



## ANALYSIS OF ONLINE SHOPPING TRENDS OF HUNGARIAN AND AMERICAN ONLINE CONSUMERS

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### Abstract

The appearance of Industry 4.0 has had a significant impact on the logistics and management processes of many companies. The study of this topic is also relevant because new shopping habits and marketing strategies on the internet have evolved and transformed with the popularity of online shopping.

This study shows comparable habits of online consumers as well as the differences between Hungary and the United States in this regard. The study was based on the results of an online questionnaire. The standardized questionnaire was completed by students from Szent István University and Murray State University, Kentucky, and their friends, and I used the Survey Monkey page for this purpose. The Hungarian survey was conducted between 23.09.2016 and 07.01.2017, and the American one between 24.02.2017 and 01.05.2017. For processing the data obtained during the research I used the IBM SPSS Statistics 21 statistical software package.

This analysis focuses on behaviours that reduce the risks associated with online consumer habits.

I used quantitative research techniques in order to reveal more precisely the consumer behaviour of the target group. During the basic research I conducted a non-representative survey on a sample of 932 people. Of these, Hungarians represented 729 people, Americans 203 people, and respondents claiming to have extreme (unrealistic, such as 1,999,999 HUF or 666,666 HUF) per capita net income were excluded.

The main subjects of the online survey included willingness to shop online, trust, online grocery shopping with VR glasses, and ordering from home. This was based on my earlier study on the popularity of online shopping and how to build trust.

The answers to the questions were first subjected to descriptive statistical analyses (mean, standard deviation, and frequency). The Likert scale was used, ranging from 1-5, forming a continuous ordinal scale. Accordingly, I applied a parametric procedure to examine the relationships between the statements of my questionnaire. Multivariate analysis of variance was used to examine the groups created during the analyses and the differences and relationships between them. The analysis of the Hungarian and American samples showed significant differences in income, place of residence and highest educational level; therefore, these variables were included in the analysis when comparing the answers of the questionnaire internationally. In summary, in the multivariate analysis of variance, the dependent variable was the value of responses to each of the online shopping statements, while the independent variables were nationality, income, place of residence, and highest educational attainment.

KEY WORDS: e-market, cross-study; online marketing; customer behaviour; online customer; online shopping.

### Introduction

The focus of this paper is to characterize consumer behaviour when shopping online in Hungary and in America. My choice of subject was greatly influenced by the research scholarship that was established between Murray State University and Szent István University, which allowed me to work overseas.

The primary purpose of my research is to highlight which variables and information play a key role in influencing online consumer behaviour of the populations of the two countries. This includes mapping the factors behind the risk reduction behaviours associated with online consumption based on the responses of the sample participants.

Before starting my research, I assumed that convenience, speed and the possibility of buying food from home, even using VR glasses, play an important role in the e-shopping (shopping on the Internet) habits of Hungarian and American consumers.

The number of American online buyers was 197.6 million (MINIWATTS, 2018). In Hungary, this value is much lower, exceeding 3 million people only in 2017 (ORIGO, 2018). Compared to the EU average (65%), the number of Hungarian online buyers (47%) from among internet users is lower (PORTFOLIO, 2016).

In terms of online commerce, retail sales (as well as number of sellers) increased significantly in 2015.

Online purchases accounted for 2.5% of total retail sales in Hungary; their turnover was 229 billion HUF, and since 2010 they have grown on average by 38% annually compared to the previous year (NAGY, 2016).

KNOKE and KOVÁCS (2018) also mention that the internet can introduce and create new business models by opening gateways to potential retail dealers for potential market niches; however, it rewards large companies with a multitude of network and threshold effects, which in many cases can lead to monopolies. Innovative solutions and new development strategies at micro and macro levels are therefore also highly important. According to a study conducted by IVSZ (2017), with the advent of Industry 4.0, in the digital world ever-increasing value is being given to state subsidies. In 2018, an opportunity and a source of financing was provided for the development of related software and applications. In the course of my research, I also examined the use of VR glasses at home, specifically for a grocery store purchase (simulation).

The Technology Acceptance Model (TAM) should be mentioned with regard to the online purchasing decision, which shows the potential for developing technological responsiveness, positive consumer attitudes and positive confidence (DAVIS-BAGOZZI-WARSHAW, 1989, FEHÉR – SZAKÁLY, 2015). SAM – CHATWIN (2015) first summarized the characteristics of online consumer

behaviour in the Online Customer Style Inventory (O-CSI) based on the original CSI (Customer Style Inventory) created by SPROLES and KENDALL (1986). Of the original 8 factors, 7 have been identified which can also be found in the online marketplace. These are: online consumers' pursuit of high quality, brand loyalty, fashion, price sensitivity, product portability, website content, and website design (SAM → CHATWIN, 2015; FEHÉR, 2017).

When looking at factors influencing consumer behaviour, there are many definitions. At the microeconomic level, consumers are characterized by economic, political, legal, technological, infrastructural and cultural conditions within the country (REKETTYE et al., 2015).

### Analysis → article material

The results of the research are based on Hungarian and American online buyers in 2017. The analysis begins with the demographic characterization of the sample. During the demographic analysis I found a special statistical relation between age groups, gender and income. Next, I examined the importance of grocery shopping in terms of online commerce (marketplace). However, it is important/meaningful/significant to map the range of products and services purchased online by nation. This analysis is given by the multi-dimensional variance analysis of the responses to the questions. Through those responses, I examined the preferences of online buyers.

### Characteristics of the Sample

A total of N=932 people participated in the survey. Based on the answers provided, out of the total number, 371 are men (40.1%) and 555 are women (59.9%). Having split the sample by nationality, it seemed professionally justified to separate the respondents into four age groups. These were adolescents (16-20 years), young adults (21-25 years), early-stage adults (26-30 years), and mature adults (over 30 years). The oldest respondent was 73 and the youngest was 16. The rounded average age was 27. The age distribution of Hungarian and American respondents was similar. Most of the people who participated in the research were aged between 21 and 25 and between 26 and 30 (following a similar pattern for both nations).

On the whole it can be said that Hungarian consumers have a lower income than their American counterparts in the sample ( $\chi^2(4) = 77,391$ ,  $p < 0.001$ ). A significantly higher proportion of Hungarians have well below average incomes. 24% of Hungarian women, 18.4% of men, 4.3% of American women, and none of the American men belonged to this income category. A significantly higher proportion of Americans fell into the category of average or above-average income.

Most American respondents (76.3%) lived in rural areas, 14.5% in the capital and 9.1% in cities. Almost half of the Hungarian respondents (47.4%) live in the capital, while 40.5% lived in cities and only 12% in villages.

### Limitations of the analysis

It should not be ignored that the sampling of the research is not fully representative and that there are many differences between Hungarian and American students, such as fundamental cultural and technological differences. Taking all of this into account, I will conduct analyses that highlight the similarities and differences and may serve as a basis for further research.

### Factorial ANOVA

In order to examine the preferences of online consumers, I analysed the responses to the 12 statements, i.e. "items". The responses were on a Likert scale ranging from 1 to 5 (1 - strongly disagree with the statement, 5 - strongly agree with the statement). A plus variable was the "Do Not Respond/Don't Know" option, which, if chosen, was always excluded during the analysis. I examined the two nationalities separately, the descriptive statistical indicators of which will be presented at the conference but this table shows that both Hungarian and American consumers showed the highest average values for more choice and flexibility of time, while comfort was the third. In addition to the averages, the frequency data for each category on the 1-5 scale also show 79.3% of Hungarians gave responses of 4 and 5, with 84.7% of Americans responding in the same way. Because the Hungarian and American samples showed significant differences in income, place of residence and highest educational level, these variables were further considered when comparisons of the 12 statements between the two countries were included in the analysis. Thus, I examined the main effect of nationality and the following interactions already mentioned in the methodology:

1. Nationality
2. Nationality compared with place of residence
3. Nationality compared with education
4. Nationality compared with income

The main effects, discrepancies, and interactions obtained in the analysis are highlighted in gray in Table 1. (source: own data):

**Table 1.** Test of Within- Subject Effects Based on Nationality and on the Interaction of Analysed Demographic Data

|                                                                   | Nationality |       |           | Nationality compared with residency |       |           | Nationality compared with education |       |           | Nationality compared with income |       |           |
|-------------------------------------------------------------------|-------------|-------|-----------|-------------------------------------|-------|-----------|-------------------------------------|-------|-----------|----------------------------------|-------|-----------|
|                                                                   | F           | p     | $\eta^2p$ | F                                   | p     | $\eta^2p$ | F                                   | p     | $\eta^2p$ | F                                | p     | $\eta^2p$ |
| It is cheaper to buy online than in a store                       | 0.128       | 0.721 | 0.00      | 1.571                               | 0.180 | 0.01      | 2.522                               | 0.040 | 0.01      | 2.096                            | 0.034 | 0.02      |
| Shopping online is better than shopping in a store                | 2.237       | 0.135 | 0.00      | 1.862                               | 0.115 | 0.01      | 0.401                               | 0.808 | 0.00      | 1.902                            | 0.057 | 0.02      |
| I get better quality when I buy online than when I buy in a store | 5.652       | 0.018 | 0.01      | 1.778                               | 0.131 | 0.01      | 2.963                               | 0.019 | 0.02      | 2.275                            | 0.021 | 0.02      |
| Selection is bigger when I buy online than when I buy in a store  | 0.480       | 0.488 | 0.00      | 1.181                               | 0.318 | 0.01      | 0.936                               | 0.442 | 0.01      | 1.080                            | 0.375 | 0.01      |
| I choose to buy online because it is cheaper                      | 0.215       | 0.643 | 0.00      | 0.672                               | 0.611 | 0.00      | 0.117                               | 0.976 | 0.00      | 0.382                            | 0.930 | 0.00      |
| I can only buy online because it is cheaper                       | 5.194       | 0.023 | 0.01      | 0.668                               | 0.615 | 0.00      | 1.807                               | 0.125 | 0.01      | 1.478                            | 0.161 | 0.02      |
| I just compare prices when I buy online                           | 4.891       | 0.027 | 0.01      | 1.433                               | 0.221 | 0.01      | 0.207                               | 0.935 | 0.00      | 2.262                            | 0.022 | 0.02      |
| I prefer not to buy online because it is more expensive           | 0.346       | 0.557 | 0.00      | 1.519                               | 0.195 | 0.01      | 1.865                               | 0.115 | 0.01      | 1.314                            | 0.233 | 0.01      |
| I prefer not to buy online because of the quality                 | 0.682       | 0.409 | 0.00      | 1.114                               | 0.349 | 0.01      | 1.258                               | 0.285 | 0.01      | 1.313                            | 0.233 | 0.01      |
| I shop online because it is better than shopping in a store       | 54.052      | 0.000 | 0.07      | 0.612                               | 0.654 | 0.00      | 1.413                               | 0.228 | 0.01      | 0.836                            | 0.571 | 0.01      |
| Shopping online is better than shopping in a store                | 0.113       | 0.737 | 0.00      | 0.742                               | 0.563 | 0.00      | 0.605                               | 0.659 | 0.00      | 0.996                            | 0.438 | 0.01      |
| If I could shop the groceries online, I would                     | 0.908       | 0.341 | 0.00      | 0.382                               | 0.821 | 0.00      | 1.016                               | 0.398 | 0.01      | 1.574                            | 0.129 | 0.02      |

For the answer to the first statement ("Buying online is cheaper"), the interaction of nationality x educational attainment ( $F(4,770)=2,522$ ;  $p=0.040$ ) and nationality x income ( $F(8,770)=2,096$ ;  $p=0.034$ ) was statistically significant.

In the case of the nationality compared with education, Hungarian consumers with primary and secondary education were more likely to agree (mean:  $H_{middle}=3.77$ ) that products purchased online are cheaper than American consumers with the same educational level ( $A_{middle}=3.48$ ). The opinion of Hungarian and American consumers with higher educational levels did not differ significantly on this question (see mean:  $A_{college}=3.60$ ,  $H_{college}=3.49$ ;  $A_{university}=3.76$ ,  $H_{university}=3.76$ ).

In the case of nationality x income interaction, Hungarian consumers were more likely than American consumers to agree that the product purchased online was cheaper. The monthly net income of the household (interaction), in the well-below average income categories (means:  $A_{below.income}=3.04$ ,  $H_{below.income}=3.43$ ), and well-above average (net) income categories (means:  $A_{above.income}=3.38$ ,  $H_{above.income}=3.75$ ) was also a factor.

Hungarian consumers were statistically significantly more likely to agree that online purchases are of higher quality (mean: 3.14) than American consumers (mean: 2.82). The interaction between nationality x education ( $F(4,767)=2,963$ ;  $p=0.019$ ) and nationality x income ( $F(8,767)=2,275$ ;  $p=0.021$ ) was statistically significant. At

each level of education, the Hungarian consumers were more likely to agree with the "better quality" statement for the nationality x school education interaction; however, Hungarian consumers with primary and secondary education and those with higher education showed a greater difference compared to American consumers.

They buy online because products purchased online are of better quality than American consumers with the same educational level.

Nationality x income, namely, taking into account the household's monthly net income per capita during the research, the incidence of agreement with the statement varied across all income categories. American e-shoppers in all income categories were less likely to agree that they buy online because of the higher quality of products there. Significant differences were found between people with average income (means:  $A_{average.income}=2.87$ ,  $H_{average.income}=3.27$ ), and those with well-above average incomes (means:  $A_{well.above.average.income}=2.51$ ,  $H_{well.above.average.income}=3.09$ ) in examining the consumer habits of the two nations.

Nationality played a statistically significant main effect in the answers to the sixth statement ("You can only buy the product online") ( $F(1,758)=5.194$ ;  $p=0.023$ ). American e-buyers were significantly more likely to agree that online purchases can only be purchased online (mean: 3.16) than Hungarian consumers (mean: 2.63).

Nationality played a statistically significant main effect in response to the seventh statement ("I only compare on the Internet") ( $F(1,752)=4.891$ ;  $p=0.027$ ). American consumers agreed significantly that they only compare the product they want to buy online (mean: 3.16), while Hungarians agreed less to that statement (mean: 2.69). The interaction of nationality x income ( $F(8,752)=2.262$ ;  $p=0.022$ ) was statistically significant. Figure 5 illustrates the interaction of nationality x income, where American and Hungarian consumers showed almost the same value only in the well-below-average income category. In the other income categories, Americans were more likely to agree that they were browsing the internet because they were only comparing products than Hungarian consumers with the same income.

Nationality played a statistically significant main effect when analysing the tenth statement ("Online shopping is more convenient") ( $F(1,767)=54.052$ ;  $p=0.000$ ). In this regard, American consumers were significantly more likely to agree to prefer online shopping for convenience (mean: 4.07) than Hungarian consumers (mean: 2.58). Other main effects and interactions did not show statistically significant results.

## Conclusions

The topic selection is timely because we use the World Wide Web every day in the office and at home. This research analysed, on the basis of a non-representative sample, the national and demographic identities and differences of Hungarian and American online buyers.

The first objective of this article is to explore the attitudes of different national categories toward online products and services by analysing research results. The majority of Hungarian consumers in the survey chose hot meals, food and daily consumer goods as their most frequently-purchased online product and/or service category, and 1/5 of them indicated that they used the sites of online insurance and banks. The Americans surveyed tended to buy mostly fashion products, clothing, and accessories online. Further research has revealed that one of the main reasons for different consumer habits (for example, daily consumer goods, semi-finished products, etc.) is given.

A further research objective was to explore, based on the results of the study, which variables and information could play a role in favouring online shopping. This is included in the "justification for online shopping" statements in Table 1, which summarizes the advantages and disadvantages of online shopping. When examining consumer preferences, there was a significant difference in terms of nationality between "better quality", products "only available for purchase online" and "convenience" and "I just compare the products online with each other". In addition, in the case of "better quality", demographic differences between nations (such as individuals' educational attainment and income) significantly influenced the results obtained. As an example, in the "well below average income" category, American and Hungarian consumers showed nearly the same value. In the other income categories, Americans were more likely

to agree that they were browsing the internet because they were only comparing products than Hungarian consumers with the same income. In the case of the "I only compare on the Internet" statement, the study showed a significant difference by income level.

On the subject of online grocery shopping with the help of VR glasses, I studied consumers' attitude toward buying food online at home, where the response was a moderate, relatively neutral value for both nationalities. Thus, I did not receive a clear, positive result on the possibility of virtual shopping in the grocery store.

Based on the results of my current questionnaire survey, additional potential research topics have emerged in many scientific disciplines (e.g. robotics and software development), which I will investigate in further research.

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