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Original Research

EXTRACTING THE FACTORS THAT ARE AFFECTING THE HUNGARIAN CITIZENS' ADOPTION OF E-GOVERNMENT SERVICES FROM THE VIEWPOINT OF UNIVERSITY STUDENTS: EXTENDED UTAUT2 MODEL

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E-government;
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Acceptance model;
Awareness;
Trust;
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JEL Classification
H83, J18, J28, J45, J68, J88; N45

Abstract

This study is a phase in a research chain to explore the factors affecting users of e-government in Hungary, and the current study extended the model (UTAUT2), which has been widely applied in commercial contexts and limited in the public sector contexts. The study extends the model with additional factors that may significantly impact the e-government system, such as trust, awareness and system characteristics (interactivity, enjoyment and flexibility), all the variables the researcher put under three significant variants. In the methodology, this paper used Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis tests (CFA) to explore and extract the factors that affect the acceptance. The questionnaire was distributed to a random sample of students from the University of Debrecen in Hungary. The results showed that the factors related to system characteristics merged the three factors in two factors which are System Interactivity and System flexibility, and excluded the third factor the system enjoyment. Finally, Habit was also excluded from the original model. The study established a theoretical framework suitable for testing a larger sample of the Hungarian community and a reference for other researchers.

INTRODUCTION

Today, the internet has become one of the most essential success tools of any commercial or governmental institution. That is why it has become necessary and a must for any private or governmental organization to take advantage of using the internet to provide the best services to stakeholders and citizens. The information and communications technology (ICT) revolution in the eighties and nineties changed all aspects of human life, and one of them is the characteristics of interaction between governments and citizens, and since the advent of the ICT, the public and private sectors have competed on the best ways to exploit new technologies to enhance the level of services provided and relationships with stakeholders. Generally, the private sector always showed tremendous enthusiasm and more use of ICT means in transactions and interactions, in contrast to the public sector, which showed a lot of caution and hesitation initially, but this caution and hesitation did not last for long. In the early decade of the twenty-first century, many governments began to adopt more ICT and launched what is called "e-government projects", as many experts point out that the beginning of the term "electronic government" appeared in the ’90s. However, the real beginning of the spread of electronic governments began at the beginning of the twenty-first century.

Previous studies have shown many definitions of e-government, but most of the definitions agreed that the public sector's use of technology and communication means providing services to stakeholders and citizens (Rumman & Szilágyi, 2018; United Nations, 2002).

E-government in Hungary

Hungary launched the e-government program in 2001 as part of version 1.0 of the National Information Society Strategy (NISS) after opinion polls were conducted on a large scale. The government allocated about 48 million euros to implement the program in the first year (OECD, 2007).

The government has set two main objectives for the program: improving government efficiency and internal operations and providing better services to citizens, all of which will necessarily lead to lower operating costs in public administration (OECD, 2007).

The start-up period of the project during the years 2003-2008 can be summarized by the most prominent achievements such as: creating the legal framework for the work of e-government and e-commerce and the mechanism of electronic signature work, which Parliament approved in late 2003. In 2005, a plan was launched to implement the program, and the main e-government portal, “www.magyarorszag.hu “was launched, which enabled all users to access information and obtain services in electronic form.

Despite this, the program faced many challenges, and the most prominent challenge was the multiplicity of agencies responsible for the program (Prime Minister’s Office Electronic Government Center (MEH EKK), Hungarian Office for Administration and Electronic Public Services, (KEKKH), Ministry of Economy and Transport)and poor coordination between them, which led to poor implementation of the program and the achievement of its objectives (OECD, 2007).

In the year 2008, the program improved significantly, with the participation rate of employees in the public sector reaching 40%, which increased later in 2013 to 63%, and a greater percentage in the higher administrative levels with 73%, and this is a great progress for the program (European Union, 2014).

This improvement was accompanied by many progress, such as improvements in the legal framework, launch the hotline (1818 and 1818.hu) and customer service, and established centers to provide electronic services in Local municipalities, and finally adopting a digital ID card to be used in obtaining access to services through electronic portals such as: www.netenahivatal.hu; http://okmany.hu; www.kormanyablak.hu; www.kozbeszerzes.hu (European Union, 2014).

Currently, the program still faces many challenges, most notably that many electronic portals provide services, which must be unified under one portal. And less than half of the Internet users in Hungary use electronic portals in Hungary, and in addition, less than half of this number use electronic portals to obtain information only (European Union, 2017).

Issues related to e-government in Hungary.

All developed countries are interested in e-government to improve the performance and productivity of the public sector, and this interest has increased dramatically in recent times with what the world faced under the influence of the Corona pandemic in early 2020, as many government transactions and activities in the world have turned to the electronic form. In the same context, countries such as Hungary have sought to improve the e-government program to improve performance, increase transparency and accountability.

Hungary ranked 52 in the United Nations survey of e-governments in 2020. However, according to the same classification, Hungary has regressed since 2010, where it was ranked 27th, and this decline confirms the presence of some challenges that the program faces, especially in citizens' acceptance of e-government services and participation. We see clearly in the electronic participation index that Hungary's significant decline according to this index to the 75th position in 2020 (United Nation, 2020). Moreover, the use of electronic services in Hungary depends on pre-registration on the website, and a European Commission study has shown that only 22% of adults in Hungary have made this registration (European Commission, 2017).

In summary, a considerable study investigated the variables that directly affect citizens' acceptance of services provided by government electronically; however, it is not clear if these factors are human-related factors, infrastcuture factors, or factors related to trust. The present study attempts to a deep understanding and explores the factors that influence the users' adoption of e-government using the extended UATAUT2 model, which was adopted mainly in commercial context and limited to the public sector context.

Theories and Models of Technology Acceptance

The most useful and famous models in this field are the following models and theories: Theory of Reasoned Action (TRA), Theory of Planning Behavior (TPB), Technology Acceptance Model (TAM), Motivational Model (MM), Unified Theory of Acceptance and Use Technology Model (UTAUT), Unified Theory of Acceptance (UTAUT2).

UTAUT is a unified theory whose main objective is to explain user acceptance. UTAUT model postulates four factors that are thought to influence behavioral intentions: namely, performance expectancy, effort expectancy, facilitating conditions, and social influence. The UTAUT model assumes that these variables have an influential and direct relation with the using decision. Furthermore, gender, age, experience, and voluntariness of use are considered moderating variables in UTAUT (Venkatesh, Morris, Davis, & Davis, 2003).

This research extended the UTAUT2 model because it is a comprehensive model, as many previous theories support it. In addition, this model merged 8 previous models (TRA, TAM, TPB, MM, C-TAM-TPB, MPCU, IDT, SCT) to explain the users' acceptance of the technology.

Unified Theory of Acceptance and Use of Technology (UTAUT2)

UTAUT model includes four main independent variables that affect the level of acceptance of any new system, and this model has four variables mainly:

Expecting performance (EP): The users' level of perception of any system of the benefits and gains that the system can provide to them (Venkatesh et al., 2003).

Expecting effort (EE): The level of users' ability to use the system easily without any difficulty (Venkatesh et al., 2003).

Social Impact (SI): The level to which any user thinks it is very important for others to believe they must use any new system (Venkatesh et al., 2003).

Facilitating Conditions (FC): The individual's perception that the existing system has an infrastructure, whether organizational or technical, that helps to better use the system. As seen in Figure 1, in 2012 Venkatesh, Thong, & Xu, (2012) extended the new framework with the new three variables:

Hedonic Motivation (HM): It refers to the fun or pleasure expressed in the use of technology. It is considered very fundamental to the use and acceptance of the technology. More specifically, it is an important determinant of the use and acceptance of technology in the consumer context. Hence, (HM) is very useful to estimate the consumers' behavioural intention in technology use.

Price Value (PV): This variable measures the impact of the user's costs when using the system and the impact of this cost on the level of acceptance of this system.

Habit (H): Most of the previous studies concerned with the use of any technology have two aspects related and close to the concept, but they are separate, and they are experience and habit. Experience is, as operationalized by (Venkatesh et al., 2012), the amount of time that an individual experiences in the use of technology. Habit is the degree to which people are likely to learn to use technology and carry out behaviors automatically. There are two critical differences between habit and experience. Moreover, experience is a prerequisite for the development of a habit. On the other hand, habit measures are based on familiarity and interaction between the user and the targeted system.

PROPOSED FRAMEWORK

This study is conducted in the public sector, so two variables were excluded from the original (HM) and (PV) (Figure 2) Firstly, the variable (HM) was excluded. The services provided by governments in the public sector are government services that are free of fun, as this variable measures the level of fun that occurs to the user during the completion of the process. Secondly, the variable (PV) is excluded because the services provided in Hungary are provided free of charge, and its use does not constitute any costs to the users. Therefore, the effect of this variable will not affect the decision of the users in the two countries, and the two variables were excluded from the proposed framework (Lian, 2015). One moderating variable, the experience, was retained (Venkatesh et al., 2012), indicated that the higher experience using any system or similar systems could change the effect of some variables on the users' intention to use the system.

On the other hand, the proposed framework extended the UTAUT model by adding new variables. The findings of previous research have Indicated that UTAUT2 did not consider the system characteristics, awareness, or even the trust that could have a major effect on the users' attention of the system, especially in countries like Hungary; therefore, the present study has incorporated five new variables to provide a better understanding about the factors that influence the attention of users to use e-government system.

The system characteristics are constructed that are related to system factors. It affects the user's attention to use a particular system. The system characteristics: namely, system flexibility, system interactivity, and system enjoyment, were added to the framework of the present study as a part of the infrastructure. In addition, system flexibility refers to "the degree to which the users have perceived that they can use the system anywhere and anytime" (Hsia & Tseng, 2008). System interactivity indicates "the interactions among the users themselves, the interactions between the system and users, and the collaboration in the system that results from these interactions." System enjoyment refers to "the degree to which the user believes that using a particular system will be enjoyable." All these factors play a major role in the user's attention to use the e-government (Conci, Pianesi, & Zancanaro, 2009). According to Sahin & Shelley, 2008; Abbad, Morris, & Nahlik, 2009; Conci et al., 2009 and Zhang, Zhao, & Tan, 2008, there are many subcritical success factors in the system acceptance to the system factor.

The original model UTAUT2 addresses the various factors that may affect the user's intention to accept and adopt any new system. However, this model does not address the impact of factors related to trust that may play an essential role in affecting users' acceptance of the system, especially when it comes to services in the public sector because trust in the system is a must for the direction of users to use this system because they will use their data and personal information. As for the current study, the context of the study is the e-government in Hungary, and trust can play either in the system or the government that provides services with an important factor that may affect the users' decision to accept and use the system (Csótó, 2019; Spacek, Csótó, & Nicolae, 2020).

Finally, the current study added another variable, which is (awareness), which is usually the first stage in using any system, the awareness which the knowledge of the importance of the system to the users and knowing the benefits that may accrue to them from using the system, which leads to the adoption of the system at the end (Pavlou & Fygenson, 2006)., and many previous studies confirm this.(van Dijk, Peters, & Ebbers, 2008) divided the process of adopting the system into four main phases, and in the first phase were: knowing the system, encouragement, decision, and finally using, moreover, (Shareef, Kumar, Kumar, & Dwivedi, 2011) indicated that the starting point in the process of adopting any system is to know it and take a complete picture of it. They mentioned that belief in the system is the most important factor affecting the user's decision to adopt the system.

As seen in Figure 2 To make the framework easier has grouped the variables under three basic complex variables:

- Human-E government interaction : All factors related to the human perception of the system (effort expectancy (EE), performance expectancy, influence (SI), habit (H), awareness (AW)).
- Moderating: Experience (EX)
- E-government Infrastructure: All factors related to infrastructure :(facilitating conditions (FC), system flexibility (SF), system Interactivity (SI), system enjoyment (SE).
- Trust: All factors related to trust (trust in the system (TS), trust in government (TG).

METHODOLOGY

Sample size

Determining the sample size for the study is an important factor for analyzing the variables later. By referring to the previous studies, we found that most of the previous studies headed in two directions: the first is (Sapnas & Zeller, 2002), which indicates that only 50 responses are sufficient for the study, on the other hand, the second direction suggested that the required number must be proportional to the number of variables in the study, the rules of thumb range anywhere from 2: 1, 3: 1, 4: 1, 6: 1, 10: 1, 15: 1, or 20: 1 (Hogarty, Hines, Kromrey, Ferron, & Mumford, 2005; Tabachnick, Fidell, & Ullman, 2007). Based on the above, this study adopted the second direction, and accordingly, the suggested sample size for the study is (2 * 53 = 106).

Instrument Design

A preliminary Instrument was designed to meet the research goal. It consisted of (53) items where Human-E government interaction variable (21) items, E-government Infrastructure variable (14) items, trust variable (8) items, Experience variable (5) and finally behaviour intention variable also consisted of (5) items. The study instrument was distributed to 106 participants in Hungary at the University of Debrecen during June- July 2020, and to ensure the study Instrument is valid and reliable, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis tests applied (CFA).

Exploratory Factor Analysis

Before doing an extract for the factors, some tests would be used to assess respondents' data for analyzing the factor. These tests include the correlation matrix, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity.

First, the significant values of the correlation matrix determinant for all factors, as Table 1 shows, are between (0.010 - 0.432) and that consider statistically acceptable at (0.00001) level. Also, this shows no "Multicollinearity," and there is no linear overlap between columns or between rows within the matrix, and there is no high or unrealistic correlation between the variables.

However, there must be a minimum correlation between variables (items), and a singular matrix "relationship-free" must not be, and Bartlett's Test verifies these two conditions, And the values of Bartlett's Test "$\chi 2$" for all factors range from (87.39 to 467.78) and P-value <0.05 for all factors.

Finally, to measure Sampling, Adequacy (KMO-test) was used, and all factors' values were greater than (0.50). From the above, we conclude that all the requirements for checking the factorability of the correlation matrix have been met (Yong & Pearce, 2013).

Method of extracted the factors

Many methods work to extract factors, and by referring to previous studies, it was found that the most used is Principal components analysis (PCA) which is adopted by this study. In this step, this statistical tool is based on simplifying the factors, which is a process of gathering factors that showed a high item load in one factor and the other factors that showed less item load on the remaining factor solutions (Williams, Onsman, & Brown, 2012).

The main aim of data extraction to reduce some of the items into factors. To produce scale one-dimensionality and simplify the factor solutions, there are many ways to do that (Williams et al., 2012).

(Hair, Black, Babin, Anderson, & Tatham, 2006) indicate that most researchers and analysts use multiple criteria. The existing extraction approaches include many ways as the cumulative percent of variance extracted, Scree test, and Kaiser's criteria (Eigenvalue> 1 rule) (Williams et al., 2012).

In this research, the researcher used the Kaiser Criterion, Eigenvalues is a critical criterion to determine the factors. If Eigenvalue is more than one, then that factor could be considered, but if Eigenvalue is less than one, the factor should not consider (Hair et al., 2006).

Human-E government interaction

From Table 2, it is obvious that Human-E government interaction scale consists of four factors depend on Eigenvalues are greater than one "Kaiser's criteria (Eigenvalue > 1 rule)" and the cumulative percent of variance extracted > 0.50 for four factors together, and the four factors are:

- The first factor has Initial Eigenvalues (3.643) with percent of variance extraction (28.03%) and after rotation became (20.39%).
- The second factor has Initial Eigenvalues (1.9405) with a percent of variance extraction (14.92%) after rotation is (14.77%).
- The third factor has Initial Eigenvalues (1.349) with percent of variance extraction (10.38%) after rotation is (14.64%)
- The fourth factor has Initial Eigenvalues (1.301) with percent of variance extraction (10.01%) after rotation is (13.53%)

The cumulative percent of variance extracted from four factors is (63.33%), and this value is accepted according to (Hair et al., 2006).

E-government Infrastructure

Table 3 shows that E-government Infrastructure consists of three factors based on (Kaiser's criteria) Eigenvalues and the factors as next:

- The first factor shows that it has Eigenvalues (4.256) and percent of variance extraction (38.69%) and after rotation became (23.12%).
- In the second factor, Eigenvalues were (1.477) and percent of variance extraction (13.43%) and after rotation (22.85%).
- In the third factor, Eigenvalues were (1.078) and the percent of variance extraction (9.80%) and after rotation (15.95%).

The cumulative percent of variance extracted for the four factors is (61.92%), and this value is acceptable (Hair et al., 2006).

Trust

In Table 4 trust shows that it consists of two factors, and the factors are:

- In the first factor, it shows that Eigenvalues were (2.976) and percent of variance extraction (49.60%) and after rotation became (34.11%).
- In the second factor, Eigenvalues were (1.070) and the percent of variance extraction were (17.83%) and after rotation is (33.31%)

The cumulative percent of variance extracted from four factors is (67.42%), and this value is acceptable (Hair et al., 2006).

Experience

From Table 5 it can be noticed that Experience consists of one factor, and the factor was (2.053) with percent of variance extraction (68.42%). Extraction Sums of Squared Loadings from one factor is (68.42%), and this value is acceptable (Hair et al., 2006).

Behavior Intention
Table 6 shows that Behaviour Intention consists of one factor based on (Kaiser's criteria). Eigenvalues in the factor were (2.530) and the percent of variance extraction (63.25%). The sum of the Extraction of Squared Loadings from one factor is (63.25%), and this is acceptable (Hair et al., 2006).

Confirmatory Factor Analysis

Human-E government interaction
Standardized Loadings for 4-Factor Confirmatory Model of Human-E government interaction, Figure 3 shows that the covariance values between externalizing and internalizing latent variables are 21- 61, and these values less than 0.70 and acceptable. Moreover, Figure 3 shows that the values of correlation between externalizing and internalizing latent variables are 0.59 -0.90, and these values greater than 0.50 and acceptable. Finally, the results of the path analysis of Human-E government interaction match with EFA.

E-government Infrastructure
Standardized Loadings for 3-Factor Confirmatory Model of E-government Infrastructure Figure 4 shows that the covariance values between externalizing and internalizing latent variables are 53 - 64, and these values less than 0.70 and acceptable. Moreover, the figure showed that the correlation between externalizing and internalizing latent variables is .54 to .79, and these values more than 0.50, and that is acceptable values. Finally, the results of path analysis of E-government Infrastructure match with EFA.

Trust
Standardized Loadings for 2-Factor Confirmatory Model of Trust, Figure 5 shows that the covariance value between externalizing and internalizing latent variable is 58, and this value less than 0.70, and that is an acceptable value. Moreover, the figure showed that the correlation between externalizing and internalizing latent variables is .61 to .97, and these values are more than 0.50, and it is acceptable values. Finally, the results of the path analysis of Trust match with EFA.

Experience
As seen in Figure 6 the values of correlation between externalizing and internalizing latent variables are .62 - .91, and these values more than 0.40, and it is acceptable values. Finally, the figure showed that the results of the path analysis of Experience match with EFA.

Behavior Intention
Figure 7 shows that the values of correlation between externalizing and internalizing latent variables are .62 - .91, and these values more than 0.50, and it is acceptable values. Finally, the results of the path analysis of Behavior Intention match with EFA.

Discriminant and Convergent Validity
The current study used the CFA technique to make and validate the measurement for the unobservable or latent variables. The CFA was created according to the theoretical search and understanding that determined the covariation and variation within the study's variables, including indicators, latent variables, unobserved variables, and measurement errors (DeCoster, 1998). It identified if factors and loadings of the measured variables fit what was expected according to pre-established theory. Therefore, CFA tried to clarify the variation and covariation in a group of observed variables in terms of a set of theoretical and unobserved factors (Suhr, 2006).
Table 7 shows that the (CR) of all the latent constructs is more than 0.70 and the average variance extracted (AVE) more than 0.50, and that confirms that the constructs have very good reliability and convergent validity (MacKenzie, Podsakoff, & Podsakoff, 2011; Shaffer, DeGeest, & Li, 2016).

Reliability
In Table 8 the reliability results for the dimensions representing the Cronbach alpha technique for internal consistency. The values came between (0.701-0.861), which is a high result and confirms high reliability. The values to be accepted and reliable must be greater than 0.60(> 0.60), which is acceptable reliability, and in the last table, most of the values were > 0.70, which means the current values confirm high reliability.
Also, Table 8 indicates that multivariate normality assumption is met by values of Skewness and Kurtosis, and these values within acceptable range ±1 for Skewness and ±2.5 Kurtosis (Hair et al., 2006). As all measurement models were validated via CFA with high reliability, chapter 4 will discuss the covariance structure model to perform the hypotheses testing.

CONCLUSIONS

The world and the countries, in general, are moving to change the form of government and public sector management from the traditional form that relies on providing services in-person to use the technology and employ it to provide various government services and communicate with citizens and companies completely electronically.
Most of the countries in the world began to implement e-government and move from the traditional form of service provision to the

electronic form since the beginning of the 21st century. At the beginning of 2020, the importance of e-government has increased dramatically due to the spread of the Coronavirus pandemic in the world and the urgent need to reduce any personal contact between people.

Despite these major changes, e-government programs in many countries failed for many reasons, and the most important reason was the lack of acceptance for this system by the stockholders, so the rate of acceptance and use was one of the challenges troubling officials in the public sector. Researchers have developed many theories and models to explore the most important factors that affect the acceptance and adoption of new technological systems such as e-government. However, these theories were often tested in developed countries and to a limited extent and less in Hungary. One of the most important and best models is the UTAUT2 model, which brings together many previous models and explains the acceptance of technology greatly compared to previous models. However, this model is still tested in different environments and does not cover all the factors that may affect the users' decision to adopt a new system, especially in the public sector.

In this research, the model was expanded with additional variables related to trust, system characteristics, and awareness that were not present in the original model and may be influential in Hungary to study and explore the most important factors that affect the users' decision to adopt the e-government system.

After the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis tests (CFA) to explore and extract the factors, the results showed that the system characteristics merged the three factors into two factors which are System Interactivity and System Flexibility, and excluded the third one - System Enjoyment. Moreover, Habit was also excluded from the original model.

This study represents a framework that can apply in the next phase of this study on the larger sample to get a better understanding of the factors that affect the acceptance of e-government in Hungary; in addition, this research can be as a reference for future researchers on the factors affecting the level of citizens' acceptance of e-government services in Hungary and other smiler contexts, and future researchers can expand the current framework to get a better understanding of the factors especially the factors related to trust such as (privacy, security, and transparency).

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Table 1
Hungarian respondent's correlation matrix determinants for factors, Own data

Factors	Test name	Value	Criteria	Judgment
Human-E government interaction	Determinant	0.010	Greater than 0.00001	**Accepted***
	Bartlett's test	0.000	Less than 0.05	**Accepted***
	(KMO-test)	0.739	Greater than 0.50	**Accepted***
E-government Infrastructure	Determinant	0.019	Greater than 0.00001	**Accepted***
	Bartlett's test	0.000	Less than 0.05	**Accepted***
	(KMO-test)	0.806	Greater than 0.50	**Accepted***
Trust	Determinant	0.159	Greater than 0.00001	**Accepted***
	Bartlett's test	0.000	Less than 0.05	**Accepted***
	(KMO-test)	0.775	Greater than 0.5	**Accepted***
Experience	Determinant	0.432	Greater than 0.00001	**Accepted***
	Bartlett's test	0.000	Less than 0.05	**Accepted***
	(KMO-test)	0.659	Greater than 0.5	**Accepted***
Behaviour Intention	Determinant	0.253	Greater than 0.00001	**Accepted***
	Bartlett's test	0.000	Less than 0.05	**Accepted***
	(KMO-test)	0.757	Greater than 0.50	**Accepted***

Table 2
Total Variance Explained by Human-E government interaction, Own data

	Initial Eigenvalues			**Rotation Sums of Squared Loadings**		
Component	Eigenvalue	% Variance	% Cumulative	Eigenvalue	% Variance	% Cumulative
1	3.643	28.025	28.025	2.650	20.386	20.386
2	1.940	14.920	42.945	1.920	14.768	35.154
3	1.349	10.376	53.321	1.904	14.643	49.798
4	1.301	10.006	63.327	1.759	13.529	63.327
5	.767	5.899	69.226			

Table 3
Total Variance Explained by E-government Infrastructure, *Own data*

	Initial Eigenvalues			**Rotation Sums of Squared Loadings**		
Component	Eigenvalue	% of Variance	%Cumulative	Eigenvalue	% of Variance	% Cumulative
1	4.256	38.694	38.694	2.544	23.123	23.123
2	1.477	13.430	52.124	2.513	22.845	45.968
3	1.078	9.798	61.922	1.755	15.953	61.922
4	.966	8.784	70.705			

Table 4
Total Variance Explained by the trust, Own data

	Initial Eigenvalues			**Rotation Sums of Squared Loadings**		
Component	Eigenvalue	% of Variance	%Cumulative	Eigenvalue	% of Variance	% Cumulative
1	2.976	49.597	49.597	2.047	34.112	34.112
2	1.070	17.825	67.422	1.999	33.310	67.422

3	0.696	11.592	79.013			
4	0.497	8.285	87.299			
5	0.407	6.790	94.088			

Table 5
Total Variance Explained by Experience, Own data

Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Eigenvalue	% of Variance	% Cumulative	Eigenvalue	% of Variance	% Cumulative
1	2.053	68.418	68.418	2.053	68.418	68.418
2	0.592	19.718	88.136			
3	0.356	11.864	100.000			

Table 6
Total Variance Explained by Behaviour Intention, Own data

Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Eigenvalue	% of Variance	% Cumulative	Eigenvalue	% of Variance	% Cumulative
1	2.530	63.254	63.254	2.530	63.254	63.254
2	0.700	17.494	80.749			
3	0.458	11.446	92.194			

Table 7
CFA discriminant and convergent validity

Variables	**CR**	**AVE**
Awariness OS	0.786	0.551
Performance expectancy	0.912	0.724
Effort expectancy	0.840	0.636
Social influence	0.857	0.668
System Interactivity	0.916	0.688
Facilitating conditions	0.901	0.696
System Flexibility	0.869	0.690
Trust in system	0.810	0.681
Trust in government	0.757	0.628
Experience	0.764	0.723
Behavior Intention	0.793	0.823

Note: Composite Reliability (CR)> 0.70, Average Variance Extracted (AVE) >0.50, (Catalán, 2019; MacKenzie et al., 2011; Shaffer et al., 2016)

Table 8
Reliability of instrument of E-government acceptance using Cronbach alpha method for internal consistency

Hungarian sample					
Main factors	**Dimensions**	**No. of items**	**Cronbach alpha**	**Skewness**	**Kurtosis**
Human-E government interaction	Performance expectancy	4	0.818	-0.402	1.095
	Effort expectancy	3	0.710	-0.687	0.834
	Awareness of the system	3	0.751	-0.435	-0.116
	Social influence	3	0.721	-0.060	0.271
E-government Infrastructure	Facilitating conditions	3	0.791	-0.276	0.161
	System Interactivity	5	0.762	-0.317	0.601
	System Flexibility	3	0.701	-0.360	0.749
Trust	Trust in system	3	0.753	-0.230	0.340
	Trust in government	3	0.736	-0.217	0.015
Experience		3	0.769	-0.045	-0.063
Behaviour Intention		4	0.800	-0.159	0.194

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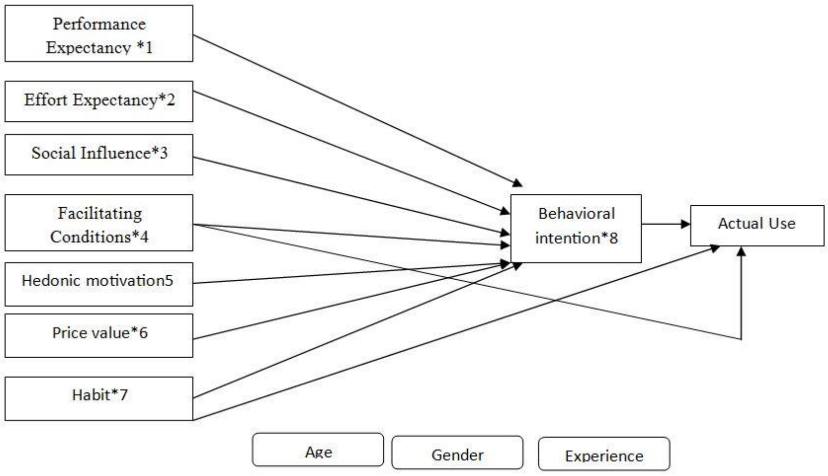

Figure 1
Unified Theory of Acceptance and Use of Technology (UTAUT2)
Source: (Venkatesh et al., 2012).

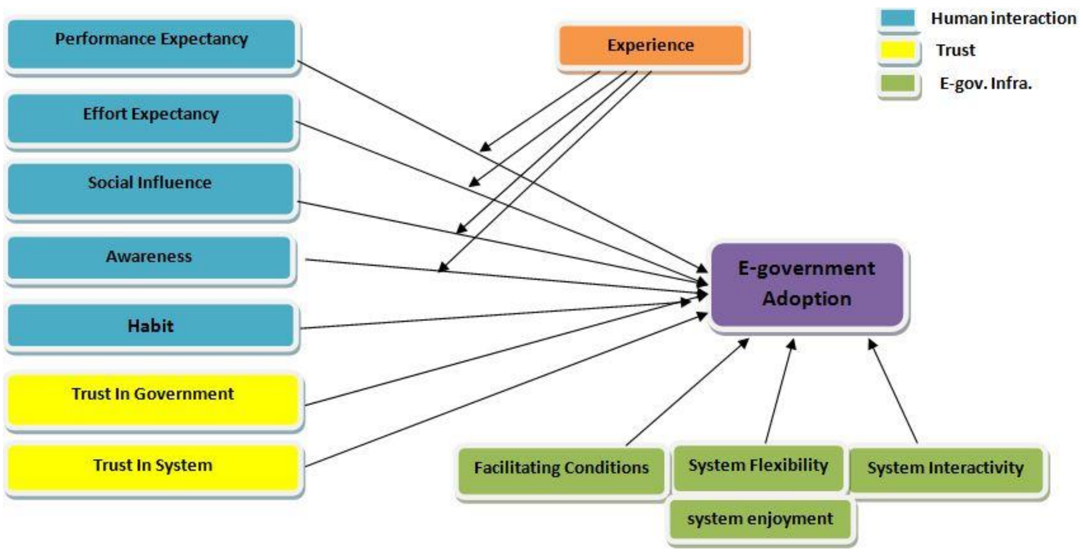

Figure 2
Proposed Research Model Unified
Source: own creation

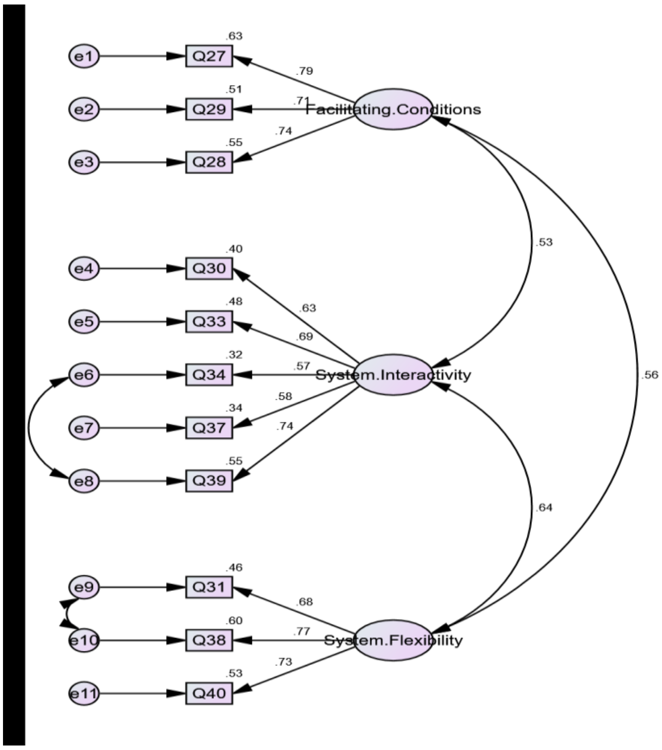

Figure 3
Path analysis for Human-E government interaction
Source: own creation

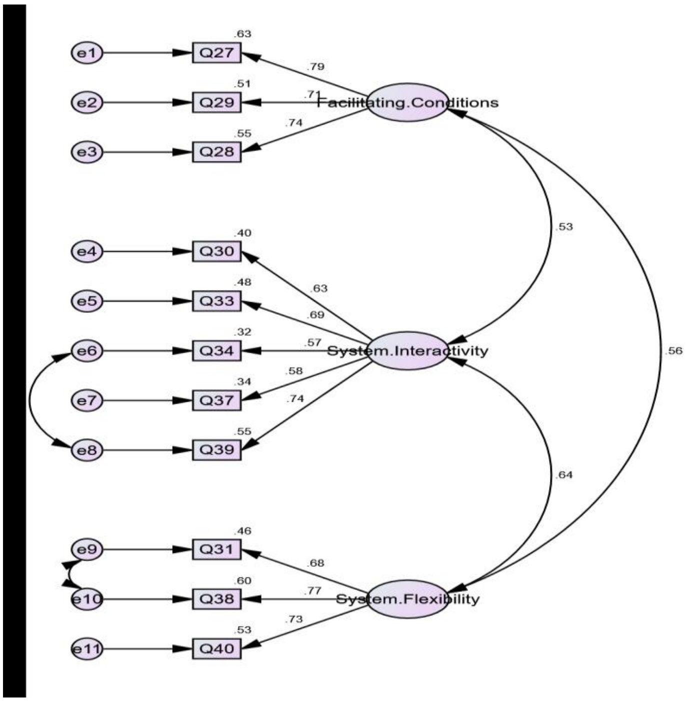

Figure 4
Path analysis for E-government Infrastructure
Source: own creation

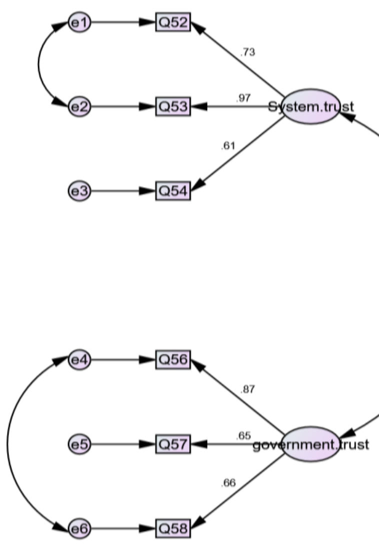

Figure 5
Path analysis for Trust
Source: own creation

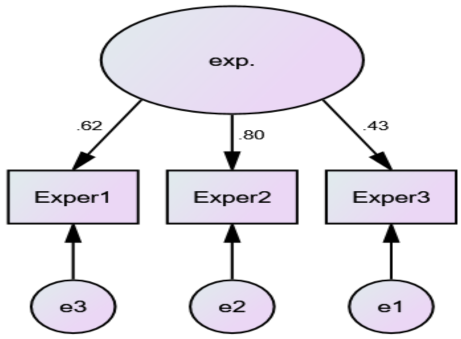

Figure 6
Path analysis for Experience
Source: own creation

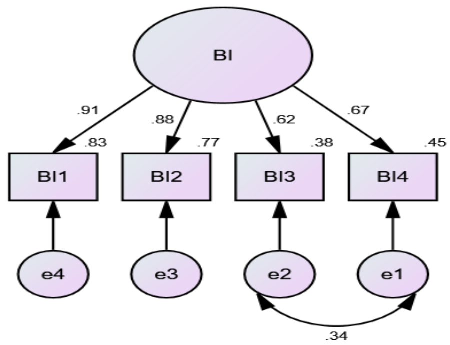

Figure 7
Path analysis for Behavior Intention
Source: own creation