



ORIGINAL ARTICLE


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Online grocery shopping: the customers' perspective in the Czech Republic

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Abstract

Research background: Online shopping is becoming popular among most customers thanks to quickness and easy shopping, and also due the COVID pandemic. Companies are aware of the great interest of customers and, as a consequence, e-commerce is expanding. There has been a significant increase in online grocery purchases due to economic growth in the past few years. Online shopping attracts a lot of research interest, individual authors and this is a widely discussed topic. It should be borne in mind that online purchasing of food has its own peculiarities compared to the segment of electronics or fashion from the perspective of everyday needs.

Purpose of the article: The aim of the study is to analyze specific consumer behaviour in online purchasing of groceries. This study takes into account the age and purchasing preferences of online grocery purchasers.

Methods: The study was conducted using quantitative research. Data (n = 171) was obtained by using a questionnaire survey done in the Czech Republic. The questionnaire survey contained 17 questions. For the statistical evaluation, Chi-square test and Pearson's correlation test were used. For the statistical evaluation, Chi-square test and Pearson's correlation test were used.

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Findings & value added: The results of the study indicate that there is a relationship between the age of customers and online purchase in the grocery field. However, customers who use the e-shop for grocery purchase are still reluctant to buy perishable goods (meat, pastries) and prefer goods that are packed directly by the manufacturer. The study sheds light on understanding the customers' purchasing behaviour and their preferences in terms of quality of service, payment terms, delivery conditions, and range of assortment.

Introduction

The way customers acquire goods and services has changed due to internet trading. Development of the Internet and smart technologies influenced online shopping, which has been growing steadily both in terms of revenue and the number of individuals purchasing products and services online (European Commission, 2018). Buyer behavior was also affected by the COVID pandemic (Eger *et al.*, 2021). The increase is also evident in the online grocery-shopping category. However, despite the fact there is a worldwide increase in this category, the situation in the Czech Republic is different. It is evident from the Eurostat database that online grocery shopping significantly differs in the number of shoppers from other countries e.g. Great Britain or Sweden. However, online grocery shopping is one of the fastest growing categories in the Czech Republic as evidenced by the fact that between 2015 and 2018, the number of individuals purchasing grocery online has increased almost six times (Czech Statistical Office, 2018). Therefore, the marketing managers of domestic business organizations must adapt to changes caused by the development of the internet in order to maintain position, strengthen their position or increase their competitiveness and market share. Understanding what attracts the customers to do shopping is very important for better identification of marketing opportunities and optimization of marketing strategy (Denault, 2018). It is, therefore, very important to provide empirical data to understand what attracts customers to European businesses.

The aim of the article is to identify and then to define which groups of people are buying groceries online in the Czech Republic and what the requirements for grocery delivery services are. This article is the first publication for the series of research directed by authors on online grocery shopping in the Czech Republic. The online questionnaire survey examined the relationship to online grocery shopping between income and age groups. Another part of the survey was focused on the frequency of purchases and the selection of food that respondents prefer to choose. Prior to the investigation, it was assumed that it would mainly be unpacked food, pastries and meat. On this assumption, initial questions were formulated in the questionnaire.

The main objective of the series of research is to clearly identify the key factors that affect customer satisfaction and thus the development of online food purchases, as well as to specify the negative effects that hinder the development of this type of grocery sales. The preliminary conclusions show that the biggest barriers to online food sales are the reliability of supplies, free shipping and the possibility of paying online after the delivery of goods.

The literature review analyses the specifics of online grocery environments and customer's behaviour. The following part introduces the methodology used to find out the relations between income, age and will to purchase grocery online. The next part describes and comments the provided results. The last part of the paper summarizes and discusses the main findings.

Theoretical framing

Offline versus online environments in connection with grocery shopping

Research suggests that traditional retailing formats are still preferable to online shoppers (Lee & Tan, 2003, Keen *et al.*, 2004). In addition, a large majority of online grocery shoppers are multichannel shoppers who keep visiting offline grocery stores (Campo & Breugelmans, 2015). The researchers argue that customers combine convenience advantages of shopping grocery online with self-service advantages of offline stores. There are barriers that arise from the online environment. These barriers include the physical aspect of traditional shopping or the risk (health, financial, delivery, or quality risk) arising from the online purchase process. Lee and Tan (2003) argue that e-commerce cannot dominate traditional retailers for all types of products and services because consumers prefer physical aspects of buying certain products.

Haridasan and Fernando (2018) argue that shopping motivations differed for online and in-store shoppers. They have found that variety, value for money and delivery are important attributes for online shoppers, while in-store shoppers looked for social interaction and personalized attention. Nowadays, traditional retailing with stone stores is preferred over the e-tail format, but this situation may be changing over time in connection with the ever-expanding number of online customers.

Seitz *et al.* (2017) argue that the main factors influencing the willingness to shop grocery online are awareness of benefits, need for more convenience and trust in the new distribution channel. The barriers of the

online environment can be mitigated through new technologies, such as virtual stores (Vrechopoulos *et al.*, 2004). These can bring products closer to customers and can thus mitigate or remove barriers, such as the inability to hold goods physically. Using virtual reality, e-tail companies could "physically" bring the goods closer to the customer in the future. For example, a customer could view the items for himself and try out to buy it with the comfort of their home.

The current COVID pandemic has changed customer habits and significantly affected e-commerce. Research shows that the trend during a COVID pandemic is online shopping (Sayyida *et al.*, 2021). There was a significant increase in the share of online purchases in terms of transactions (Pham *et al.*, 2020). The pandemic highlighted the importance of online commerce, and some customers who have not yet used e-commerce have entered online shopping. For example, demand for vegetables and frozen products has risen of online grocery shopping (Chang & Meyerhoefer, 2020).

Online grocery customers' behaviour

Customers' behaviour differs depending on the product purchased, but the following findings suggest that customer's shopping behaviour can also be affected by the purchasing channel choice. For example, scientists have found that customers purchasing grocery online tend to choose an online retailer where they can also shop in traditional stone shops (Anesbury *et al.*, 2014). Customers often prefer online grocery retailers with "Grocery Stewardship Certification" which is also an interesting finding affecting customer' e-retailer choice (Bartok, 2018).

A very interesting finding is leading to the fact that online customers tend to buy less unhealthy food than in traditional stone shops because it is virtual, while in stores the products are physically presented (Huyghe *et al.*, 2017; Jilcott Pitts *et al.*, 2018).

Other research shows the importance of Episodic Future Thinking (EFT), which refers to the capacity to imagine or simulate experiences that might occur in one's personal future (Schacter *et al.*, 2017). Researchers, however, show the EFT as another possible reason for choosing healthier purchased grocery (Hollis-Hansen *et al.*, 2019). They analysed customers' purchases for calories purchased per family. Both groups surveyed confirmed the fact that EFT may be an effective intervention for reducing the energy intake of food purchased while online grocery shopping. Another research shows that online grocery customers chose products with a significant reduction in salt to the final selected shopping basket when

they had the choice (Payne Riches *et al.*, 2019). The behaviour of online grocery customers is also different in comparison to customers who do shopping in traditional shops in response to discounts. It has been found that offline discounts have a greater impact on customers than in the online environment (Arce-Urriza *et al.*, 2017). The previous literature shows the different behavior of online customers, which provides a research gap to be filled with current research.

Factors influencing customers when shopping grocery online: hypotheses development

Previous research thus suggests that the unique online consequences, such as convenience, affordability and gratification (Haridasan & Fernando, 2018), of online grocery shopping, affect customers' behaviour, which is reflected in the selection of healthier and more quality food. However, the following surveys also show that other factors influencing customers' behaviour exist. These factors influence not only the choice of online products in their basket, but also whether customers accept online grocery shopping and make a purchase in the online environment. We divided the examined factors into personal and non-personal factors and specified as follows.

As personal factors, we have determined those that were based on the individual's characteristics. Research on these factors found that age (Osman & Hwang, 2016; Whaley *et al.*, 2019), gender and education factors affect consumer's online grocery acceptance (Suel *et al.*, 2015; Droogenbroeck & Hove, 2017). Some researchers considered individual socioeconomic attributes to be the most influential factors contributing to e-shopping spending and frequency (Xiao *et al.*, 2018).

Non-personal factors include all those that influencing customers from the external environment. In this group, we included factors based on the technology acceptance model (TAM), situational factors, factors associated with the online grocery service, and other factors. Researchers have confirmed that acceptance of online grocery shopping is affected by basic factors of the TAM model which are perceived usefulness, perceived ease of use and attitude (Sreeram *et al.*, 2017; Bauerová & Klepek, 2018; Locketkrawee & Bhatiasevi, 2018). The influences from family members, friends and media have been also considered as the key factors affecting the purchase intention of consumers to shop grocery online (Pauzi *et al.*, 2017). Researchers have also confirmed that situational factors, such as the birth of a child or a health crisis, also have an impact on online grocery customers' decision (Hand *et al.*, 2008).

There are other non-personal factors which can influence the customer's decision. The specific socio-technical factors, namely ease of price comparison; attitudes to purchasing perishable goods online; and logistical considerations, which may be contributing to changes in consumer behaviour (Munson *et al.*, 2017). In the case of the factors that are associated with the process of online grocery shopping, it was found in the following findings. It was found that the amount of delivery fee and delivery time strongly affects the purchasing decisions in the case of shopping grocery online (Bauerová, 2018). Chintagunta *et al.* (2012) also found that transaction costs (from the in-store point of view) for grocery shopping can be sizable and play an important role in the choice between online and offline channels.

Other researchers have found that online grocery customers are also influenced by the existence of a customer review system (Heng *et al.*, 2018). Researchers dealing with factors that create the customer's value, when using click and collect service, found that customers' relations, website and pickup station is the most important for online grocery customers (Jara *et al.*, 2018). Therefore, we can conclude that many factors affect the behaviour of customers when purchasing grocery online.

Some research suggests that personal factor like the age of people is important in online grocery shopping. It seems people under 55 year buy more grocery online, than older ones. But there is not a proven empirical dependence between age and willingness to shop grocery online (Osman & Hwang, 2016; Whaley *et al.*, 2019). Therefore, considering the above-mentioned findings, the following hypotheses were formulated:

H₁: There is a statistical dependence between age and willing to purchase grocery online.

As studies show, customer income is an important factor in online shopping. For example, as a study by Jilcott Pitts *et al.* (2018) about online buying healthy foods, where consumer income significantly impacts the willingness to purchase healthy groceries online. Other studies perceive a similar connection, like a Suel *et al.* (2015) or Droogenbroeck and Hove (2017), but not with the statistical dependence. Hence;

H₂: There is a statistical dependence between income and willing to purchase grocery online.

Some customers may be anxiety from buying grocery online like a vegetable, meat or pastry. That's why some prefer to use click & collect

methods, where customers can see the purchased goods immediately (Davies *et al.*, 2019). It also indicates that some customers may prefer packaged foods by the manufacturers (Benn *et al.*, 2015; Ramus & Asger Nielsen, 2005). Therefore;

H₃: There is a significant statistical dependence between preference of groceries packaged by a manufacturer and the refusal to buy pastries, meat, vegetables via the internet.

Methods

Data collection was realized by using an individual questionnaire method, where each participant responded individually and without any guidance. Data were collected by the Google Forms® and distributed via a link by the social networks e.g. Facebook® and by a database of emails from December 2019 to January 2020. For a Chi-squared test, the age and income range were adjusted due to lower of respondents at the following intervals. These two intervals have been adjusted; less than 27, 56 and more for age interval, less or equal 600 € and more than 1000 € for income.

Research sample

Participant details are shown in Table 1. The respondents are divided into two groups, the first group includes the respondents who use e-shops for purchasing groceries, and the second group includes those who do not use grocery e-shops. The participants of the questionnaire were from the Czech Republic. Based on the performed G * Power® test, which is used to determine the strength of the static sample, the value of a statically significant sample was determined in a questionnaire survey of 116 participants. This data was based on the assumed significance level $\alpha = 0.05$, the reliability $\beta = 0.95$ and the magnitude of the effect $f^2 = 0.25$

Measures

The structure of the questionnaire was divided into two parts, each containing closed questions using the Likert scale, from 1 (strongly disagree) to 5 (strongly agree). In total there were 13 questions with high reliability (Cronbach's $\alpha = .833$) and 4 other questions that were used for demographic differentiation (gender, age, wage and country). The questions examined the behaviour of customers using e-shops to buy grocery. In questionnaire

there were questions such as “I’m willing to pay for the groceries in advance.” relates to payment terms, or “Waiting for grocery to be delivered late annoys me.” for supply conditions, “I do not buy groceries which is better to see personally (pastry, meat, vegetables).” relates range and quality of products and “The condition of buying is a user-friendly web.” relates to quality of service. Each question in the questionnaire is shown in Table 2.

Results

To confirm the first hypothesis, the Chi-squared test was used. This test was used because of discrete data. The value of the Chi-square statistic is 62.605, which is within rounding error. This value is highly significant $p < .001$, indicating that the age had a significant effect on whether online grocery purchase is used. Only 10% of respondents are willing to buy online grocery — aged 56 and over. On the other hand, 83% of respondents between 35 and 45 years of age are willing to buy this way. This can be caused by computer self-efficacy, which could be weak for participants over the age of age. Figure 1 and 2 present the percentage of participants using online grocery.

For these data, Cramer’s statistic is 0.607 out of a possible maximum value of 1. This represents a semi-strong association between the age of respondents and the preference of the usage e-shop for grocery purchase. This value is highly significant $p < .001$. In view of the facts, we can confirm H_1 .

The same statistical method as the previous one was used to confirm the second hypothesis. The value of the chi-square statistic is 16.631, which is within rounding error. This value is highly significant $p = .002$, indicating that the age had a significant effect on whether online grocery purchase is used. Respondents with income of 1001€ and more purchase grocery online at 82%, on the other hand, the ones with income less than 600€ at 40%. Especially in the Czech Republic, there are large discounts in traditional shops, which are aimed primarily at people with lower incomes.

For this data, Cramer’s statistic is 0.313 out of a possible maximum value of 1. This represents a moderate association between the income of respondents and the use of e-shop for grocery purchase. This value is highly significant $p = .002$. For this reason, we can confirm H_2 .

The third hypothesis was tested by non-parametric tests. The correlation between the Q_2 [I buy via the internet only the groceries packed by the manufacturer.] and Q_3 [I do not buy grocery which is better to see person-

ally (pastry, meat, vegetables).] was positively correlated, Pearson's $r(124) = .667, p < .001$. These data are statistically significant due to greater $p < \alpha .05$. This relationship shows a moderate positive correlation between $Q2$ and $Q3$. There is not a significant relationship due to low Pearson's coefficient, less than 0.7 . For this reason, H_3 was not supported.

In Figure 3, we can see the radar chart which represents the mean of each question.

The questions $Q9$, $Q10$ and $Q11$ have the highest mean. The respondents pay attention to delivery terms and simple web (user friendly). Simple web may refer to self-computer efficacy of respondents, in the reason of the 38% of respondents were older than 36 years old respondents. The speed of delivery ($Q11$) can be affected as a significant factor due to the fact that people are used to having food available immediately, as in most cases there are shops in their immediate vicinity. From the point of view of free delivery ($Q10$), the premise is that many people just enjoy walking and are, therefore, not willing to pay for delivery.

On the other hand, the statements $Q1$, $Q2$ and $Q4$ have the lowest mean. From the perspective of $Q1$, respondents still prefer buying some groceries in classic retail stores, which may be related to $Q2$, when respondents prefer buying some kind of groceries in classic retail stores too. There is not very high mean of agreement with the mentioned statements.

Discussion

Some research has focused on the influence of customer characteristics, such as the authors of the Droogenbroeck and Hove study (2017), which pointed to a possible influence in the case of online grocery purchases. For example, Osman and Hwang (2016) or a more recent study by Whaley *et al.* (2019) also addressed customer characteristics such as gender and indirectly pointed to possible correlations in the case of online purchases. This influence was also proved by this research in the field of online grocery purchase from the point of view of the age of the customer.

The difference in willingness to buy between the younger and older generations of visitors, especially for people over 56, may also be due to their self-efficacy. As research by Dash and Sajin (2008) points to a correlation between the self-efficacy of older people and a willingness to make a purchase online.

The research by Suel *et al.* (2015) perceived income as one of the factors influencing the choice to buy. As research shows, buying grocery online is affected by this factor as well. This may indicate that people find

buying food as readily available and ordering it is the domain of people who work more in management positions and their monthly income is higher (Jilcott Pitts *et al.*, 2018). However, the COVID pandemic refutes this assumption to some extent, as there has been a large influx of additional customers (Sayyida *et al.*, 2021).

Some customers may be concerned about buying non-prepacked grocery through an online store and prefer to buy directly packaged products. However, as some studies suggest, this concern is with some customers (Benn *et al.*, 2015; Ramus & Asger Nielsen, 2005; Grashuis *et al.*, 2020). The other important factor for online grocery customers is a simple ordering through the website, which relates to (Bauerová & Klepek, 2018). The radar chart also shows how necessary a friendly website is for consumers. Similar findings show a study by Driediger and Bhatiasevi (2019).

Conclusions

The results of the analyses have confirmed the assumption that different factors affect the behaviour of customers when purchasing groceries online. It was found that willingness to purchase groceries online is affected by customers' age and their income (by not rejected H_1 and H_2). People over the age of 56 are less willing to buy groceries online, despite the pandemic. People aged 46–55 are the most willing to buy groceries online, probably due to time constraints and an active lifestyle, when they do not have time to shop. The customer's income also plays an important role in deciding whether to buy groceries online.

People with higher incomes have also shown a higher willingness to buy groceries online, which may be due to the willingness to pay for groceries' delivery or a higher price for certain foods. From the point of view of the set factors, the quality of services is the most important. People expect more added value compared to regular shopping in a traditional grocery store.

From the point of view of the set factors, the quality of services is the most important. Customers expect more added value compared to regular shopping in a traditional grocery store. Not only the quality of services, but also delivery conditions and timely delivery is important. Packaged foods and the preferences of packaged goods from manufacturers, as research shows, are not important in terms of customer preferences.

Limitation of research and future perspective

This research has some limitations and future opportunities for research. Research has been disseminated only online, with paper formats being able to achieve different results. However, the focus of the research was on e-shops with grocery, which are accessible through online way. The research has been carried out only in the Czech Republic and so the data cannot be used for other regions of the world, or with crucial barriers. The most sufficient countries for applications are the countries with the same history and development as the Czech Republic such as Poland, Slovakia, Slovenia and Hungary. More respondents in the questionnaire survey could produce slightly different results.

The research could also be enriched with customer self-efficacy, which was not investigated in this research. By taking this factor into account, interesting results can be achieved. Research does not define the size of the e-shop with grocery in which respondents buy. Defining them could bring interesting results. Future research may also be aimed at customers who do not buy groceries in e-shops. Hence, future research could compare this study to other countries.

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Annex

Table 1. Sample distribution

Measure	Items	Using e-shops		Not using e-shops	
		# of Response	%	# of Response	%
Number of participants		124	73	46	27
Gender	male	76	61.29	30	34.78
	female	48	38.71	16	65.22
	missing	0.0	0.0	0.0	0.0
Age	less than 18	3	2.42	4	8.70
	19–26	20	16.13	4	8.70
	27–35	53	42.74	4	8.70
	36–45	43	34.68	9	19.57
	46–55	4	3.23	16	34.78
	56–65	1	0.81	6	13.04
	66 and more	0	0.0	3	6.52
Wage (netto in €)	less and 420	2	1.61	5	10.87
	421–600	1	0.81	1	2.17
	601–800	8	6.45	4	8.70
	801–1000	34	27.42	11	23.91
	1001–1200	46	37.10	14	30.43
	1201 and more	25	20.16	2	4.35
	missing	8	6.45	9	19.57

Table 2. The question formulation used in the Survey

Questions			
#	Items	<i>M</i>	<i>SD</i>
1	<i>I am buying all grocery via the internet.</i>	3.05	0.89
2	<i>Via the internet, I am only buying the grocery packaged by the manufacturer.</i>	3.52	0.81
3	<i>I do not buy grocery which is better to see (pastry, meat, vegetables).</i>	3.67	0.83
4	<i>Order the grocery online and pick it up in the store.</i>	3.35	0.96
5	<i>I consider online sales of food perspective</i>	4.05	0.53
6	<i>I would appreciate if all the assortment retail store will be online.</i>	4.12	0.56

Table 2. Continued

Questions			
#	Items	<i>M</i>	<i>SD</i>
7	<i>I am willing to pay for the grocery in advance.</i>	3.89	0.69
8	<i>The condition of buying is a user-friendly web.</i>	4.20	0.65
9	<i>In my opinion, ordering grocery online must be simple.</i>	4.40	0.57
10	<i>I prefer e-shop with grocery which offers free shipping.</i>	4.40	0.60
11	<i>Annoy me waiting for a grocery to be delivered late.</i>	4.30	0.67
12	<i>In the case of delivery delay of more than one hour the supplier should reduce the price or pay a contractual penalty.</i>	4.22	0.73
13	<i>Obviously justified complaints should be addressed direct carrier.</i>	4.07	0.75

A total number of responses is 124.

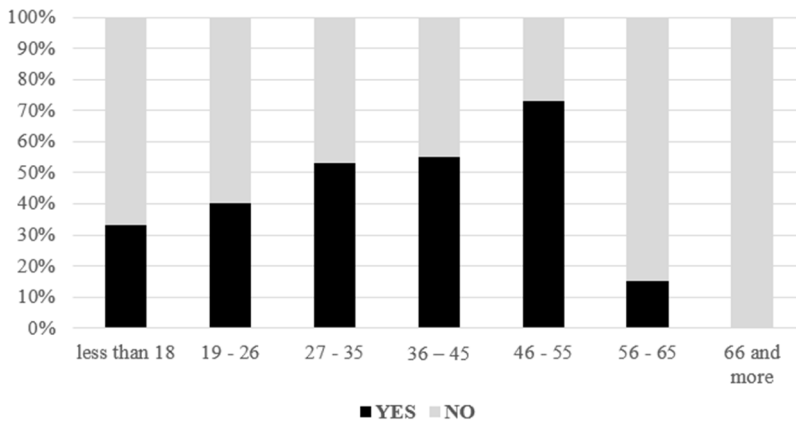
Figure 1. The percentage of participants using online grocery

Figure 2. The percentage of willing to buying grocery via internet (Euros)

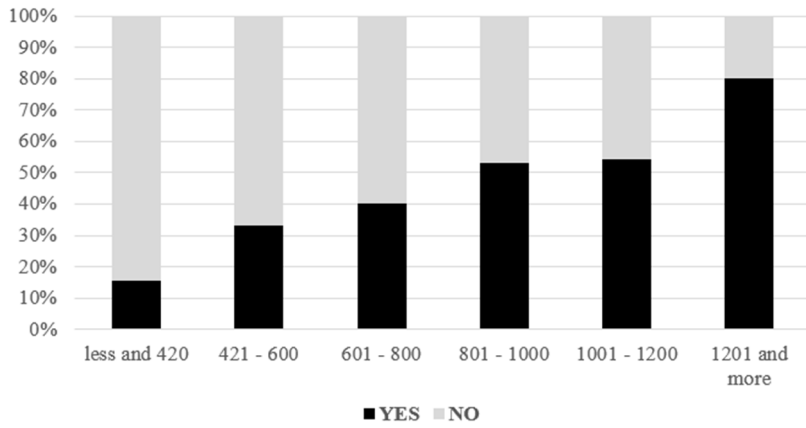


Figure 3. The mean of each question

