attitudes toward OGS were surveyed with statements "electronic shopping of groceries is attractive to me in my daily life." and "buying groceries via the internet is well suited to the way in which I normally shop groceries".

A more recent study concluded that perceptions of social norms (i.e. friends' and family's attitude toward OGS), compatibility (i.e. fit with existing lifestyle and consumption patterns) and relative advantage (i.e. expectations of time saving, convenience and attractive price levels) explained the difference between adopters and non-adopters of OGS (Frank & Peschel, 2020). Speculating on these results, a self-reinforcing loop may emerge if social norms play a significant role in OGD adoption whereby online grocery services become more widely adopted based on previous adoption.

TAM was employed by researchers on a population of Thai consumers to understand their acceptance of OGS (Driediger & Bhatiasevi, 2019). The two main variables predicting intention to use a technology (perceived usefulness and perceived ease of use) were confirmed to influence intentions to shop groceries online. Perceived usefulness had a stronger effect than perceived ease of use. In turn, convenience and time saving were the strongest determinants of perceived usefulness. Optimism toward the technology's usefulness was higher among users who found OGS easy or felt confident in learning the new technology.

The COVID-19 pandemic erupted the demand for online grocery services. This introduced the question whether new customers would continue to shop groceries online after the pandemic. COVID-19 decreased the importance of the strongest known determinants of online grocery purchase intentions (Tyrväinen & Karjaluoto, 2022). Most notably, the perceived usefulness of online grocery services and shoppers' attitudes (and habits) toward the services did not determine purchase intentions as they had in the past. COVID-19 may have compelled consumers to adopt online grocery services for reasons beyond personal preference, such as the need to avoid crowded supermarkets to minimize exposure to the highly infectious disease and legal restrictions on movement. If these observations prove accurate, a decline in the online grocery market may occur now that the pandemic is over.

Determinants of OGS adoption may vary across the world. In Malaysia, system availability and privacy concerns were strongly related with OGS adoption (Muhammad et al., 2016). System availability is a decreasing concern for online shoppers in Europe or North America and has not been high on research agendas for some time. Perceived risks were demonstrated to deter consumer migration from offline shopping to OGS in Indonesia (Handayani et al., 2020). The authors note that online fraud and data privacy violations still occur regularly in Indonesia, which likely affects consumer perceptions. Region may therefore significantly moderate risk and trust in determining how strongly they predict OGS intentions, with Europeans and Americans increasingly trusting their online service providers.

5.4 Omnichannel shopping behavior

Omnichannel is a business philosophy and approach to commerce that aims to integrate the different methods of interaction available to customers to provide the best possible seamless and convenient customer experience across channels (Asmare & Zewdie, 2022). The difference to earlier multichannel thinking is that channels are not viewed as parallel alternatives for the customer, but instead as an integrated system. Particularly important is the flow of information between channels, so that the customer experience continues seamlessly from one channel to the next.

Digitalization has created new touchpoints in the customer journey and impacted how sales and marketing are practiced. Omnichannel thinking has given rise to a stream of research that aims to understand how online and offline encounters between a business and a customer mesh to produce the final customer experience. One goal is to understand how customers employ the different channels at their disposal to satisfy their needs. Omnichannel management is especially important in the grocery business where a large majority of online shoppers are in fact cross-channel shoppers (aka. multichannel shoppers), who also frequently take advantage of offline shopping (Campo & Breugelmans, 2015;

Saphores & Xu, 2021). Key questions are how the individuals switch between channels and how their behavior or spending differs across channels.

A seminal study in the omnichannel behavior of online grocery shoppers discovered that initially novel online customers prefer online services from the same retailer that they prefer for offline shopping (Melis et al., 2015). The same phenomenon was observed by another study around the same time (Dawes & Nenycz-Thiel, 2014). It has been suggested that consumers trust multi-channel retailers more than pure online retailers (Aspray et al., 2013). Over time, as customers become experienced with OGS, they are more likely to begin comparing different e-grocery services and open up to the idea of switching service providers. At this point it becomes crucial for the e-grocer to hold a competitive advantage over rivals in their online offering. A key driver of online loyalty among experienced shoppers was the parity of online and offline assortment (Campo & Breugelmans, 2015; Melis et al., 2015). Customers expect to find the same assortment online that they are accustomed to offline. Prices did not impact loyalty (Melis et al., 2015). Omnichannel research has posited that cross-channel shoppers favor different product categories online than they do offline. Large and heavy items are common in online orders, because the utility of home delivery is greatest for them (Campo & Breugelmans, 2015). In contrast, cross-channel shoppers prefer to buy sensory products offline, i.e., products they prefer to touch, smell or inspect before making a purchase decision (Campo & Breugelmans, 2015).

Although consumers usually begin online shopping with their preferred offline grocery chain, as they gain experience, they begin to consider other options. This raises the question of what factors affect their decision to switch when the time comes. One study found that push factors, i.e. shortcomings of a service or other grievances, increased switching intentions (Singh & Rosengren, 2020). Identified push factors were poor customer service, problems with delivered products, high price perception and technical problems with the service. The impact of high price perception was less significant than the other push factors, which is consistent with other literature suggesting that online shoppers expect convenience and time savings more than minimal prices. Pull factors related to competing offers had a slightly greater effect on switching intentions than the push factors. It appears that the grass is greener elsewhere. Competitor related pull factors are beyond a business's control, so focus should be on improving one's own services. Specifically, improving service features that, if mismanaged, exacerbate push factors. Mitigating push factors by improving service quality and improving service recovery processes improve customer retention. E-grocers can also work to increase the switching costs. Switching costs are anticipated personal losses in time, effort and money associated with switching to a different service provider (Hellier et al., 2003). Automation and personalization of the online shopping experience based on earlier shopping history make the current service easier to use relative to competing services. The managerial implication of the results is that online grocers can gain online market share through service quality rather than price leadership alone. This provides opportunities for higher

product margins online, which is attractive in the grocery retail industry where margins are thin.

Online grocery orders are delivered using two strategies: home delivery (HD) and click and collect (C&C). One research studied the sociodemographic factors influencing delivery channel choice in Britain (Hood et al., 2020). The study concluded that females, more affluent households and young, but not the youngest, shoppers were most likely to choose HD. Collection was generally a much less popular delivery method, but those who chose it were more likely to be male and socio-professionally segmented as skilled manual workers. Their personal mobility patterns were speculated to encourage personal collection of orders.

Another study investigating cross-channel shopping patterns found that consumers tend to buy fewer unhealthy foods (vices) online than offline (Huyghe et al., 2017). This channel effect was attributed to the symbolic presentation of the groceries online, as opposed to physical presentation in conventional supermarkets. The symbolic presentation decreased the vividness of products and induced fewer temptations to buy. These findings are in line with the knowledge that online shoppers make fewer impulse purchases than offline shoppers (Campo & Breugelmans, 2015). Some consumers are aware that shopping online helps them buy less and eat healthier (Berg & Henriksson, 2020).

A related study found that object interactivity in online channels shaped consumer attitudes (valuations) toward products and increased ownership feelings (De Vries et al., 2018). Rotating 360° 3D product images can therefore reintroduce some of the product vividness to online channels that is missing compared to brick-and-mortar stores and this can increase consumer purchase intentions. While this technology could be used by retailers to increase sales of vices or other high-margin products, the authors speculate that this technology could be used to increase customer acceptance of sensory products in online channels, which is a perennial obstacle in OGS (Campo & Breugelmans, 2015; De Vries et al., 2018; Keh & Shieh, 2001). Another proposed remedy for the problem of fresh produce is providing demonstrative videos of the produce being evaluated haptically (Kühn et al., 2020). Such content was shown to alleviate reluctancy to pay for produce.

A different study asserted that a customer's channel choice was best explained by the customer's shopping orientation, i.e. their pre-purchase expectations about the value of a goal-driven shopping transaction (Cervellon et al., 2015). Key shopping orientations are utility, hedonism, and sustainability. An omnichannel customer will weigh these motivators when deciding which channel to use. Importantly, shopping orientation was presented as a better, more reliable predictor of channel choice than traditional demographic attributes. Some of the findings suggested that French consumers with pro-environmental value may prefer OGS, perceiving it to be eco-friendly. This perception might result from the elimination of private motorized trips to the supermarket in favor of the efficient consolidation of multiple orders into coordinated deliveries. Consumer preference for online shopping was driven by the utilitarian factors of 1)

assortment, 2) shopping convenience and 3) time saving. The fourth utilitarian subconstruct, money saving, did not appear decisive (Cervellon et al., 2015). A different meta-analytical study concluded that price value had a weaker influence on consumers' intention to shop groceries online than other significant determinants, such as perceived usefulness and attitudes toward the services (Tyrväinen & Karjaluoto, 2022). These finding are supportive of other literature that has concluded that online grocery shoppers are less price sensitive than their offline counterparts (Cebollada et al., 2019; Chu et al., 2010). A price premium may indeed be a trade-off for time saving and convenience, which appear to be more important values for online shoppers. As such, higher prices may be an acceptable compromise, which suggests that grouping it together with the other utilitarian values is a flaw in the research model of Cervellon et al. Utilitarian motives (e.g. time saving and convenience) are frequently cited as motives for OGS (Raijas, 2002; Verhoef & Langerak, 2001).

6 THE THEORETICAL FRAMEWORK

OGS is both a technological innovation and an alteration to previous consumption behavior and habits. Grocery shopping is an activity that concerns nearly all people, or at least nearly all households. OGS adoption can be seen as the acceptance of a new technology-driven service. Likewise, OGS adoption can be framed as a choice between previous means of acquiring groceries and the new online channel.

The current research is concerned with the acceptance of technology in a consumer setting. Specifically, the current research asks the question: what deters consumers from adopting OGS? Technology acceptance is a focal element in IS research. This section of the current paper presents a brief review of how user acceptance theory in IS studies has evolved. The review extends from the origins of TAM in the 1980s to the release of UTAUT2 in 2012. Additionally, we introduce the push–pull–mooring framework which is highly effective for analyzing consumer decision-making in a switching situation. The model is particularly effective for contrasting alternatives in binary decisions. The findings of the empirical research in the current paper were analyzed using UTAUT2 and the push–pull–mooring model as the theoretical framework. Both theories provide compelling tools for making sense of the data and the experiences of the study participants.

6.1 User acceptance theory in IS research

Digitalization has led to rapid adoption of new ICT-technologies in the workplace. For an organization to realize value from newly deployable technologies members of organizations must accept and begin to use the new technology (Davis et al., 1989). In practice, the deployment of new technologies often involves friction, user resistance and other challenges that undermine the value of newly deployed technologies. The challenge of successfully deploying new technologies in organizations generated a stream of IS literature aimed at understanding

and predicting the acceptance of technology by means of identification and measurement of pertinent variables.

The Theory of Reasoned Action (TRA) examines what factors determine consciously intended behaviors and is applicable to a broad range of human activities (Fishbein & Ajzen, 1975). TRA is a very general and extensively researched model originating from social psychology. It became the basis for early information system theories focusing on user behavior (Davis et al., 1989). The Technology Acceptance Model (TAM), first published in 1986, became a hallmark theory in the IS field (Davis, 1986). TAM is an adaption of TRA customized for user acceptance in the IS domain (Davis et al., 1989; Dwivedi et al., 2012, p. 21). TAM posits that two factors, 1) perceived usefulness and 2) perceived ease of use, are the primary determinants of technology acceptance (Davis et al., 1989; Dwivedi et al., 2012, p. 21). Perceived usefulness is the prospective user's subjective assessment of how a technology will enable him or her to achieve desirable outcomes or complete relevant tasks (Davis et al., 1989). Perceived ease of use is the degree to which the prospective user expects the technology to be effortless to use (Davis et al., 1989). These two constructs influence the user's attitude towards a technology, which subsequently influences behavioral intention and finally actual behavior or use (Bradley, 2012, pp. 23, 34). TAM became the most widely adopted theory in user acceptance studies because of strong empirical backing and the simple but efficient manner in which it could explain and predict user acceptance (Dwivedi et al., 2012, p. 21).

TAM received a major revision when TAM2 came out in the year 2000 to address some of the criticism directed at the original theory and to improve the explanatory power of the of the model (Dwivedi et al., 2012, p. 28). TAM2 introduced seven new variables, resultingly becoming a substantially more complex model but also achieving greater explanatory power in the tradeoff. TAM2 could explain roughly 60% of the variance in the drivers of user intentions, whereas the original model had only achieved about a 40% rate (Ibid.).

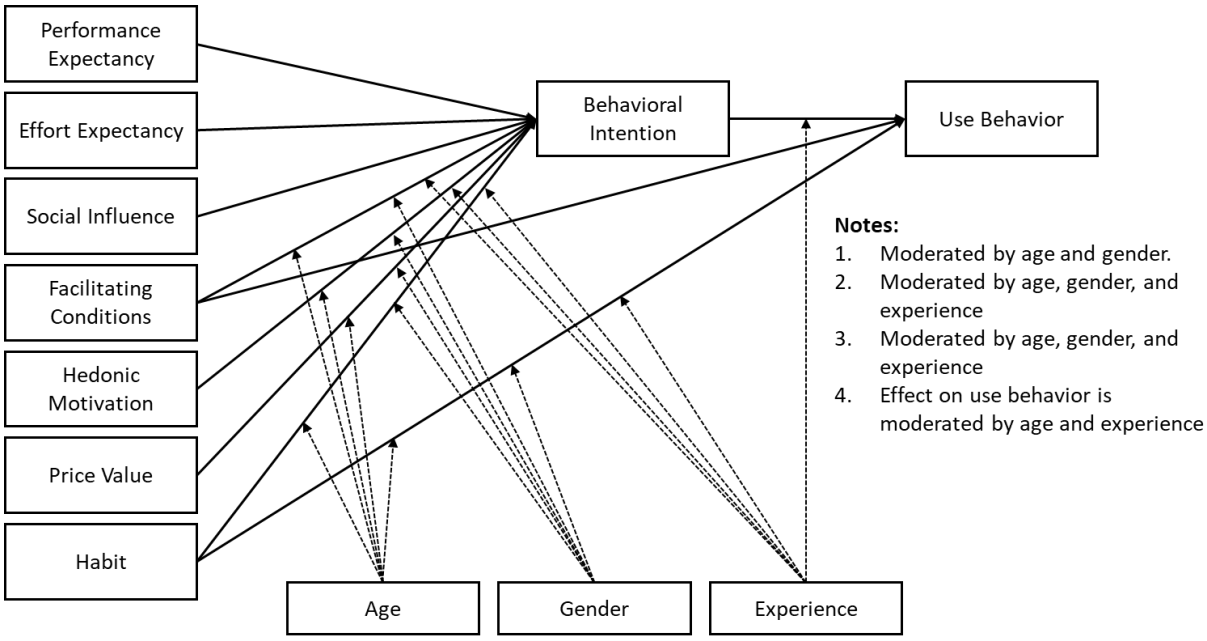
With the goal to further improve the explanatory power of user acceptance theories, a research team in 2003 studied eight major user acceptance models and formulated a new theory based on a synthesis of their findings (Dwivedi et al., 2012, p. 29; Venkatesh et al., 2003). The new theory became known as the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT argues that four fundamental constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) determine behavioral intention towards technologies and subsequently actual behavior and use (Venkatesh et al., 2003). The theory also acknowledges that the effect of the four fundamental constructs is moderated by user characteristics (gender, age, experience and voluntariness of use).

UTAUT became widely modified and extended to adapt the model to specific circumstances. UTAUT was primarily designed for an organizational setting, and research has argued that consumer acceptance of technology differs from technology acceptance in organizations (Marikyan & Papagiannidis, 2023). Given the identified limitations of UTAUT, Venkatesh proposed an extended and

revised version of the theory, called UTAUT2 (Marikyan & Papagiannidis, 2023; Venkatesh et al., 2012). UTAUT2 was designed to model consumer acceptance of information technology (Venkatesh et al., 2012), as opposed to employee acceptance of technology in organizational settings (Marikyan & Papagiannidis, 2023). Other than having a consumer perspective, UTAUT2 was not designed to have any specific focus (e.g. new technology, type of information technology or geographical area of application), but rather to be a general theory (Marikyan & Papagiannidis, 2023).

UTAUT2 introduced three additional underlying factors that specifically influence the use of consumer technologies. These constructs were hedonic motives, cost and perceived value, and habits (Venkatesh et al., 2012). The full UTAUT2 model is presented in FIGURE 16. The following is a brief presentation of the UTAUT2 model, and its constructs based on Venkatesh et al., 2012.

FIGURE 16. Structural model of UTAUT2 (Venkatesh et al., 2012).



Performance expectancy is the degree to which the user beliefs that using the technology will aid him or her perform tasks more effectively to reach desired outcomes (Venkatesh et al., 2003). Performance-enhancing technologies that yield substantial utility are compelling to users.

Effort expectancy is the degree to which the prospective user expects the technology to be easy to use (Venkatesh et al., 2003). If the user expects the technology to be easy to learn and use, they are more likely to intend to use it.

Social influence is the impact of social factors on the prospective user's decision to employ a technology or forgo it (Venkatesh et al., 2003). Social influence is asserted by peers, associates, and the broader society. Social factors can encourage or deter the use of technologies. Humans are social beings and opinions and norms conveyed by an individual's reference group influence their behavior.

Humans expect their associates to accept their behavior, and by extension, the use of technologies.

Facilitating conditions are an individual's perceptions and beliefs regarding the fulfillment of necessary preconditions and presence of supportive elements that enable and aid the adoption of a technology (Venkatesh et al., 2003). Facilitating conditions may be technical or organizational. For example, certain hardware may be required to adopt a new software. Alternatively, a technology may derive its value from a network effect by having enough users or compatible add-on technologies. Having a sufficiently large user base is an example of a facilitating condition.

Hedonic motivations are expectations about enjoyment or pleasure resulting from using a technology (Venkatesh et al., 2012). Hedonic motivation is particularly important for consumer technologies which are regularly used for fun and pleasure, as opposed to organizational technologies which are used to complete tasks assigned by supervisors for the fulfillment of organizational goals.

Price value is the perceived benefit of a technology relative to its monetary cost to the user (Venkatesh et al., 2012). Price value is essential for consumer technologies because consumers pay personally for the technologies they use (Ibid.).

Habits are routines and tendencies to use technology and stand in contrast to deliberate and selective instances of technology use (Venkatesh et al., 2012). When technology use becomes a habit, it also becomes a low-involvement decision that the user is decreasingly aware and critical of. Users may continue to use a technology out of a habit, even when more advanced and effective alternatives have entered the market. Some of the key constructs of UTAUT2 are moderated by the age, gender and experience of the user as illustrated in FIGURE 16. These moderators are not covered in this review and were not used in the analysis of the current empirical results. They are, however, highly relevant in quantitative applications of UTAUT2.

UTAUT2 is a powerful and rather recent theory. It has yet to be surpassed in popularity and acceptance by another theory in consumer acceptance of technology research. A good theory is one that lasts long enough to get you to a better one, and for the time being UTAUT2 has thrived.

6.2 Push–pull–mooring framework for switching behavior

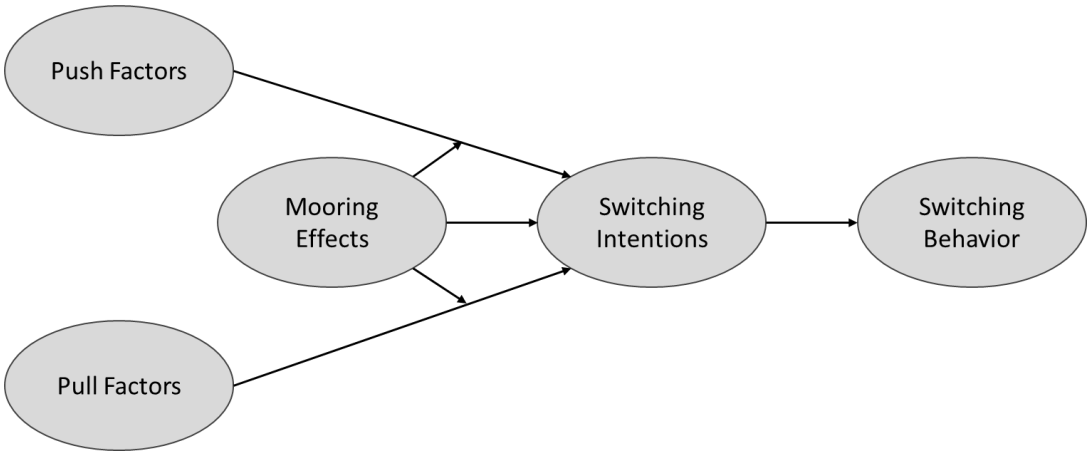
The push–pull–mooring (PPM) framework is a widely used paradigm for understanding human decision-making and resulting behavior. The framework is popular in business and management studies (Nimako & Ntim, 2013) and has been applied to study OGS behavior (Singh & Rosengren, 2020). The framework is particularly used in the context of switching behavior, which refers to the act of replacing previously used goods or services with competing alternatives based on the user's needs and desires (Jung et al., 2017). The PPM model is an evolution of the push–pull theory used to analyze migration patterns and explain migration

through the undesirable properties of the previous condition and the desirable properties of the new prospective condition. (Lee, 1966).

Push factors are variables that are judged negatively in the current solution or condition by the subject and encourage them to make a decision in favor of a new alternative (Adjie et al., 2023). Pull factors are factors related to the new alternative that appear enticing and are judged positively relative to the old option (Adjie et al., 2023). Pull factors draw the subject towards the new alternative and motivate them to leave behind the previous option. And imbalance between push and pull factors results in the subject's verdict that favors either the existing solution or the new alternative. Mooring factors are a later addition to the basic push–pull model (Moon, 1995). Mooring factors are contextual or situational elements that can moderate or limit the effects of push and pull forces. These elements include, for example, social, cultural, and other personal considerations.

OGS adoption can be viewed as a channel choice: either shop online or in a traditional brick-and-mortar store. Outside of this choice, there are few real options for obtaining food. Self-sufficient farming, complete dependency on restaurant services, or scavenging for food, are impossibilities for ordinary citizens and consumers in modern societies.

FIGURE 17. Push-pull-mooring (PPM) migration model of service switching (Bansal et al., 2005).



7 RESEARCH METHODOLOGY

This study examines consumer behavior in OGS and, in particular, the reasons why consumers are reluctant to adopt OGS. The focus is on consumers who have never shopped online for groceries. So far, a comprehensive literature review of OGS has been presented. The literature equips the reader with the necessary knowledge to interpret and comprehend the following empirical research, its implications, and contributions. The literature provides a theoretical framework for the empirical research. The current section details the methodology of the empirical research of this study.

Earlier research has approached the adoption of OGS with quantitative methods. Researchers have employed research models such as TAM, which are widely used in IS research. The constructs in TAM are highly abstracted. TAM constructs include, for example, perceived usefulness and perceived ease of use. These abstractions hide many of the subtleties of the subjective experiences of consumers who are apathetic or opposed to OGS. Findings regarding these constructs provide minimal managerial value as they are too abstract to be actionable. More information is required to understand *why* online grocery services are perceived as useful or not, or alternatively, *how* users judge the usability of a particular service. Recent literature has recommended the adoption of qualitative research methods to study barriers to OGS adoption and to complement the abundance of quantitative research on the topic (Tyrväinen & Karjaluoto, 2022).

In this section of the paper the research methodology is discussed as follows. First, the employment of semi-structured interviews as the data collection method is presented and reasoned. Next, the design process behind our interviews is presented. The selection of participants is covered and basic background information about the participants is presented. Finally, a description of the analytical methods applied to the collected qualitative data is provided.

7.1 Research strategy and methodology

The current research utilizes qualitative, phenomenographic methodology and an interpretive research paradigm. Qualitative methods have their origins in psychology and social sciences and have evolved from the need to study and understand social and cultural phenomena (Flick, 2009). Qualitative methods enable researchers to understand the interactions between people and their social and cultural environment. Quantifying human experience inescapably leads to a loss of fidelity relative to the subject's original experience. Even just the verbalization of human experience is constrained by the limitations of language. Relative to quantitative methods, qualitative methods mitigate this loss of fidelity and provide better access to the richness and diversity of human experience across participants.

Phenomenography aims to uncover the perceptions, beliefs, feelings, and opinions of subjective individuals about the phenomenon under study (Kettunen, n.d.). The assumption underlying phenomenography is that people's ideas and perceptions about the same phenomenon differ and diverge and are related to environmental and subjective factors. Subjective factors include, for example, past experiences, familial upbringing, cultural setting, socialization, self-image, and personal life situation. This study aims to understand participants' perceptions of OGS technologies as experienced in their everyday lives.

The current research is interpretivist and assumes that reality is subjective, as opposed to fixed and objective (Alharahsheh & Pius, 2020). Interpretivism seeks to understand a phenomenon rather than to predict and control it (Saldana, 2011). No dependent or independent variables were defined in advance for testing. Instead, pertinent factors and themes were expected to emerge from the participants' accounts. Qualitative research does not seek to draw conclusions that are generalizable (Hirsjärvi et al., 2009, p. 182). Likewise, the findings of the current research are not considered generalizable over time or across a population. Instead, the current findings are considered to be a glimpse into the subjective realities of the participants at one point in time.

7.2 Data collection method

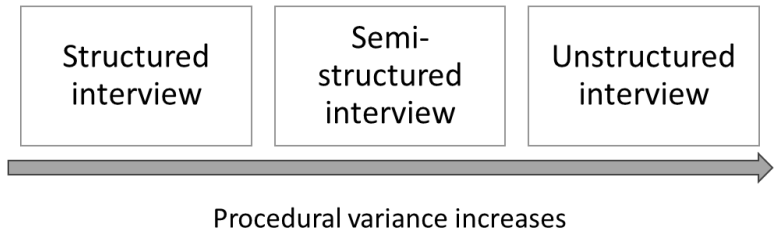
Empirical data was collected using semi-structured interviews with individual consumers. Interviews are a typical data collection method in qualitative research (Saldana, 2011, p. 32). The primary variable differentiating types of research interviews is the level of structuredness (Hirsjärvi & Hurme, 2022). Therefore, semi-structured interviews are best understood in relation to other types of interviews, which are structured and unstructured interviews.

Structured interviews follow a rigid process, where interview questions are predetermined and fixed (Hirsjärvi & Hurme, 2022). The purpose of the interviewer is to present all of the predefined questions with no alteration and no

situational steering. The order of the questions is fixed and ideally the questions are presented in the same manner in all interviews. Structured interviews seek to standardize the collection of information to facilitate the comparison of responses.

At the other extreme of the research interview spectrum are unstructured interviews. Unstructured interviews will likely have a main topic but otherwise resemble a natural free-flowing conversation that limits the conversationists minimally (Hirsjärvi & Hurme, 2022). From the outset, the conversations evolve naturally and dynamically and within a series, interviews may unfold very differently. Unstructured interviews are highly flexible and allow participants to express themselves freely, bringing into the conversation experiences and opinions that they judge to be relevant and important. The role of the interviewer is to facilitate deep, reflective responses from the interviewee (Hirsjärvi & Hurme, 2022). The resulting data is typically rich and nuanced, but comparisons between responses are rarely feasible nor advisable.

FIGURE 18. Types of research interviews (Hirsjärvi & Hurme, 2022).



Semi-structured interviews represent a middle ground between the two extremes. Semi-structured interviews are also known as thematic interviews (Hirsjärvi et al., 2009, p. 208; Sarajärvi & Tuomi, 2018, p. 87). Expert opinions differ on how flexible or rigid semi-structured interviews may be. Flexibility in the interview process can represent variety in the order of questions or the phrasing of questions (Hirsjärvi & Hurme, 2022). Others assert that the key defining feature of semi-structured interviews is not confining the respondent to any specific answer options (Eskola & Suoranta, 1998), whereas questions should remain constant for each respondent. An inherent risk of structured interviews is the misinterpretation of terms and questions (Leinonen et al., 2017). Semi-structured interviews remedy this problem by permitting deviations from a rigid sequence of questions, allowing the interviewer to implore respondents to elaborate and specify answers (Hyvärinen et al., n.d.).

A typical format for semi-structured interviews is the thematic interview. Thematic interviews are prepared in advance. A set of relevant themes is identified and an interview guide is formed based on the themes. All the themes are covered with each respondent, but the allocation of time across themes can vary from one interview to another (Eskola & Suoranta, 1998). The thematic structure of the interview helps to systematically transcribe and analyze the data and to compare responses.

The research methodology and the choice of interview type should always be based on the research problem (Eskola & Suoranta, 1998). Qualitative research is well suited for probing novel issues in social sciences or for advancing our

understanding of familiar, identified issues at greater granularity. Qualitative research is applicable in research areas where theories are emerging and formalizing, but not yet ready for quantitative structural testing and validation. Semi-structured interviews were selected as the method of data collection based on the research goal to accurately understand the experiences and perspectives of the participants and to fill the purported gap in the literature that qualitatively addresses factors hindering OGS adoption (Tyrväinen & Karjaluoto, 2022).

7.2.1 Interview preparations

Qualitative methodology textbooks highlight that interviews are dynamic situations and interviewers should be ready for anything (Eskola & Suoranta, 1998). This is especially true for non-structured interviews, where participants may take the discussion in unforeseen directions. With verbose participants, interviewers may need to focus the discussion back on the right track. With timid participants, interviewers may need to facilitate and encourage discussion, while being careful not to influence responses. The following advice from the methodology literature was followed in preparing for the thematic interviews (Eskola & Suoranta, 1998):

- Prepare an interview guide.
    - Prepare interview themes based on the literature.
    - Prepare questions and discussion aids for each theme.
- Conduct test interviews to develop and validate the interview guide.
- Plan strategies for…
    - …facilitating the discussion if responses are laconic.
    - …bringing the discussion back to focus if the conversation digresses.
- Prepare for anything; visualize different contingencies that may occur during the interview.
- Practice using your equipment, particularly the recording equipment.
- Prepare to present an outline of your research to the participant, including the research problem, the interview procedure, and ethical considerations of the research.

7.2.2 Selection of participants

Literature posits that interview participants should be recruited based on their fit or relevance with the research problem (Flick, 2009, p. 121; Saldana, 2011, p. 33). Interviews are time consuming and resource intensive, so when researching a population as opposed to an individual or small group, sampling, or the selection of participants, becomes an issue. Interviewing everyone in a large group is not feasible with finite resources. If the study has various distinct subject groups, participants should be drawn from each group. Researchers may use their discretion to identify and recruit specific persons that are expected to be able to provide substantive answers and responses for the study (Saldana, 2011, p. 33).

One subject group was identified for this study: consumers that do not shop groceries online. This is a broad group and enabled sampling from a large population through various channels. Consumers who decline to shop for groceries online were eligible to participate. In the final sample, none of the participants had ordered groceries online.

Participants were recruited from a student population at the University of Jyväskylä and through the researcher's personal connections. The germane faculty helped circulate a recruitment email among students, featuring a brief description of the research and the interview procedure. Volunteers could autonomously book an available interview time through a Doodle poll or contact the researcher via email. All participants booked their interview through Doodle. The researcher immediately contacted everyone who made an appointment through Doodle and confirmed their participation. The volunteers were briefed on the study and any concerns or questions about the interviews were addressed in advance.

The researcher directly recruited individuals, who were known to match the target population. This sampling was purposive or selective, as opposed to random. In purposive sampling, cases (i.e. interview participants) are selected based on their known content and relevance to the subject matter, i.e. sampling is not randomly applied to a population.

A gradual strategy of sampling was employed. In gradual sampling the sample size is not predetermined. Instead, the need for collection further empirical data is evaluated along the data collection and analysis process (Flick, 2009). Gradual sampling raises the question of when to stop integrating new cases to the empirical set of data. The criterion of theoretical saturation was employed. In simple terms, saturation means that the same issues begin to repeat in the collected data and no new insights emerge (Hirsjärvi et al., 2009, p. 182). If the study concerns different groups or categories of subjects, saturation is evaluated separately for each. Gradual sampling in qualitative research focuses on the relevance of cases instead of their representativeness (Flick, 2009, p. 121). The sample size required for saturation depends especially on the homogeneity of the study population and how narrowly defined the research goal is (Hennink & Kaiser, 2022). In practice, 9-17 individual interviews or 4-8 focus group discussions typically yield saturation (Hennink & Kaiser, 2022). Eight people were interviewed for the current research, and the interviews lasted on average roughly 37 minutes. The basic information on research participants is presented in TABLE 1. Only basic information is presented and ages are deliberately imprecise to protect the anonymity of participants in accordance with ethical research standards.

TABLE 1. Background information on research participants and interviews.

ID	Age	Gender	Online shopping frequency (per year)	Interview duration
P1	60s	Female	c. 4-6	36min
P2	30s	Male	c. 2-3 (+ regular meal deliveries)	27min
P3	20s	Female	>24 (multiple times a month)	33min
P4	60s	Male	c. 50	36min
P5	40s	Male	c. 6 (+ regular C2C)	45min
P6	30s	Female	>36 (several times a month)	34min
P7	50s	Female	c. 5-10	41min
P8	20s	Female	c. 12-36	46min

7.2.3 Implementation of interviews

Interviews were conducted remotely using Microsoft Teams and Google Meet applications as meeting tools. With experience, Microsoft Teams became the preferred meeting application because of its powerful integrated speech-to-text transcription tools. Microsoft Teams was also known to be a familiar tool among the university students who participated. Google Meet was used with some non-student respondents for its ease of use on any device.

The interviews were conducted between 23.10.2023 and 10.11.2023. All interviews were conducted in Finnish. All citations in the results section are thereby translations. Interviews were recorded using integrated recording features of the two meeting applications.

7.3 Data analysis

Thematic analysis was applied to the gathered data. Thematic analysis is the practice of identifying common patterns (i.e. themes) and relations between themes in the data (Vaismoradi et al., 2013). The distinction between thematic analysis and another common qualitative analysis method, content analysis, is subtle. Both methods are easier to understand by comparing them and contrasting their differences and similarities.

Content analysis seeks to describe characteristics of a document containing textual data, i.e. what terms or phrases are present in the data and at what frequency. Content analysis allows for quantification of the data, i.e. counting frequencies of words or phrases and drawing subsequent conclusions (Vaismoradi et al., 2013). Words in textual data act as labels for concepts, ideas, and themes. Therefore, a search for certain words may effectively be a search for certain themes. For this reason, content analysis and thematic analysis are sometimes confused, and distinguishing between the two methods can be challenging at first. However, content analysis only operates on words that appear explicitly in the data. Thematic analysis, on the other hand, seeks to discover and understand larger themes that emerge from the entire data set, often by means of

interpretation and synthesis. In thematic analysis, the analyst may utilize various elements of the data to construct and argue for the presence of particular themes.

Thereby, thematic analysis goes beyond a focus on word frequency and word count. Thematic analysis focuses on identifying and describing both implicit and explicit ideas, or themes, in the data, i.e. themes (Guest et al., 2012). Another key difference between the two analysis methods is that content analysis begins with a firm resolution about what the material is being analyzed for, i.e. what things are of interest to the research. In contrast, thematic analysis proceeds without such a preliminary resolution, and the empirical data is expected to guide the researcher in determining what to focus on (Sarajärvi & Tuomi, 2018). The thematic analysis in the current research proceeded in the following steps:

Data analysis process

- Selection of theoretical framework for the analysis
- Transcription
- Familiarization
- Coding
- Mapping codes to themes from the theoretical framework
- Iterative revision
    - Reviewing and revising codes
    - Revising mapping of codes to themes
- Reviewing the results
- Writing up and reporting

Transcription preceded the actual analysis of the data. Transcription is the process of converting recorded speech into a text format. The actual analysis was performed on the resulting textual data. The interviews were transcribed in Microsoft Word and, where possible, the automatic transcriptions of Microsoft Teams were used as a basis. However, the automatic transcriptions were meticulously reviewed and rectified to ensure the integrity of the data. This approach is believed to have saved significant time in the transcription process.

Careful and thorough transcription is important, because it affects the quality of the data available for analysis (Flick, 2009). The necessary accuracy of the transcription depends on the research question (Flick, 2009, p. 300; Ruusuvuori & Nikander, 2017). Linguistic and conversation-analytic studies may require extremely precise transcription, including notation for pauses, emphasis, interrupting sounds, etc. in the transcription. Psychological or sociological research questions rarely warrant this level of accuracy. By the account of one qualitative methodology textbook, "only as much and only as exactly as is required by the research question" should be transcribed (Flick, 2009, p. 300). In the current research, speech recordings from the interviews were transcribed with a high degree of accuracy. Some informal abbreviations and word forms typical of spoken language were tidied into proper written language for ease of reading, comprehension, and analysis.

Familiarization begins during the transcription of the data and continues with a full read-through of the complete data set. The goal of familiarization is to thoroughly review the entire data set before proceeding with coding. Familiarization assists in the creation of relevant codes and facilitates later stages of the analysis.

Coding aims to partition the data into smaller coherent units for better manageability and more effective analysis. Coding is always a systematic process of evaluating the entire data set (Eskola & Suoranta, 1998). Coding typically proceeds in a series of stages. Coding may be theory-driven or data-driven (Juhila, n.d.), i.e. deductive or inductive. Taguette, an open-source software for qualitative data analysis, was used to code and analyze the textual data. Taguette is an accessible, beginner-friendly tool that offers basic features essential for qualitative analysis of text. Compared to alternative proprietary applications, Taguette offers basic functionalities without a license fee.

Codes should describe, name, or classify the phenomenon under study and have substantial meaning or relevance (Flick, 2009, pp. 309–310). Codes are words or short phrases that describe the sections of the text they point to (Saldana, 2011). A text can be coded line by line, sentence by sentence or paragraph by paragraph depending on the use case. The granularity of coding is a design choice owned by the researcher and is influenced by the data and the research question. The precision of analysis may vary across the text, so that highly informative passages of text are coded finely, while inessential sections are coded coarsely. There is no single way to code a qualitative textual data set. Coding inescapably involves judgement calls, interpretations, and decisions by the researcher (Juhila, n.d.).

The current research aims to discover factors that deter consumers from adopting OGS. The current empirical research utilized a combination of inductive and deductive coding. Initially, data-driven inductive coding was employed to group textual passages based on their commonality and relevance to the research question. Subsequently, these inductive codes were mapped to broader deductive themes derived from the UTAUT2 model in the theoretical framework. This approach proved unsuccessful, as the initial inductive codes did not properly map to the deductive themes mirroring UTAUT2 construct. Additionally, passages under initial inductive codes were often linked to multiple deductive themes. An extensive revision of the initial codes was necessary and implemented to better align the codes and the themes. This approach proved effective and enabled the analysis and presentation of the findings deductively based on the theoretical framework. After a final review, the thematic findings were written up for reporting in the current paper.

8 RESULTS

UTAUT2 served as the theoretical framework to guide the analysis of the empirical data (see section 6.1 User acceptance theory in IS research for further details). The theory was used to make sense of the data and to structure the findings. The results were not used to test theory, nor is the current study postulating a new theory.

All participants were experienced online shoppers. Everyone reported making multiple online purchases per year. However, there was variation in how often participants shopped online. The most active online shoppers reported making multiple online purchases each month or almost weekly. All participants were comfortable using digital devices and the internet and possessed the devices and technologies necessary to conduct e-commerce. The following section reports the findings of the current research. A summary of the findings is presented at the end of the current main section.

8.1 Performance expectancy

Performance expectancy is the degree to which the user believes that using the technology will aid him or her perform tasks more effectively to reach desired outcomes (Venkatesh et al., 2003). Users are compelled by performance-enhancing technologies that provide substantial utility and help them in their daily lives. Potential users judge the performance of OGS relative to their existing means of grocery shopping. If OGS is expected to deliver superior performance, it will compel consumers.

Participants had high expectations for their current grocery services. These expectations were expressed particularly as demands for the range of available products and the quality and freshness of the products. Some participants were demanding about the origin of products and the ethical background of goods.

> At least, as I said, I want to get all my groceries from one store. So that I don't need to go to some other store just to get one small, essential item. And then of course I want the products to be fresh… I want products with good expiration dates. (P1)

> For me the price point is more important than brand loyalty. The brand has essentially no significance to me as long as I can look up where it [the grocery product] was produced. If it was produced in a clearly unethical environment, then I'll avoid it… Olive oil is an exemplary product where I've started to look up more information. (P5)

> And then I am quite demanding when I'm buying bread, that the bread needs to be very fresh, because I usually put some of it in the freezer. (P6)

> Domestic products [are important to me]. Even though they sometimes cost more, I buy domestic products, nevertheless. I read from the labels and packages where the products originate from… another important thing is freshness. (P7)

> …and if I'm buying eggs or honey then I'll buy domestics products. I want to support the local producers. That's also true for berries and vegetables. (P8)

Sometimes assortment limitations steered the participants to shop in a particular store, which might have represented a departure from their normal preferred store. If individual products can determine the choice of grocery store, then e-grocers need to offer complete assortments. This implies a very high performance expectation in terms of assortment. In practice, some independent pure players have attempted to downsize their assortments to reduce costs. The wider the assortment, the greater the inventory risk becomes.

> Well, this is a bit funny right now. But a thing as simple as Alpro natural yogurt. In the S-group it's not available in S-markets [smaller supermarkets]. It's only available in Prismas [larger hypermarkets]. I could maybe use another product, but the thing is that I know for certain that I'll be able to buy it when I go to the right store. (P1)

> Then there are some special products that I know I can only get in certain stores. Minced strawberries are only available in K-Group store. It forces me to visit the K-Citymarket… And one small issue is walnuts, which we always get at Lidl because they're good over there and inexpensive. The product determines the store. (P4)

> If I know I'll be shopping for vices, I'll select a K-group store, because they have all kinds of special items unlike S-group stores. (P6)

> But sometimes I visit the K-supermarket because they have more products available… especially if I'm planning to bake, they offer more products than S-group store. (H8)

To its detriment, OGS was judged by numerous participants as having lower performance compared to brick-and-mortar shopping in some of the issues that they judged to be important in grocery shopping. The salient issue was the selection and subsequent quality and freshness of perishables such as fruits and vegetables. For packaged and processed foods, freshness was judged in terms of expiration dates.

> If I'm not bothered to go to the store, then why would I order online if I can't be 100% sure of what I would get. For example if I buy apples, then I want to personally select the best looking apples at the store. So I don't trust that someone else would pick the best looking apples for me and the same thing goes for perishables like meat and such. I always make sure to get the best expiration dates, and my preconception is that I wouldn't get the same dates there [in the online grocery service]. (P3)

> [Online grocery shopping differs from offline shopping in] the way you can get to know your products. EU regulatory return policies for e-commerce will probably never extend to perishables. That's the biggest difference to shopping in a physical store, where you can touch and feel the products. For example, you can squeeze fruits and get an idea of which ones are the best. (P5)

> We were just making apple jam last weekend and we needed the right variety of apples. That's something that's still not possible in the online grocery services, to select the right variety of apples. Selecting a proper sweet variety would have been quite impossible in an online store. This is not an issue with dry goods though, as long as the manufacturer or the manufacturing process doesn't change. (P5)

> And then I have wondered how attentive those pickers are to expiration dates… [picking] practices might differ considerably across stores. (P6)

> Maybe it is [most critical for me] that I want to personally select what I buy and determine the quality… so that I can ensure the freshness and that the products are domestic… it [OGS] would be different in that you can't select what [perishables] you're buying… [the main difference is] making selections personally and getting fresh produce… I've seen them do picking in the store. They just grab the first item without any selection or a glance at the expiration dates. (P7)

> I'm a bit skeptical about the freshness of the products [if I ordered online] if the delivery came from far away. How fresh would they [perishables] be if you can't personally select them? In the store I can feel the bread and see if it has started to dry up… [with online grocery services] you just have to trust that someone is picking good quality for you… I believe the products of online retailers to be generally as good as in the supermarkets. I just think that the pickers will grab the first item, and you could end up with a poor-quality item. (P8)

Most participants were rather complacent with how they currently shop for groceries in the offline environment. Some expressed no desire to improve the grocery shopping experience, despite having voiced some grievances.

> I don't know [how grocery shopping could be improved]. For me it's just fine how things are now. (P1)

> I don't really have any wishes [for improving grocery shopping], because all of these issues have to do with how I think. So I can't really complain. (P6)

> I don't know, so I guess I don't [wish for any improvements in grocery shopping]. Sometimes I wish it was easier to find products. (P8)

Many participants acknowledged that OGS could improve the performance of grocery shopping in some ways. Shopping online was expected to be faster and, in some cases, more convenient. This had not, however, motivated participants to adopt OGS. Other determinants appeared to weigh heavier in their assessment of the value of the services.

> If I was raising small kids, then I would order groceries home. But there's only two of us living in this household and we are not short of time. And I can go to the store in person. (P1)

> Well, I'd imagine that busy families with small kids and otherwise hectic lives and no time to do shopping, this service [OGS] might suit them better… It could be that with an order template and a bit of experience with making an online order that ordering could be very quick… it would speed things up a lot. Not having to go anywhere physically would save time. (P3)

> It's [online grocery services] probably good for those that it helps. It's probably almost a necessity, or at least a huge relief for people, that find it difficult to leave their home for some reason… and families with small children. That in a way it gives time for other hobbies, you can go to the gym or go for a walk when you don't have to go to the grocery store. No need to waste your time going to the store. (P4)

> I used to live abroad and work 12-hour days, as did my wife. We had very little free time then… We did not use an online grocery service back then, but I would have welcomed saving my own time by not shopping for groceries. (P5)

> But maybe [online grocery services are good] for people that have a family and lots of things going on and in the evening they have to take their kids to practice and there's always a rush. Maybe it's useful for them. (P7)

> Well, it would be relieving in a certain way if someone else picked and assembled the purchased products. (P1)

Some participants anticipated that OGS could help them save money on groceries. Financial savings could materialize through various mechanisms, such as price comparison or the elimination of impulse shopping. Price was stated to be an important factor in grocery shopping by all participants, as discussed later in section 8.6 Price value.

> I think that the number of impulse purchases would decline substantially. (P3)

> I'd say that if I was able to plan my groceries for an entire week, then ordering online would become economical [despite delivery fees], because the number of impulse purchases would decrease. I probably spend more money on impulse purchases in a month than the cost of four home deliveries … Saving money would definitely be an advantage [with OGS]. Because I believe that a lot of people are mindful of their impulse shopping. (P6)

> Price comparison would be possible [in OGS]. Either between products or between services using a third-party comparison tool. But then it would become difficult if

> products were even slightly different. For example, if one store would be selling Finnish milk and another store would be selling Swedish milk. (P5)

Participants could also conceive other ways in which OGS would improve their grocery shopping habits and their broader food consumption behavior.

> It would be easier to discover and buy supplementary products, things that go with what you are buying. There could be inspirational recipes [in an online grocery service]. In a physical store inspirational recipes wouldn't work, not on printouts. (P5)

> Well, I believe, for example, that if I need to buy something that I rarely buy and I'd need to look around for the product in the physical store, then it would just be easier for me to find and buy it from an online service. (P6)

> And then if I'm buying for example those small individual packed yoghurts, then every time that I'm carrying my groceries home I'm wondering if they'll break and spill in carriage. Maybe those [products] would be nice to order from an online service. (P6)

Home deliveries were identified as reducing the need to drive. This was believed to generate financial savings through the conservation of fuel. It might also have a positive ecological impact.

> You'd save on fuel because you wouldn't need to drive around. That would generate savings as well. (P3)

> It [OGS] could reduce the need for driving around. It could be ecological. (P7)

Various other positive qualities were identified in OGS that could be interpreted as performance enhancements over conventional grocery shopping. These qualities included potential access to larger assortments, better product findability (i.e. convenience and time saving), avoiding crowds (i.e. convenience and possibly time saving) and relief for those with limited ability to physically handle heavy groceries.

> It [OGS] could provide larger assortments when shelf space is no longer a limiting factor. There'd be no more wandering in the supermarket, that would be nice. Products would be easy to find. There'd be more options [products] available. (P5)

> And then if I consider crowds at the store during peak hours, I would not need to worry about them anymore. (P3)

> …also [it would be good] for the elderly, who can't carry their own groceries. (P7)

> Of course, an advantage is that it is much easier [to shop groceries online] if the groceries are delivered to your doorstep, especially if the customer has any mobility impairments. It will certainly help them a lot. And of course during the pandemic it [OGS] must have helped out a lot of people. (P8)

Performance expectancy is closely associated with another UTAUT2 construct, price value. The value of a service is influenced by its performance, real of expected. Price value is a judgment of that performance relative to the price of the technology to the consumer. Thereby the analysis of performance related findings is complemented by the findings covered in the section 8.6 Price value.

8.2 Effort expectancy

Effort expectancy is the degree to which the prospective user expects the technology to be easy to use (Venkatesh et al., 2003) , which in turn affects their intention to use the technology. Only one participant made a direct comment about the effort expectancy of OGS. Multiple others had alluded that online shopping could facilitate grocery shopping (see previous section 8.1 Performance expectancy for further details), implying that the order process did not intimidate them.

> I am not familiar with the online grocery service. I can't say, for example, whether it would be easy for me to use it. I cannot say. (P1)

Notably, most respondents did not appear to find conventional offline grocery shopping bothersome. Despite many participants voicing some grievance related to their current grocery shopping, most seemed very accepting of the current situation including its merits and shortcomings.

> …as I'm driving around on my businesses it's easy to stop by the supermarket. (P4)

> It [grocery shopping] is pretty easy nowadays because the store is so close by. It's easy to visit the store. (P7)

> Often, I don't feel like leaving home to go [grocery] shopping, but once I am there in the store it's all quite easy… (P8)

One aspect where some respondents believed that OGS would involve an undesired strain was in the reception of home deliveries. On the one hand, home deliveries had been identified as a potential performance enhancer that could save time and trouble. On the other hand, they could also confine the customer to staying home unproductively. Unwanted effort was required to schedule and commit to deliveries.

> Well, it's an interesting point, that it [the online grocery delivery] presumably confines you to be at home at a specific time. I don't know how the delivery time is negotiated or communicated. How large is the variance [in delivery times] and how flexible it [the delivery process] is… Do you always need to sign the receipt? (P4)

> If the delivery time window is three hours long, that's not necessarily specific enough for me. If it was a fifteen-minute time window that's three hours away, that would be precise enough for me. (P5)

> And then there's this thing… I don't remember how long the delivery time windows are, but then I'd always need to plan that now I'm going to stay at home for three hours and be ready to receive an order. That's also one thing [reason to not buy groceries online]. (P6)

> And then of course related to the home delivery. Since I am a bit of an introvert, I've never had any home deliveries. I always order to a parcel locker. So if the goods came directly to my door, would that be a little awkward?... it [the problem] is having to stand by and wait. It somehow feels stressful… it feels easier to just go to the store in person. (P8)

Most participants planned their grocery shopping in advance (more details in section 8.7 Habits). For those who did not, the effort required to switch to OGS appeared greater.

> A disadvantage [with OGS] would be that if you don't know how to plan your groceries for the whole week, then you would buy too much or too little of something and then you'd need to run to the brick-and-mortar store anyways to get something… for me it would probably be difficult with some products to determine how much is enough for a week. In my case, I would probably buy way too much of some things, and not the other way around. (P6)

8.3 Social influence

Social influence is the impact of social factors on the prospective user's decision to employ a technology or not (Venkatesh et al., 2003). Social influence is exerted by peers, associates, other reference groups and the broader community. Social factors can encourage or deter the use of technologies. As social beings, individuals tend to be influenced by their reference groups' opinions and expectations. People expect their peers to accept their behavior, and by extension, their use of technologies. None of the participants indicated that social influence would prevent them from shopping for groceries online, although some had heard of blunders and problems with online grocery services. None displayed outright animosity towards OGS.

> And I've heard stories on social media that someone ordered six bananas and received six kilos of bananas. Or something like that. So probably I'd need to study the services. I don't know how to make my order so that they'd get it right there [in the store]. (P1)

> The problem [for my friends] is always that the picker in the store never arrives at the same conclusion from five alternatives as you would. Personally you'd have picked something else. So if the designated product is not available in the store, that [selection of a substitute product] appears to be the weakness in the [online grocery] services nowadays and it's causing negative experiences [for my friends] and leading them to evaluate the use of the services. (P5)

Most seemed to know or remember someone that had purchased groceries online, but some had not discussed the experience in detail.

> I'm not sure, but my sister's family might have shopped for groceries online. I'm not sure. I don't think I'd know anyone else… during the pandemic they probably used it [an online grocery service]. (P7)

> I remember almost nothing about the time that my dad tried one of those [online grocery] services. I can't really remember anything, except that the groceries were home delivered. It was during the COVID-pandemic and that's why my dad tried it out. (P8)

Some participants did not know any online grocery shoppers or hadn't heard any first-hand experiences of OGS.

> I don't have anyone close to me that would buy groceries online. Or at least no one has mentioned it or we haven't discussed it. (P3)

> [What have you heard from your associates about OGS?] Nothing really, I guess… I can't remember that I would have seen any marketing either. (P4)

Some participants had heard positive feedback about online grocery services, but these favorable arguments did not seem to apply to them or influence their grocery shopping behavior.

> That one person [a friend] noted it [OGS] to be a good service. Because she, for example, doesn't have a car and it's easier for the groceries to be delivered home. She lives on the third or fourth floor with no elevator. Someone is bringing her the groceries. I don't think I know anyone else. I haven't heard many experiences. (P1)

> Some [friends] have said that it [OGS] is quite easy. But we haven't really discussed it otherwise. It made things easier because they did not need to go to the store, but that is not something that ever would have troubled me. (P2)

> Well, I have two friends that are doctors. They have no time to visit grocery stores… they use it [the online grocery service] actively and avoid going to grocery stores by having all groceries home delivered… for them the driving force is avoiding shopping. It's more significant for them. (P5)

> I know lots of people [that shop groceries online]. They're telling me how easy it is when everything is home delivered. You can just click around to fill up your shopping basket. But those are the kind of people that know how to plan their lives in advance. (P6)

8.4 Facilitating conditions

Facilitating conditions are an individual's perceptions and beliefs regarding the fulfillment of necessary preconditions and the presence of supportive elements

that enable and aid the adoption of a technology (Venkatesh et al., 2003). Facilitating conditions are, for example, access to training, support, knowledge, or other resources that aid in the use of technology.

All participants shopped regularly online and possessed the skills, devices, and internet connection to do so (see section 8.7 Habits for further details). All participants also lived in areas where full-service online grocery services operate (i.e. services that deliver frozen goods, perishables, dry goods and household supplies). Thus, the primary facilitating conditions were satisfied and did not impede OGS.

The possession, or lack thereof, of relevant knowledge is a component of facilitating conditions (Venkatesh et al., 2003, 2012). Studies utilizing UTAUT2 have investigated facilitating conditions with survey items such as "I have the knowledge necessary to use [a technology]." (Venkatesh et al., 2012). Many respondents acknowledged having limited information about online grocery services. The lack of knowledge and lack of exposure to online grocery services evidently did not facilitate adoption of the services. The prevalence of this condition makes it a key finding of the current research. There was uncertainty about the ordering process, pricing, and fees, and how order fulfillment works etc.

> It [my preference to pick my own groceries] has to do with seeing things yourself. And here we come to the fact that I don't have experience with online grocery shopping. It's probably a matter of practice. Currently I can see if a product is good and OK and if a product happens to be unavailable then I personally know what to select [as a substitute] from nearby, something suitable. (P1)

> Well, all I can tell [about online grocery services] is that I see pickers in the store… and there is a collection point [C&C] in the store lobby. A family man was coming from there with his shopping cart full of cardboard boxes, so he had most likely collected his preordered groceries, I realized. (P1)

> I have thought that it would be a good idea to become familiar with online grocery ordering now while I have the capacity to learn. So that once I really need the service… I'd know how to order. (P1)

> Eventually, I know very little [about online grocery services]. I have not acquainted myself with the services, but I know that there are services where you can order groceries and they get home delivered. At least some companies have had that. I don't actually know if those services are provided by the grocery stores or by third parties… Then there are [services] where you can order groceries and, I don't know, do you have to pick them up yourself from the store?... I know that most big chains have some kind of a service nowadays. (P2)

> I have no experience with those [online grocery] services… and then there are those ambiguities about how the services work in practice. These might be just my perceptions. It's not clear to me how they [the online grocery services] work. (P2)

> I am not familiar [with online grocery services], I got to admit. I don't know for example, how much a home delivery would cost or does it cost differently with different firms. Or how conveniently the ordering works or if it works at all. (P3)

> I don't know how you can manage affordability in those [online grocery] services. How can you determine which tomatoes you're getting and at what price level? And this goes for other things too… I don't know too well how this matter works. (P4)

> I have no idea [what C&C would cost]. My local store just started a C&C service and they have those [pickup] lockers where you can retrieve your order, but I haven't investigated what it might cost. I know that they offered the service for free at first, but I have no idea what the fees are now. (P7)

> I know for example that the S-group store that's nearby, they have a service where you can order groceries online, then a staff member picks the products and deposits the order in a locker where you can retrieve it. And I know that – I think they're not here yet – but in the city center there are those Starship-robots that deliver grocery orders. But otherwise, I don't know much about local [online grocery] services. (P8)

There was widespread ambiguity among the participants about the most basic aspects of online grocery services. Unclear issues included delivery options and conditions, product substitutions, order requirements, and the notation of desired products in the ordering process.

> I have thought that if I ever was sick or for some reason could not move around or if I didn't have my car available, then at that point I would consider making an online grocery order. Except that… do they home deliver? Or do I need to pick it up personally? I'm not sure… Well I have this perception that a friend of mine began home-ordering groceries during the COVID-pandemic from a nearby hypermarket. So yes, they do make home deliveries. (P1)

> Something that I always wonder is do you select alternatives in the webstore, in case that a product is unavailable, like how to make substitutions. That I don't know. In the supermarket I can personally look around if I want something else instead. (P1)

> I don't even know if they [online grocery services] allow you to make small purchases, with like 14 euros. Could I even do that? (P2)

> I don't know how the practicalities work. Like what or how much can be bought, how is ordering done, how and where are the products delivered and so forth. I just haven't done it. (P2)

> I don't know for example what delivery times are available or how the ordering actually works. I have, however, tried to find shelf location in store [using a website on my mobile device] and encountered that the product is available online for order. And the site also displays options for pick-up lockers somewhere. That's e-commerce. (P4)

> I've never tried one of these grocery delivery services, but I guess you can select that you don't want any Rainbow-products [private label products of non-domestic origin]. I don't know. I've never even tried their web sites. (P7)

> I don't know if you can demand that you want Finnish cucumbers and not Spanish cucumbers. Maybe you can, but I don't know. (P7)

> I know that there are services where you can order online and either pick up the order or have it home delivered. Or I don't know if they deliver them anymore. I don't think they have home deliveries. During the COVID-pandemic some stores had that [service]. (P7)

> If I ordered online… well I haven't investigated this, maybe I should investigate this… like how far away do the deliveries come from? For example, if they're delivered from another city, then are the orders kept chilled during transportation and how is their quality when they arrive? (P8)

Only two respondents appeared to know specific details about online grocery services. Both had received some exposure to online grocery services through their profession.

> I know that there is basic picking in many stores and that can go and collect their order from refrigerated lockers or a counter at the store. I think it has evolved in a direction where there are lockers at the store entrance… Nowadays you can order precise items and then you can or can't [depending on conditions] select a substitute product in case there's a stock-out. It works pretty well. These are the alternatives that I am aware of. Then there are these services that deliver fruit baskets every week or two, mostly for mid-sized firms. (P5)

> Then I know roughly what the service fees are. Or I don't know home delivery prices, but pick-ups are roughly five euros, roughly… It's fantastic to add products to the virtual shopping basket and browse assortments online… often before I go to the store, I might make a kind of shopping list in those online grocery stores, so that I add those products to the shopping cart, but then I actually go and buy the products in the physical store…[I don't complete the online order] probably because I'm no good at planning my main dishes in advance… (P6)

In some cases, offline shopping seemed to be facilitated by multitasking, i.e. combining multiple everyday errands into one for efficiency. Sometimes the boundary between grocery shopping and restaurant services seems to become blurred, and the purchase of takeout food for immediate needs may alter other grocery shopping patterns.

> It [the grocery store that I prefer] is maybe roughly two and a half kilometers from home. And I use my own car to go there, yes… and yes there are lots of other businesses in that direction where I might run errands. Other stores and such. (P1)

> On some infrequent occasions [it is important] what else is available nearby. Like other stores such as Alko, or a shoemaker's shop, or a gas station and so forth… or sometimes just the mailbox. Rarely do I need that one of course, but maybe five times a year or possibly more frequently than that. (P4)

> This fall I've been visiting the university in person. I usually stop at the larger market along the drive. (P7)

> And for example, when I'm in a hurry, I might go to the K-supermarket because they serve fresh sushi on Wednesdays and Saturdays. (P8)

8.5 Hedonic motivation

Hedonic motivation is the fun or pleasure that results from using a technology (Venkatesh et al., 2012). Hedonic motivation is particularly important for consumer technologies which are regularly used recreationally for fun and pleasure, as opposed to utility. However, based on the responses, grocery shopping appears to be a largely utilitarian affair. Only one participant asserted to enjoy grocery shopping.

> Well, at the moment, as I have more time than when I was still working, it's quite pleasant to go [to the store] in person and select products. So yes, I find it quite nice to go in person. I could however still consider, if going three times a week is excessive… but I do like going to the grocery store. (P1)

Many participants expressed indifference in their attitude toward grocery shopping.

> It's not so that I would dislike grocery shopping. I'd say that I feel quite neutral about it. (P2)

> It's pretty neutral [my opinion of grocery shopping]. I'm not excited to go to the store, but it's not bothersome either. Maybe I find it most unpleasant if I go during peak hours, that's when I find it most frustrating to do my grocery shopping, as there are so many other people. But if I go at the right time, it's a neutral experience. (P3)

Some participants did not enjoy grocery shopping.

> Well, I see it [grocery shopping] as a necessary evil. (P5)

> I don't like it [grocery shopping]. If I was capable of planning my groceries in advance, then I'd definitely order from online and get a home delivery. I despise going to the grocery store. (P6)

Some participants displayed mixed feelings about grocery shopping.

> I like it [grocery shopping] when I have a clear vision of what I want… but I dislike wandering aimlessly in the store and trying to figure out what to buy. (P7)

> Well, it [grocery shopping] is something quite neutral. Often, I don't feel like leaving home to go [grocery] shopping, but once I am there in the store it's all quite easy… But many times, when I've gone to the store during peak hours it has been a much more frustrating experience. I'd much rather go during the final hour before they close and avoid the crowds. (P8)

Hedonic motivation did not appear to influence the participants' preference for either online or offline grocery shopping.

8.6 Price value

Price value is the perceived benefit of a technology relative to its monetary cost to the user (Venkatesh et al., 2012). Price value is essential for consumer technologies because consumers personally pay for the technologies they use. The price of an online grocery service to the customer includes product prices as well as service fees for activities like picking, packaging, and delivery. Modern online grocery services may employ dynamic pricing where demand and other variables influence service fees. For example, deliveries over long distances might cost more. Alternatively, C&C at the most desirable hours, for example during after-work commuting hours, could be priced higher.

Assessing price value is a function of two variables: price and value. Price refers to the amount of money that a customer pays for an offering. Value is the benefit or worth a customer perceives in the transaction, in essence anything that the customer is willing to pay for. Price value is subjectively assessed by each consumer and deemed compelling when these two variables align. Value is related to the performance, or perception thereof, of a technology (see section 8.1 Performance expectancy for further details). Most respondents recognized clearly valuable properties in OGS as evident in the previously discussed performance expectations. All participants stated that they cared about the price of their groceries and only a selective sample of answers is hereby presented.

> Well of course price is [an important] thing, so I do prefer S-market stores because K-chain stores are more expensive. At least when it comes to the products that I buy regularly. (P2)

> Price [is important to me]. Usually the price [is decisive]. And I have experienced that Prisma and K-Citymarket are more affordable than the local [smaller] shops around here. (P3)

> Well of course price is a major factor, and then also the healthiness of the food… (P4)

> When I go to S-market or Lidl, it's because they are less expensive… and they are closer… but usually [I select my store] based on the price level. (P6)

> But then I have observed that you can get your groceries at lower prices in the larger stores. That's maybe why I sometimes drive to the bigger markets. When I do, I go to Prisma. (P7)

One participant explained, however, that under certain conditions prices were not as important.

> I mainly visit the same couple of stores, depending a bit on what I'm buying. If I'm only buying a few small things, then I might shop just about anywhere, and I would not be looking at prices all that much. (P6)

Many participants had concerns about service fees and how they'd negatively influence the overall cost of the service and the dependent price value assessment.

> Somehow I have this perception from somewhere, that if you start buying [groceries online] then you'd either have to or you'd be economically better off making larger purchases. (P2)

> I have not attempted to get acquainted with these [online grocery] services because… maybe my preconception has been that the service will cost something extra. (P3)

> I'd be willing to pay [something for the delivery service]. But maybe I've had this idea that the fees are high and then there's the uncertainty whether I'd get what I want [freshness and expiration dates were previously discussed]… If I'd receive something that wouldn't satisfy me, after paying 20 euros for the service, then that would be frustrating. (P3)

> And then there is the financial perspective [for why I don't buy groceries online], that I don't want to pay extra for it [the online grocery service]. (P3)

> [I don't buy groceries online] probably because I'm no good at planning my main meals in advance so that ordering with home delivery would be economical. Because I'd just see myself ordering groceries to my home three times a week then [and paying substantial service fees]… I'd say that if I was able to plan my groceries for an entire week, then ordering online would become economical [despite delivery fees], because the number of impulse purchases would decrease. (P6)

> And then what comes to my mind is that there is always going to be a delivery fee and when you're buying groceries for just one person and your shopping basket is small, then the expense of having someone pick your groceries and deliver them to your home seems disproportionate… during the pandemic I might have looked at some of their prices. And I thought that I could buy quite a lot of products with the money that I'd spend on just service fees. (P7)

While participants could generally conceive advantages with OGS, many saw no practical value in the services for which they would be willing to pay for in their current subjective situations.

> It might be convenient, if I learnt to order groceries online and didn't have to go to the store, but I don't experience it [shopping in person] to be bothersome anyways… If I could think of advantages, I probably would be using those [online grocery] services. (P2)

> But maybe I think that as a student living by myself, or I'm not living alone anymore but I'm still a student with a tight budget… and I'm quite attentive to quality and want to know what I'm getting, then this [online grocery service] might not be a service for me in the end. (P3)

> I have the time to go grocery shopping and when I do I know exactly what I'm getting. Why pay extra for the online service and take a risk? (P3)

> Those [online grocery] services are a matter of saving time. People that are short on time [are the target group]. I can't say that I'd be pressed for time nowadays… so it's not a problem to go and stretch my legs at Prisma. (P4)

> Well, if it would give me more time free time in my daily life, I would use it [the online grocery service]. This autumn I don't have a problem with [insufficient] spare time. (P5)

> I seem to recall that a colleague maybe once said that you can create an order template [in an online grocery service] and then it is easy to buy the same basic groceries every week… it could be useful for a large family. I faintly remember this. It's just that… none of this has ever seemed important to me, so I've never seen myself using these services, so that I would have paid close attention. (P7)

> If I consider this pragmatically, these [online grocery] services evoke no feelings, at least not in the direction that these services would be useful to me… but I don't have anything negative to say about them either. (P7)

> I'm probably not inclined to shop groceries online, because my walk to the grocery store is so short and it's not an inconvenience. (P8)

OGS may have negative side effects that could possibly reduce existing value for the customer in their grocery shopping routines. Some participants anticipated these adverse effects. Some participants alluded to enjoying the physical activity involved in grocery shopping and experienced it to be refreshing. As discussed earlier in section 8.2 Effort expectancy, several participants expressed concerns about the limitations of the home delivery reception process, particularly the imprecision of delivery time windows and the inconvenience of having to stay home and be available on standby to receive a delivery. Additionally, the physical store environment could help participants recall replenishment needs and shop proportionately, thereby helping them in their grocery shopping.

> Well then of course, would I leave my home as often [and be disadvantaged], if I didn't go shopping? (P1)

> I feel like when I visit the store in person, I might remember suddenly that "hey I need this or hey I need that!" and then I can still get the product because I'm at the store. But if I ordered online and then remembered that I still need something else it would be much harder to modify the order. I'd assume so, if the order was already submitted. (P3)

> And often when I'm shopping in a supermarket I'll notice when my shopping basket is starting to get heavy. With online orders, especially when you're buying from multiple stores around the same time, you don't realize how much you've ordered until the deliveries begin to arrive. (P8)

> But then on the other hand there'd be more waste from packaging materials. They always pack the orders into carboard boxes, don't they? But cardboard can be recycled… (P7)

8.7 Habits

Habits are routines and tendencies to use technology and stand in contrast to deliberate and selective instances of technology use (Venkatesh et al., 2012). When technology use becomes a habit, it also becomes a low-involvement decision that the user is decreasingly aware and critical of. Strong habits may deter people from changing their behavior, even when better alternatives have become available.

The participants of the current empirical research had not bought groceries online for their household and obviously lacked any habit to do so. All respondents made other online purchases on a regular basis. Some did so quite actively, while others shopped online quite infrequently. Four participants shopped online multiple times a month. Others shopped online every month or two, with the exception of one participant who asserted to shop online only two or three times a year, but frequently when restaurant meals are included.

The participants' online shopping habits did not extend from other product categories to groceries. In fact, habit seemed to play a central role in the participants' propensity to buy groceries in brick-and-mortar stores. In this sense, onboarding the participants to OGS can be seen as a struggle to overcome their previously established routines and habits for grocery shopping. Many participants referred directly to routines or habitual behavior in their analysis of their own grocery shopping behavior.

> It [the grocery store that I visit] is quite simple. And then of course, because I visit the same place [store], it [the shopping] is somehow effortless and quick and I know the locations of products and of course the assortments are good, so that I don't need to visit multiple stores. I get everything from one place. (P1)

> Not really [there is no distinct reason for not shopping groceries online]. As we have discussed, it [grocery shopping] is probably a question of habit. (P2)

> When I shop, I have a routine for going through the store, so that I usually grab the fruit first, and then I navigate the aisles...and then the refrigerated items, and usually the frozen items last. Then I make my way out of the store. (P3)

> Maybe it [grocery shopping] is just a question of habit and the fact that as I'm driving around on my businesses it's easy to stop by the supermarket. (P4)

> I prefer the same store because I am familiar with it. I can find things easily there. I don't run after offers because it would be just one out of fifty products in my shopping basket. (P5)

> We considered the division of labor in our household back in the day, but then this routine emerged that we need to do top-up shopping only every three days, and it's a quick shopping trip. When it [the grocery shopping] doesn't take up much time then it's not so bad… Yes, that whole thing [grocery shopping] becomes very routinized for me. (P5)

OGS forces shoppers to plan their purchases in advance. Shoppers need to determine how much and what kind of groceries they need. The lack of planning habits seemed to deter some participants from shopping groceries online. On the contrary, most participants were used to planning their purchases and saw various good reasons for doing so. If a new technology requires the user to adjust habitual behavior, successful adoption is less likely.

> Let's say that it [OGS] would require… how should I phrase this… this is neither anything negative nor positive, but maybe it would require a bigger adjustment in mindset. In a way I'm used to doing things in a particular way… It [adopting OGS] feels a bit like it would be a surprisingly big change. (P2)

Many participants planned their grocery shopping in advance:

> Well yes, I plan them [grocery purchases] before I go to the store. I will have checked what I need and planned my meals for the next day and maybe the one after that. So I have that planned when I go to the store… I have them [shopping list] in written form in Google Keep. (P1)

> Usually my shopping follows the same pattern. It [my grocery shopping process] begins at home when I start making a list of the things I'm missing. I might have been preparing the list all week long and right before I go to the store, I inspect my fridge for the final time to see if I'm missing anything. I try to buy my weekly groceries all in one go. (P3)

> [I plan my groceries] quite perfectly, so that the shopping list is formed at home. (P4)

> I plan my shopping basket at home and try to avoid impulse purchases. I use a note-taking application, a generic one. (P5)

> I plan [my groceries]. I rarely go to the grocery store without a shopping list. So I plan what I'll cook and what I'll buy. I try to consolidate my shopping so I don't need to go out to get just one thing. I go grocery shopping about twice a week. (P7)

> I only visit the grocery store when I need something. I check first what I still have available [at home] and if something else is close to running out. (P8)

Some participants did not plan their groceries:

> [I buy groceries] By going to the store, usually without much forethought. I am not very orderly with my grocery shopping, and I never make big purchase at once… I don't know what I'll be eating in the long term. (P2)

> I go to the grocery store many times a week, so I don't do much of planning in this matter, not in the long term. Basically I buy one meal at a time. (P6)

8.8 Summary of results

This section presented the empirical findings of the current research. The theoretical framework of the current research was evident in the analysis of the data and how the findings were structured and presented. Interview participants reflected on their grocery shopping habits and e-commerce experience and proceeded to describe their perceptions of OGS as well as provide their rationale for not using OGS.

Several thematic issues emerged from the data that appeared to weigh heavier in the participants' evaluations of the value of online grocery services. Importantly, grocery shopping appears to be a very habitual behavior that is considered but not questioned by the shoppers. Even those participants that experienced and voiced grievances with their grocery shopping seemed reluctant or uninspired to change how groceries are shopped. Participants appeared to accept the current state of affairs with its advantages and shortcomings.

The selection of perishable groceries, such as fruits and vegetables, continues to be an item of concern for shoppers. To ensure that they receive and consume produce of the highest quality, shoppers seemed to be motivated to shop for their groceries offline in person.

Most participants were strikingly uninformed about the properties of online grocery services. Some were self-aware of their lack of knowledge and stated that they had not felt attracted to online grocery services, instead preferring their current habits of grocery shopping.

Participants were conscious of the service fees associated with OGS and appeared unenthusiastic or unwilling to pay extra for the picking and delivery service, preferring instead to do these tasks personally. Multiple participants contemplated that online grocery services could be useful and valuable under the right circumstances, but not in their current situation. The price value of OGS did not convince them, despite some conceivable advantages.

A variety of other concerns regarding OGS were voiced, such as the inconvenience of receiving scheduled home deliveries personally, the added packaging material waste, and delivery lead times. These concerns appeared to play a smaller role in deterring these participants from adopting OGS. All these findings are interesting and valuable, however, and some of the mentioned issues could prove to be significant for other shoppers in a different sample. A comprehensive summary of the current findings is reported in TABLE 2 in the next section.

9 DISCUSSION

The current research studied consumers' perceptions of OGS and its suitability for their daily lives and grocery shopping needs. Despite the continued growth and adoption of e-commerce, groceries remain a product category where online shopping channels are used sparingly by consumers. The current research sought to understand what factors impede the broader consumer adoption of OGS by asking the following research question:

- What factors deter consumers' adoption of OGS?

Two supportive research questions were investigated in the literature section:

- What are the various customer-facing service elements that differentiate online grocery services?
- What constraints do businesses encounter in designing and delivering online grocery services?

In this section of the research these questions are answered to the best of current findings. The empirical findings are discussed thoroughly and contrasted with findings from earlier research. Similarities and differences to prior knowledge are highlighted. The theoretical and managerial implications of the current research are then reflected. The limitations of the current research are considered, and several avenues for future research are proposed. Finally, the quality of the current research is assessed in terms of the reliability and validity of the study. The eight conducted semi-structured interviews yielded an abundance of relevant data for analysis. The interviews proved effective in eliciting reflective and critical responses from the participants. Participants were open and appeared invested in the research. TABLE 2 presents a summary of the current empirical findings.

9.1 Key findings

TABLE 2. Summary of empirical findings. Key findings are indicated with "!".

Performance Expectancy	Worse quality of perishables !	
	Improved speed, saving time	
	Convenience and ease	• Overall ease of making the order • Help with cumbersome groceries • Easier to find products • Avoiding crowds & peak hours
	Saving money	• Less impulse purchases • Price comparison • Conservation of fuel
	Facilitation of ideas and inspiration	• Improved product discoverability (novel, complementary products) • Recipe inspiration
	Improved ecology, no driving involved	
Effort Expectancy	Brick-and-mortar shopping is easy enough (complacency)	
	Inconvenience of receiving HDs personally	
	OGS requires effort if not used to planning groceries	
	Limited perceptions of OGS effort expectancy	
Social Influence	Some had heard about blunders and problems with service	
	Some could recall very little word-of-mouth	
	Some did not know any online grocery shoppers	
	Some had heard positive experiences, but appeared unswayed	

Facilitating Conditions	Broad lack of knowledge about OG services !	• Order process
		  ○ Specificity of product selection in order process
		  ○ Price, size etc. order requirements

		• Quality & freshness of perishables
		• Pricing & fees

		• Fulfillment and delivery
		  ○ Availability of HD
		  ○ Substitutions
		  ○ Delivery distances and mngmt of temperature in transportation

	Only few were more familiar with OG services and options	
	Multi-tasking encouraged offline shopping	• Motorized shoppers and combined errands • Ready-to-eat meals available in brick-and-mortar stores
Hedonic Motivation	Grocery shopping was largely passionless	
	Many voiced minor grievances with grocery shopping, but seemed accepting of status quo	
Price Value	All considered product prices to be important	
	Concerns about service fees relative to service value !	
	Unwillingness to pay for the proposed value (under current circumstances) !	
	Negative side effects diminished value of OGS	• Undesired reduction of physical activity • Inconvenience of receiving HDs personally • Lead time and order editing limitations • Disproportionate shopping because of intangibility • Packaging material waste
Habits	Grocery shopping appeared strongly habitual !	
	Routinized and optimized (same store, default products, regular shopping intervals/days etc.)	
	Those who didn't plan groceries, seemed poorly situated to adopt OGS	

The eight conducted semi-structured interviews yielded an abundance of relevant data for analysis. The interviews proved effective in eliciting reflective and

critical responses from the participants. Participants were open and appeared invested in the research.

Top-level themes in the analysis were derived from the theoretical framework, specifically the UTAUT2 model. Multiple sub-themes were inductively identified from the data and mapped to each of the seven main themes. Some of the sub-themes are concerns or negative perceptions of OGS, others are otherwise relevant observations about the data. Some of the identified themes represent issues that appeared to be more significant to the participants based on their narratives, for example, when a participant made repeated remarks about the same grievance or emphasized an issue. Some issues were more personal, reflecting idiosyncratic preferences and concerns, such as the optimization of ecological behavior. Other issues were almost universally voiced by all participants, such as the importance of product prices.

We introduced the push–pull–mooring (PPM) framework into the theoretical framework of the study because it became clear during the data collection and analysis process that the participants comprehended OGS as an alternative to conventional grocery shopping in a brick-and-mortar store, i.e. a binary choice. The same comparative perspective has been considered in numerous other OGS studies (Ramus & Nielsen, 2005; Verhoef & Langerak, 2001). Therefore, it makes sense to contrast these two alternatives in order to understand how the shoppers decide between the two options. Both options have their advantages. The negative aspects of conventional shopping push consumers toward adopting OGS and the perceived advantages of OGS pull them toward the new services. Additionally, personal, social, situational, and habitual mooring factors moderate the push and pull forces and introduce inertia into the equation.

The current findings underscore how habitual grocery shopping is for consumers. On the one hand, it is essential for individuals to have regular meals. On the other hand, many groceries are perishable and cannot be stockpiled for long periods. Resultingly, consumers are forced to purchase groceries regularly, which reinforces habitual behavior. Many participants recognized grocery shopping as habitual. Many also appeared to have taken steps to optimize this process, for example, by visiting the same stores and learning their layouts, buying the same basic groceries, having regular weekdays for shopping etc. Changing ingrained habits is particularly difficult. Many participants did not seriously question the current state of grocery shopping and expressed complacency. The lack of push factors urging consumers to change their grocery shopping habits has been identified in the literature as a barrier to OGS adoption (Seitz et al., 2017).

The thought and effort expended to routinize and optimize grocery shopping, as well as the prevailing complacency, appeared to be mooring factors that discourage change and maintain the status quo. The mechanism behind this could be various. Perhaps the investments made in grocery shopping optimization have increased consumers' sense of ownership, personalization, and agency in their current offline shopping process. This idea has been floated by previous research, which found that low-income shoppers receiving food subsidies had developed strategies and skills for optimizing their grocery shopping which were

not transferable to OGS, thus demotivating OGS adoption (Martinez et al., 2018). While the current study did not take into account the income level of the participants, all participants did express to care about prices. Other shoppers too might be moored by the strategies and habits they've developed to optimize their grocery shopping for specific outcomes, whether it's low cost or high quality. Literature has postulated that OGS adoption increases when the practice is compatible with existing habits and behaviors (Frank & Peschel, 2020).

Issues with the selection of perishable groceries, such as fruits, vegetables, and bread, continue to play a major role in discouraging OGS adoption, consistent with previous literature (Geuens et al., 2003; Hurgobin et al., 2020; Raijas, 2002). This was a clear topic where participants felt that OGS would perform poorly compared to conventional shopping. In the case of individual customers, the need to haptically verify the quality of perishables may be a matter of pedantry and excessive attention to detail (Kühn et al., 2020), but this is not to dismiss real customer concerns. Self-service shopping, once introduced by retailers to alleviate their own workload and reduce costs, has enabled customers to become accustomed to the highest quality of products realistically possible. Some customers may be so demanding personality-wise, that they will continue to shop perishables in physical stores indefinitely. However, many of the more moderate shoppers could perhaps be convinced to shop groceries online if they would receive a positive initial exposure to the services. The lack of exposure and experience seemed to deter OGS adoption. Previous studies have noted that consumer distrust in novel distribution channels is not unusual (Seitz et al., 2017).

Many participants demonstrated limited knowledge of online grocery services, as revealed by their responses. Possession or access to knowledge is a facilitating condition that drives technology adoption (Venkatesh et al., 2003). Some participants were aware of the limitations of their knowledge, but lacked the interest in online grocery services that would have motivated them to learn more. Previous research has demonstrated that the visibility of OGS, understood as the degree to which the services are apparent to the user, has a strong positive impact on perceptions and intentions to use OGS (Chien et al., 2003). In this sense, the participants' lack of knowledge about online grocery services or people who would use them, could hinder their own adoption of OGS due to a lack of pull factors. Certain consumer segments have been discovered to not care about OGS in general, e.g. low-income shoppers (Rogus et al., 2020).

The current participants did not know many people who would buy groceries online. This too indicates low visibility of online grocery services, which, as argued before, negatively impacts intentions to use the services. The participants had little exposure to positive or negative word-of-mouth. Social influences appeared to be very limited and did not deter OGS. Social influences can however work in either direction, and exposure to positive word-of-mouth could encourage OGS adoption as observed in previous research (Frank & Peschel, 2020). When customers have limited knowledge of online grocery services, their assessment of the advantages and disadvantages of the services as well as their price value judgement are going to be based on beliefs rather than facts. Customers

who are unaware of the actual service fees are not able to accurately assess price value. The lack of information about the services seemed to be a deterrent factor, as it raised only concerns, not hopes. Unclear concerns touched on many issues, including the ordering process, product quality, prices and fees, and fulfillment practices.

Finally, the participants placed a high importance on prices. All participants expressed an interest in good prices. Most participants recognized that online grocery services involve service fees in addition to product prices. Service fees seemed to discourage adoption and experimentation with OGS. An aversion to service and delivery fees has been observed in previous literature (Driediger & Bhatiasevi, 2019; Murphy, 2007; Sheng, 2005). It should be noted that current participants could generally not quote any fees and their perceptions of fees appeared to be fuzzy. No one commented on the prices of products in online grocery services, seemingly expecting them to be the same as in conventional stores. The issue of customer unwillingness to pay service fees in OGS has a long history.

Many of the minor findings of the current study have been identified in previous research and reported in the literature. For example, the inconvenience of scheduling and receiving home deliveries in imprecise delivery windows (Ramus & Nielsen, 2005), combining grocery shopping with other errands (Aspray et al., 2013), and enjoying the experience of shopping (Rogus et al., 2020). Although the current discussion of the findings focuses on the barriers to OGS adoption, in line with the research question, it should be noted that the interviews also provided insights into positive perceptions of OGS. Many of these same perceived advantages have been identified in previous literature, for example the opportunity to save money and gain access to larger assortments (Blitstein et al., 2020).

Interestingly, consumers in earlier literature have mourned the lack of impulse shopping in OGS, seeing it as a fun spontaneous element of grocery shopping (Ramus & Nielsen, 2005). In the current study, participants viewed the anticipated reduction or elimination of impulse shopping in OGS as a positive feature that would help them save money. Generally the current data supports earlier knowledge and does not present conflicting findings.

From the perspective of the PPM framework, some of the pull factors associated with OGS by the participants in the current study were saving time, ease of shopping, convenience (avoiding crowds, finding products more easily, help with groceries for the old or physically impaired) and saving money on fuel. All participants could conceive something positive about OGS. The fact that they did not evaluate OGS as worth adopting implies that push factors associated with conventional offline grocery shopping are not particularly strong for these participants, or that the mooring factors are very strong and impede change. As argued previously, the findings suggest that shopping is very habitual, which could imply a mooring effect. Changing habits is difficult and slow. The lack of strong push factors could be sensed in the participants' narratives about the relative ease of conventional grocery shopping and their complacency with their current grocery shopping approach. The lack of knowledge could also function

as a mooring factor. Without a clear picture of both alternatives, a critical comparative analysis becomes difficult, and the current serviceable option might appear more compelling due to familiarity and a lack of risk.

The secondary research questions were comprehensive answered in the literature section. The discussion and synthesis in sections 4 Research on online grocery services presents an overview of how online grocery services are designed on the supply side and how various service configurations are employed by competing service providers to differentiate in the marketplace (see for example García et al., 2022). These findings help understand what potential online grocery customers are seeing in the marketplace and what kind of value they can expect from online grocery services.

The other secondary research question was primarily answered in section 3.5 Online grocery services which covered the peculiar nature of e-grocery business and the challenge of designing efficient fulfillment strategies for groceries. For businesses, efficiently picking orders with numerous perishable and delicate items and delivering to customers' homes is the great challenge of e-grocery (Asdemir et al., 2009; Aspray et al., 2013; Hübner et al., 2016). The cost and complexity of the fulfillment operation is significant.

9.2 Managerial implications

The current findings have some managerial implications, which are encapsulated in three points. The ideas presented next would ideally benefit from further validation. Since a lack of knowledge and a fixation on old habits seemed to deter OGS adoption, it would be important for service providers to attract consumers to try out the services for an initial exposure. First experiences are the most informative and could alleviate some of the concerns that consumers have about the quality of products and service. Special promotions targeting new users could serve as the method. The first delivery would provide the users with physical, tangible evidence of the quality of the service and products and could perhaps motivate them to make further orders. It's important to recognize that in the present, most active online grocery shoppers are actually multichannel shoppers, who use both offline and online channels (Campo & Breugelmans, 2015). Therefore, any new customers are also likely to become multichannel customers who use the online channel under specific circumstances. But helping potential consumers discover the situations in their lives where OGS could deliver them real value is a marketing challenge for service providers to overcome. These firsthand experiences are also the only chance to give potential customers a true sense of the quality of products sold through online grocery channels. As literature notes, customers who have experienced OGS are more trusting of the service and product quality (Aspray et al., 2013; Mortimer et al., 2016). Continuously improving the quality of delivered products is an internal operational challenge for online grocery services and should be a key managerial concern given the importance of the issue to customers.

Secondly, the lack of word-of-mouth and testimonials is a missed opportunity to promote and market online grocery services. Like many e-commerce businesses, online grocery services are short on physical elements that would attune and socialize consumers to OGS. Marketing activities that promote the dispersion of second-hand accounts of OGS should be considered. This consideration is best left to marketing specialists, but visually conspicuous delivery operation or other service elements that prompt customers to share experiences or social media content are ideas. Second-hand accounts could help alleviate some of the consumer concerns and promote the services in a more positive light. Social normative influences have been proposed to be of potentially high importance in normalizing and promoting OGS (Driediger & Bhatiasevi, 2019; T. Hansen et al., 2004).

Finally, since customers appear reluctant to pay for online grocery services, it may be necessary to offer discounts on service fees to prospective customers. This idea is based on the assumption that a certain percentage of new customers would convert to regular customers. Such promotions might hurt profitability in the short term but could generate greater profits in the long term.

9.3 Contributions of the research

The current research adopted its primary research question from the discussions of a recent meta-analytical review of OGS (Tyrväinen & Karjaluoto, 2022). During the research project, the topic in question revealed to be broadly studied and reported in the literature. The current findings are corroborative of earlier research and present no remarkable new discoveries. Certain minor findings were unexpected, such as the participants' unfamiliarity with OGS and their lack of knowledge about the services. To the best of existing knowledge, this research is unique in studying Finnish consumers to understand their perceptions of OGS in depth using qualitative methods. The current research possesses value as a confirmatory study that validates previous research and provides further evidence that the deterrents of OGS identified in studies in other parts of the world are rather universal and apply to Finnish consumers.

9.4 Study limitations and future research

The current research is the master's thesis of the author and is subject to certain limitations common to this type of work. The author is an inexperienced researcher and worked solitarily on the current paper. The resourcing for this research was limited and adversely influenced some elements of the research design and the research execution. The author believes to have evolved as a researcher during the research project and upon starting all over again would change certain aspects of the research.

The systematic portion of the literature review was limited to just one academic database, ScienceDirect provided by Elsevier. This choice was an unconsidered outcome of inexperience with academic databases and search engines. This flaw in the original strategy was rectified considerably by employment of snowball sampling as a secondary sampling technique. In the end, a considerable amount of cited literature came from outside of the ScienceDirect database.

The interview guide might have adversely affected the scope of the findings. The interview guide was drafted in haste and, more importantly, before the final decision about the study's analytical framework. As such, the interview guide was not theory-driven (albeit it was informed by an ample review of literature) and resultingly the interviews provided only limited perspectives on some elements of the of the theoretical framework. Particularly direct comments on the effort expectancy of OGS were scarce. Neither did the interviews provide information about the economic situation or disposable income of the participants. With more experience these shortcomings could have been avoided and a better alignment between the interview guide and the theoretical framework could have been established. Note that it was argued that the scope of the findings may have been limited. The validity of the findings is believed to be impeccable, as will be discussed shortly.

Some research participants were directly recruited by the researcher based on knowledge that they matched the target population. This represents a purposive sampling strategy and comes with advantages and disadvantages. When interviewing experts, specialists, or otherwise studying a rare phenomenon affecting only rare individuals, purposive sampling is a valid and even recommended strategy (Flick, 2009, pp. 122–123). This is, however, hardly the case in the current research on consumers. Additionally, interviewing known associates can put the participants in awkward situations, which may distort the reliability of answers and the subsequent data (Saldana, 2011, p. 34). This risk was possibly mitigated by the ordinary nature of the study's subject, i.e. grocery shopping. Participants appeared to be at ease discussing the passionless topic, although such speculation is subject to potentially false interpretations. It can be argued that the purposive sampling complemented nicely the random sample of peer students that participated in this study. The purposive sampling improved the heterogeneity of the collected data and introduced alternative perspectives and voices to the data by incorporating non-student consumers of various ages and backgrounds into the sample. The student participants were also of various ages, but all shared the occupation of being a student.

One element of concern in the current study is the sample size of eight participants. This is admittedly minimal for a qualitative study of this nature. The interviews were, however, comprehensive and the participants were active and forthcoming in discussing their perceptions of OGS. A substantial amount of textual data was generated. The analysis of the current data and the alignment of findings with earlier research suggests that the sample was adequate to produce relevant and saturated findings. As discussed under the research strategy section, these findings were not intended to be, nor are they, generalizable, as is not

unusual in qualitative research (Flick, 2009, p. 122). Ideally, with better resourcing and availability of time, the sample would have been expanded to include a few more participants.

Considering the topic of the research, the choice of theoretical framework for the analysis of data offered many possibilities. While freedom of choice regarding methodology can be a positive issue, it can also be a daunting task for a novice researcher. With a more comprehensive review of pertinent literature and theory, the theoretical framework might have been altered.

Based on the literature review in the current paper and the findings of the empirical research it appears that the consumer grievances of OGS are well known. The current findings support that the adoption of OGS is partly hindered by a lack of knowledge and awareness of the services. Therefore, it would be very interesting to study the perceptions of consumers who have experience with OGS but choose not to shop groceries online. Their criticisms of the services would be based on real experiences and could reveal real shortcomings of the services. These results could be very informative for practitioners working to improve online grocery services. It would also be interesting to study active online grocery shoppers to understand what motivates them to stay with the services. Additionally, investigating whether consumers use these services on a long-term basis or intermittently based on situational factors in their lives would also provide valuable insights.

9.5 Reliability and validity

Reliability and validity are two key elements of any research, and both are necessary components of quality (Cypress, 2017). Reliability in qualitative research has been defined as "the consistency of the analytical procedures, including accounting for personal and research method biases that may have influenced the finding (Noble & Smith, 2015)." The reliability of the current study is grounded in the choice of research methods and their proficient application. As argued earlier in section 7.2 Data collection method, semi-structured interviews are a prevalent and tried means of investigating subjective experiences and individuals' perceptions and beliefs (Saldana, 2011, p. 32). Barring the aforementioned shortcomings in the design process of the interview guide, it can be argued that the research methods were proficiently applied in addition to careful and purposive selection. The design and implementation of this study are thoroughly documented and openly publicized in this document.

Perhaps more typical of quantitative research, is to understand reliability as the degree to which the same results would be yielded by a repetition of the study. The whole notion of reliability has been criticized as problematic in social sciences where human behaviors and interactions change over time (Cypress, 2017). Reliability could perhaps have been improved with a larger sample size, because as the law of large numbers dictates, larger samples lead to convergent results. While the law of large numbers is a principle of quantitative research, the same

idea bears some merit when qualitatively studying general technologies utilized by large populations of common people, i.e. a very inclusive phenomenon. So, while a different sample of participants would undoubtedly yield some alternative findings, corroboration between the current findings and earlier research support the reliability of the current study.

Validity on the other hand is broadly defined as "the state of being well grounded or justifiable, relevant, meaningful, logical, confirming to accepted principles or the quality of being sound, just, and well founded (Cypress, 2017)." Alternatively, validity has been defined as "the precision in which the findings accurately reflect the data (Noble & Smith, 2015)" or sometimes in layman's term simply as did the thesis answer the research question?

Critical evaluation of validity is especially important in quantitative research where validity can be compromised by the wrong operationalization of concepts and erroneous construct validity. In contrast, when an interviewer asks a participant about their perspective on a given issue, there is less room for similar errors in validity. Naturally differences in cognition and the use of language between the interviewer and the participant can lead to validity errors in qualitative interview research. The current research sought to minimize the risk of miscommunication and subsequent validity issues by incorporating a contextual introduction to the interviews. In the introductions, the basic concepts of OGS were presented to each participant and for example restaurant meal deliveries were excluded from the definition of OGS and the scope of the current research question. As for internal validity, data from all conducted interviews was analyzed. Validity errors can also occur in the reporting of findings, if the reporting is selective and influenced by the researcher's subjective preferences or biases. In qualitative studies, however, it is inescapable that researchers will need to conduct presentational sampling and make decisions about what to present and what not to present (Flick, 2009, p. 115). This is due to the large volume of textual data typical of qualitative research. Including everything in the final report is not feasible. In the current research, the final data set was not excessively large and the data could be presented relatively comprehensively. The presentation of the findings was guided by the theoretical framework which is backed by literature and argued in section 6 The theoretical framework.

On a different note, the classical criterion for validity is rooted in the positivist research tradition (Cypress, 2017), which assumes that truth is objective, fixed, and latently waiting to be discovered. In this line of thinking, the question of validity becomes a question of finding the one truth. However, as previously presented in section 7.1 Research strategy and methodology, the current research follows an interpretivist research paradigm and assumes that reality, for example the value of a novel consumer technology, is open to multiple interpretations (Alharahsheh & Pius, 2020). The findings of the current research answer why participants in the current sample of consumers had not adopted OGS. As such, the research can be considered to have answered the original research question with sound scientific rigor and adherence to vital scientific principles. The results

of the current qualitative research are not generalizable but represent the opinions of the current participants.

REFERENCES

Adjie, E. A., Calista, N., Muhtadiin, R. R., Handayani, P. W., & Larasati, P. D. (2023). User switching intention from E-marketplace to E-pharmacy: The Influence of push, pull, and mooring factors. *Informatics in Medicine Unlocked*, *43*. https://doi.org/10.1016/j.imu.2023.101404

Ahold Delhaize. (2023). *Ahold Delhaize Factsheet 2023*. https://www.aholddelhaize.com/media/ckjgt3v1/factsheet-ahold-delhaize.pdf

Alharahsheh, H. H., & Pius, A. (2020). A Review of key paradigms: positivism VS interpretivism. *Global Academic Journal of Humanities and Social Sciences*, *2*(3), 39–43. https://doi.org/10.36348/gajhss.2020.v02i03.001

Ali, S. H., Lloyd-Montgomery, J., Lowery, C. M., Vedovato, G. M., & Trude, A. C. B. (2022). Equity-Promoting Strategies in Online Grocery Shopping: Recommendations Provided by Households of Low Income. *Journal of Nutrition Education and Behavior*, *54*(11), 998–1010. https://doi.org/10.1016/j.jneb.2022.08.007

Asdemir, K., Jacob, V. S., & Krishnan, R. (2009). Dynamic pricing of multiple home delivery options. *European Journal of Operational Research*, *196*(1), 246–257. https://doi.org/10.1016/j.ejor.2008.03.005

Asgari, H., Azimi, G., Titiloye, I., & Jin, X. (2023). Exploring the influences of personal attitudes on the intention of continuing online grocery shopping after the COVID-19 pandemic. *Travel Behaviour and Society*, *33*, 100622. https://doi.org/10.1016/j.tbs.2023.100622

Asmare, A., & Zewdie, S. (2022). Omnichannel retailing strategy: a systematic review. *The International Review of Retail, Distribution and Consumer Research*, *32*(1), 59–79. https://doi.org/10.1080/09593969.2021.2024447

Aspray, W., Royer, G., & Ocepek, M. G. (2013). Anatomy of a Dot-Com Failure: The Case of Online Grocer Webvan. In *Food in the Internet Age* (pp. 25–35). Springer International Publishing. https://doi.org/10.1007/978-3-319-01598-9_2

Aull, B., Kohli, S., & Marohn, E. (2022). *Navigating the Market Headwinds: The State of Grocery Retail 2022 - North America*.

Baluch, A., & Main, K. (2023, February 8). *38 E-Commerce Statistics Of 2023*. Forbes. https://www.forbes.com/advisor/business/ecommerce-statistics/

Bansal, H. S., Taylor, S. F., & James, Y. St. (2005). "Migrating" to new service providers: Toward a unifying framework of consumers' switching behaviors. *Journal of the Academy of Marketing Science*, *33*(1), 96–115. https://doi.org/10.1177/0092070304267928

Berg, J., & Henriksson, M. (2020). In search of the 'good life': Understanding online grocery shopping and everyday mobility as social practices. *Journal of Transport Geography*, *83*. https://doi.org/10.1016/j.jtrangeo.2020.102633

Blitstein, J. L., Frentz, F., & Pitts, S. B. J. (2020). A Mixed-method Examination of Reported Benefits of Online Grocery Shopping in the United States and

Germany: Is Health a Factor? *Journal of Food Products Marketing*, *26*(3), 212–224. https://doi.org/10.1080/10454446.2020.1754313

Bonifacic, I. (2020, September 17). *Amazon Fresh grocery store in Los Angeles opens to the public*. Engadget. https://www.engadget.com/amazon-fresh-woodland-hills-la-open-to-public-200248518.html

Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic Approaches to a Successful Literature Review* (M. Steele, Ed.; Second Edition). Sage.

Boyer, K. K., & Hult, G. T. M. (2005). Extending the supply chain: Integrating operations and marketing in the online grocery industry. *Journal of Operations Management*, *23*(6), 642–661. https://doi.org/10.1016/j.jom.2005.01.003

Boyer, K. K., & Hult, G. T. M. (2006). Customer behavioral intentions for online purchases: An examination of fulfillment method and customer experience level. *Journal of Operations Management*, *24*(2), 124–147. https://doi.org/10.1016/j.jom.2005.04.002

Boyer, K. K., Prud'homme, A. M., & Chung, W. (2009). The last mile challenge: Evaluating the effects of customer density and delivery window patterns. *Journal of Business Logistics*, *30*(1), 185–201. https://doi.org/10.1002/j.2158-1592.2009.tb00104.x

Bradley, J. (2012). If We Build It They Will Come? The Technology Acceptance Model. In Y. K. Dwivedi, M. R. Wade, & S. L. Schneberger (Eds.), *Information Systems Theory - Explaining and Predicting Our Digital Society, Vol. 1* (pp. 19–36). Springer. https://doi.org/10.1007/978-1-4419-6108-2_2

Brand, C., Schwanen, T., & Anable, J. (2020). 'Online Omnivores' or 'Willing but struggling'? Identifying online grocery shopping behavior segments using attitude theory. *Journal of Retailing and Consumer Services*, *57*. https://doi.org/10.1016/j.jretconser.2020.102195

Bürklin, N., Henninger, C. E., & Boardman, R. (2019). The Historical Development of Social Commerce. In *Social Commerce - Consumer Behaviour in Online Environments* (pp. 1–16). Springer International Publishing. https://doi.org/10.1007/978-3-030-03617-1_1

Campo, K., & Breugelmans, E. (2015). Buying Groceries in Brick and Click Stores: Category Allocation Decisions and the Moderating Effect of Online Buying Experience. *Journal of Interactive Marketing*, *31*, 63–78. https://doi.org/10.1016/j.intmar.2015.04.001

Cebollada, J., Chu, Y., & Jiang, Z. (2019). Online Category Pricing at a Multichannel Grocery Retailer. *Journal of Interactive Marketing*, *46*, 52–69. https://doi.org/10.1016/j.intmar.2018.12.004

Cervellon, M. C., Sylvie, J., & Ngobo, P. V. (2015). Shopping orientations as antecedents to channel choice in the French grocery multichannel landscape. *Journal of Retailing and Consumer Services*, *27*, 31–51. https://doi.org/10.1016/j.jretconser.2015.06.008

Chien, A.-W., Kurnia, S., & von Westarp, F. (2003). The Acceptance of Online Grocery Shopping. *BLED 2003 Proceedings*. http://aisel.aisnet.org/bled2003/52

Chinn, M. D., & Fairlie, R. W. (2010). ICT Use in the Developing World: An Analysis of Differences in Computer and Internet Penetration. *Review of International Economics*, *18*(1), 153–167. https://doi.org/10.1111/j.1467-9396.2009.00861.x

Chu, J., Arce-Urriza, M., Cebollada-Calvo, J.-J., & Chintagunta, P. K. (2010). An Empirical Analysis of Shopping Behavior Across Online and Offline Channels for Grocery Products: The Moderating Effects of Household and Product Characteristics. *Journal of Interactive Marketing*, *24*(4), 251–268. https://doi.org/10.1016/j.intmar.2010.07.004

Cude, B. J., & Morganosky, M. A. (2000). Online Grocery Shopping: An Analysis of Current Opportunities and Future Potential. *Consumer Interests Annual*, *46*, 95–100.

Cypress, B. S. (2017). Rigor or reliability and validity in qualitative research: perspectives, strategies, reconceptualization, and recommendations. *Dimensions of Critical Care Nursing*, *36*(4), 253–263. https://doi.org/10.1097/DCC.0000000000000253

Danie, E., Wilson, H., & Myers, A. (2002). Adoption of E-Commerce by SMEs in the UK. *International Small Business Journal*, *20*(3), 253–270.

Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems : theory and results*.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Source: Management Science*, *35*(8), 982–1003. https://www.jstor.org/stable/2632151?seq=1&cid=pdf-

Dawes, J., & Nenycz-Thiel, M. (2014). Comparing retailer purchase patterns and brand metrics for in-store and online grocery purchasing. *Journal of Marketing Management*, *30*(3–4), 364–382. https://doi.org/10.1080/0267257X.2013.813576

De Vries, R., Jager, G., Tijssen, I., & Zandstra, E. H. (2018). Shopping for products in a virtual world: Why haptics and visuals are equally important in shaping consumer perceptions and attitudes. *Food Quality and Preference*, *66*, 64–75. https://doi.org/10.1016/j.foodqual.2018.01.005

Degeratu, A. M., Rangaswamy, A., & Wu, J. (2000). Consumer choice behavior in online and traditional supermarkets: The effects of brand name, price, and other search attributes. *International Journal of Research in Marketing*, *17*(1), 55–78. www.elsevier.comrlocaterijresmar

Deloitte. (2023). *Global Powers of Retailing 2023 Revenue growth and continued focus on sustainability*. https://www.deloitte.com/content/dam/assets-shared/legacy/docs/analysis/2022/gx-global-powers-of-retailing-v9.pdf

Driediger, F., & Bhatiasevi, V. (2019). Online grocery shopping in Thailand: Consumer acceptance and usage behavior. *Journal of Retailing and Consumer Services*, *48*(March 2018), 224–237. https://doi.org/10.1016/j.jretconser.2019.02.005

Droogenbroeck, E., & Hove, L. Van. (2017). Adoption of Online Grocery Shopping: Personal or Household Characteristics? *Journal of Internet Commerce*, *16*(3), 255–286. https://doi.org/10.1080/15332861.2017.1317149

Dutta, S. (2006). *Introductory Economics (Micro and Macro)* (1st ed.). New Age International Ltd. https://ebookcentral.proquest.com/lib/jyvaskyla-ebooks/detail.action?docID=346118

Dwivedi, Y. K., Wade, M. R., & Schneberger, S. L. (2012). *Information Systems Theory - Explaining and Predicting Our Digital Society, Vol. 1*. Springer. http://www.springer.com/series/6157

Eriksson, N., & Stenius, M. (2021). Online grocery shoppers due to the Covid-19 pandemic - An analysis of demographic and household characteristics. *Procedia Computer Science*, *196*, 93–100. https://doi.org/10.1016/j.procs.2021.11.077

Eriksson, N., & Stenius, M. (2023). What do regular online grocery shoppers want from online grocers going forward? Suggestions for service quality improvements. *Procedia Computer Science*, *219*, 201–210. https://doi.org/10.1016/j.procs.2023.01.282

Eskola, J., & Suoranta, J. (1998). *Johdatus laadulliseen tutkimukseen* (1st ed.). Vastapaino.

European Central Bank. (2023). *ECB - statistics, Euro foreign exchange reference rates*. European Central Bank.

Eurostat. (2008). *NACE Rev. 2 - Statistical classification of economic activities in the European Community*.

Eurostat. (2023a). Final consumption expenditure of households by consumption purpose (nama_10_co3_p3). In *Eurostat*. https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_CO3_P3__custom_4560656/default/table?lang=en

Eurostat. (2023b). Internet purchases by individuals (until 2019)(isoc_ec_ibuy). In *Eurostat*. Eurostat. https://ec.europa.eu/eurostat/databrowser/bookmark/464cd8f9-6db8-4d8b-9efc-40cad6e803b7?lang=en

Eurostat. (2023c, March 16). *Annual detailed enterprise statistics for trade (NACE Rev. 2 G)*. Eurostat. https://ec.europa.eu/eurostat/databrowser/bookmark/818a2a20-7cf2-4dc3-818c-85e61a0289a3?lang=en

Farris II, M. T., & Gabaldon, J. (2020). The Rise, the Fall, and the Resurrection of the Egrocery Channel: A Transformation in Retail Logistics and U.S. Consumer Behavior. *Journal of Transportation Management*, *30*(2), 73–95. https://doi.org/10.22237/jotm/1577855220

Farris II, M. T., & Wilson, P. (2002). Where have all the on-line grocers gone? Lessons learned from the demise of on-line grocers. *Journal of Transportation Management*, *13*(1), 9–18. https://doi.org/10.22237/jotm/1017619380

Fedoseeva, S., Herrmann, R., & Nickolaus, K. (2017). Was the economics of information approach wrong all the way? Evidence from German grocery r(E)tailing. *Journal of Business Research*, *80*, 63–72. https://doi.org/10.1016/j.jbusres.2017.07.006

Fernie, J., Sparks, L., & McKinnon, A. C. (2010). Retail logistics in the UK: Past, present and future. In *International Journal of Retail and Distribution Management* (Vol. 38, Issue 11, pp. 894–914). https://doi.org/10.1108/09590551011085975

Fishbein, M. A., & Ajzen, I. (1975). *Belief, attitude, intention and behaviour: An introduction to theory and research.* .

Fisher, G., & Kotha, S. (2014). HomeGrocer.com: Anatomy of a failure. *Business Horizons*, *57*(2), 289–300. https://doi.org/10.1016/j.bushor.2013.12.002

Flick, U. (2009). *An Introduction to Qualitative Research* (4th ed.). Sage.

Forbes. (2022, May 12). *Forbes - The Global 2000*. Forbes. https://www.forbes.com/lists/global2000/?sh=747a8cf75ac0

Frank, D. A., & Peschel, A. O. (2020). Sweetening the Deal: The Ingredients that Drive Consumer Adoption of Online Grocery Shopping. *Journal of Food Products Marketing*, *26*(8), 535–544. https://doi.org/10.1080/10454446.2020.1829523

Fredriksson, A., & Liljestrand, K. (2015). Capturing food logistics: a literature review and research agenda Capturing food logistics: a literature review and research agenda. *International Journal of Logistics: Research and Applications*, *18*(1), 16–34. https://doi.org/10.1080/13675567.2014.944887

García, M. R., Romero, I. G., Bas, Á. O., & Prado-Prado, J. C. (2022). E-grocery retailing: from value proposition to logistics strategy. *International Journal of Logistics Research and Applications*, *25*(10), 1381–1400. https://doi.org/10.1080/13675567.2021.1900086

Geuens, M., Brengman, M., & S 'Jegers, R. (2003). Food retailing, now and in the future. A consumer perspective. *Journal of Retailing and Consumer Services*, *10*(4), 241–251.

Gevaers, R., Van De Voorde, E., & Vanelslander, T. (2014). Cost Modelling and Simulation of Last-mile Characteristics in an Innovative B2C Supply Chain Environment with Implications on Urban Areas and Cities. *Procedia-Social and Behavioral Sciences*, *125*, 398–411. https://doi.org/10.1016/j.sbspro.2014.01.1483

Grossman, L. (2007, January 10). *Go Behind the Scenes of Apple's First iPhone Release*. Time. https://time.com/3222128/apple-iphone/1/8

Guest, G., MacQueen, K., & Namey, E. (2012). *Applied Thematic Analysis*. SAGE Publications, Inc. https://doi.org/10.4135/9781483384436

Handayani, P. W., Nurahmawati, R. A., Pinem, A. A., & Azzahro, F. (2020). Switching Intention from Traditional to Online Groceries Using the Moderating Effect of Gender in Indonesia. *Journal of Food Products Marketing*, *26*(6), 425–439. https://doi.org/10.1080/10454446.2020.1792023

Hansen, A. V. (2019). Value co-creation in service marketing: A critical (re)view. *International Journal of Innovation Studies*, *3*(4), 73–83. https://doi.org/10.1016/j.ijis.2019.12.001

Hansen, T., Jensen, J. M., & Solgaard, H. S. (2004). Predicting online grocery buying intention: A comparison of the theory of reasoned action and the theory

of planned behavior. *International Journal of Information Management*, *24*(6), 539–550. https://doi.org/10.1016/j.ijinfomgt.2004.08.004

Hellier, P. K., Geursen, G. M., Carr, R. A., & Rickard, J. A. (2003). Customer repurchase intention: A general structural equation model. *European Journal of Marketing*, *37*(11/12), 1762–1800.

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine*, *292*, 1–10. https://doi.org/10.1016/j.socscimed.2021.114523

Hirsjärvi, S., & Hurme, H. (2022). *Tutkimushaastattelu - Teemahaastattelun teoria ja käytäntö* (2nd ed.). Gaudeamus.

Hirsjärvi, S., Remes, P., & Sajavaara, P. (2009). *Tutki ja kirjoita* (15. painos). Tammi.

Hood, N., Urquhart, R., Newing, A., & Heppenstall, A. (2020). Sociodemographic and spatial disaggregation of e-commerce channel use in the grocery market in Great Britain. *Journal of Retailing and Consumer Services*, *55*. https://doi.org/10.1016/j.jretconser.2020.102076

Hu, W.-C., Yang, C.-H. T., Yeh, J., & Hu, W. (2008). Mobile and electronic Commerce systems and technologies. *Journal of Electronic Commerce in Organizations*, *6*(3). https://doi.org/10.4018/jeco.2008070104

Hübner, A., Kuhn, H., & Wollenburg, J. (2016). Last mile fulfilment and distribution in omni-channel grocery retailing: A strategic planning framework. *International Journal of Retail and Distribution Management*, *44*(3), 228–247. https://doi.org/10.1108/IJRDM-11-2014-0154

Hurgobin, Y., Le Floch, V., & Lemercier, C. (2020). Effect of multiple extrinsic cues on consumers' willingness to buy apples: A scenario-based study. *Food Quality and Preference*, *81*. https://doi.org/10.1016/j.foodqual.2019.103860

Huyghe, E., Verstraeten, J., Geuens, M., & Van Kerckhove, A. (2017). Clicks as a healthy alternative to bricks: How online grocery shopping reduces vice purchases. *Journal of Marketing Research*, *54*(1), 61–74. https://doi.org/10.1509/JMR.14.0490

Hyvärinen, M., Suoninen, E., & Vuori, J. (n.d.). Haastattelut. In J. Vuori (Ed.), *Laadullisen tutkimuksen verkkokäsikirja*. Tampere: Yhteiskuntatieteellinen tietoarkisto [ylläpitäjä ja tuottaja]. Retrieved October 13, 2023, from https://www.fsd.tuni.fi/fi/palvelut/menetelmaopetus/kvali/laadullisen-tutkimuksen-aineistot/haastattelut/

Ilyuk, V. (2018). Like throwing a piece of me away: How online and in-store grocery purchase channels affect consumers' food waste. *Journal of Retailing and Consumer Services*, *41*, 20–30. https://doi.org/10.1016/j.jretconser.2017.11.003

Ivanov, D., Tsipoulanidis, A., & Schönberger, J. (2018). *Springer Texts in Business and Economics Global Supply Chain and Operations Management* (Second Edition). Springer. http://www.springer.com/series/10099

Juhila, K. (n.d.). Koodaaminen. In J. Vuori (Ed.), *Laadullisen tutkimuksen verkkokäsikirja*. Tampere: Yhteiskuntatieteellinen tietoarkisto [ylläpitäjä ja tuottaja]. Retrieved October 13, 2023, from

https://www.fsd.tuni.fi/fi/palvelut/menetelmaopetus/kvali/analyysita-van-valinta-ja-yleiset-analyysitavat/koodaaminen/

Jung, J., Han, H., & Oh, M. (2017). Travelers' switching behavior in the airline industry from the perspective of the push-pull-mooring framework. *Tourism Management*, *59*, 139–153. https://doi.org/10.1016/j.tourman.2016.07.018

Kantar Worldpanel. (2018, November 22). Global online FMCG sales grow by 13%. *Kantar Worldpanel*. https://www.kantarworld-panel.com/global/News/global-online-fmcg-sales-grow-by-13

Katic, M., & Pusara, K. (2004). Adoption Of eCommerce Terminology. *BLED 2004 Proceedings. 4.* http://aisel.aisnet.org/bled2004/4

Keh, H. T., & Shieh, E. (2001). Online Grocery Retailing: Success Factors and Potential Pitfalls. *Business Horizons*, *44*(4), 73–83.

Kettunen, J. (n.d.). Fenomenografia. In J. Vuori (Ed.), *Laadullisen tutkimuksen verkkokäsikirja*. Tampere: Yhteiskuntatieteellinen tietoarkisto [ylläpitäjä ja tuottaja]. Retrieved October 21, 2023, from https://www.fsd.tuni.fi/fi/palvelut/menetelmaopetus/kvali/teoreettis-metodologiset-viitekehykset/fenomenografia/

Kirschling, P. J., & Linneman, R. E. (1997). Perishables as Targets for Home Shopping: Will Consumers Reject Them? *Journal of Food Products Marketing*, *4*(3). https://doi.org/10.1300/J038v04n03_01

Kotler, P., Armstrong, G., Harris, L., & Piercy, N. (2017). *Principles of Marketing 7th European Edition* (4th ed.). Pearson Education, Limited.

Kühn, F., Lichters, M., & Krey, N. (2020). The touchy issue of produce: Need for touch in online grocery retailing. *Journal of Business Research*, *117*, 244–255. https://doi.org/10.1016/j.jbusres.2020.05.017

Kutcher, A. M., & Lebaron, V. T. (2022). A simple guide for completing an integrative review using an example article. *Journal of Professional Nursing*, *40*, 13–19. https://doi.org/10.1016/j.profnurs.2022.02.004

Lee, E. S. (1966). A theory of migration. *Demography*, *3*(1), 47–57. http://read.dukeupress.edu/demography/article-pdf/3/1/47/908149/47lee.pdf

Leiner, B. M., Kahn, R. E., Postel, J., Cerf, V. G., Kleinrock, L., Roberts, L. G., Clark, D. D., Lynch, D. C., & Wolff, S. (2009). A Brief History of the Internet. *ACM SIGCOMM Computer Communication Review*, *39*(5), 22–31. https://doi.org/https://doi.org/10.1145/1629607.1629613

Leinonen, M., Otonkorpi-Lehtoranta, K., & Heiskanen, T. (2017). Kyselyhaastattelu. In M. Hyvärinen, P. Nikander, & J. Ruusuvuori (Eds.), *Tutkimushaastattelun käsikirja* (1st ed., pp. 1–460). Vastapaino.

Liao, S. H., Chen, Y. J., & Lin, Y. T. (2011). Mining customer knowledge to implement online shopping and home delivery for hypermarkets. *Expert Systems with Applications*, *38*(4), 3982–3991. https://doi.org/10.1016/j.eswa.2010.09.059

Marikyan, D., & Papagiannidis, S. (2023). Unified Theory of Acceptance and Use of Technology: A review. In S. Papagiannidis (Ed.), *TheoryHub Book*.

https://open.ncl.ac.uk/theories/2/unified-theory-of-acceptance-and-use-of-technology/

Martinez, O., Tagliaferro, B., Rodriguez, N., Athens, J., Abrams, ; Courtney, & Elbel, B. (2018). EBT Payment for Online Grocery Orders: a Mixed-Methods Study to Understand Its Uptake among SNAP Recipients and the Barriers to and Motivators for Its Use. *Journal of Nutrition Education and Behavior4*, *50*(4), 396–402. https://doi.org/10.1016/j.jneb.2017.10.003

Melis, K., Campo, K., Breugelmans, E., & Lamey, L. (2015). The Impact of the Multi-channel Retail Mix on Online Store Choice: Does Online Experience Matter? *Journal of Retailing*, *91*(2), 272–288. https://doi.org/10.1016/j.jretai.2014.12.004

Melis, K., Campo, K., Lamey, L., & Breugelmans, E. (2016). A bigger slice of the multichannel grocery pie: When does consumers' online channel use expand retailers' share of wallet? *Journal of Retailing*, *92*(3), 268–286.

Moon, B. (1995). Paradigms in migration research: exploring "moorings" as a schema. *Progress in Human Geography*, 504–524.

Morelli, N., de Götzen, A., & Simeone, L. (2021). *Service Design Capabilities* (F. Tosi, C. Germak, F. Zurlo, Z. Jiny, M. P. Amadori, & M. Caon, Eds.; Vol. 10). Springer International Publishing. http://www.springer.com/series/16270

Morgan, B. (2020, December 14). *3 Lasting Changes To Grocery Shopping After Covid-19*. Forbes. https://www.forbes.com/sites/blakemorgan/2020/12/14/3-lasting-changes-to-grocery-shopping-after-covid-19/?sh=59497b2454e7

Mortimer, G., Fazal e Hasan, S., Andrews, L., & Martin, J. (2016). Online grocery shopping: the impact of shopping frequency on perceived risk. *International Review of Retail, Distribution and Consumer Research*, *26*(2), 202–223. https://doi.org/10.1080/09593969.2015.1130737

Muhammad, N. S., Sujak, H., & Rahman, S. A. (2016). Buying Groceries Online: The Influences of Electronic Service Quality (eServQual) and Situational Factors. *Procedia Economics and Finance*, *37*, 379–385. https://doi.org/10.1016/S2212-5671(16)30140-X

Murphy, A. J. (2007). Grounding the virtual: The material effects of electronic grocery shopping. *Geoforum*, *38*(5), 941–953. https://doi.org/10.1016/j.geoforum.2006.12.012

Nimako, S. G., & Ntim, B. A. (2013). Construct Specification and Misspecification within the Application of Push-Pull-Mooring Theory of Switching Behaviour. *Journal of Business and Management Sciences*, *1*(5), 83–95. https://doi.org/10.12691/jbms-1-5-2

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-Based Nursing*, *18*(2), 34–35. https://doi.org/10.1136/eb-2015-102054

PricewaterhouseCoopers. (2020). *The Economic Impact of the US Retail Industry*.

Punakivi, M., & Saranen, J. (2001). Identifying the success factors in e-grocery home delivery. *International Journal of Retail & Distribution Management*, *29*(4), 156–163. https://doi.org/10.1108/09590550110387953

Raijas, A. (2002). The consumer benefits and problems in the electronic grocery store. In *Journal of Retailing and Consumer Services* (Vol. 9).

Ramus, K., & Nielsen, N. A. (2005). Online grocery retailing: what do consumers think? *Internet Research*, *15*(3), 335–352. https://doi.org/10.1108/10662240510602726

Rogus, S., Guthrie, J. F., Niculescu, M., & Mancino, L. (2020). Online Grocery Shopping Knowledge, Attitudes, and Behaviors Among SNAP Participants. *Journal of Nutrition Education and Behavior*, *52*(5), 539–545. https://doi.org/10.1016/j.jneb.2019.11.015

Rowley, J. (1996). Retailing and shopping on the Internet. *International Journal of Retail &Distribution Management*, *24*(3), 26–37. 10.1108/09590559610113411

Ruusuvuori, J., & Nikander, P. (2017). Haastatteluaineiston litterointi. In M. Hyvärinen, P. Nikander, & J. Ruusuvuori (Eds.), *Tutkimushaastattelun käsikirja* (1st ed., pp. 1–460). Vastapaino.

Saldana, J. (2011). *Fundamentals of Qualitative Research*. Oxford University Press.

Saphores, J. D., & Xu, L. (2021). E-shopping changes and the state of E-grocery shopping in the US - Evidence from national travel and time use surveys. *Research in Transportation Economics*, *87*. https://doi.org/10.1016/j.retrec.2020.100864

Sarajärvi, A., & Tuomi, J. (2018). *Laadullinen tutkimus ja sisällönanalyysi* (Toinen painos). Tammi.

Saskia, S., Mareï, N., & Blanquart, C. (2016). Innovations in e-grocery and Logistics Solutions for Cities. *Transportation Research Procedia*, *12*, 825–835. https://doi.org/10.1016/j.trpro.2016.02.035

Seitz, C., Pokrivčák, J., Tóth, M., & Plevný, M. (2017). Online grocery retailing in Germany: an explorative analysis. *Journal of Business Economics and Management*, *18*(6), 1243–1263. https://doi.org/10.3846/16111699.2017.1410218

Senn-Kalb, L., & Mehta, D. (2022). *B2B eCommerce – In-depth Market Insights & Data Analysis*. https://www-statista-com.nelli.laurea.fi/study/44442/in-depth-report-b2b-e-commerce/

Shen, H., Namdarpour, F., & Lin, J. (2022). Investigation of online grocery shopping and delivery preference before, during, and after COVID-19. *Transportation Research Interdisciplinary Perspectives*, *14*. https://doi.org/10.1016/j.trip.2022.100580

Sheng, M. L. (2005). The wired mother. *Technovation*, *25*(9), 1071–1077. https://doi.org/10.1016/j.technovation.2004.02.009

Shivaram, R., & Azevedo, I. M. L. (2023). How COVID-19 altered perceived household resource consumption in the United States: Results from a survey. *Environmental Research Letters*, *18*(8). https://doi.org/10.1088/1748-9326/ace72d

Singh, R., & Rosengren, S. (2020). Why do online grocery shoppers switch? An empirical investigation of drivers of switching in online grocery. *Journal of Retailing and Consumer Services*, *53*. https://doi.org/10.1016/j.jretconser.2019.101962

Sousa, R., Horta, C., Ribeiro, R., & Rabinovich, E. (2020). How to serve online consumers in rural markets: Evidence-based recommendations. *Business Horizons*, *63*(3), 351–362. https://doi.org/10.1016/j.bushor.2020.01.007

Statista. (2023a, January 7). *Food and beverage retail e-commerce revenue in the United States from 2017 to 2027*. Statista. https://www-statista-com.nelli.laurea.fi/statistics/257532/us-food-and-beverage-e-commerce-revenue/

Statista. (2023b, January 7). *Food and beverage sales as percentage of total retail e-commerce sales in the United States from 2017 to 2027*. Statista. https://www-statista-com.nelli.laurea.fi/statistics/368438/feed-beverage-eretail-share-us/

Statista. (2023c, August). *Grocery Delivery - Europe*. Statista. https://www.statista.com/outlook/dmo/online-food-delivery/grocery-delivery/europe

Towill, D. (2001). E-shopping: The Peapod grocery experience. In *Food Supply Chain Management: Issues for the hospitality and retail sectors* (pp. 310–313). Taylor and Francis. https://doi.org/10.1016/b978-0-7506-4762-5.50025-0

Turban, E., Outland, J., King, D., Lee, J. K., Liang, T.-P., & Turban, D. C. (2018). *Electronic Commerce 2018 - A Managerial and Social Networks Perspective* (9th ed.). Springer.

Tyrväinen, O., & Karjaluoto, H. (2022). Online grocery shopping before and during the COVID-19 pandemic: A meta-analytical review. In *Telematics and Informatics* (Vol. 71). Elsevier Ltd. https://doi.org/10.1016/j.tele.2022.101839

United States Census Bureau. (2022, December 15). *U.S. Retail Sales Top $6,523 Billion*. United States Census Bureau. https://www.census.gov/newsroom/press-releases/2022/retail-sales.html

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). *Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study*. https://doi.org/10.1111/nhs.12048

Valle, C. A., Beasley, J. E., & da Cunha, A. S. (2017). Optimally solving the joint order batching and picker routing problem. *European Journal of Operational Research*, *262*(3), 817–834. https://doi.org/10.1016/j.ejor.2017.03.069

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, *27*(3), 425–478.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, *36*(1), 157–178.

Verdon, J. (2022, March 15). *The Pandemic Changed How We Shop For Groceries, Adobe Report Shows*. Forbes. https://www.forbes.com/sites/joanverdon/2022/03/15/the-pandemic-changed-how-we-shop-for-groceries-adobe-report-shows/

Verhoef, P. C., & Langerak, F. (2001). Possible determinants of consumers' adoption of electronic grocery shopping in the Netherlands. In *Journal of Retailing and Consumer Services* (Vol. 8).

Wang, R. J. H., Malthouse, E. C., & Krishnamurthi, L. (2015). On the Go: How Mobile Shopping Affects Customer Purchase Behavior. *Journal of Retailing*, *91*(2), 217–234. https://doi.org/10.1016/j.jretai.2015.01.002

Wirtz, B. W. (2019). *Digital Business Models - Concepts, Models, and the Alphabet Case Study*. http://www.springer.com/series/10440

Yrjölä, H. (2001). Physical distribution considerations for electronic grocery shopping. *International Journal of Physical Distribution & Logistics Management*, *31*(10), 960–995. https://doi.org/10.1108/09600030110411419

Zentes, J., Morschett, D., & Schramm-Klein, H. (2011). *Strategic Retail Management* (2nd ed.). Gabler Verlg | Springer Fachmedien Wiesbaden GmbH.

APPENDIX 1 INTERVIEW GUIDE IN ENGLISH

Agenda:

- Describe the motive and goal of the research.
- Define online grocery shopping and exclude meal deliveries from the discussion.
- Present the four themes (i.e. sections) of the interview.
- Interview the participant according to the interview guide.
- Summarize the discussion and thank the interviewee for their contribution.

Interview principles:

- Greet the interviewee warmly and thank them for their voluntary contribution. Establish rapport.
- Encourage the interviewee to talk openly and at length. Ask them to describe their behavior, feelings, attitudes, and perceptions in detail.
- Give the interviewee ample time to provide full answers.
- Do not interrupt answers.
- Before moving to the next question, inquire if the interviewee has anything more on their mind they'd still like to share.
- If the interviewee stops talking, give them a brief moment to continue before making any comment yourself.
- Make sure to cover all the themes and questions.
- If the interviewee goes off topic, bring the discussion back onto track with a paraphrased question. If the interviewee goes off topic once again, prepare to move to the next question.

Section 1 – **demographics**:

1. Background information:
   1.1. Age
   1.2. Place of residence
   1.3. Gender
   1.4. Occupation/level of education

Section 2 – **grocery shopping**:

2. Describe how you generally shop for groceries.
3. Where and how do you usually buy groceries? (Particular chain? One or multiple locations?)

- (Is there travel or a vehicle involved?)

4. How often do you shop for groceries?
5. How much do you plan your grocery purchases in advance?
6. Describe what things are important to you when buying groceries?
   - E.g. location, assortment, product, price, service & staff, inspiration, discounts, loyalty programs, personal selection of goods, compatibility with travel patterns etc.)
7. How much do you enjoy grocery shopping?
8. Do you wish that buying groceries could somehow be different or better?

Section 3 – **online shopping**:

9. Describe your online shopping habits in general.
10. What do you buy online? (product categories, services?)
11. How often do you make purchases online?
    11.1. When was the last time you made a purchase online?
12. Why do you buy these things online?

Section 4 – **online grocery shopping**:

13. What do you know and can tell about online grocery services?
14. Do you know people who buy groceries online? (What have you heard?)
15. How do you feel about the idea of buying groceries online?
16. How do you think buying groceries online is different from buying groceries in a physical store?
17. Do you see any advantages or disadvantages with online grocery shopping?
18. Do you see a distinct reason for why you do not shop groceries online?

19. Do you have anything on your mind that you would like to add?

APPENDIX 2 HAASTATTELURUNKO SUOMEKSI

Agenda:

- Kuvaile tutkimuksen motiivi ja tavoitteet.
- Määrittele ruoan verkko-ostaminen ja sulje keskustelusta pois ravintola-annosten toimitukset
- Esittele haastattelun neljä teemaa (ts. osiota)
- Haastattele vastaaja haastattelurungon mukaisesti
- Tee yhteenveto keskustelusta ja kiitä haastateltavaa hänen kontribuutiostaan.

Haastattelun periaatteet:

- Tervehdi haastateltavaa lämpimästi ja kiittää häntä vapaaehtoisesta osallistumisesta. Rakenna luottamusta.
- Kannusta haastateltavaa puhumaan avoimesti ja perusteellisesti. Pyydä häntä kuvailemaan käyttäytymistään, tunteitaan, asenteitaan ja käsityksiään yksityiskohtaisesti.
- Anna haastateltavalle riittävästi aikaa kokonaisille vastauksille.
- Älä keskeytä haastateltavan vastauksia.
- Ennen siirtymistä seuraavaan kysymykseen, tiedustele, onko haastateltavalla mielessään jotain muuta, mitä hän haluaisi vielä tuoda keskusteluun.
- Jos haastateltava lopettaa puhumisen, anna hänelle hetken mahdollisuus jatkaa ennen kommentointia.
- Käsittele kaikki teemat ja kysymykset.
- Jos haastateltava poikkeaa aiheesta, tuo keskustelu takaisin uralleen uudelleenmuotoillulla kysymyksellä. Jos haastateltava poikkeaa aiheesta toistamiseen, valmistaudu siirtymään seuraavaan kysymykseen.

Osio 1 – **demografiset tiedot**:

1. Taustatiedot:
   1.1. Ikä
   1.2. Asuinpaikkakunta
   1.3. Sukupuoli
   1.4. Ammatti/koulutusaste

Osio 2 – **ruokaostokset**:

2. Kuvaile miten yleisesti teet ruokaostoksia.

3. Missä ja miten yleensä ostat elintarvikkeita? (Tietyssä ketjussa? Yhdessä tai useammassa paikassa?)
   - (Liittyykö ostosten tekemiseen matkustamista tai ajoneuvo?)
4. Kuinka usein teet ruokaostoksia?
5. Kuinka paljon suunnittelet ruokaostoksiasi etukäteen?
6. Kuvaile mitkä asiat ovat sinulle tärkeitä, kun teet ruokaostoksia?
   - Esim. sijainti, valikoima, tuotteet, hinta, palvelut & henkilökunta, inspiraatio, tarjoukset, kanta-asiakasohjelmat, tuotteiden valitseminen itse, yhteensopivuus oman liikkumisen kanssa jne.)
7. Kuinka paljon tykkäät ruokaostosten tekemisestä?
8. Toivotko, että ruokaostosten tekeminen voisi olla jotenkin erilaista tai parempaa?

Osio 3 – **verkko-ostaminen**:

9. Kuvaile verkko-ostamisen tottumuksiasi yleisesti.
10. Mitä ostat verkosta? (tuotekategoriat, palvelut?)
11. Miten usein ostat verkosta?
    11.1. Milloin viimeksi ostit verkosta?
12. Miksi ostat näitä asioita verkosta?

Osio 4 – **ruoan verkko-ostaminen**:

13. Mitä tiedät tai osaat kertoa ruoan verkkokauppapalveluista?
14. Tunnetko ihmisiä, jotka ostavat ruokaa verkosta? (Mitä olet kuullut?)
15. Mitä ajatuksia sinussa herättää idea ruokaostosten tekemisestä verkossa?
16. Miten ajattelet ruokaostosten tekemisen verkossa eroavan ostosten tekemisestä fyysisessä kaupassa?
17. Näetkö mitään hyötyjä tai haittoja ruokaostosten tekemisessä verkosta?
18. Näetkö selkeää syytä, miksi sinä et tee ruokaostoksia verkkokaupasta?

19. Onko mieleesi tullut mitään lisättävää? Haluatko kertoa vapaasti jotain?