STUDY OF ONLINE GROCERY SHOPPING IN THE EUROPEAN UNION: INFLUENCE OF SOCIO-ECONOMIC FACTORS

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Abstract

In the digital economy, online grocery shopping is growing in the countries of the European Union. The main objective of the present work is to investigate the dynamics of the relationship between the online grocery shopping by individuals and the size of the Gross Domestic Product per capita of the 27-member states of the European Union, and on this basis draw corresponding conclusions and summaries. The geographical focus of the study is on the online shopping of European consumers. The measurement of the investigated dependencies is carried out using the statistical software for computer processing – IBM SPSS Statistics and the Excel program. Analyzes were based on the method of linear regression and correlation. The time span of the study is 2013-2023. The results of the study interpret the variation of online grocery shopping due to a socio-economic factor such as Gross Domestic Product per capita. The generalizations and conclusions drawn are useful for characterizing the determinants of the changing behavior of European consumers.

Keywords: online shopping, online grocery shopping, factors of online shopping, European Union
JEL: L 81, E 21, D 11.

1. Introduction

In the digital economy, online grocery shopping follows a trend of continuous growth. Internet usage is increasing. User behavior is changing. In search of the best economic value, marketers improve their product and service offerings.

By its very nature, online grocery shopping is one of the key elements of consumer behavior. Researchers on these issues seek to provide an understanding and interpretation of the factors that account for variation in shopping behavior, including at the household or individual level. The upcoming changes have an impact on the development of the type of commercial formats, such as supermarkets, hypermarkets, convenience stores, online stores.

European consumers are changing their way of life, which is becoming more complex and advanced in socio-economic and socio-cultural direction. New applications of digital technologies supporting user activity are being created. A significant part of consumers from the 27 member states of the European Union adopt shopping models that combine the choice of offline with online stores.

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The behavior of the studied users is determined by diverse groups of factors: technical and technological, marketing, social and cultural, psychological, demographic, economic and others. In confirmation, in the subsequent exposition, research positions are cited that single out one or another group of factors, or a combination and integration between them is sought.

As confirmed by R. Singh and M. Soderlund, online grocers must create the right shopping experience to ensure that consumers remain loyal and make repeat purchases by identifying the factors that support a positive experience and satisfaction. According to the paradigm adopted by S. Jaiswal and A. Singh, among the defining factors that influence the consumer experience of online shopping are the digital platforms offered by grocers (Jaiswal & Singh, 2020). Theorists A. Fiore and J. Kim emphasize the level of user experience, psychographic features and interests (Fiore & Kim, 2007).

In accordance with the research objective set in the present work, the outline of theoretical-methodological positions pointing to the socio-economic characteristics of users, such as: gender, age, educational status, employment, place of residence, amount of disposable income, is of particular importance (Bigne, et al., 2005). The indicated indicators can be supplemented with: the size of households and their consumer expenditure, the average consumer expenditure at the household or individual level. Other significant indicators of socio-economic development, including those indicated in reports of the National Statistical Institute, are: growth rate of real Gross Domestic Product per capita, investments, growth rate of labor productivity, expenditure on research and development activities and others (НСИ, 2024). The scope of these indicators includes those that are of primary importance for determining the socio-economic profile of any economy, and also of the European economy, such as: Gross domestic product per capita, labor productivity and others.

The main objective of the present work is to investigate the dynamics of the relationship between the online grocery shopping by individuals and the size of the Gross Domestic Product per capita of the 27 member states of the European Union, and on this basis draw corresponding conclusions and summaries. In order to achieve the goal, adjacent tasks have been formulated, finding expression in: providing theoretical statements about the online grocery shopping; interpreting empirical aspects of the studied shopping behavior of European consumers, taking into account the influence of certain socio-economic factors; formulating more important conclusions.

The analysis and evaluation of online grocery shopping carried out at the European level requires the perception of certain limitations within the framework of the study: introduction of temporal and territorial scope – the study covers the period 2013-2023 and targets consumers from 27- the member states of the European Union; the presentation of the development is dominated by a presentation of the impact of selected socio-economic factors on the online grocery shopping process in Europe.

2. Literature review

By its very nature, online grocery shopping is defined as a form of shopping facilitated by e-commerce websites or mobile applications. As highlighted by F. Driediger and V. Bhatiasevi, studies of online grocery shopping began as early as the 1990s with the advancement of the high-tech generation, which turned to online shopping as it simplified the lifestyle (Driediger & Bhatiasevi, 2019).

The process of online grocery shopping is developing with increasing potential and economic importance in the context of the application of digital technologies in the commercial business. As evidenced by the above-mentioned research findings, the development of this process is influenced by a number of socio-economic and other factors. In a variety of scientific works, the power of influence of factors of a demographic nature – gender, age, education, size of the household, number of children up to 18 years of age in the household, marital status, status according to professional development and others are interpreted; economic nature – amount of disposable income, amount of consumer spending, Gross Domestic Product per capita and others; technological nature – types of devices or software used, availability of internet skills and others.

In the specialized literature, there is evidence that the socio-economic characteristics of consumers are determinants for online grocery shopping, namely: gender, age, educational status and income (Verhoef & Langerak, 2001). For example, according to the claims of M. Meuter, J. Bitner, A. Ostrom and S. Brown, younger consumers have better information and communication skills, look for differentiated and innovative consumption, perceive greater benefits of online grocery shopping by saving time, the ability to shop at any time, compare the prices of purchased products, take into account the promotional conditions (Meuter, et al., 2005). The theorists M. Naseri and G. Elliott also reached similar results indicating the role of demographics, social connectedness, and prior Internet experience in online shopping adoption (Naseri & Elliott, 2011). Gender research questions are often associated with the influence of respondents' age on online grocery shopping decisions, as reported by (Hou & Elliott, 2021).

A substantial part of the studies in specialized theory and practice disclosed by various author teams including T. Spahiu, A. Manavis, Z. Kazlacheva and H. Amori, primarily focus on technical and technological advances where offline and online systems connect and function together to enable omnichannel shopping (Spahiu, T., et al., 2021). The views expressed thus apply to online grocery shopping.

Another part of the studies focuses on the influence of psychological and sociocultural characteristics of users. A systematization of consumer expectations, attitudes and shopping habits related to the manifestation of interest in the assortment items and their attributes, brand, logo, name, colors and others is carried out. In this regard, M. Wolfinbarger and M. Gilly emphasize that online grocery shopping consists of user experience with websites, receipt of ordered goods, timeliness of delivery and satisfaction with service (Wolfinbarger & Gilly, 2003).

In a joint scientific development of A. Huterska and R. Huterski, findings and generalizations related to a study of the determinants of online shopping in the countries of the European Union are presented. The cited research shows the statistical significance of online shopping by dependent variables mainly of a technical and socio-economic nature, affecting the relative share of consumers who shop online for groceries in the societies of the European Union countries. According to the authors, the increase in this type of shopping is influenced by: technological factors, such as the availability of broadband Internet and the way the Internet is used; demographic characteristics of users; level of economic development, measured by the Gross Domestic Product per capita (Huterska & Huterski, 2022).

In the literature review made in this way, when explaining the factors influencing online grocery shopping, those related to the socio-economic characteristics of consumers are of particular importance for the present study.

3. Materials and methods

The subsequent research focuses on analyzing and evaluating the dynamics of the interrelationship between the variables „online grocery shopping, represented by the online purchases of food and beverages from stores and other suppliers – size of the Gross Domestic Product per capita“ of the 27 member states of the European Union. The studied online shopping and the indicator – Gross Domestic Product per capita, are significant indicators of the level of economic well-being of European consumers.

From a methodological point of view, the analysis of the assessed interrelationship is carried out by applying the method of single linear regression and correlation. Statistical software for computer processing – IBM is used for analytical purposes SPSS Statistics, and the capabilities of the program Excel. The main source of information is data on consumers from the 27-member states of the European Union, published by Eurostat. The time frame of the study is as follows: 2013-2023.

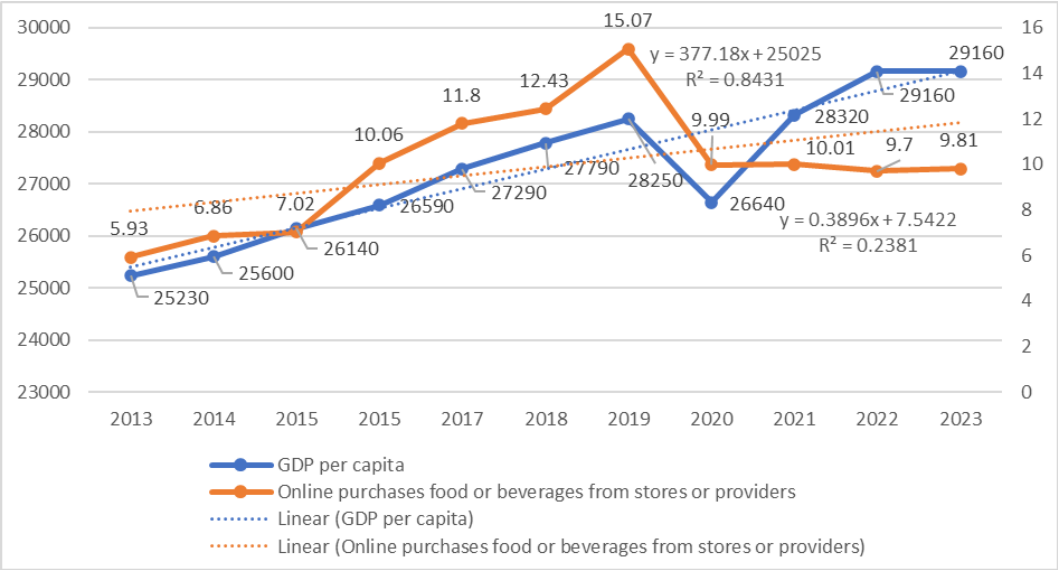
The results obtained from the research take into account the variations of the two measured indicators within the European Union. The usefulness of the formulated conclusions finds expression in the characterization of significant factors determining the behavior of European consumers in online grocery shopping.

4. Research results

The dynamics of change in the online environment, using the possibilities of digital technologies, creates new added value in satisfying the demands of consumers. New research results published in the specialized literature show that modern consumers, along with shopping in physical stores, seek to improve their experience through digital technologies. According to data from the Global Trade Association, more than 80.00% of online users have expectations and attitudes that augmented reality – AR, has the

potential to improve shopping at all levels, including in physical stores (Shop. Association, 2023).

The search for saving time and convenience when shopping is changing the behavior of consumers from the 27 member states of the European Union. A visualization of the data released by Eurostat for the two deterministic variables is achieved using Figure 1.



Source: Eurostat, 2024: isoc_ec_ibgs; sdg_08_10; isoc_ec_ibuy.

Figure 1. Dynamics and trends of online purchases of food and beverages from shops or other suppliers and of the Gross Domestic Product per capita of the 27 Member States of the European Union in the period 2013 – 2023

The presented Figure 1 is based on data visualizing the dynamics and trends of the size of the Gross Domestic Product per capita and the online purchases of food and beverages by European consumers. This figure contains two axes, with the left axis showing the size of the Gross Domestic Product per capita, and the right axis showing the change in the analyzed type of online purchases.

During the study period 2013-2023, the dynamics of online purchases of food and beverages from shops or other suppliers of consumers from the 27-member states of the European Union can be described by a relatively increasing trend, as the coefficient of determination R^2 amounts to 0.8431. The reported coefficient expresses the strength of the dependence and shows how much of the variation in the size of the studied online purchases – over ¾ – can be explained by the change in the other determinant – the Gross Domestic Product per capita in the European Union, measured at market prices. In essence, this is the so-called explained variance. The purpose of performing regression analysis is to establish the presence of an emerging trend. When considering the

section of the regression line, it is found that the increase in the size of the Gross Domestic Product per capita in the 27 member states of the European Union for each past year is 0.3896 euros, and that of online purchases of food and drinks – with 377.18 euros. Therefore, the growth of the two compared indicators is at very different rates and rates of change. In addition, in accordance with the reported dynamics of the Gross Domestic Product per capita, it was found that the coefficient of determination takes the value of 0.2381. Therefore, a relatively low part of the variation of this indicator – less than ¼ – is explained by the change of the other variable.

The implementation of single linear regression and correlation with the statistical software product SPSS allows analyzing the apparent dependence of online purchases of food and beverages made by consumers in the 27-member states of the European Union on the factor: Gross domestic product per capita, measured at market prices. At the same time, it is important to clarify to what extent the tested model can be considered adequate or vice versa. With the help of the following Table. 1, Table 2. and Table. 3 shows the obtained results.

Through Table 1. the values of the measured correlation and determination coefficients are visualized.

Table 1. Model Summary

Model Summary			
R	R Square	Adjusted R Square	Std. Error of the Estimate
0.617	0.381	0.312	2.197
The independent variable is GDP per capital.			

Source: Eurostat: isoc_ec_ibgs; sdg_08_10; isoc_ec_ibuy.

Through Table 2. data are displayed that allow the value of the variance to be estimated. The value of the F – criterion is determined from the given data. The comparison of the two estimates of the variables has empirical significance.

Table 2. A nova

	Sum of Squares	df	Mean Square	F	Sig.
Regression	26.687	1	26.687	5.529	0.043
Residual	43.439	9	4.827		
Total	70.126	10			
The independent variable is GDP per capital.					

Source: Eurostat: isoc_ec_ibgs; sdg_08_10; isoc_ec_ibuy.

The analysis of the calculated coefficients is supported by the data in the following Table 3.

Table 3. Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
GDP per capita	0.001	0.001	0.617	2.351	0.043
(Constant)	-22.841	13.931		-1.640	0.136

Source: Eurostat: isoc_ec_ibgs; sdg_08_10; isoc_ec_ibuy.

The test method is the F – test, the value of which is empirically measured by comparing the two estimates of the explained and residual variance of the variable magnitude of online food and beverage purchases. As the data from Table 2., the explained variance with a value of 26.687 is sufficiently larger than the residual – 4.827, i.e. more than 5.53 times. This result allows us to assume that the tested model manages to explain a significant part of the variation of the studied online shopping, which is why it can be considered adequate. According to the data from Table 3. it is found that the parameter B = +0.001, from which the conclusion can be drawn that when the Gross Domestic Product per capita in the 27-member states of the European Union increases by 1.00 euros, there is an increase in the amount of online purchases of food and beverages with 0.001 euro.

Thus, the results of the study are based on the conclusion that a medium-strength dependence or a moderate degree of dependence is established between the two analyzed variables.

5. Discussion

The research results thus obtained are grounds for interpreting the influence of the variable – Gross domestic product per capita in the member states of the European Union, on the change in consumer behavior when shopping for groceries online. In the research field outlined in this way, there are opportunities to compare and contrast the results of studies in the highlighted area, published in the specialized literature. In earlier studies, a number of researchers published results and judgments that were associated with accounting for the influence of marketing factors, including the created trading conditions. One part of the authors brings to the fore the cross-shopping of food products – through models of selective use of commercial formats (Hino, April 2014). In subsequent studies, along with the marketing factors, those of a technical and technological nature stand out. The opportunities and challenges facing the construction and use of websites, applications, platforms for online grocery shopping are examined (Singh & Soderlund, 2020). Particular emphasis is also placed on factors of a socio-economic nature. The cited researchers adhere to prioritizing the impact of certain groups of factors. In the proposed development, this research position finds acceptance,

with a special emphasis on interpreting and evaluating the impact of factors of a socio-economic nature.

6. Conclusions

The presented research, related to tracking the dynamics of online grocery shopping by individuals from the 27-member states of the European Union, allows certain conclusions and generalizations to be formulated. The obtained research results allow us to state that more than ¾ of the variation in the amount of online grocery purchases made by European consumers is explained by the change in the determinant – Gross domestic product of the population, measured at market prices.

Within the framework of the presented development, the assumption is shared that the size of the Gross Domestic Product per capita predetermines, both in the short term and in the long term, the behavior of consumers when shopping for groceries online. In addition, it is perceived that the type of shopping in question is primarily determined by the impact of socio-economic factors. Therefore, the magnitude of these indicators has a clear modeling effect on the amount of online grocery shopping, and there is a causal relationship between them. From this point of view, it is important that future decisions for the development of the European digital economy and society consider the influence of the factors analyzed and evaluated in this way.

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