



Szent István University

Doctoral School of Management and Business
Administration

Doctoral Dissertation

**A COMPARATIVE STUDY OF THE BEHAVIOURAL
INTENTION TOWARDS SMARTPHONE IN THE
CASE OF AZERBAIJANI AND HUNGARIAN
STUDENTS**

Doctoral Thesis

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1 INTRODUCTION

1.1 Relevance of Topic

The introduction of the new iPhone in 2007 changed the development direction of the industry (Donner and Jonathan, 2009). Some authors (Park and Lee, 2015) named it the starting point of the “smartphone era”. Using social media, and other apps in smartphones and/or other handheld devices changed users' lifestyles (Liu and Li, 2010). It became easy to gain information, track everyday changes, and much more.

Nowadays, almost anything can be done by using a smartphone, from buying a train ticket, to making purchases and calling a taxi. The affordability of handsets is a reason for discussion. The prices of smartphones has gradually decreased since the beginning of 2010 (GSMA, 2017, p. 32). However, the low-income level of the population in developing countries created additional barriers (Jamalova and Constantinovits, 2020) in the purchase and use of smartphones (Lechman, 2015).

In the current study, the author focused on the factors formulating students' behavioural intention toward smartphones, that considered as the end user's expectations and satisfaction (Wakefield *et al.*, 2007, p. 314). Two different countries (i.e. Azerbaijan and Hungary) with a special segment of customers – university students from Szent István and Baku Engineering Universities participated in the study. The author aimed to define how the same model would operate in countries with different religions, cultures, lifestyles, income levels, political situations, and so on.

1.2 Purpose of Research

The main objective of the current research is to determine factors influencing the behavioural intention of university students, by offering a model that explains behaviour in Azerbaijan and Hungary. The survey has cross-cultural characteristics and provides the opportunity to compare countries with different religions, cultures, historical developments, economic situations, and locations. The secondary purpose of the study was to define whether there was a positive relationship between the given variables in Azerbaijan and Hungary. The third and final purpose of the study was to see how well the model measures the behaviour of students towards smartphones.

1.2.1 Research Gap

The author would like to highlight the lack of studies analysing behavioural intention in Hungary and Azerbaijan. The unpopularity of the topic among scientists might derive from the smaller market size and the lower purchasing power of Azeri and Hungarian people. As a result, there is a scarcity of information regarding the smartphone markets of the mentioned countries and the formulation of users' behavioural intentions towards handsets had not been analysed previously. By conducting this study, the author decreases the gap in the literature regarding behavioural intention towards smartphones in Azerbaijan and Hungary using the Extension of Unified Theory of Acceptance and Use of Technology (Venkatesh, Thong and Xu, 2012).

1.3 Research Questions and Hypotheses

Research questions create a structure of study (Figure 1) and build the framework for the formulation of hypotheses (Babbie, 2016). The author of this research was interested in a cross-cultural comparison of differences influencing behavioural intention toward handsets. Research questions and hypotheses were illustrated below.

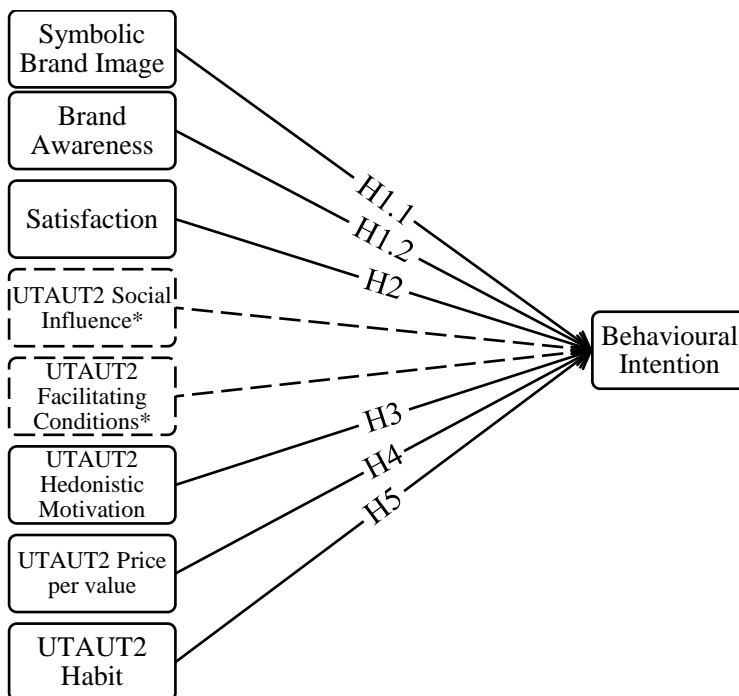


Figure 1. Proposed Research Model

Note: *Originally the author planned to have a separate hypothesis measuring the relationship between Social Influence and Behavioural Intention, however because of low numbers in reliability tests, it was impossible to identify whether there is a relationship or not.

Source: own editing

The main part of the offered model was involved from the UTAUT2 (Figure 1), it was extended by including several new variables. For understanding students' behavioural intentions toward smartphones, the author first focused on the identification of the relationships between 'Behavioural Intention' and the UTAUT2-related variables, as well as evaluated marketing variables (i.e. brand knowledge and satisfaction). Secondly, this research aimed to measure the fit of the proposed model with the data from Azerbaijan and Hungary.

Research Question 1. What are the relationships between Brand-related Indicators involved in the study and Behavioural Intention in the examined countries?

Hypothesis 1. Brand Knowledge-related indicators that developed as the result of the pilot study have a significantly positive influence on students' Behavioural Intention toward smartphones in examined countries.

- Hypothesis 1.1 Symbolic Brand Image has a significantly positive influence on the Behavioural Intention of students toward smartphones in examined countries.
- Hypothesis 1.2 Brand Awareness has a significant positive influence on the Behavioural Intention of students toward smartphones in the examined countries.

The second research question was based on measuring the relationship between Satisfaction of Purchase and Behavioural Intention.

Research Question 2. What is the relationship between the Satisfaction of Purchase involved in the study and Behavioural Intention in the examined countries?

Hypothesis 2 Satisfaction of Purchase has a significant positive influence on the Behavioural Intention of students toward smartphones in the examined countries.

Research Question 3. What is the relationship between Hedonistic Motivation and Behavioural Intention examined countries?

Hypothesis 3. Hedonistic Motivation has a significant positive influence on the Behavioural Intentions of students toward smartphones in the examined countries.

Research Question 4. What is the relationship between Price per value and Behavioural Intention in the examined countries?

Hypothesis 4. Price per value has a significant positive influence on Behavioural Intention of students toward smartphones in examined countries.

Research Question 5. What is the relationship between Habit and Behavioural Intention in the examined countries?

Hypothesis 5. Habit has a significant positive influence on Behavioural Intention of students toward smartphones in examined countries.

The last research question (Figure 1) is closely linked to the applied family of analysis – Structural Equation Modelling (SEM). This technique allows us to propose, test, and validate models in social science and is widely used in marketing (Brian S. Everitt, 2005). A detailed explanation of SEM is given in the materials and methods chapter.

Research Question 6. Is the proposed model measuring Behavioural Intention toward university students valid for the examined countries?

Hypothesis 6. The proposed models are valid and can be applied for measuring Behavioural Intention of students toward smartphones in examined countries.

2 MATERIALS AND METHODS

The basic part of the model was adopted from UTAUT2, developed in Venkatesh et al. (2012). It was the result of an extensive literature review which was explained in Chapter 2. There are two main purposes for choosing the model:

1. UTAUT2 is the only model aimed to analyse diffusion and the use of high-tech products
2. To some extent, the UTAUT2 constructions are in compliance with components created by the PCA (detailedly explained in Results and Discussion chapter)

In the case of smartphones, the scales offered to measure the connection between ‘Performance Expectancy’/’Effort Expectancy’ and ‘Behavioural Intention’ are outdated.

‘Symbolic Brand Image’ and ‘Brand Awareness’ are known as brand knowledge indicators. The first variable, Symbolic Brand Image, aims to explain brand preferences based on the social status and prestige of the handset brand. The scale was adapted from the study that aimed to measure the influence of product attributes, brand image, and perceived value on smartphone purchases in Taiwan (Chen, Liu and Ann, 2018). The author included a separate item aimed at measuring the importance of brand awareness. The questions were adopted from several pieces of research focused on smartphone brand awareness (Wu and Ho, 2014; Huang and Shih, 2017; Filieri *et al.*, 2019).

The last external latent indicator included in the study was ‘Satisfaction’. All satisfaction-related questions were adopted from Kim et al. (2016) which measured customer loyalty and satisfaction in the South Korean smartphone market.

2.1 The Final Research Model for Measuring Behavioural Intention

Based on previously conducted exploratory factor analysis and literature review, the author of the current study proposed a research model. The model was developed on the framework of the UTAUT2 by involving three influential variables (Figure 1) from the exploratory factor analysis (i.e. symbolic brand image, brand awareness, and satisfaction).

2.1.1 Structure of the Questionnaire

The questionnaire contained self-reporting questions related to the above-mentioned latent constructions as well as some personal information. The large number of questions (26 self-reporting questions) was justified by the the high

number of latent variables included in the study. In order to compile an easily understandable questionnaire, questions were grouped into multiple sections.

- In the paper-based version (Appendix II and III), the first section contains general information about smartphone owners and handsets: age, gender, manufacturer and smartphone model. In the online version (Appendix IV), this section is mentioned at the end; to be confident and decrease the probability of mistake control question (i.e. occupation of the respondents) was also included.
- The second section in the paper-based questionnaire includes statements regarding Symbolic Brand Image, Brand Awareness, Satisfaction and the UTAUT2-related indicators (i.e. Social Influence, Facilitating Conditions, Hedonistic Motivation, Price per value, Habit, Behavioural Intention, and Use). The participants of the survey expressed their opinion using a five-point Likert scale (from 1 or “strongly disagree” to 5 or “strongly agree”). Each assumption focused on the measurement of latent variables related to behavioural intention toward smartphones.

2.1.2 Data Collection

The questionnaire was distributed among Hungarian and the Azerbaijani students. The sampling method was based on an opportunity (convenience) sampling technique and limits the potential to generalise the findings (Babbie, 2016). Responses were collected during the same period: from the 25th of October until the 25th of December (two months) 2019. To reach so many respondents, paper-based and online versions were employed at the same time. The online survey was conducted by using Facebook; sharing the questionnaire among university students, which is a well-known approach for analysing behaviour in the smartphone market (Gazley, Hunt and McLaren, 2015; Stoica, Vegheş and Orzan, 2015). Each university student (mainly from Szent István University and Baku Engineering University) who had a smartphone could participate in the survey. However, it is important to highlight that the sampling technique employed limits the generalising potential of the findings to broader demographic ranges of Azerbaijani and Hungarian populations.

In order to meet the SEM requirement, the author’s main purpose was to reach around 300 respondents from each country. According to the literature (Hair *et al.*, 2014), it is acceptable to use a sample size of approximately 300 students (i.e. 323 students from Azerbaijan and 318 students from Hungary) for structural equation modelling. After excluding questionnaires with missing data and duplicated responses, 283 questionnaires from the Azeri respondents and 288 questionnaires from the Hungarian sample remained. Moreover, in order to decrease the number of observations that significantly differ from general samples, the author deleted 5% of outliers. In the end, 234 Azeri and 247

Hungarian students filled out completed and usable questionnaires and the total sample size contained 481 respondents. The datasets were analysed using an IBM AMOS version 23 statistical software package (Arbuckle, 2014).

2.2 Structural Equation Modelling

SEM is considered a family of different structural techniques (Hoyle, 2012) in order to measure the relationship between latent variables which mainly have confirmatory characteristics (Byrne, 2016) and in fact combines measurement and structural models (Hair *et al.*, 2014; Byrne, 2016). The measurement model explains the combination of observed variables that aimed to describe latent constructions while the structural model (also known as the path model (Hair *et al.*, 2014, p. 19)) illustrates the relationships among latent constructions (Hair *et al.*, 2014). Moreover, it is one of the most frequently-used tools for measuring willingness to purchase, e-purchases, the relationships between customers and attitudes toward brands (Mazzocchi, 2008, p. 319).

2.1.3 SEM: Reliability and Validity

Reliability is a tool used to measure the internal relationship between variables and is aimed to identify one latent construction. Simply, the purpose of calculating reliability is to statistically indicate that a set of variables has a high chance of explaining the same construction/latent variable. The high numbers of the reliability tests decrease the value of the measurement error (Hair *et al.*, 2014). Additionally, the statistics literature confirms that reliability estimates are also used as evidence of convergent validity (Hair *et al.*, 2014, p. 619) and high scores of Average Variance Extracted (AVE) prove convergent validity. In this case, AVE is the share of total variance explained by the latent variable (Malhotra and Birks, 2010, p. 734).

Table 1 Reliability and Validity Requirements for SEM

Cronbach's Alpha (CA)	Construction/Composite Reliability (CR)	Convergent Validity measured by AVE	Discriminant Validity
> 0.6 better > 0.7	CR > 0.6 (better when 0.7)	AVE > 0.5 (sometimes 0.45)	AVE > MSV the square root of the AVE might be higher absolute value of the correlations

Source: own editing based on literature review

2.1.4 Main Assumptions of Maximum Likelihood Estimation

Maximum Likelihood (ML) is the estimation technique that “iteratively improves parameter estimates to minimize a specified fit function (Hair *et al.*, 2014, p. 544)”. It helps to analyse a particular number of latent variables used for measuring interrelations between constructions. Like any other statistical analysis/technique, ML also has requirements for data as well as the main SEM

assumptions that must be followed. According to Tabachnick and Fidell (2013, p. 756), assumptions for using SEM are summarized as follows:

Sample Size – Jackson (2003) agrees that in the case of maximum likelihood, sample size less than the number of variables multiplied by 10 might influence research accuracy (Kline, 2011, p. 12). In conclusion, a sample size of 300 respondents is considered appropriate for less than seven constructions with an average level (≈ 0.5) of communities (Hair *et al.*, 2014, p. 574). 19 observed variables have been involved in the model for measuring behaviour among questioned Hungarian students, and 18 observed variables have been included in the model of measuring behaviour among the Azeri students. (Hungarian analysis $19 \times 10 = 190 \leq 247$; Azeri analysis $18 \times 10 = 180 \leq 234$)

Multivariate Normality – generally, multivariate normality is essential in the case of SEM techniques (Kline, 2011; Hair *et al.*, 2014; Byrne, 2016). Even if ML generally requires normally distributed data, the results of non-normal distributed data are also valid (Kline, 2011, p. 48). J. Arbuckle (2012, p. 36) specified situations (i.e. in the case of ML) when a normal distribution is not essential and the categorisation of respondents is one of the terms.

Multicollinearity is considered an issue in the case of SEM. The result of the multicollinearity tests proved that there was no multicollinearity issue in either the Azeri or the Hungarian sample. All numbers are below the accepted threshold.

Multivariate outliers – is the identifications of the filled out questionnaires that are significantly different from the general dataset (Hair *et al.*, 2014; Byrne, 2016). Outliers might be difficult to define in the case of a large number of variables; calculating Mahalanobis distance is a traditional solution. In the current survey, the author removed 5% of the outliers using Mahalanobis distance.

2.1.5 Probability Value (p-value)

Probability level is used to define “a fraction or a proportion” (Gravetter and Wallnau, 2014, p. 151). It is a value at which the mentioned assumption/hypothesis can be supported by statistical calculations. In a current study, all hypotheses accepted if $p \leq 0.05$, (there is a significant relationship between variables), and $p \leq 0.01$ (i.e. confidence interval 99%), which explains the strong relationship between variables (formulated as there is a significantly **strong** relationship between variables). As result, the author of the study set the confidence interval (Byrne, 2016) at 95% for latent variable-related hypotheses (i.e. hypotheses 1-5). The confidence interval in the case of model building/validation (i.e. Hypothesis 6: model explains behaviour of students) is defined by scholars and acceptable ranges are illustrated in the Materials and Methods chapter.

3 RESULTS AND DISCUSSION

The current survey focused on an investigation of the main drivers of behavioural intention toward smartphones from a cross-cultural point of view. The Extension of The Unified Theory of Acceptance and Use of Technology was partially applied by involving brand knowledge indicators and satisfaction of purchase in the study. The mentioned indicators were identified as the result of the pilot study. The statements measuring SBI, Satisfaction of Purchase, and Brand Awareness were included in the final questionnaire.

The proposed model examined university students in Azerbaijan and Hungary. Widespread usage of smartphones and the review of the literature regarding performance and effort expectancy (Venkatesh *et al.*, 2003; Venkatesh, Thong and Xu, 2012; Venkatesh, 2015) allowed the author to exclude the indicators from the study. The results of the current surveys were different from the original results. This might be due to a specific segment and age (17-24) of respondents, economic and cultural situations and so on. According to the results of path analysis, students' behavioural intentions toward smartphones were affected by hedonistic motivation and habit in both countries.

3.1 Results for Azerbaijan

3.1.1 Structural Model

The proposed model was tested employing the ML estimation technique using AMOS 23.0. Basic goodness-of-fit indices were employed to measure the fit of the proposed structural model (Table 2); Chi-square, χ^2/df , GFI, AGFI, CFI, TLI, SRMR, and RMSEA were calculated. The chi-square value was 207.183 ($p > 0.05$), which showed that the model was a good fit. χ^2/df was 1.594, which was below the threshold of 3.00 (Hu and Bentler, 1999).

The results of GFI, CFI, and TLI for the structural model were 0.915, 0.95 and 0.943 respectively; the values for all indices were in the accepted range (Hu and Bentler, 1999; Hair *et al.*, 2014). According to the results of the Azeri sample, AGFI was a slightly lower than 0.9 (i.e. 0.876); however, it was suitable according to requirements offered by Hu and Bentler (1999). SRMR and RMSEA showed reliable results that were lower than the suggested criteria 0.08 (Hair *et al.*, 2014). All the fit indices proved that the proposed model complied with the suggested criteria. The goodness of fit of the proposed structural model was illustrated in Table 2.

Table 2. Fit Indices of Structural and Measurement Models for Azerbaijan

Structural Model variables	χ^2	p.	χ^2/df^*	GFI	AGFI	CFI	TLI	SRMR	RMSEA
Requirements for fit Indices	Significant p-values with good fit	≥ 0.05	<3 $<5^*$ sometimes acceptable	>0.9 $>0.95^*$	>0.9 $>0.8^*$	>0.95 $>0.90^*$ $>0.80^*$ sometimes acceptable	>0.9	≤ 0.08 $<0.09^*$	≤ 0.08 <0.05 good 0.05-0.10 moderate >0.10 bad
Structural Model Azerbaijan	207.183	0.00	1.594	0.915	0.876	0.956	0.943	0.050	0.05
Proposed Model Azerbaijan	425.389	0.00	3.272	0.819	0.762	0.829	0.799	0.156	0.099

Note 1: thresholds offered by Hair et. al (2014) was not marked; * - thresholds offered by Hu and Bentler (1999);

Note 2: number of observations/respondents (N(AZ)=234); the number of observed variables that create latent construction (m(AZ)=19);

Source: own editing

3.1.2 Measurement model

Three UTAUT2-related variables (Hedonistic Motivation, Price per value, and Habit), as well as SBI, Brand Awareness and Satisfaction of Purchase were involved in the path analysis. According to the results of the path analysis of the survey conducted with Azeri participants, all hypotheses (excluding SBI) were confirmed. Unfortunately, according to the results of the path analysis, SBI did not influence the behavioural intention of the questioned university students in Azerbaijan.

According to the results of the ML estimate, brand awareness and the UTAUT2-related variables had highly significant relationships with behavioural intention (Table 3). Only in the case of satisfaction was value of p was higher than 0.001; path estimate, and critical ratio proved that the relationship between satisfaction of purchase and behavioural intention had effects opposite to what was expected. Behavioural intention of Azeri respondents who participated in the survey had a briefly positive influence on satisfaction of purchase. Social influence and facilitating conditions were excluded from the analysis based on the low numbers for reliability tests. In the end, the results of four of six path estimates of the Azeri Sample were significant in the proposed direction. Figure 2 demonstrates all the above and the hypothesized relationship between variables in the Azeri sample.

Table 3. The Test Results of Hypotheses for Azerbaijan

Hypotheses	Estimate	S.E.	C.R.	P
H1.1 SBI → BI	0.034	0.053	.635	0.526
H1.2 BA → BI	0.226	0.048	4.715	≤ 0.001**
H2 SA → BI	-0.071	0.032	-2.209	0.027*
H3 HM → BI	0.313	0.043	7.299	≤ 0.001**
H4 PV → BI	0.307	0.054	5.719	≤ 0.001**
H5 HT → BI	0.164	0.034	4.768	≤ 0.001**

Note 1: SBI – Symbolic Brand Image; BA – Brand Awareness; SA – Satisfaction; HM – Hedonistic Motivation; PV – Price per value; HT – Habit; BI - Behavioural Intention.

Note 2: S.E. – Standard Error; E - Path Estimate/Parameter Estimate; C.R. – Critical Ratio;

Note 3: * means $p \leq 0.05$ (significant); ** means $p \leq 0.01$ (highly significant)

Source: own editing

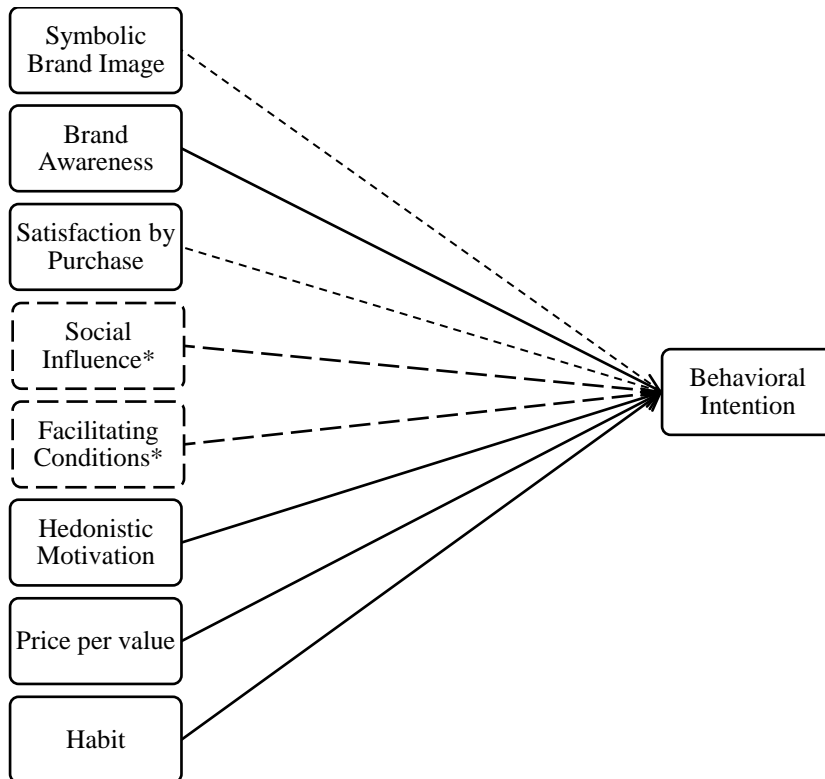


Figure 2. Measurement Model for Azerbaijan: Hypotheses Testing

Note 1: —→ significant relationship; - - - - -→ insignificant relationship - - - - - did not pass reliability/validity tests

Note 2: * Originally the author planned to have a separate hypothesis measuring the relationship between Social Influence and Behavioural Intention, however because of low numbers in reliability tests, it was impossible to identify whether there is a relationship or not.

Source: own editing

The last hypothesis mentioned in the introduction is related to the results of the measurement model. The above-illustrated results of the measurement model (Table 2) prove that the proposed measurement model was not a good representation of the students' behavioural intention towards the smartphone. Even in the case of relying on requirements offered Hu and Bentler (1999), which support lower threshold values for model validation, GFI ($0.819 < 0.9$) and SRMR ($0.156 > 0.08$) did fall in the accepted range. The goodness of fit of the proposed measurement model for Azerbaijan was illustrated in Table 3. As result, the structural model was a good representation of the hypothesized relationships among questioned Azeri students.

3.2 Results for Hungary

3.2.1 Structural Model for Hungary

Chi-square value for the Hungarian sample was 177.204 ($p > 0.05$), which might indicate the good model fit (Table 4). χ^2/df was 2.645, which was below the threshold of 3.00 (Hu and Bentler, 1999). The results of the GFI, CFI, and TLI were 0.913, 0.863, and 0.935 respectively. As expected, the values for all mentioned indices were in the accepted range (Hu and Bentler, 1999; Hair *et al.*, 2014). AGFI was also lower than 0.9 (i.e. 0.863) in Hungary, however, it is suitable according to requirements offered by Hu and Bentler (1999). SRMR showed reliable results that were lower than the suggested criteria 0.08 (Hair *et al.*, 2014) while RMSEA was slightly higher than the accepted level. The numbers were high in comparison with the results of the Azeri sample. The current structural model made for Hungary was a good representation of the hypothesized relationships. The goodness of fit indices of the proposed structural model is illustrated in Table 4.

Table 4. Fit Indices of Structural and Measurement Models for Hungary

Structural Model variables	χ^2	p	χ^2/df^*	GFI	AGFI	CFI	TLI	SRMR	RMSEA
Requirements for fit Indices	Significant p-values with good fit	≥ 0.05	<3 $<5^*$ sometimes acceptable	>0.9 $>0.95^*$	>0.9 $>0.8^*$	>0.95 $>0.90^*$ $>0.80^*$ sometimes acceptable	>0.9	≤ 0.08 $<0.09^*$	≤ 0.08 < 0.05 good 0.05-0.10 moderate >0.10 bad
Structural model for Hungary	177.204	0.00	2.645	0.913	0.863	0.935	0.912	0.0772	0.082
Proposed model for Hungary	248.566	0.00	3.359	0.878	0.827	0.897	0.874	0.1084	0.098

Note 1: * - thresholds offered by Hu and Bentler (1999)

Note 2; the number of observations/respondents (N(HU)=247); the number of observed variables that create latent construction (m(HU)=14);

Source: own editing

3.2.2 Measurement model

In the Hungarian sample, SBI had a direct influence on behavioural intention. However, the value of p was higher than 0.001 that means that the result is not highly significant. The satisfaction of purchase had no direct impact on behavioural intention (Table 5).

Table 5. The test results of hypotheses for Hungary

Hypotheses	Estimate	S.E.	C.R.	P
H 1.1 SBI → BI	2.665	1.103	2.416	0.016*
H 1.2 BA → BI			Low-reliability scores	
H2 SA → BI	-0.042	0.063	-0.671	0.502
H3 HM → BI	0.404	0.049	8.183	$\leq 0.001^{**}$
H4 PV → BI	0.126	0.039	3.263	$\leq 0.001^{**}$
H5. HT → BI			Low-reliability scores	

Note 1: SBI – Symbolic Brand Image; BA – Brand Awareness; SA – Satisfaction; HM – Hedonistic Motivation; PV – Price per value; HT – Habit; BI - Behavioural Intention.
 Note 2: S.E. – Standard Error; E - Path Estimate/Parameter Estimate; C.R. – Critical Ratio;

Note 3: * means $p \leq 0.05$ (significant); ** means $p \leq 0.01$ (highly significant);

Source: own editing

The results of reliability tests of the second brand knowledge indicator - Brand Awareness were insufficient. Only two of the UTAUT2 related variables: Hedonistic Motivation and Price per value had a highly significant influence ($p \leq 0.001$) on Behavioural Intention. Based on the output of reliability tests, Habit (i.e. last two of the UTAUT2 indicators) were excluded from the analysis. In the end, the results of three of five path estimates of the Hungarian Sample were significant in the proposed direction. Figure 3 proves all above mentioned the hypothesized relationship between variables in the Hungarian sample.

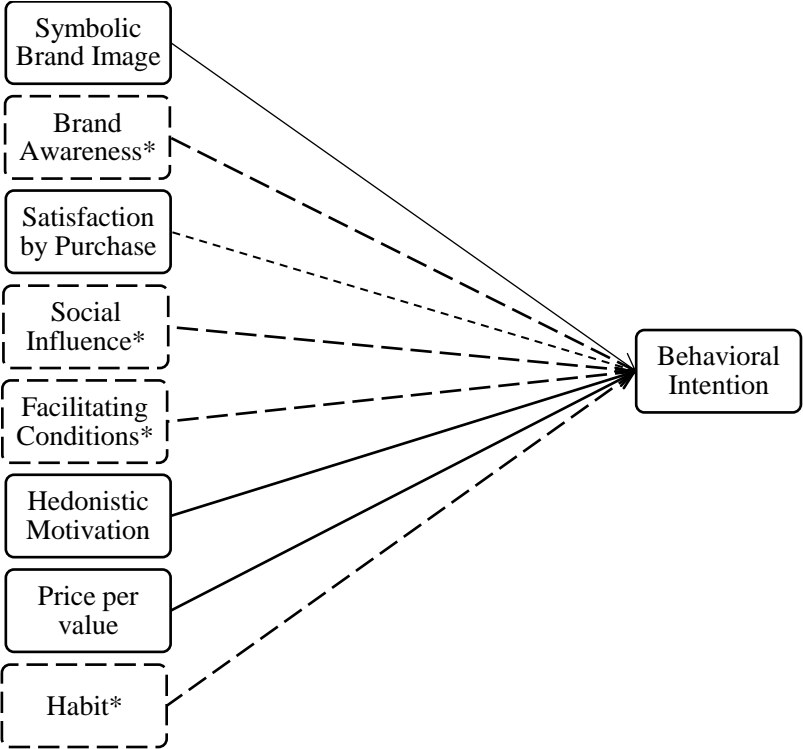


Figure 3. Measurement Model for Hungary: Hypotheses Testing

Note 1: ———> significant relationship; - - - - -> insignificant relationship; - - - - - did not pass reliability/validity tests

Note 2: * Originally the author planned to have a separate hypothesis measuring the relationship between Social Influence and Behavioural Intention, however because of low numbers in reliability tests, it was impossible to identify whether there is a relationship or not.

Source: own editing

The last hypothesis mentioned in the introduction was related to the results of the measurement model. The goodness of fit of the proposed measurement model for Hungary was illustrated in Table 4. The illustrated results proved that the proposed measurement model might be a good representation of the student’s behavioural intention towards the smartphone in Hungary. It is important to note that the fit indices for Hungary have better results in comparison with Azerbaijan.

In the Hungarian sample, Only GFI (0.878>0.9) was a bit lower than the threshold. All remaining indicators including SRMR fell to the accepted range offered Hu and Bentler's (1999). It allowed the author of current work to assume that the model offered for the Hungarian sample can be a good representation of the hypothesized relationship between variables and comply with the answers of the questioned respondents.

3.3 Discussion

Symbolic Brand Image (SBI) → Behavioural Intention (BI)

Symbolic Brand Image was involved in the research as the result of the pilot study conducted among Azeri and Hungarians. In the beginning, the aim of the author was the involvement of SBI was to measure the mediating effect of SBI in the relationship between Social Influence and Behavioural Intention toward smartphones. However, the results of reliability tests of Social Influence made impossible to define whether there is a relationship or not. Then the author of current research decided to measure the influence of the Symbolic Brand Image of the smartphone on students between 17-24.

The results prove that questioned Azeri students were not influenced by their smartphones' Symbolic Brand Image. Moreover, the author already indicated comparatively high prices in terms of iPhones and Samsung handsets in Azerbaijan by comparing prices of the same smartphone models in different countries. It was also proven by the results of descriptive statistics; More Azeri students (in comparison with Hungarians) had Xiaomi smartphones which considered to be cheaper in comparison with Huawei. A large number of Consumer Price Index (149%) indicated by the UN statistics (United Nations, 2020a) also prove the mentioned idea. "Affordability of devices and services" calculated for Azerbaijan (We Are Social & Hootsuite, 2019a) illustrates that the Azerbaijani population has less money for purchasing a smartphone in comparison with Hungarian (We Are Social & Hootsuite, 2019b). It means that in the past few years inflation was high in Azerbaijan, and in combination with low income, it made expensive smartphones less accessible for Azeri smartphone users. Also, students are the group, highly influenced by the changes in income level. So, considering the income and affordability level of Azeri students, it is logical that respondents' behavioural intentions toward smartphones were not influenced by SBI.

Interestingly, the results of the survey among Hungarian students showed the direct influence of the SBI of smartphone manufacturers on students' behavioural intentions

(Hu: SBI→BI; P=0.016). The lower CPI number (114%) compared to Azerbaijan might explain this. Moreover, per capita GDP, the unemployment rate (United

Nations, 2020b), as well as the affordability of handsets (We Are Social & Hootsuite, 2019b) in Hungary, have higher numbers in comparison with Azerbaijan. Considering the macroeconomic situation, Hungarian students have better chances to buy or receive a better smartphone. It can be the main reason for the positive relationship between SBI and the behavioural intentions of the questioned Hungarian students. Earlier, Chen et al. (2018) proved that brand image had a positive influence on purchase intention in Taiwan. The survey result for Hungary corroborated the findings of Chen et al. (2018) in Taiwan, however the result differed from the current research findings in Azerbaijan.

Brand Awareness (BA) → Behavioural Intention (BI)

Predictably, brand awareness had a significant positive effect on behavioural intention towards smartphones among Azeri students (Az: BA→BI; $P \leq 0.001$). It means that well-informed users/students are more likely to have positive behavioural intentions toward purchasing and using smartphones. Unfortunately, the results of the path analysis for the Azeri sample could not be compared with the Hungarian sample. Brand Awareness was excluded from the analysis because of low-reliability scores. In previous studies (Huang and Shih, 2017; Filieri *et al.*, 2019) related to the smartphone market, brand awareness was measured for analysing brand equity. Only one study (Wu and Ho, 2014) measured the relationship between brand awareness and purchase intention where variables did not have any direct relationship. So, the results of the current study do not corroborate any previously-mentioned research, however, they are consistent with the findings of Mohd Suki (2013) related to the brand name and smartphone demand in Malaysia. The brand name scale used in Malaysia does not differ much from the brand awareness scale employed in the current survey.

The Satisfaction of Purchase (SA) → Behavioural Intention (BI)

There are a lot of studies that aimed to measure smartphone owners' satisfaction (Kim *et al.*, 2016; Ma, Chan and Chen, 2016; Pappu and Quester, 2016), however, research measuring the relationship between satisfaction and behavioural intention is scarce. Previous studies proved that satisfaction has a positive influence on repurchase intention in Nigeria (Adekunle and Ejechi, 2018). Also, a relationship between smartphone use and life satisfaction was proven both in the USA and in South Korea (Kang and Jung, 2014).

Table 6. The comparison of results between the Azeri and Hungarian samples

Hypotheses	AZERBAIJAN		HUNGARY	
	Method	Status	Estimate	Status
Hypothesis 1.1 Symbolic Brand Image has a significantly positive influence on the Behavioural Intentions of students toward smartphones in examined countries.	SEM	Rejected	SEM	Accepted
Hypothesis 1.2 Brand Awareness has a significant positive influence on the Behavioural Intentions of students toward smartphones in examined countries.	SEM	Accepted	SEM	Not reliable
Hypothesis 2 Satisfaction has a significant positive influence on the Behavioural Intention of students toward smartphones in examined countries.	SEM	Rejected	SEM	Rejected
Hypothesis 3. Hedonistic Motivation has a significantly positive influence on Behavioural Intention of students toward smartphones in examined countries.	SEM	Accepted	SEM	Accepted
Hypothesis 4. Price per value has a significantly positive influence on Behavioural Intention of students toward smartphones in examined countries.	SEM	Accepted	SEM	Accepted
Hypothesis 5. Habit has a significantly positive influence on the Behavioural Intentions of students toward smartphones in examined countries.	SEM	Accepted	SEM	Not reliable
Hypothesis 6. The proposed models are valid and can be applied for measuring the Behavioural Intentions of students toward smartphones in the examined countries.	Model validation	Rejected	Model validation	Accepted

Source: own editing

According to the results of the path analysis, satisfaction had a significant effect in Azerbaijan (Az: SA→BI; P=0.027) while it had no effect on behavioural intention among Hungarian students (Hu: SA→BI; P≥ 0.05). The difference in results between the Azeri and Hungarian samples proved the difference in consumers' behavioural intentions in different countries (Table 6). In Azerbaijan, the hypothesis was rejected because of the direction of the relationship. The parameter/path estimate, and critical ratio showed negative scores for satisfaction, while the result of the analysis was significant for Azeri students. In terms of satisfaction, a similar situation was reported by Hair et al. (2014, p. 656).

Hedonistic Motivation (HM) → Behavioural Intention (BI)

Hedonistic motivation was considered one of the three key indicators included in the updated version of the UTAUT modified for consumer electronics (Venkatesh, Thong and Xu, 2012). According to the results of the survey

conducted among Azerbaijani (Az: HM→BI; $P \leq 0.001$) and Hungarian students (Hu: HM→BI; $P \leq 0.001$), hedonistic motivation has a positive influence on the formulation of survey participants' behavioural intention (Table 6). The result of the study confirms previous research regarding technology acceptance in Portugal (Macedo, 2017), in terms of mobile banking in Jordan (Alalwan, Dwivedi and Rana, 2017). However, in some studies (Gupta, Dogra and George, 2018; Merhi, Hone and Tarhini, 2019) these variables had no relationship. The moderators of the strong positive relationship between latent variables can be the age, gender, and/or experience/status of smartphone users (Venkatesh, Thong and Xu, 2012). In the current research, the significance of the relationship could be connected to age (17-24) and smartphone users' occupations.

Price per value (PV) → Behavioural Intention (BI)

The findings proved that price per value had a positive significant effect on behavioural intention towards smartphones (Table 6) among Azeri (Az: PV→BI; $P \leq 0.001$) and Hungarian students (Hu: PV→BI; $P \leq 0.001$). The price per value attracts the particular attention of Azeri and Hungarian smartphone users. The results might be significant due to students' relatively low income and purchasing power. Mainly, parents are the buyers of students' smartphones as therefore price per value plays an essential role because students have a certain defined budget for their smartphones. Mentioned reasons directly influence the behavioural intention of survey participants. Previous studies examining price per value presented contradictory results; some of them proved (Alalwan, Dwivedi and Rana, 2017; Ameen and Willis, 2018; Ameen, Willis and Hussain Shah, 2018) a relationship between price per value and behavioural intention while the others rejected it (Macedo, 2017; Merhi, Hone and Tarhini, 2019). As mentioned before, it could be connected with the users' segment, as well as cultural or economic differences among others.

Habit (HT) → Behavioural Intention (BI)

Habit was one of the indicators included in the UTAUT to extend it to the consumer use context. Venkatesh et al. (2012) included habit as a strong predictor of learned automatized behaviour. The construction proved its importance, however, it is rarely involved in the UTAUT2-related studies (Tamilmani *et al.*, 2018). The findings of the current study (Table 6) confirm that habit is one of the strong predictors of behavioural intentions toward smartphones (Az: HT→BI; $P \leq 0.001$) among questioned Azeri university students. Unfortunately, habit did not pass reliability and validity tests in the case of Hungarian sample. The results of this study support previous findings. All reviewed studies (Macedo, 2017; Gupta, Dogra and George, 2018; Merhi, Hone and Tarhini, 2019) also showed that habit had a positive relationship with behavioural intention.

4 CONCLUSION AND RECOMMENDATIONS

The current study focused on understanding the formulation of students' behavioural intentions (Azerbaijani and Hungarian) toward smartphones. The main part of the research was conducted in Azerbaijan and Hungary at the same period. The final questionnaire development was based on the literature review regarding behavioural intention toward smartphones (i.e. relying on the UTAUT2); the survey combines the statements related to several new constructions as symbolic brand image, brand awareness, satisfaction of purchase as well as the UTAUT2-related variables. The hypotheses built on the direct relationship between latent constructions and model validation. The confirmatory study was made by using SEM, and the ML estimation technique.

Paper-based questionnaires were distributed among students of Baku Engineering University in Azerbaijan and Szent István University students in Hungary. The online version of the questionnaire was available in respondents' native languages while the control question about occupation allowed the author to only include students in the analysis. The questionnaires (i.e. in Azeri and Hungarian) were shared in different Facebook groups to reach the required amount of responses.

4.1 Azerbaijani Analysis

Azerbaijan is the country in the Caucasus with rich crude oil fields. Until 1991, the country was the part of the USSR and after proclaiming independence; the economy was mainly focused on crude oil manufacturing. However, in the last several years, the government changed policy toward supporting the development of the other fields of the economy (such as agriculture and tourism). Due to a simmering conflict with Armenia, the political situation in the country cannot be considered stable. This conflict not only negatively influences the economy but also takes the lives of Azeri citizens. This is the main reason why the median age of the Azeri population is very young at 32.4 years (We Are Social & Hootsuite, 2019a), compared to populations of European countries. Based on all macroeconomic indicators, Azerbaijan is a developing country with higher-middle income (World Bank, 2020) in the middle of the Caucasus and Asia.

The author has to highlight that Azerbaijan is a Muslim country where traditional values (including religion and tolerance) strongly impact people's lives (Inglehart and Welzel, 2005; Inglehart *et al.*, 2014). The economy is not so highly developed which makes survival values essential (Inglehart and Welzel, 2005). A reader might consider the influence of these details hard to prove. The income differences between Azeri and Hungarian survey respondents might be seen from brand choice. Around 37% of questioned Azeri students chosen Samsung which is a brand that is well-known for having smartphone models in different price

categories. About 17% of respondents chose Xiaomi, which offers even cheaper, budget models of Samsung. It proves a hidden influence of income difference on the questioned Azeri students. The usage of iPhone smartphones as a status statement or belonging to a particular social group has already been proven. Therefore, the author did not connect it to owners' income levels.

The result of the survey conducted in Azerbaijan was illustrated in Table 2 and 3. The main findings show that the proposed model for measuring university students' behavioural intentions in Azerbaijan was not in compliance with the responses of students (n=234). As a result, the offered model was not valid for determining the behavioural intentions of the questioned Azeri students.

According to the results of the literature review, the author's aim was to extend the UTAUT2 by including brand awareness, symbolic brand image, and satisfaction. Furthermore, symbolic brand image did not have an impact on the behavioural intentions (SBI→BI) of the students from Azerbaijan who participated in this study. The mentioned findings were strengthened with results illustrated in Inglehart et al.'s (2014) cultural map. For a nation that lives under the strong influence of survival values, the symbolic brand image of a smartphone does not seem necessary. It has been proven that brand awareness of questioned students had a positive influence on the formulation of behavioural intention (BA→BI; $P \leq 0.001$). Brand awareness is one brand knowledge indicator that allow a user to choose the device which is more suitable for his/her needs. Even if students do not have a high enough income for better smartphones, they try to choose the best price-quality ratio, which requires brand knowledge. The last latent variable involved from the pilot study (Satisfaction) showed a significant impact on behavioural intention (SA→BI; $P=0.027$), however the parameter estimate (C.R.=-2.209) indicated the opposite direction of the relationship.

The main part of the proposed model involved the UTAUT2-related variables such as social influence, facilitating conditions, hedonistic motivation, price per value, habit, and behavioural intention. Unfortunately, social influence and facilitating conditions failed to pass reliability and validity tests. Therefore, only the relationships between behavioural intention and hedonistic motivation (HM→BI; $P \leq 0.001$), price per value (PV→BI; $P \leq 0.001$), Habit (HT→BI; $P \leq 0.001$) were measured. The results of the analysis proved a strong positive relationship ($P \leq 0.001$) between behavioural intention and the above-mentioned variables in the Azeri sample.

4.2 Hungarian Analysis

Hungary is situated in Eastern Europe. The country was a satellite state of the Soviet Union for 40 years and became independent in 1989. During this period, it was a state with a strong economy that exported a lot of light industrial and

agricultural products to former Soviet Union states. The development of the economy continued after Hungary became independent. Nowadays, Hungary is a high-income country (World Bank, 2020) with branches/representative offices of international companies. The median age of Hungarians is 43.4; it is significantly higher in comparison to that of Azerbaijan. Based on macroeconomic data (Table 1.), Hungary is in a better economic situation than Azerbaijan.

The country was listed as part of Catholic Europe in the Inglehart – Welzel cultural map (Inglehart *et al.*, 2014). Secular-rational values are quite high (compared to Azerbaijan) and regarding survival versus self-expression, Hungary remains at the border of survival values. Like in Azerbaijan, around 40% of respondents used iPhones. Around 20% of respondents had Samsung and less than 9% preferred Xiaomi to the other handsets. These numbers are roughly half (36.76% of Azeri respondents own Samsung; 16.24% of Azeri respondents use Xiaomi) of surveyed Azeri brand users. Additionally, more than one-fourth of Hungarian survey participants were Huawei owners, which priced higher than Samsung and Xiaomi.

The main findings show that the proposed model for measuring the behavioural intentions of university students in Hungary was more in compliance with the responses of students (than the Azeri model) and it illustrates a good model fit (Table 4). As a result, the model was valid for determining the behavioural intentions of Hungarian respondents.

Symbolic brand image had a positive impact on the behavioural intention of the Hungarian students (SBI→BI; $P=0.016$), who participated in this study. However, low scores on reliability tests (CR and AVE as well as Cronbach's Alpha) in the case of brand awareness, did not allow the author to compare results. Satisfaction of purchase was the last latent variable involved from the pilot study and it did not have any impact on the behavioural intentions of Hungarian respondents. In contrast, there is a significant negative relationship between satisfaction of purchase and behavioural intention in the Azeri sample.

The main part of the proposed model included the UTAUT2-related variables such as social influence, facilitating conditions, hedonistic motivation, price per value, habit, and behavioural intentions. Unfortunately, social influence, facilitating conditions, and habit failed to pass reliability tests. So, only the relationships between hedonistic motivation (HM→BI; $P\leq 0.001$), price per value (PV→BI; $P\leq 0.001$), and behavioural intentions were measured. The results of the analysis proved that there is a strong positive relationship between behavioural intention and the above-mentioned variables in the Hungarian sample.

4.3 Research Limitations

The current study has also limitations. The sample size of the research was in the acceptable range ($N= 234+247=481$). At first, the sampling method was built upon on a convenience sampling technique (Babbie, 2016), and involved respondents from two universities in Azerbaijan and Hungary. However, it is important to note that the applied sampling technique limits the generalizing potential of the findings to the entire Azerbaijani and Hungarian populations.

Secondly, some of the used latent constructions failed reliability tests the terms of the Azeri and Hungarian samples. Venkatesh (2015) strongly encouraged authors to apply the UTAUT2 in different countries. In the first version of the UTAUT published in 2003, facilitating conditions did not have any direct relationship with behavioural intention. According to Venkatesh et al. (2003), the relationship is highly dependent on users' age and experience. It can be the main reason for low reliability and validity scores in terms of facilitating conditions. Also, the author of the model (Venkatesh *et al.*, 2003) noted that the usage of the social influence indicator in the models measuring behavioural intention could be questionable. Interestingly, the social influence construction was deleted from the study during the exploratory factor analysis stage. It means that the correlations between items of the scale were not strong enough and the items moved together with items of the other constructions. Moreover, inappropriate results of reliability and validity tests were also reported in terms of brand awareness and habit in the Hungarian sample.

Thirdly, the survey had self-administered characteristics and some of the answers might not reflect users' real opinions. The respondents could have reported answers that differed from their real opinions to stay socially accepted. It means that opportunity sampling itself has some limitations while it is a generally accepted method of measuring behaviour (Ameen, Willis and Hussain Shah, 2018; Merhi, Hone and Tarhini, 2019).

Different cultural values (Inglehart *et al.*, 2014), religion, political situation, macroeconomic conditions (We Are Social & Hootsuite, 2019a, 2019b), and other factors surely influenced the results of the study, however this is very hard to illustrate. It is a very wide topic that requires a lot of time and financial support to realize. However, the current study aimed to define factors influencing the formulation of behavioural intentions towards smartphones of questioned university students in Azerbaijan and Hungary.

APPENDIX I: LIST OF PUBLICATIONS

List of Publications in Conference Proceedings

1. Jamalova, M. (2017): “Consumer Behaviour in Azerbaijan during the recession”. 7th International Scientific Conference “Managerial Trends in Development of Enterprises in Globalization Era” pp.776-784 Nitra, Slovakia 2017, ISBN 978-80-552-1739-0
2. Jamalova, M. (2017): “Consumer Behaviour in Azerbaijan during the recession” 4th VUA Youth International Scientific Conference pp 375-384. Gödöllő, Hungary 2017 ISBN: 978-963-269-693-5
3. Jamalova, M. (2018): “Relationship between income and market share of mobile phone vendors in Azerbaijan”. Third International Scientific Conference for Young Researchers – Gödöllő, Hungary 2018, pp. 273-285. ISBN 978-963-269-730-7
4. Jamalova, M. (2018): “Current situation in agriculture of Azerbaijan” 17th Alps Adria Scientific Workshop. Hnanice, Czech Republic 2018, pp. 36-37 ISBN: 9789632697345
5. Jamalova, M. and Constantinovits M. (2018): “Analysis on the level of influence of macroeconomic indicators on consumer behaviour in the mobile phone market”. Business and Management Sciences: New Challenges in Theory and Practice (5th Anniversary of the Doctoral School of Management and Business Administration, Szent István University) - Gödöllő, Hungary 2018, pp. 169-176. ISBN 978-963-269-781-9

List of Publications in Peer Reviewed Journals

1. Jamalova, M. (2018). Review of Consumer Behaviour from Intercultural Marketing Perspective. *Vadyba*, 33(2), 31–38.
2. Jamalova, M., & Constantinovits, M. (2019). The Comparative Study of the Relationship Between Smartphone Choice and Socio-Economic Indicators. *International Journal of Marketing Studies*, 11(3), 11. Doi: 10.5539/ijms.v11n3p11
3. Jamalova, M. and Constantinovits, M. G. (2020) ‘Smart for development: Income level as the element of smartphone diffusion’, *Management Science Letters*, 10(5), pp. 1141–1150. doi: 10.5267/j.msl.2019.10.027.
4. Jamalova, M. and Constantinovits, M. (2020) *Attitudes toward smartphone characteristics: What do users pay for?*, *International Journal of Interactive Mobile Technologies*. – under publication

List of Publications in Books

1. Jamalova, M., and Fehér, I. (2018). Consumer Behavior. I. Fehér (Ed.), *Principles of Agrimarketing* (pp. 154–171). Gödöllő: Szent István Egyetemi Kiadó. ISBN 978-963-269-745-1