

Does the payment method matter in online shopping behaviour? Study on the Romanian market of vegetables during the pandemic crisis

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Abstract: The present study, centred on customer online shopping behaviours, aims at analysing the frequency of vegetable acquisition and its main determining factors, while considering different methods of payment, i.e. cash, debit card, and bank transfer on the Romanian market. Using data obtained from a questionnaire applied nationwide, a descriptive analysis and logistic regression were performed. An immature market in terms of digitalisation, characterised by the customers' mistrust in online bank transfers, but also in products sold online was observed. In addition, the income, education, gender, and size of the household appeared to be significant in relation to the frequency of online orders for vegetables. Moreover, our results indicated that a higher customer readiness for a high price, large quantity, and a monthly delivery subscription comes bundled with a higher frequency of acquisition in the case of bank transfers. Our findings are especially focusing on the vegetable local producers' promotion process, with its main desideratum of properly responding through adaptation to the continuously changing customers' requirements, particularly when special contexts like the pandemic appear. Accordingly, our paper intended to offer several concrete responses in this regard, indicating some possible paths for better managing the communication process on the vegetable market.

Keywords: fresh vegetables; methods of payment; online purchasing behaviours; particularities of the offer; Romania; socio-demographic and economic factors

Given the specificity of the COVID-19 pandemic, with its certain limitations with regard to both professional and personal life features, individuals were put in the situation of forced adaptation in order to man-

age new daily challenges and to be able to continue their actual activities as efficiently as possible. Accordingly, organisations faced the need to reconfigure their knowledge with respect to customers' habits, prefer-

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ences, patterns of consumption, and acquisition. One visible change is represented by a larger openness to online demands and acquisitions, which especially challenged the small producers that needed to rapidly adapt to this new requirement. Reviewing the prior literature, Venkatesh et al. (2022) identified two streams of research in regard to online shopping: *i*) one that centres on the consumers' behaviour in regard to online shopping at particular shops, and *ii*) one focusing more on the main reasons of consumers for choosing to shop online in general, such as reasons of routine, ease, planning, and cost efficiency (Ahuja et al. 2003; Yang and Lester 2004; Khalifa and Liu 2007; Yang et al. 2007; Al-Debei et al. 2015; Bryla 2018). The health crisis determined by COVID-19 and the specific restrictions for overcoming it seem to represent additional reasons that are closely related to the above-mentioned ones. For example, the study of Jensen et al. (2021) observed that the changes remained in place even in the summer of 2020, when the peak of the crisis attenuated. However, questions in regard to their adoption in the long run and to the possibility of becoming part of daily habits appeared across the literature. For example, authors like Grashius et al. (2020) aimed at finding out the manner in which digital peculiarities with regards to the pandemic context might impact the option of choosing online grocery shopping. They concluded that the higher orientation to online acquisition is predominantly a consequence of the specific pandemic restrictions and, thus, only a temporary habit determined by them, with minimum chances to replace the brick-and-mortar shopping in the long run. However, the consumers, based on the most important benefits of online shopping in general and, in particular, on those regarding online food acquisition as well, boosted by the pandemic to try this type of food offer, could discover that it deserves to remain a frequent habit.

Contextually, as a consequence of a higher customers' orientation to online buying, the production sector has become more oriented to its digital capabilities in need of a close linkage to the characteristics of their target segments, including the modality of payment chosen in the purchasing process. Therefore, these concerns related to customer specificities are accurate and justified, as also indicated by Mascarenhas and Phad (2021). Moreover, it held true even with more conventional and perishable products like vegetables, a case in which the small farmers had also to comply with the demands of customers, inclusively in regard to the online manner of acquisition, acceler-

ated by the COVID-19 pandemic and by the official measures imposed for its counteraction. This is especially explained when considering the main advantages of online platforms, such as time saved, 24/7 availability, variety of products, discounts, convenience, comparison shopping, better return policies, home delivery (Saluja et al. 2018; Pandey and Parmar 2019) and digital payment methods, such as fast payment, convenience, ease of use, no need to carry cash, no fear of theft, increasing the prestige of customers, getting special offers, etc. (Praveen and Hebbar 2021). As diverse major limitations, different aspects in regard to the financial, product, and delivery risks have been pointed out (Ho and Awan 2019), such as no tangibility, no tracking ability, lack of trust, delay in deliveries, no interaction with the seller, and even fraud (Saluja et al. 2018; Pandey and Parmar 2019). In addition, as emphasised by Anjum and Chai (2020), studies addressing different topics showed that some of the main factors generating the unwillingness of customers to use different e-payment methods appear to be related to privacy and safety (Mekovec and Hutinski 2012; Maqableh et al. 2015). However, in the context in which e-commerce is continuously developing, many individuals still do not detain enough experience in online payments.

The methods of payment regarding online shopping could be divided into two types of payment, i.e. offline (for example, cash) and online (Ho and Awan 2019). In this way, the credit card, followed by online bank transfers, represents a type of payment method commonly used in the case of online shopping (Martínez-López et al. 2014). Chiejina and Olamide (2014) observed in their research that, especially in developing and emerging economies, customers frequently have a kind of reluctance when they need to offer their private details with regards to their bank accounts and, in this context, find the process inconvenient (Ho and Awan 2019). In addition, as mentioned by Mascarenhas and Phad (2021), the fact that a large number of e-consumers are still relying on cash payments may be the result of three types of fear, like *i*) fear of being hacked by online hackers, *ii*) fear of the e-tailer not refunding within the stipulated time, or *iii*) fear of giving access to all their bank details to various known and unknown sources. Accordingly, the findings suggested that online marketers should take proper measures for maintaining the privacy and safety of online payments of e-consumers, while offering a trustworthy and transparent digital payment mode (Mascarenhas and Phad 2021).

As indicated by Xiao et al. (2018), personal socio-economic characteristics were shown to represent the most significant factors in relation to online shopping, especially when referring to e-shopping spending and frequency. Among them, the age, gender, education, or income are some of the most frequently selected for analysis and shown to be significant in regard to online shopping. As Venkatesh et al. (2022) pointed out, a lack of similitudes in regard to online shopping behaviours when analysing gender and age groups were indicated in previous research (e.g. Lian and Lin 2008; Lian and Yen 2014). Still, others did not show any clear differentiation (e.g. Van den Poel and Buckinx 2005; Hernández et al. 2011). However, as revealed in many studies (Hiser et al. 1999; Farag et al. 2005; Van Droogenbroeck and Van Hove 2017; Bryla 2018; Etumnu and Widmar 2020; Venkatesh et al. 2022), the age represented a factor that negatively affected the probability of online grocery shopping. In this context, as Bartók et al. (2021) showed, people over 56 years of age seem not to be very oriented in buying groceries online, even in the context of the pandemic, while those between 46 and 55 years of age appear to be the most open ones, an explanation in this regard might be related to more time constraints and a higher need for flexibility. Moving on, based on the results of different studies, inconsistencies in terms of the role of gender might be observed. For instance, Van den Poel and Buckinx (2005) indicated that men are more oriented to shop online, while Hasan (2010) and Dai et al. (2019) found that women appear to be more open in this regard. With respect to education, Mascarenhas and Phad (2021) observed that people possessing a higher level of education formed a larger share of online purchases than those with a low level. In terms of grocery shopping, a greater likelihood was also associated with higher levels of educational background (Hiser et al. 1999; Van Droogenbroeck and Van Hove 2017; Etumnu and Widmar 2020; Jaller and Pahwa 2020; Jensen et al. 2021). In regard to income, studies found its positive effects

(Hansen 2005; Hernández et al. 2011; Bartók et al. 2021) on online shopping, including grocery shopping. In this way, individuals having higher incomes showed a higher inclination to purchase groceries online, potentially explained by the additional financial possibilities of paying for the grocery transport and/or even supporting higher costs for the same types of products (Bartók et al. 2021). Still, Jensen et al. (2021) found that the pandemic appears to be a significant factor influencing the shopping online option among low-income households also.

Accordingly, as shown in the literature, the COVID-19 pandemic has registered significant influence on consumer behaviour in numerous ways. In the present study, we analysed the effects of such individual factors in the constraining sanitary restrictions imposed by the context of the pandemic on consumer online shopping behaviours and payment options in the case of a food category that is more perishable and, accordingly, especially amenable to a tactile evaluation, i.e. the one of fresh vegetables (Figure 1). Dividing the individuals depending on their preference for a payment method or other category, thus observing their openness and, consequently, their trust in online transactions, it is expected to better reveal the deeper aspects that tend to be the most important in determining the increased frequency in the act of online shopping. Besides the socio-demographic and economic determinants also considered in the literature, we added factors related to the peculiarities of the offer – such as the price, quantity bought, and preference to opt for a monthly subscription. The option to include them between the more commonly analysed ones in terms of the frequency of online shopping might add value to the study. Accordingly, we intended to observe whether the characteristics of the offer might be able to influence the frequency of the online shopping and, if so, what is the nature of this significant effect (Figure 1).

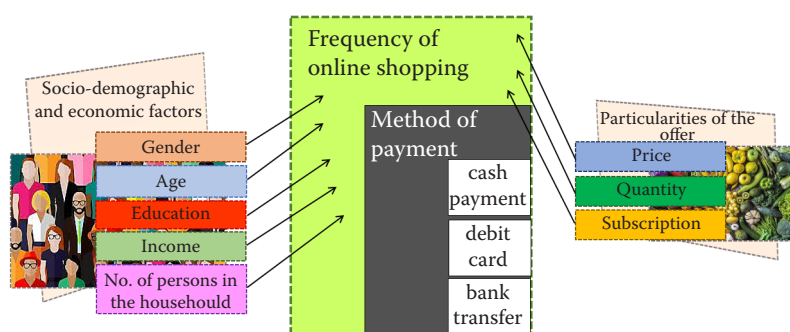


Figure 1. Conceptual framework for the analysis of the frequency of online vegetables shopping in function of the payment method and its main factors

Source: Authors' own elaboration

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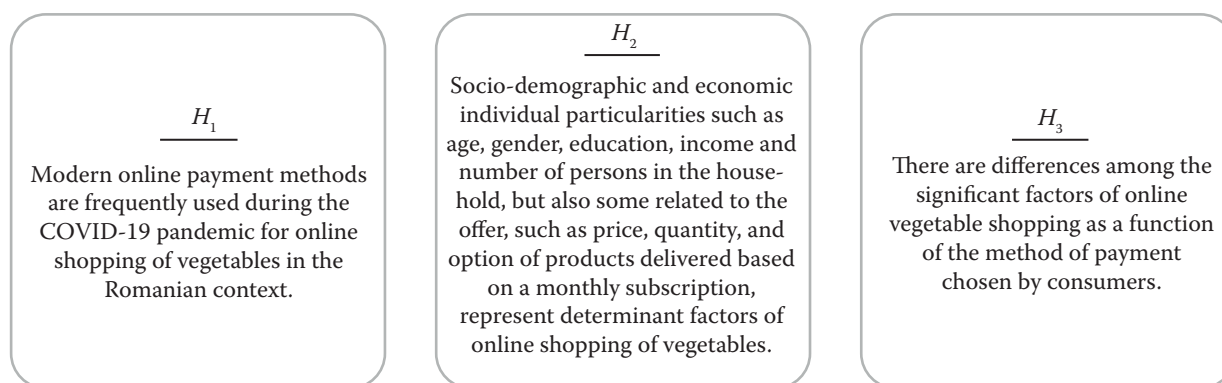


Figure 2. Research hypotheses

Source: Authors' own elaboration

Based on the findings of our study, supported by the results of other papers from academic literature, the present investigation could be of interest especially for the producers with their continuous need to adapt to a specific changing societal context. Taking into consideration the fact that this study was devoted to the online buying of vegetables, the study especially addresses small local farmers that generally tend to be reluctant to change. Accordingly, it constitutes an alarm for them, showing the importance of properly responding to the market requirements if they want to have an efficient and durable activity. Consequently, the aim of this paper is to emphasise some significant individual socio-demographic and economic factors (age, gender, education, income, number of persons in the household), but also specific peculiarities of the offer (option to make a subscription, quantity bought, prices) for determining the frequency of the online acquisitions depending on the most used consumer payment method in the Romanian market for fresh vegetables during the pandemic crisis.

Following the main objective of the study, we shall consider the hypotheses stated in Figure 2.

MATERIAL AND METHODS

In order to study the frequency of online purchasing of fresh vegetables in relation to the peculiarities of the offer (i.e. subscription, quantity, price) and socio-demographic and economic factors (i.e. age, gender, education, income, number of persons in the household), we created a questionnaire and conducted it nationwide between April 10 and May 15, 2020. It has to be underlined that this questionnaire was dedicated only to the analysis of online shopping and, consequently, the respondents who mentioned that

do not purchase using digital tools were not eligible to participate in our survey.

The survey was conducted within the Rural Development Research Platform (RDRP), established in Iași, Romania in January 2016, representing an interdisciplinary research group in the field of rural and urban systems and their development within the contemporary European Union. It was initiated by the authors of this study with the main aim of advancing a collaborative and innovative hub dedicated to scientific research and knowledge transfer.

The data was collected through an online methodology, the questionnaire being administered through Google Forms and distributed on Facebook (RDRP page and several other pages having common interests with vegetable production and selling, for example, local producers), as it represents the main social media platform used in Romania. This methodology has unique advantages *vs.* other methods like TAWI (tablet assisted web interviewing), Input, CATI (computer assisted telephone interviewing), PAPI (paper assisted personal interviewing) (Van Selm and Jankowski 2006), namely: *i*) collected data in one database while not using any manual input; *ii*) a shorter time required for data processing, with no need of any input; *iii*) availability of real-time information regarding the completion of the data; *iv*) a higher reach, due to the ease with which the potential respondents can be approached; *v*) absence of interviewer bias; and *vi*) a higher availability of respondents to take part in the study. The individuals who participated with the questionnaire gave their informed consent. In addition, the authors presented the purpose of the study in the introductory paragraph and mentioned to the participants that no personal information will be obtained and/or used and

that they are free to quit the survey anytime, without repercussions. The database was created using Microsoft Excel, exported in Tableau Public (version 2022.1) for elaborating the figures and in IBM Statistical Package for the Social Sciences (SPSS, version 20) for processing the empirical analysis.

The sample size comprised 1 806 respondents from Romania. The number of valid answers is higher than the estimated sample size (1 067) in the case of the Romanian population, while considering a 95% confidence level and a 3% margin of error.

Based on the responses to the questions administered in the applied questionnaire, several variables were created (Figure 3). Their values reflect the responses received in the questionnaire, no supplementary transformations being necessary.

Based on the responses given to the question regarding the method of payment used, we divided the database into three parts, the first one containing only the respondents declaring that cash payment is the most frequently used method in online shopping of fresh vegetables, the second – the ones using the debit card, and the third one – the respondents selecting a bank

transfer. In each group of respondents, we first performed descriptive statistics to characterise them in regard to their frequency of the online shopping, the peculiarities of the offer and the socio-demographic and economic aspects. Next, we applied logistic regression models to identify how the frequency of the purchase is influenced by the other variables. The obtained results were also compared among the methods of payment in order to identify how producers should cope with the customers' behaviours regarding the acquisition of fresh vegetables.

Logistic regression modelling is performed when the dependent variable is a binary one, in our case, the frequency of online shopping is defined as a dichotomous variable (Figure 3). We estimated the probability that a respondent will have a high frequency depending on a set of variables, the conditional mean being thus formulated between the bounds of 0 and 1. The maximum likelihood yields values for the unknown parameters which maximise the probability of obtaining the observed set of data. The goodness-of-fit for the estimated models was verified using the Hosmer-Lemeshow test (Hosmer et al. 2013).

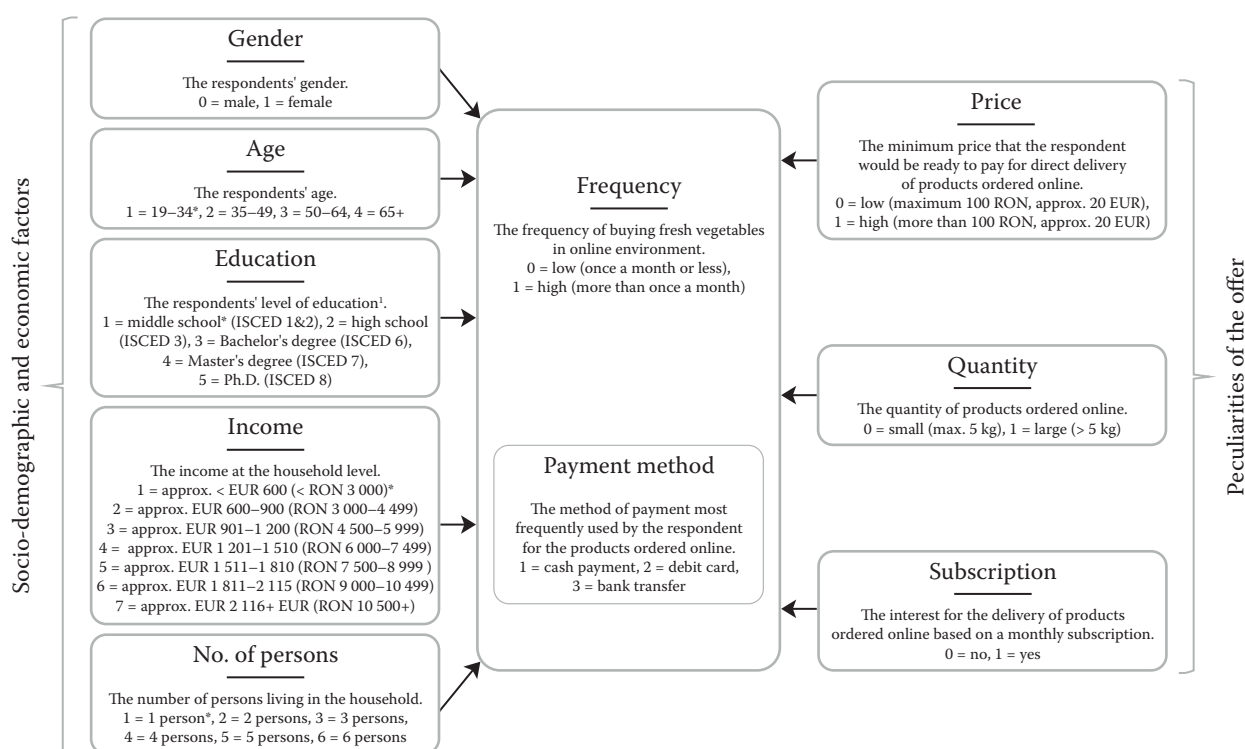


Figure 3. Description of the variables included in the study

*the reference category in the logistic regression models explained in the methodology section of the paper; ¹classification made according to UNESCO (2011)

Source: Authors' own elaboration

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RESULTS AND DISCUSSION

From the 1 806 respondents, 857 of them opted for the debit card as a preferred method of payment in regard to the online shopping of vegetables, 812 respondents preferred cash, while only 137 of them used a bank transfer more frequently. This result partially confirms our first hypothesis (H_1). It is true that a higher percentage of people (47.54%) from our sample opted for payments with a debit card, but the second option, in an approximatively equal percentage (44.96%), was the one paying with cash. This situation reveals that, in the analysed punctual context, i.e. the Romanian one, the investigated market is still immature in terms of digi-

talisation, which confirms the findings of another study observing the same conjuncture (Tanasă et al. 2022). Accordingly, a kind of mistrust in online bank transfers, but also in the producers selling online vegetables, determines the customers' choice to opt more frequently for the types of payments that firstly offer the possibility to observe the vegetables to be purchased. This lack of trust in producers is also strengthened by the peculiarities of this type of food product, especially in terms of its rapid spoilage.

An overview of the main socio-demographic and economic characteristics of the respondents from this study is illustrated in Figure 4. Our respondents are preponderantly females, approximately equally distrib-

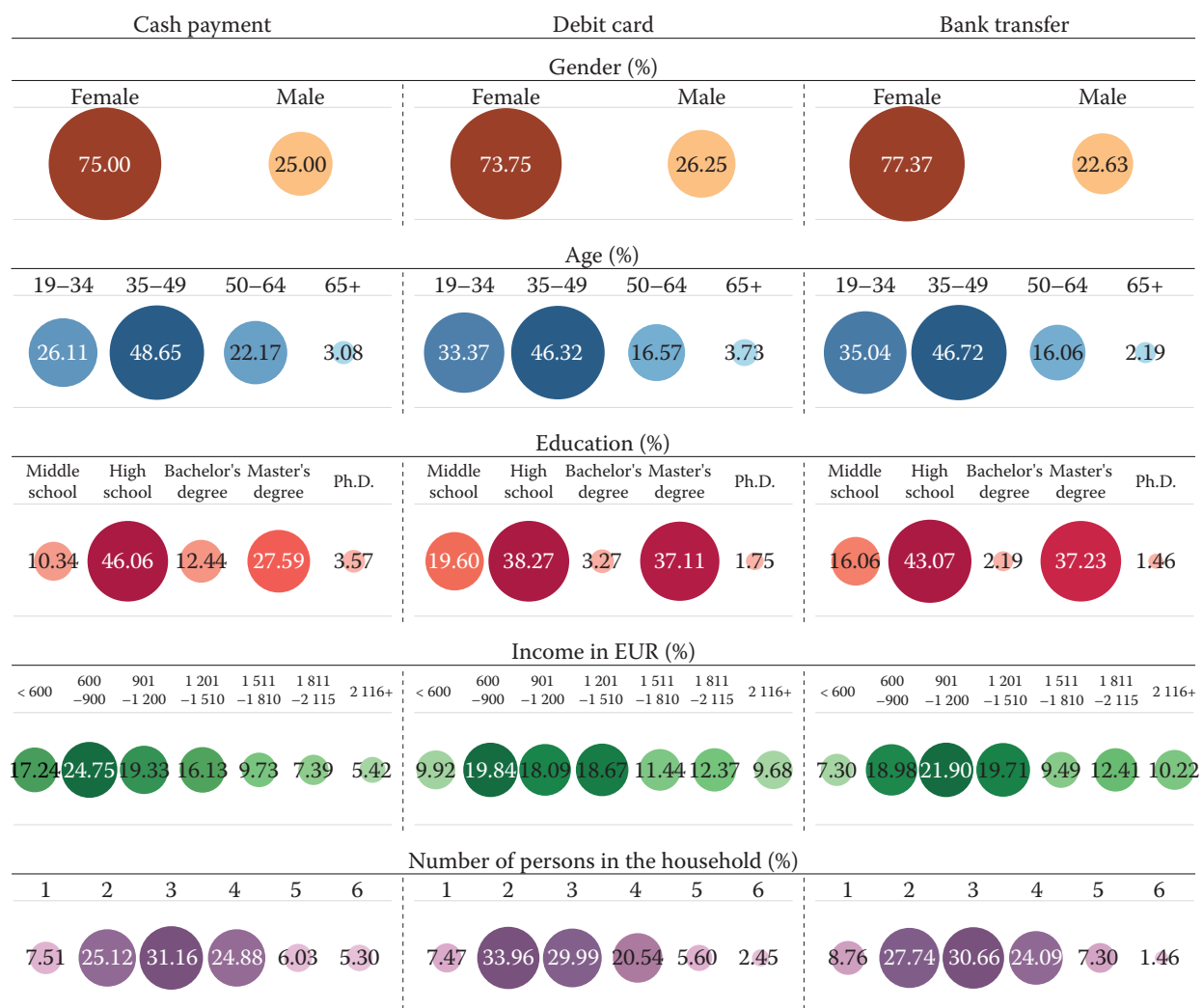


Figure 4. Sample description in terms of gender, age, education, income, and number of persons in the household in function of the payment method

Source: Authors' own elaboration, carried out with Tableau Public version 2022.1

uted across the three payment methods (cash payment, debit card, and bank transfer).

With regard to age, the most numerous category with regards to the respondent's age includes individuals between 35 and 49 years of age, followed by younger people, between 24–34 years of age, and, then, by older people between 50–64 years of age. The smallest group of people is that of the eldest ones, having 65+. In terms of education, the majority of the respondents graduated from either a high school or a university with a master's degree, while the extremities, i.e. middle school or having a Ph.D., represent the least numerous categories. The income seems to determine the most heterogenic groups of individuals, approximatively balanced as a percentage, but with higher values, between approx. EUR 600 and EUR 1 510 (RON 3 000 and RON 7 499), meaning that this is the most predominant interval of respondents' income that buy vegetables online. As to the number of people in the household, the groups with two, three, and four members are predominant. Considering the highest percentages of all these socio-demographic and economic variables, we could state that the predominant profile of the individuals opting for cash or bank transfer in the case of the online vegetable shopping is the following: female, aged between 35 and 49 years, graduated from a high school, with an income between

approx. EUR 600 and EUR 900 (RON 3 000 and RON 4 499), having three members in her household. In the case of the debit card, this profile is quite similar, the difference is in the number of individuals living in the household, in this case, the most numerous group is the one with four members.

Analysing the frequency of acquisition in terms of high and low percentages, Figure 5 shows that the distribution of respondents tends to be well-balanced. Accordingly, a low frequency is selected by the respondents in percentages varying between 36.17% and 40.87%, while a high frequency, in percentages varies between 61.70% and 63.83%. In addition, the individuals indicating a high frequency of acquisition and opting for the cash method of payment are especially the ones that tend to apply for a subscription, buy in small quantities, and prefer low prices. An approximatively similar situation is met with the ones that opt for the debit card payment method but have the same frequency with regards to the online acquisition. Differences could be observed when analysing the responses of those opting for the bank transfer as the method of payment used for their online shopping (while having the same high frequency), as follows: lower reticence upon making a subscription (from 41.87% or 41.32% in the case of debit card and cash payment groups, respectively, comparatively to 22.23% in this

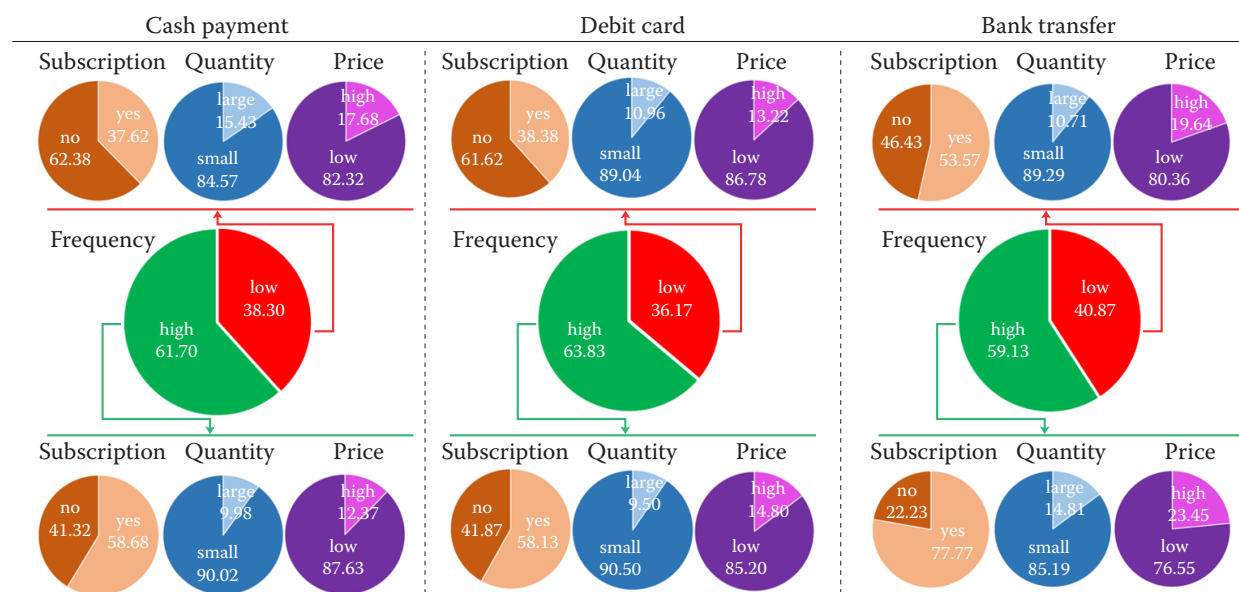


Figure 5. Sample structure by price, quantity and subscription depending on the frequency of acquisition in function of the payment method

Source: Authors' own elaboration, carried out with Tableau Public version 2022.1

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case); higher preference for a large quantity of products ordered (from 9.50% or 9.98% in the other cases to 14.81% in this situation) and for a high price (from 14.80% or 12.37% to 23.45%). Thus, a higher availability of the ones who opt for bank transfers as the payment method for their online shopping, for the higher prices, higher quantities, and, also, for making a subscription in the case of vegetables, could be observed.

On the contrary, most of the individuals tended to have a low frequency of online vegetable acquisition, when opting for the cash payment method, preferring to not make a subscription, while the same predilection for a small quantity and a low price still remained. In the case of the debit card, when the respondents tended to indicate a low frequency of acquisition, the differences could be seen with regard to the preferences in terms of the quantity and price, with lower tendencies of preferring large quantities and high vegetable prices. In the case of bank transfers, compared to the other two methods of payment, the ones that opt for the low frequency of acquisition tend to prefer making a subscription, the small quantities, and high prices more. As a general observation, the respondents using the bank transfer, whatever their choice in regard to the frequency of acquisition, are more likely to opt for a subscription, to order a large quantity, and pay a high price, compared to the other two payment methods that seem to be more alike each other. Moving on and taking the delimitation made with regard to the methods of payment into consideration (i.e. cash payment, debit card, and bank transfer), we focused on studying the probability of increasing the frequency of purchasing fresh vegetables in relation to the aspects referring to the peculiarities of the offer (i.e. subscrip-

tion, quantity, price) and socio-demographic and economic characteristics (i.e. gender, age, number of persons, education, and income). In this respect, Table 1 lists the results of the estimated logistic regression model for each method of payment.

As observed, the peculiarities of the offer have different influences on the frequency of the purchase depending on the used payment method. On one hand, the increasing openness in regard to purchasing online products using a monthly subscription appears to register a significant and positive impact on the frequency of purchasing for all payment methods (coefficient = 0.811; probability = 0.01 for the cash payment; coefficient = 0.802, probability = 0.01 for the debit card; and coefficient = 1.013, probability = 0.05 for the bank transfer). On the other hand, the impact of increasing the quantity and price of the products is different from one method of payment to another. In this way, in the case of respondents who use cash payments and a debit card, the influence is negative while, in those using a bank transfer, it is positive. However, the coefficients are statistically significant (coefficient = -0.546, probability = 0.01 for the quantity and coefficient = -0.694, probability = 0.01 for the price) only for the cash payment.

Referring to the socio-demographic and economic characteristics of the respondents, i.e. gender, income, and number of individuals living in the household, they register significant influences upon the frequency of purchasing fresh vegetable. Thus, females are more inclined to increase their shopping frequency than men when they use cash payments and bank transfers (coefficient = 0.522, probability = 0.01 and coefficient = 0.978, probability = 0.10). The probability of increasing the frequency also increases with an increase in the level of in-

Table 1. Econometric modelling results (dependent variable: frequency)

Variable	Cash payment		Debit card		Bank tranfer	
	coefficient (SE)	Wald statistic	coefficient (SE)	Wald statistic	coefficient (SE)	Wald statistic
Subscription	0.811*** (0.166)	23.865	0.802*** (0.165)	23.726	1.013** (0.445)	5.194
Quantity	-0.546*** (0.253)	4.643	-0.358 (0.276)	1.681	0.134* (0.668)	0.040
Price	-0.694*** (0.234)	8.802	-0.291 (0.246)	1.402	0.109* (0.556)	0.039
Gender	0.522*** (0.200)	6.790	-0.014 (0.188)	0.005	0.978* (0.555)	3.104
Age	0.060 (0.109)	0.307	0.079 (0.103)	0.587	-0.131 (0.284)	0.214
Education	0.107 (0.092)	1.346	-0.139 (0.095)	2.128	0.223 (0.259)	0.746
Income	0.108** (0.055)	3.883	0.127** (0.050)	6.429	-0.111 (0.132)	0.710
No. of persons	0.089* (0.070)	1.634	0.181** (0.076)	5.754	0.383** (0.196)	3.825
Constant	0.303 (0.562)	0.290	0.316 (0.316)	0.324	-2.160 (1.498)	2.078

***null hypothesis rejection for 1%; **null hypothesis rejection for 5%; *null hypothesis rejection for 10%.

Source: Authors' own results obtained using IBM SPSS Statistics v. 20

come of the respondents using the cash and debit card payments (coefficient = 0.108, probability = 0.05 and coefficient = 0.127, probability = 0.05). As to the number of persons from a household, regardless of the used payment method, the influence is positive, meaning that, as the size of the family increases, the frequency of shopping increases (coefficient = 0.089, probability = 0.10 for the cash payment, coefficient = 0.181, probability = 0.05 for the debit card, and coefficient = 0.383, probability = 0.05 for the bank transfer).

In addition, the distinctions between the reference category of the variables and the other used categories are listed in Table 2, and some remarks might be formulated based on them. For example, with respect to the reference category of income, the expansion of its level seems to imply the probability of increasing the frequency of purchasing fresh vegetables for respondents who declared that they use a cash payment and debit card, and negatively for the ones using a bank transfer. Concerning the increase in the size of the family, reported to the reference category (i.e. one person), in general, in all the estimated models, the influence on the probability of having high frequencies of buying is a positive one, yet statistically significant only in the case of respondents that usually use the debit card and bank transfer, and have three to five members in the household. A similar situation is applied in the case of education when, reported to the reference category (i.e. middle school), as the level of education increases, the probability of increasing the frequency of buying is observed, whichever the method of payment, but it is statistically significant only in respondents who mainly use a cash payment (coefficient = 1.072, probability = 0.05 for a high school diploma; coefficient = 1.535, probability = 0.01 for a bachelor's degree; coefficient = 1.408, probability = 0.01 for a master's degree; and coefficient = 0.995, probability = 0.10 for a Ph.D.).

The results of the goodness-of-fit statistics were presented for each model (Table 2). The Hosmer-Lemeshow test emphasised that the estimated models were well-fitted. Also, the statistically significant values of the Omnibus tests of the model coefficients indicated causal relationships within the estimated logit models.

To synthesise, differences in terms of the determining factors in relation to the method of payment used by the online shopper were observed. Accordingly, the income, education, gender and size of household, as the main socio-demographic and economic variables, in general appeared to be significant in relation to the frequency of the online orders for vegetables, thus confirming the results of other studies

devoted to online shopping (for example, Hasan 2010; Hernández et al. 2011; Jaller and Pahwa 2020; Bartók et al. 2021; Jensen et al. 2021; Mascarenhas and Phad 2021; Venkatesh et al. 2022).

i) The income seemed to preponderantly have a positive influence in relation to the frequency of the vegetable online shopping. These results confirm the ones of Hansen (2005), Hernández et al. (2011), or Bartók et al. (2021). Our findings also support the conclusions of Jensen et al. (2021) with regard to the low-income group [in our case, the one between approx. EUR 600–900 EUR (RON 3 000–4 499)]. The study emphasised that the pandemic exerted an important influence on the choice to shop online among the low-income households, who were previously less oriented towards utilising it. Accordingly, the pandemic context appears to represent a significant driver of change in terms of embracing digitalisation across the entire society. This could represent an additional positive step against the limited chances for the full participation of the economically disadvantaged Romanian people to the societal development, especially in terms of education and economic growth.

ii) The gender was also significantly linked to online shopping in the way that females tended to shop for vegetables more frequently online compared to men, proving a wider openness to the digitalisation process at least in regard to the purchasing behaviour. This observation comes to confirm the conclusions of some other studies (Hasan 2010; Dai et al. 2019; Jaller and Pahwa 2020), while contradicting others (Farag et al. 2005; Ettumnu and Widmar 2020).

In the same way, *iii)* the education and *iv)* the size of the household were found to positively influence the online vegetable consumer behaviour in terms of the frequency of acquisition, strengthening the results provided in the literature (Ettumnu and Widmar 2020; Jaller and Pahwa 2020; Jensen et al. 2021). These variables and their positive influence found in the study come to support the idea of sustainable food consumption with its two broad behaviour strategies, i.e. one related to sustainable product choices and the other regarding sustainable dietary patterns in terms of the composition of the product categories (Brumă et al. 2022).

v) The age did not seem to register any significant influence in our discussion, not confirming the findings of the most actual studies analysing the age in relation to the online shopping (Bartók et al. 2021; Venkatesh et al. 2022), while confirming other less recent ones – Van Den Poel and Buckinx (2005) or Hernández et al. (2011). This finding could also be explained consider-

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Table 2. Econometric modelling results centering on the reference category (dependent variable: frequency)

Variable	Cash payment		Debit card		Bank transfer	
	coefficient (SE)	Wald statistic	coefficient (SE)	Wald statistic	coefficient (SE)	Wald statistic
Subscription	0.811*** (0.170)	22.876	0.785*** (0.168)	21.703	1.282*** (0.497)	6.644
Quantity	−0.510* (0.261)	3.818	−0.381 (0.283)	1.806	−0.048* (0.744)	0.004
Price	−0.667*** (0.241)	7.672	−0.340 (0.252)	1.821	0.215* (0.655)	0.108
Gender	−0.534** (0.206)	6.719	0.034 (0.193)	0.032	−0.937 (0.613)	2.331
Age	–	2.172	–	2.776	–	0.230
35–49	0.090 (0.028)	0.028	0.096 (0.461)	0.043	0.792 (1.754)	0.204
50–64	0.350 (0.527)	0.440	−0.021 (0.455)	0.002	0.738 (1.760)	0.176
65+	0.366 (0.534)	0.470	0.396 (0.477)	0.688	0.655 (1.835)	0.128
Education	***	13.758	–	6.211	–	0.210
High school	1.072** (0.524)	4.176	0.131 (0.774)	0.029	0.562 (2.526)	0.050
Bachelor's degree	1.535*** (0.488)	9.900	0.291 (0.662)	0.194	0.521 (2.104)	0.061
Master's degree	1.408*** (0.498)	7.981	−0.207 (0.667)	0.096	0.609 (2.095)	0.084
Ph.D.	0.995* (0.541)	3.280	0.018 (0.677)	0.001	0.767 (2.163)	0.126
Income	–	4.852	**	11.462	–	5.050
EUR 600–900 (RON 3 000–4 499)	0.238 (0.255)	0.872	0.779** (0.334)	5.434	−0.499 (1.413)	0.125
EUR 901–1 200 (RON 4 500–5 999)	0.322 (0.281)	1.306	1.052*** (0.346)	9.230	−0.115 (1.403)	0.007
EUR 1 201–1 510 (RON 6 000–7 499)	0.367 (0.297)	1.523	0.874** (0.346)	6.362	−1.406 (1.430)	0.967
EUR 1 511–1 810 (RON 7 500–8 999)	0.487 (0.363)	1.802	0.736*** (0.385)	3.630	−1.377 (1.503)	0.839
EUR 1 811–2 115 (RON 9 000–10 499)	0.745* (0.423)	3.103	1.054*** (0.385)	7.490	−1.045 (1.473)	0.503
EUR 2 116+ (RON 10 500+)	0.786 (0.538)	2.139	1.105*** (0.424)	6.803	−0.206 (1.552)	0.018
No. of persons	–	1.434	**	13.536	–	6.346
2	−0.006 (0.345)	0.001	0.783** (0.332)	5.550	0.741 (0.943)	0.617
3	0.133 (0.344)	0.149	0.904*** (0.344)	6.894	1.328 (0.976)	1.853
4	0.161 (0.356)	0.205	1.227*** (0.368)	11.131	1.813* (1.002)	3.275
5	0.008 (0.468)	0.001	1.356*** (0.482)	7.909	2.672** (1.353)	3.897
6	0.427 (0.492)	0.755	0.502 (0.595)	0.713	−19.694 (0.192)	0.001
Constant	−1.350* (0.737)	3.356	−1.547** (0.786)	3.879	−1.707 (3.386)	0.254
Hosmer and Lemeshow test	1.830 [0.986]		10.993 [0.202]		5.564 [0.696]	
Omnibus test	123.562 [0.000]		142.315 [0.000]		48.421 [0.003]	

***null hypothesis rejection for 1%; **null hypothesis rejection for 5%; *null hypothesis rejection for 10%; the values in square brackets represent P -values corresponding to χ^2 from Hosmer and Lemeshow test and Omnibus test

Source: Authors' own results obtained using IBM SPSS Statistics v. 20

ing the national cultural context in which the eldest appear to be more reticent to change. In this context, our second hypothesis (H_2) was partially supported, with the exception especially being made with regard to the age, which did not seem to be linked to the frequency

of the online vegetable acquisition, whatever the method of payment chosen by the online shoppers.

In addition, our study brought three other variables related to the offer and considered relevant for online shopping into consideration, especially in the case

of vegetables, i.e. the price, quantity bought, and the openness for a monthly subscription. It was shown that, when online shoppers were oriented to the bank transfer method of payment, the tendency to opt for a large quantity of vegetables and a high price positively influenced the probability of a more frequent online acquisition of this type of product. Moreover, the results prove to be contrary in the case of the cash method of payment, while they become insignificant when the debit card is discussed, which confirms our third hypothesis (H_3).

This perspective could be completed and fully understood when also analysing the influence of the socio-demographic and economic variables considered in this study. Accordingly, especially the size of the household proves to be relevant in the case of bank transfers, emphasising that people with a large household tend to opt more frequently for a subscription, and for products with a higher price and in a larger quantity, which are more oriented to place more frequent online orders in the case of vegetables. In other words, in the case of bank transfers, the readiness for a high price, large quantity, monthly subscription comes bundled with a higher frequency of acquisition. In this equation, we consider that the key aspect is the producer who has to gain the trust of the customers possibly included in this profile and convincing them to become loyal. This loyalty could be transformed, as shown by these results, into a higher frequency of online shopping and, thus, a more dynamic and efficient organisational activity. To complete this image, the other categories of customers that opt for the different methods of payment should not be neglected. Establishing the most important factors in the case of online shoppers and their preferences with regard to the offer could prove to be pertinent, especially in the case of organisations that are on their first steps on their online buying process, as happened with the small local producers of vegetables pushed by the pandemic crisis to adapt themselves to the new requirements of the market. Thus, our findings might be seen as a partial response to the concern related to the appropriate coordination of the promotion and communication process, open to the continuously changing customer peculiarities in terms of their different personal needs, requirements, and/or tastes.

As an overview, the study focused on an image of the purchasing behaviour impacted by a particular context and how it changed in terms of openness to utilising digitalisation. When referring to a national perspective, uniformity of change is not a reality, particularities determined by different socio-economic and cultural

issues are visible in the manner in which the adaptation occurred. Besides the fact that these adjustments were both positive and negative while revealing several national vulnerabilities as in regard to the readiness for using digitalisation, the most important thing is to understand them, learn from the lessons offered in this health crisis, and establish aims to correct the weak points in an integrative and coordinated systemic approach at micro, mezzo, and national levels.

We consider that our study represents a useful initiative for the Romanian vegetable market, as it observes the vegetable consumer behaviours with respect to the relationship between the frequency of online shopping and the preferred method of payment in this particular national context. Of course, this paper has certain limitations, among which we mention: *i*) our sample structure belongs to urban areas only, *ii*) the reduced number of used variables as the determining factors of the online shopping, *iii*) the limited sample size and the high differences between the number of online customers choosing one method of payment or other; *iv*) the impossibility to compare the results of the study from the period of the pandemic with some previous findings in this regard, to concretely observe the change in this specific national context. Still, considering the last limitation, as a future research topic, the investigation of the period following the pandemic should be of high interest for observing whether the behaviours regarding the online shopping of vegetables are maintained or have changed when the official and/or self-imposed restrictions are lifted or are no longer necessary.

CONCLUSION

The changes imposed to individuals by the COVID-19 pandemic included an ample palette of professional and personal issues. Similarly, organisations also needed to reconfigure their knowledge related to their customer habits, preferences, patterns of consumption, and acquisition, according to the observed changes. One organisational challenge was represented by the larger openness to online demands and acquisitions, mainly in the case of the small local producers that needed to adapt to this new requirement as fast as the other producers better positioned in the market.

Our study is centred on online shopping behaviours of customers with regard to the frequency of placing online orders for vegetables and its main determining factors, while also considering the different payment methods more frequently chosen by the respondents,

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i.e. cash, debit card, and bank transfer. The specific context of analysis was a national one, i.e. the Romanian vegetable market, focusing on the customers that buy this type of product online.

The image offered by our results revealed an immature market in terms of digitalisation, characterised by a sort of customer mistrust in the online bank transfers, but also in the products sold online. In detail, the Romanians, in their majority, are not yet prepared to pay before they receive the vegetables they order, tending to especially utilise cash and a debit card as methods of payment. Based on our descriptive analysis, as a general rule, it was observed that the respondents using the bank transfer are more open to a subscription, to order a large quantity and to pay a high price, compared to the other two payment methods that seem to be more alike each other.

In addition, our results showed differences in terms of the determining factors, depending on the method of payment used by the online shopper. The income, education, gender, and size of household, as the most of the main socio-demographic and economic variables, appeared to be significant, in relation to the frequency of the online orders for vegetables, thus confirming the results obtained in other studies devoted to online shopping. The main results showed that: *i*) the income seemed to have a preponderantly positive influence on the frequency of the vegetable online shopping; *ii*) gender was also significantly linked to it in the way that females tended to shop more frequently online for vegetables; *iii*) the education; and *iv*) size of household were found to positively influence the online vegetable consumer behaviour; *v*) the age did not seem to register any significant influence.

Moreover, the other three variables related to the offer and considered to be relevant in the context of online shopping and especially in the case of vegetables, i.e. the price, quantity bought, and openness for online purchasing using a monthly subscription were brought into focus. It was shown that when the online shoppers were oriented to *i*) the bank transfer method of payment, the tendency to opt for a large quantity of vegetables and a high price positively influenced the probability of a more frequent online acquisition of this type of product; *ii*) the results proved to be contrary in the case of the cash method of payment, while *iii*) they become insignificant when the debit card is discussed. Based on these results, it could be stated that a higher customer readiness for a high price, large quantity, and monthly subscription comes bundled with a higher frequency of acquisition in the case

of bank transfers chosen as the method of payment. Consequently, a key aspect is the necessity of the producers paying more attention towards the customers possibly included in this profile, and to convince them to become loyal. The high gain of this strategy would be that this loyalty could induce, as shown by the results of our study, a higher frequency of online shopping and, thus, a more dynamic and efficient organisational activity. Still, the other categories of customers that opt for different methods of payments should not be neglected.

All these findings seem to respond, to a certain extent, to the concern regarding the way in which local producers of vegetables have to better adapt to the need of their targeted consumers with their preferences and requirements changing over time. Thus, focus is recommended to be placed on developing their promotion processes for gaining the customer's loyalty and for transforming the producer's organisational activity into a modern, efficient, reliable, and durable one.

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