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Factors Influencing
E-commerce Adoption Behavior of
Internet Users From Romania

THESIS ABSTRACT

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Keywords

Internet; online consumer behavior; technology acceptance; e-commerce; e-commerce adoption; Internet users; Romania; TAM; factors influencing e-commerce adoption.

Introduction

It's a common reality not only among friends but also among marketing professionals that the marketing environment has changed completely in the last 30 years. This process affected almost every branch of the marketing establishment from strategic planning and market research to everyday tactical implementation. If we take a look at the way marketing professionals conducted daily work in the past and compare to the way today's marketing professionals manage their everyday tasks, then we can easily find out that the most important change has occurred in today's marketing.

Technology, especially Internet technology changed how marketing functions today (Kotler & Keller, 2009). Through the process of automation and by the possibility to gain competitive advantage, companies are directly involved into investing considerable amounts of resources in the adoption of new innovations, technology and R&D[1] activities (Porter, 2001).

Theory tells us that in order for a person to accept a technology, it has to go through different phases (Slyke, Belanger, & Comunale, 2004). For example, there are Internet users who are not e-commerce users, as there are mobile phone users who are not smartphone users. The typical ratio of e-commerce users compared to Internet users in Europe is around 50% which means that from 100 Internet users 50 are e-commerce users, as well (Eurostat, 2014). From all EU member countries this metric in Romania is the second lowest, where there are only 10 e-commerce adopters from 100 Internet users (Eurostat, 2014)[2]. Empirically no one knows the causes of this low rate of e-commerce adoption and no one conducted a thorough academic research on this topic. From this point of view, our topic can be considered new and original in the Romanian academic world.

From this problem emerges the primary objective of this research: What are the factors that have an influence on e-commerce adoption behavior of Romanian Internet users?

In our endeavor to build our case and conduct a fully reliable empirical research, we propose the following structure for the thesis:

In *Chapter 1*, entitled "The Emergence of Internet Technology and Online Consumer Behavior", we aim to present the emergence of Internet technology and its widespread effects on economic and societal factors. After presenting the macro medium, we focus on the emergence of online consumer behavior. Since technology acceptance is a form of behavior along with all of its psychological, sociological and anthropological characteristics, we consider it important to collect and synthesize all of its aspects related to online consumer behavior.

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[1] Research and Development (author)
[2] In the first phase of this doctoral research (in 2011) these metrics were even lower.

In *Chapter 2*, entitled "The Role and Importance of E-commerce on a Global and Local Scale", we aim to present the e-commerce phenomenon from an industry point of view. We considered important to take this industry context into consideration, because otherwise we wouldn't be able to have a view *en ensemble* on all possible factors affecting e-commerce adoption. By presenting industry statistics and future trends, we can see the problem of e-commerce adoption from a better angle.

In *Chapter* 3, entitled "Theories regarding Internet Technology Acceptance and Their Role in Understanding the Process of E-commerce Adoption", we will present the most important behavior change theories in the context of our topic. Since technology acceptance (*i.e.* e-commerce adoption) needs change of behavior from the part of the consumer, it is important for us to present these theories along with all of their constructs. Theories such as the Theory of Reasoned Action, the Theory of Planned Behavior, the Technology Acceptance Model and the Theory of Diffusion of Innovations are those theoretical models which can be relevant from our perspective.

In *Chapter 4*, entitled "Factors Influencing E-commerce Adoption Behavior in the Case of Romanian Internet Users", we will present the phases, the methodology of the qualitative and quantitative part of our research. After this we will also present the phase of statistical analysis, validity and reliability testing of the constructs, and finally hypothesis testing between the constructs and the presentation of the findings.

In *Chapter 5*, entitled "Conclusions, Implications, Limits and Future Research Directions", we discuss our findings and draw conclusions regarding the results. Finally we reflect upon the theoretical and managerial implications of the results, the limitations of the research, and we formulate future research directions.

CHAPTER 1. – THE EMERGENCE OF INTERNET TECHNOLOGY AND ONLINE CONSUMER BEHAVIOR

1.1. Internet Technology and Its Effect on the Economic Landscape

The major changes of the last decades have resulted in the appearance of a new society, namely the "information society", which is also known as the *digital age*, with flexibility, speed and technology as its main hallmarks (Racolta-Paina & Luca, 2010). The processes related to this phenomenon had a triggering effect on various parts of the society we live in. Some called this the Internet Revolution (Drucker, 2002). The central concept regarding the emergence and the consolidation of the digital age, is the *Internet*, which has unquestionably revolutionized the computer and communications world as nothing before. (ISOC, 2013).

ISOC (2013) states that the Internet *"is a global system, that consists of millions of private, public, academic, business, corporate and government controlled networks, of local and global*

interconnected computer networks which uses the standard Internet protocol (TCP/IP) with a purpose to serve billions of users computer users around the world which are linked by electronic, wireless and optical networking technologies" (ISOC, 2013 website).

The Internet has various and deep effects on society, economy, and comemrce, as well.
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1.2. *The Emergence of Online Consumer Behavior: a Retrospective of the Main Theories*

Consumer behavior research aims to examine the behavior particular to the consumer. By this concept sometimes we also mean the research of buyer behavior.

Several main schools of thought provided paradigms and theories in order to explain consumer/buyer behavior. We mentioned and detailed in the thesis some of the most important theories, such as: the consumer as "Economic man" or *Homo Economicus,* the psychoanalytic approach, behaviorism, cognitive approach, humanistic models of consumer behavior (such as the theory of trying, the model of goal directed behavior). We can also part the cognitive models to analytical and prescriptive models.

As we try to model online consumer behavior, we have to define some concepts. By online consumer (or buyer) behavior we understand the behavior of consumers (buyers) in an online environment, such as the Internet (Constantinides, 2004). From our perspective online consumer behavior is important since technology acceptance (e-commerce adoption) is also a form of consumer/buyer behavior, because online shoppers are both (potential) shoppers and Internet users at the same time (Koufaris, 2002). As we adopt the view that the acceptance of technology is a form of behavior (as prescriptive consumer behavior theories are frequently used to model technology acceptance –for example Chuttur, 2009; Sheppard, Hartwick, & Warshaw, 1988; Yousafzai, Foxall, & Pallister, 2007a, 2007b), we can also adhere to the general view that the more advanced is a user's e-commerce adoption, the more he/she would partake in online shopping activities.

In this chapter we also present the possible factors affecting the online consumer's behavior in general. Regarding this subject, the consumer's buying process is composed of learning, information-processing and decision-making activity divided in several consequent steps, such as (1) problem identification, (2) information search, (3) alternatives evaluation, (4) purchasing decision, (5) post-purchase behavior (Constantinides, 2004; Kotler & Keller, 2009; Turban, King, Lee, Liang, & Turban, 2012). This is also a cognitivist approach which ultimately can be managed into three categories, namely *input, decision processing*, and *output.* Based on these characteristics we present the integrative framework of online consumer behavior by Cheung et al. (2005) who elaborated a framework synthesizing the antecedents of online consumer behavior, more specifically the factors influencing the three main building blocks if online consumer purchase. We can part these factors into five areas: *individual/consumer characteristics* (such as attitude (Kacen, Hess, & Chiang, 2013;

Toshniwal, 2010), flow (Koufaris, 2002), motivation (Svatošová, 2013), perceived risk (Featherman & Pavlou, 2003; Pavlou, 2003), personal innovativeness (Goldsmith, 2002; Limayem & Khalifa, 2000), satisfaction (Kim, Ferrin, & Rao, 2008), trust (Salam, Iyer, Palvia, & Singh, 2005; Urban, 2009), and demographics), *environmental influences* (such as uncertainty, competition, and concentration, legal structure, trade restrictions, and culture), *product/service characteristics* (such as knowledge about the product, product type, frequency of buying, tangibility of products, and product quality), *medium characteristics* (such as perceived ease of use, quality, security, and reliability), and *online merchant and intermediary characteristics* (such as privacy, security, control, service quality).

Modeling online consumer behavior is a complex task since there are several theoretical viewpoints regarding the subject. In this chapter we proposed to enumerate and present the main schools of thought which can help us in formulating the bases of our research. We emphasized on online consumer behavior models and we presented the most important frameworks from among them. In the following chapter we will link online consumer behavior theory with e-commerce by defining it and presenting its most important topics, such as its role, its trends and industry statistics.

CHAPTER 2 – THE ROLE AND IMPORTANCE OF E-COMMERCE ON A GLOBAL AND LOCAL SCALE

2.1. The History, Definitions and Role of E-commerce

Electronic commerce (or e-commerce) as a concept emerged already since 1965 when consumers were able to withdraw money from Automatic Teller Machines (ATMs) and make purchases using point of sale terminals and credit cards (Molla & Licker, 2001). This process of innovations in the banking industry was followed by the implementation of systems that enabled organizations to exchange information and conduct business with the help of electronic channels. Then, these above mentioned systems were referred to as "inter-organizational systems" (Senn, 2000).

The e-commerce landscape changed completely starting from the 1990's when the implementation of Internet-based technologies became widespread.

OECD in 2001, cited by Savrul & Kılıç, (2011), defines e-commerce the following way: *e-commerce* is the purchase or sale of goods between the businesses, households, individuals, governments and other public and private organizations over computer networks.

If we examine academic definitions we can easily observe that their approach is narrower and mostly focused on applications and business supports. Zwass (1996), for instance, defines e-commerce as "the sharing of business information, maintaining business relationships and conducting business transactions by means of telecommunications networks".

In the thesis we also present e-commerce as having a great role in escaping recession. In this respect, e-commerce might be regarded as a possibly efficient tool in order to eliminate the negative effects of economic crises (Zuleeg, 2011).

2.2. E-commerce on a Global Scale: Data and Trends

E-commerce volume is growing rapidly on a global scale, but as we present, the estimates were far higher than realized. By volume B2C commerce (retail) is considered to have a minor share from the total of the global trade volume. If we consider the data provided by the WTO (2013) the sum of global trade volume of merchandises was around 17.93 trillion US dollars in 2012. Compared to this the share of the global online (B2B and B2C) trade volume was around 1 trillion US dollars according to eMarketer (Fredricksen, 2013). Hence, around 5% of the total trade volume can be considered online trade. Within the EU the share of online retail averaged 10% of the total of retail in 2012 according to EMOTA[3], and its contribution to GDP growth was of 21% (Czech, 2013).

For the following years there are some relevant trends which will definitely have an impact on the e-commerce milieu and ecosystem.

2.3. E-commerce on a Regional and Local Scale

According to E-commerce-Europe (2013a) the European B2C e-commerce is developing rapidly. In 2010 Europe surpassed the USA, which was the biggest market in the world until then. In 2012 European B2C e-commerce, without financial services, presented a 19% growth and reached 311.6 billion euros compared to previous year. The EU with 28 member states reached 276.5 billion euros, or 88.7% of total European online sales. This means a growth of 18.1% (E-commerce-Europe, 2013b). In this subchapter we present in a detailed fashion relevant data regarding all the European countries in terms of their e-commerce statistics.

There are the so called *trend-setter* countries, mostly Western and Northern European states. Central and Southern European countries constitute the average compared to the EU28 average (47%). Mostly the states of Eastern and South-Eastern Europe are the laggards in e-commerce adoption. We would like to emphasize that Internet users from Romania, Bulgaria and Turkey have the lowest e-commerce usage rates for ordering goods and services. In the case of Romania, however, there are other studies which show a more significant part of the Internet society being involved into online shopping. A 2013 study by Daedalus Millward Brown, a market research company measured that 27% of Romanian Internet users were also online shoppers and 70% of them conducts online research before shopping (Barza, 2013). The report also concluded that the percentage of urban online shoppers was rapidly catching to other Central European numbers, as the majority (84%) of Romanian online shoppers are urban residents (Barza, 2013).

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[3] European Multi-channel and Online Trade Association

At the end of 2013 a number of 10 million Romanians had Internet access and 8% of them (Eurostat, 2014), or according to Daedalus Millward Brown, 27% of them (Barza, 2013) shopped online.

The typical online shopper is between 25 and 35 years old, but 15% of online shoppers were part of the 45-55 age group. This latter development is a 10% growth compared to the previous year which means that online shopping is becoming a more widespread, a more mainstream way of purchasing goods and services (Radu, 2014).

Another useful group of information comes from a research conducted by Radu, Taloi, & Manolea (2011). They conducted an online questionnaire based research on 5764 Romanian Internet users. However the sample did not meet the criteria of normal distribution, but provided interesting results regarding the causes of decision whether to buy or not to buy from web shops.

We can see that the most important three causes of not buying from a web shops are doubt regarding the reality of presented products, the low level of trustworthiness, and the lack of "face-to-face" product testing.

CHAPTER 3 – THEORIES REGARDING INTERNET TECHNOLOGY ACCEPTANCE AND THEIR ROLE IN UNDSERSTANDING THE PROCESS OF E-COMMERCE ADOPTION

In this Chapter we present a literature review regarding technology acceptance and especially e-commerce adoption. We directry utilize the theoretical basis of online consumer behavior presented in Chapter 1, and information regarding e-commerce presented in Chapter 2.

3.1. Consumers as Shoppers and as Internet Users: Technology Acceptance as a Form of Consumer Behavior

Online consumers are both (potential) shoppers and Internet users at the same time (Koufaris, 2002). Because of these argument we cannot lay down the bases of our research solely on consumer behavior theory, but we need an interdisciplinary approach provided by technology acceptance research (in Information Systems), and diffusion of adoptions research (in engineering and sociology).

3.2. Theories of Technology Acceptance and Innovation Adoption

In this subchapter we present in detail the models which explain technology acceptance, their roots in the cognitivist logic, and their role in research regarding technology acceptance, and especially e-commerce adoption.

The 60's and 70's of the last century were the most flourishing years for the cognitivist paradigm in psychology and behavioral sciences. Several experiments were conducted and the scientific

methodology of these sciences was born and consolidated (Smith & Mackie, 2004). The cognitivist paradigm had a basic tenet, namely that between the Stimulus and the Reaction there is also an Organism and this Organism always acts in a logical way.

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┌─────────────────────┐    ┌─────────────────────┐    ┌─────────────────────┐
│  System Features and│    │  User's Motivation to│   │  Actual System Use  │
│     Capabilities    │ →  │     Use System      │ →  │                     │
│      STIMULUS       │    │      ORGANISM       │    │      RESPONSE       │
└─────────────────────┘    └─────────────────────┘    └─────────────────────┘
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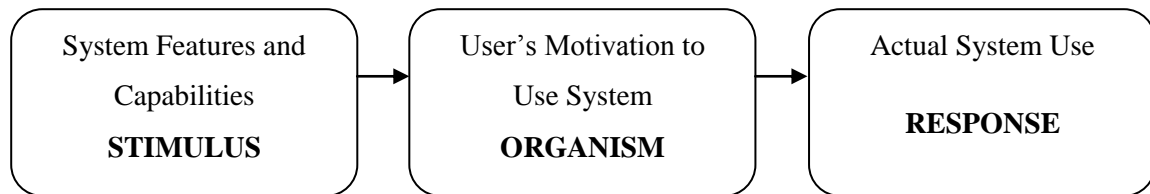
Figure – *The simplified S-O-R conceptual model for technology acceptance -*
Source: (Chuttur, 2009; Davis, 1989)

Such theory is the so called *theory of diffusion and adoption of innovations* (DAI). According to the original model consumers can be categorized by their behavior into two different groups: *innovators* and *imitators*. Innovators are those buyers who are not influenced by the number of other users when buying a new product (Nyírő, 2011).

Since e-commerce technology can be viewed as an innovation, then e-commerce adoption also can be viewed in the context of innovation diffusion and adoption, as in the case of other technologies like video and mobile phones (Nyírő, 2011).This decisional process consists of five steps: knowledge, persuasion, decision, implementation., and confirmation (Rogers, 1995). Diffusion of innovations manifests itself in different ways in various cultures and fields and it is subject to the type of adopters and innovation-decision process (Rogers, 1962, cited by Nyírő 2011).

Another model, a newer one, is the *lazy user model*, which expects that a solution is selected from a set of available solutions based on the amount of effort the solutions require from the user – the user is supposed to select the solution that carries the least effort. The model is applicable to a number of different types of situations, but it can be said to be closely related to technology acceptance models (Collan & Tetard, 2009).

Moving on to the more widespread models, the first such model we present, is the *theory of reasoned action*[4] which is for predicting behavioral intention, spanning predictions of attitude and predictions of behavior (Fishbein & Ajzen, 1975). The separation of behavioral intention from behavior allows for explanation of limiting factors on attitudinal influence (Fishbein & Ajzen, 1975).

The components of the *theory of reasoned action* are the following three constructs: Behavioral Intention (*BI*[5]), Attitude (*A*), and Subjective Norm (*SN*) (Fishbein & Ajzen, 1975). Behavioral intention (or BI) measures one's relative strength of intention to perform a certain behavior (Fishbein & Ajzen, 1975). Attitude (A) means the beliefs about the consequences of performing the behavior multiplied by the person's evaluation of these consequences (Fishbein & Ajzen, 1975). Subjective norm (SN) can be defined as a combination of one's perceived expectations obtained from

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[4] Abbreviated TRA (the author)
[5]We use these abbreviations of constructs based on commonly accepted literature guidelines

relevant individuals/groups, and one's intentions to comply with these expectations (Bray, 2008; Fishbein & Ajzen, 1975).

The second grand theory is the *theory of planned behavior*, which states that attitude toward behavior, perceived behavioral control, and subjective norms, are shaping together the behavioral intentions and behaviors of an individual (Ajzen, 1991). Because of its improved predictive power and of its good empirical background the TPB is considered to be one of the most predictive persuasion theories (Herrero Crespo & Rodriguez del Bosque, 2010). However, one argument against the Theory of Reasoned Action was regarding its lack of explanation given to people's non-volitional behavior. Contrary to that, the *theory of planned behavior* turned successful in this endeavor (Ajzen, 2002; Sheppard et al., 1988).

3.3. The Technology Acceptance Model

The Technology Acceptance Model is one of the most influential extensions of the *theory of reasoned action* which was proposed by Fishbein & Ajzen (1975). Originally it was proposed by Fred Davis in his PhD thesis (Davis, 1989). Davis defined the three factors that affect the user's motivation as the following: (1) *perceived ease of use*, (2) p*erceived usefulness*, and (3) a*ttitude toward using the system* (Chuttur, 2009; Davis, 1989). *Perceived usefulness* (PU) was defined by Davis (1989) as *"the degree to which a person believes that using a particular system would enhance his or her job performance"* (Davis, 1989, p. 320). On the other hand, p*erceived ease-of-use* (PEOU) was defined by Davis as *"the degree to which a person believes that using a particular system would be free from effort"* (Davis, 1989, p. 320). Since its first appearance, the original TAM has been modified in many ways since its introduction by Davis (1989).

3.4. E-commerce Adoption as Technology Acceptance

For a research which sets as its goal the inventory of factors which can influence e-commerce adoption, we chose the *technology acceptance model* for the following reasons:

(a) It is the most used framework for the explanation of e-commerce adoption (Davis, 1989; Venkatesh & Bala, 2008; Venkatesh et al., 2003). (b) It has a highly technology driven approach and it was mainly used by Information Systems researchers (King & He, 2006; P. Pavlou, 2003; Yousafzai et al., 2007a), but because of this, TAM can be successfully implemented for the purposes of modeling e-commerce adoption. (c) TAM was also continuously applied to marketing topics, such as consumer behavior (Cheung, Zhu, Kwong, Chan, & Limayem, 2003; Laroche, 2009, 2010), marketing orientation (Shaltoni & West, 2010), online shopping adoption (Hsiao & Yang, 2011; King & He, 2006; Turban et al., 2012; Yousafzai et al., 2007a) as well. This helps us in building the link further between Information Systems Research and Marketing, on one hand, and on the other hand, to contribute to the marketing literature in an interdisciplinary way.

It has been found that the predictive ability of TAM grows with the extension of the core model (consisted of Perceived Ease of Use, Perceived Usefulness, and Behavioral Intention) (Moital, 2006). It is also a fact that there were several attempts to extend and to apply the TAM to different circumstances. In our case, the explanation of e-commerce adoption can profit from these numerous attempts.

When using the *technology acceptance model*, the literature measures the following factors which are influencing technology acceptance (e-commerce adoption):

1) Prior factors included those factors which acted as precursors for the acceptance of a given technology (product perception, shopping experience, information access, situational involvement, prior usage or experience, self-efficacy, and technology anxiety); (2) *Factors suggested from other theories* incorporated those variables which were part of other theoretical settings (such as TRA, TPB, and DAI), but some researches in the TAM literature used these in connection with the TAM (subjective norm, expectation, perceived behavioral control, risk, and trust); (3) *Contextual factors* that offered a context for the researches and acted as moderator/control variables (demographic variables, and culture); and (4) *Consequent variables* meaning those variables that contain the parameters of the consequences of a given technology's acceptance (*actual usage*). The overwhelming majority of the external variables that can be found in the literature can be put in one of these four categories. We used several of these above presented external factors in our conceptual model which is presented in Chapter 4.

CHAPTER 4 – FACTORS INFLUENCING E-COMMERCE ADOPTION BEHAVIOR IN THE CASE OF ROMANIAN INTERNET USERS

4.1. Problem Definition, Methodology and Exploratory Research

By taking these into consideration, our main *research problem* in this thesis is the following: *E-commerce adoption process among Romanian Internet users is affected by several factors, but there has been no empirical research conducted to assess their real influence and relevance.*

Based on above mentioned arguments and the literature review presented in the first three chapters, we layed down our research questions which are the following:

1. Which are the relevant factors affecting the adoption of e-commerce by Internet users in the context of Romanian Internet user behavior?

2. Which are the components of a more adequate model of e-commerce adoption, than the existing ones?

In the case of the first research question, our aim was to test factors already tested in the literature, but this time in a new context (in the context of e-commerce adoption as a specific form of technology acceptance, and in a geographical context, namely in Romania).

In the case of our second research question, our aim was to test the connections between factors influencing e-commerce adoption and using the outcome, to propose a more suitable model explaining the e-commerce adoption process.

Based on above formulated research questions, we designed our exploratory research which consisted of three parts: unstructured observations (already available), secondary data (industry data and market research regarding Romanian Internet users and their attitude of e-commerce), and interviews.

From the *unstructured observations* we extracted the following potential factors which can have an effect on e-commerce adoption: comfort, information abundance, perceived control over the purchasing process, specific industry focus, demographic specificities, and geographical specificities.
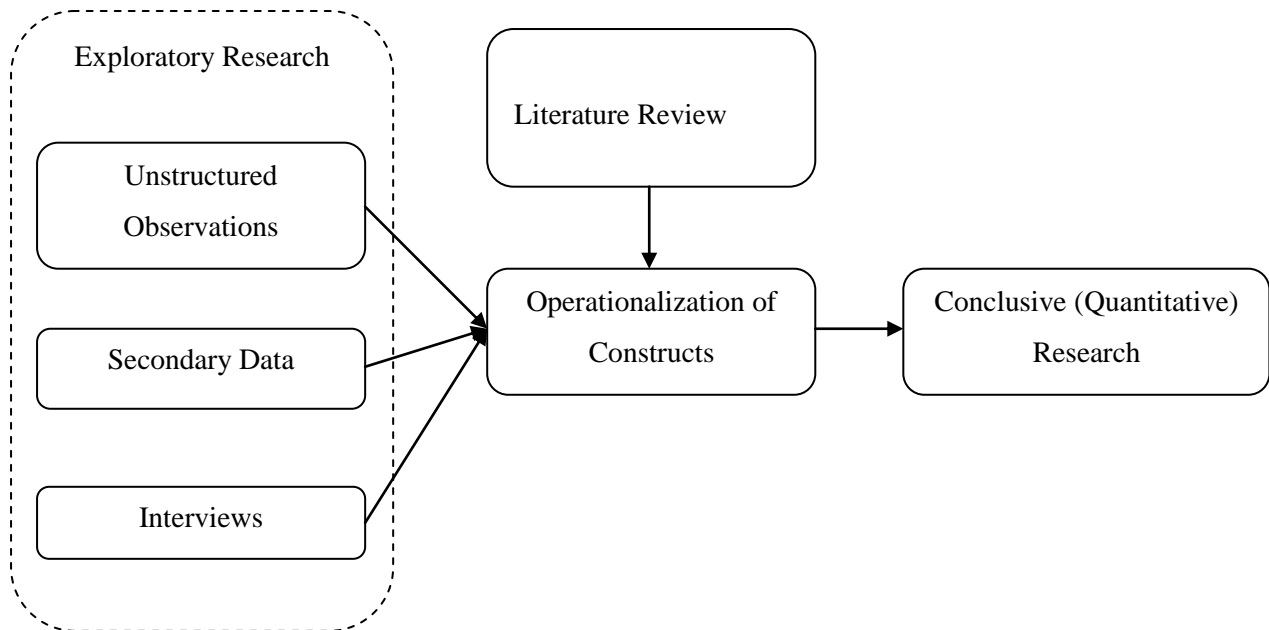
Figure - *The process of the research of factors influencing e-commerce adoption in the case of Internet users - Source: personal edit*

From the analysis of *secondary data* we succeded to extract the following potential factors: trust, impersonal nature of online shopping, timing issues , no (or rare) internet access, no knowledge of using e-commerce, narrower product range in the case of web shops compared to traditional shops, higher product prices in web shops, no debit/credit card ownership, necessity of paying delivery fee and other motives.

Data synthesized from interviews revealed other relevant factors influencing e-commerce adoption. For the interviews, as a methodological framework we used the adapted version of the '*laddering technique*' (Denzin & Lincoln, 2000; Malhotra, Birks, & Wills, 2012).

In total we interviewed 12 persons from whom 9 were "only" Internet users (on different levels of e-commerce adoption), one additional person was a web shop owner and two persons were opinion leaders working in the Internet or e-commerce industry.

During the interviews we utilized a predefined set of open-type questions but we instructed the subjects to not to stick necessarily to the questions, and if they have in mind something related to the subject discussed, then they should tell it to us.

From twelve extensive interviews we succeeded to gather a large amount of data that was analyzed and used in the next phases of the research.

Following the synthesis of all possible factors with an effect on e-commerce adoption, a conceptual model was cunstructed with the following variables:

Core variable	Connection with	Type of connection	References
Perceived ease of use (PEU)	Behavioral intention to use	PEU has positive effect on BI	(Bagozzi et al., 1992; Davis, 1989; Venkatesh et al., 2003)
	Computer self-efficacy	Computer self-efficacy has a positive effect on PEU	(Davis & Venkatesh, 1996)
	Technology anxiety	Technology anxiety has a negative effect on PEU	(P.A. Pavlou & Fygenson, 2006)
Perceived usefulness (PU)	Behavioral intention to use	PU has a positive effect on BI	(Bagozzi et al., 1992; Davis, 1989)
	Product perceptions	Product perceptions have a positive effect on PU	(Herrero Crespo & Rodriguez del Bosque, 2010)
	Shopping experience	Shopping experience has a positive effect on PU	(Herrero Crespo & Rodriguez del Bosque, 2010)
	Information access	Information access has a positive effect on PU	(Herrero Crespo & Rodriguez del Bosque, 2010)
	Subjective norm	Subjective norm has a positive effect on PU	(Venkatesh, Morris, Davis, & Davis, 2003)
	Perceived ease of use	Perceived ease of use (PEU) has a positive effect on PU	(Bagozzi et al., 1992; Davis, 1989)
Behavioral intention to use (BI)	Actual use	BI has a positive effect on actual use	(Ajzen, 1991; Bagozzi et al., 1992; FD Davis, 1989; Turner, Kitchenham, Brereton, Charters, & Budgen, 2010; Venkatesh et al., 2003)
	Subjective norm	Subjective norm has a positive effect on BI	(Venkatesh, Morris, Davis, & Davis, 2003)
	Trust	Trust has a positive effect on BI	(Gefen, Karahanna, & Straub, 2003; Gefen, 2004)
	Risk	Risk has a negative effect on BI	(Featherman & Pavlou, 2003; Pavlou, 2003; Vos et al., 2014)
	Perceived behavioral	Perceived behavioral control	(Ajzen, 1991; Pavlou,

	control	has a positive effect on BI	2002)
Age	TAM / Behavioral Intention	Age can have an effect on e-commerce adoption	(Cheung et al., 2003; Forsythe & Shi, 2003)
Gender	TAM / Behavioral Intention	Gender can have significant effect on e-commerce adoption	(Awad & Ragowsky, 2008)
Culture	TAM / Behavioral Intention	Cultural dimensions can have significant effect on e-commerce adoption / BI	(Jarvenpaa, Tractinsky, & Saarinen, 1999; McCoy et al., 2007; Straub et al., 1997)
Education	TAM / Behavioral Intention	Education can have significant effect on e-commerce adoption	Qualitative research
Residence	TAM / Behavioral Intention	Residence can have significant effect on e-commerce adoption	Qualitative research
Residence Population	TAM / Behavioral Intention	Population of residence can have significant effect on e-commerce adoption	Qualitative research

Table - *The proved and presumed relationships between concepts - Source: own edit*

After the inventory and operationalization of all constructs that could be applicable in our case for the research, we made a visual representation of the conceptual model (below):

Proposed Conceptual model with hypotheses

Figure 1 – *Proposed conceptual model with hypotheses indicated on arrows (source: own edit)*
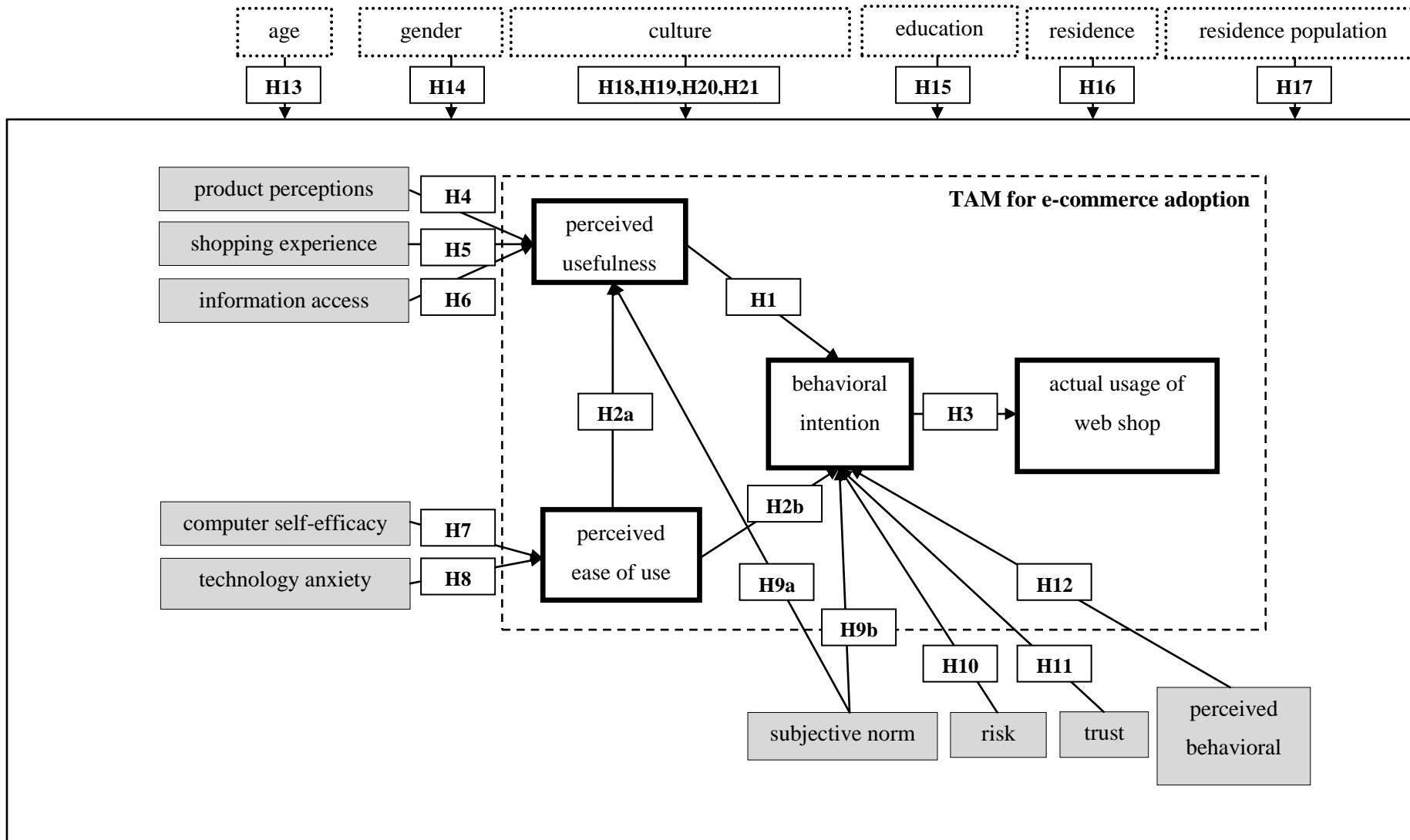
Based on our conceptual model we formulated our research hypotheses:

- **H1:** The Internet users' perceived usefulness regarding e-commerce positively affects their behavioral intention to buy.
- **H2a:** The Internet users' perceived ease of use regarding e-commerce positively affects their perceived usefulness to buy.
- **H2b:** The Internet users' perceived ease of use regarding e-commerce positively affects their behavioral intention to buy.
- **H3:** The Internet users' behavioral intention regarding e-commerce usage positively affects its actual usage.
- **H4:** Perceptions of products supplied by web shops positively affect their perceived usefulness on e-commerce.
- **H5:** Shopping experience provided by web shops positively affects their perceived usefulness on e-commerce.
- **H6:** Access to information provided by web shops during searching and comparison processes positively affects their perceived usefulness on e-commerce.
- **H7:** The level of computer self-efficacy of Internet users positively affects their perceived ease of use on e-commerce.
- **H8:** The level of technology anxiety of Internet users negatively affects their perceived ease of use on e-commerce.
- **H9a:** The subjective norm of Internet users positively affects their perceived usefulness on e-commerce.
- **H9b:** The subjective norm of Internet users positively affects their behavioral intention regarding e-commerce.
- **H10:** E-commerce risk perceptions negatively affect the behavioral intention to buy.
- **H11:** E-commerce trust perceptions positively affect the behavioral intention to buy.
- **H12:** The perceived behavioral control positively affects behavioral intention to buy.
- **H13:** User age affects the factors determining e-commerce adoption.
- **H14:** User gender affects the factors determining e-commerce adoption.
- **H15:** User education level affects the factors determining e-commerce adoption.
- **H16:** Users' geographical residence affects the factors determining e-commerce adoption.
- **H17:** The population number of the user's geographical residence affects the factors determining e-commerce adoption.
- **H18:** Individualism/collectivism affects the factors determining e-commerce adoption.
- **H19:** Masculinity/femininity affects the factors determining e-commerce adoption.

- **H20:** Power distance affects the factors determining e-commerce adoption.
- **H21:** Uncertainty avoidance affects the factors determining e-commerce adoption.

After the formulation of the hypotheses, we started to plan the conclusive (quantitative) research. The sampling process of our quantitative research consisted of the following steps, which were recommended by our thesis supervisors and the methodological literature (Fricker, 2008; Malhotra et al., 2012). The elements of our target population were *the Internet users who resided in Romania*. The sampling unit for our research was *the individual who was an Internet user*.

We opted for the **non-list-based random sampling** in the Internet which is the online version of the random digit dialing (RDD) of the classical surveys. This sampling method does not need a previous list of all Internet users (or IP addresses) in order to choose the elements in a random way (Fricker, 2008). Another possibility would have been the usage of *systematic interception*, as a sampling method, but in that case the interception would have been reached by pop-up questionnaires and it would have been a type of systematic sampling (Fricker, 2008; Malhotra et al., 2012). We opted for the non-list-based random sampling via the Internet with the application of random Internet Ads via Google AdWords, Google AdSense, and Facebook Ads, and providing *incentive* for filling out the questionnaire.

In the next step we determined the ideal sample size for our research in order to guarantee a valid statistical analysis and to draw reliable conclusions regarding the findings. For the total number of elements in our target population, namely the totality of Internet users in Romania, we used the number of 9,642,383 people according to data provided by Eurostat (Seybert, 2012). We chose to work with a *confidence level* of .95 (or 95%) which is commonly used in social science, and market research studies (Malhotra et al., 2012).

The next step was the calculation of the needed sample size based on the possible *confidence intervals* (or margins of error). Considering *non-list-based random sampling* we communicated the survey to our targeted population with the help of *online advertising*.

4.2. Results of the Research

The gathered sample had the following parameters:

In total 259 people filled out the questionnaire, however 520 Internet users clicked on one of the ads displayed in above mentioned advertising platforms. The ads were seen by 6821 Romanian Internet users[6]. Regarding the distribution of the sample by gender (Table 19), we can conclude that the distribution is almost even (124 / 47,88% female to 135 / 52,12% male) and every age group is also represented, however the age group of Internet users between 16-25 years might seem over represented, therefore we cannot speak of a normal distribution.

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[6] Based on data from Google Analytics Software.

There are several methods available for conducting scientifically plausible statistical processing and estimation, but in our case there is one major disadvantage resulted from the low sample size of 259 data points. For this sample size the calculated confidence interval (margin of error) is 6.09 which means that there can be a plus or minus 6.09 percentage points difference in the case of the answers of the population (Surveysystem.com, 2014).

Based on the literature there are different "thumb-rules" by which one can decide what method to use. Generally literature distinguishes Covariance Based Methods (CBM) and Partial Least Squares (PLS) analysis for testing causal models (Gaskin, 2013).

Since scales were adapted from the international literature, and translated from English to Romanian, we assessed the reliability of indicators by which latent variables were measured. Reliability within a construct was also referred to as internal consistency, and it is assessed by the metric known as Cronbach's Alpha.

During the assessment of indicator reliability with Cronbach's Alpha, we eliminated several underperforming indicators. By eliminating indicators with Cronbach's Alpha values under 0.7 the values of the other indicators belonging to the same latent variable increased and the constructs became more reliable.

Given the small number of data points, we had to modify the relations in our original conceptual model and to renounce to the planned assessment of some control effects. We renounced to the causality assessment of Residence and Residence Population because of reasons discussed in Subchapter 4.2.3. This also affected the hypotheses, from which H16, H17 and H18 were eliminated.

We relinked culture as an exogenous variable with assumed causality to Behavioral Intention (BI), therefore we measured the effect of the dimensions of culture on Behavioral Intention. Individualism/Collectivism was removed because of poor indicator reliability results. Age, Gender, and Education were tested as control variables of three endogenous variables of our core model: Perceived Usefulness, Perceived Ease of Use, and Behavioral Intention. For testing the significance of the relations between constructs we run the bootstrapping algorithm in Smart PLS software according to the literature. Using the Partial Least Squares (PLS) method, significance was assessed with the t-values generated between constructs in the model.

Significant t-values (two-tailed), according to the literature are the following (Baumgartner & Homburg, 1996; Gaskin, 2010; Malhotra et al., 2012): 1.65 for 10% significance level, 1.96 for 5% significance level, 2.58 for 1% significance level.

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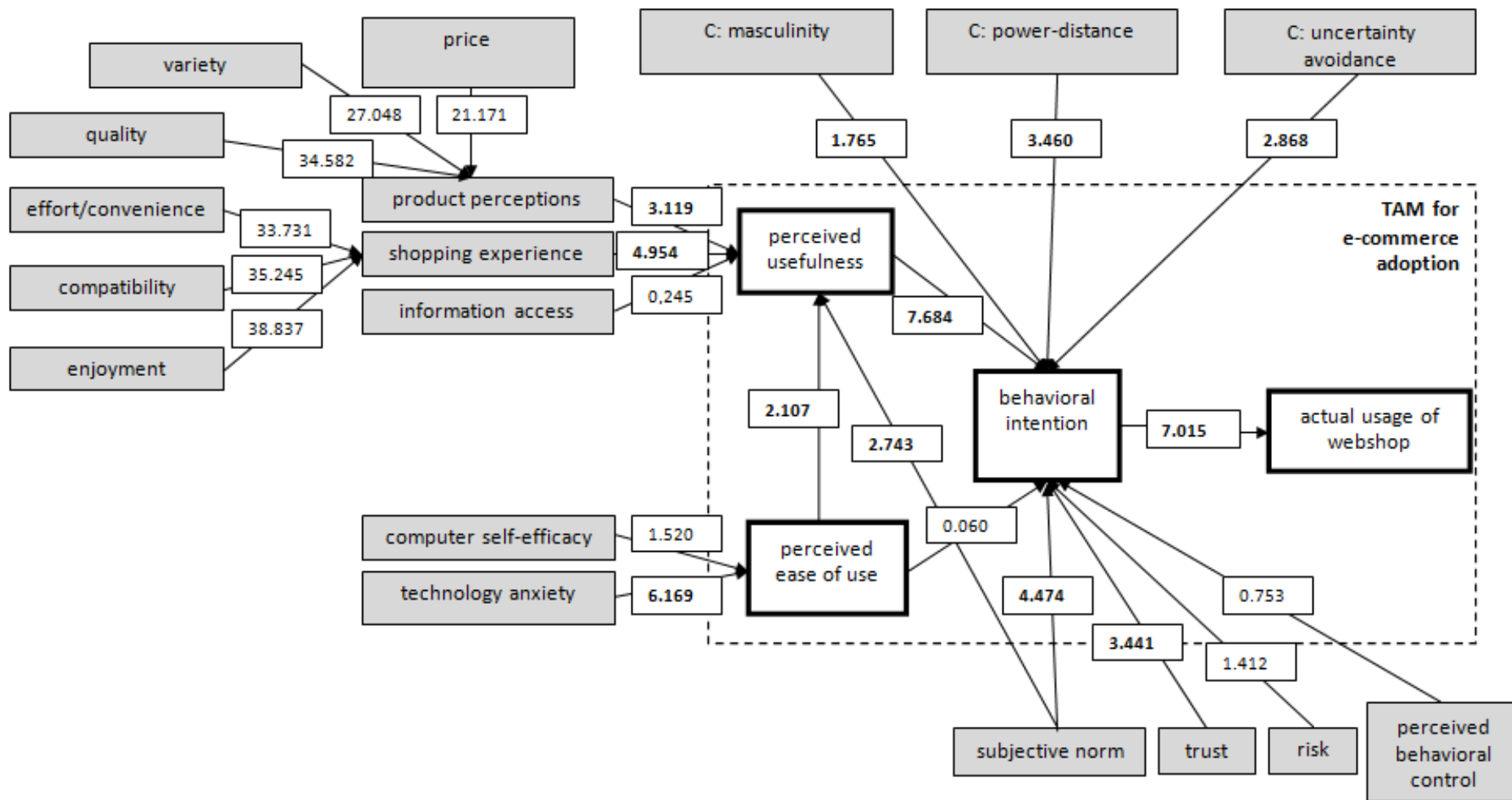
Figure 2 - *The visual representation of the results of the model, with t-values on the arrows - Source: own edit / SmartPLS*

After testing the hypotheses, the control variables (age, gender, and education) were also tested.

Below we present the results of hypothesis testing. Please note, that some prior hypotheses have been removed because of the small sample number.

H1: *The Internet users' perceived usefulness regarding e-commerce positively affects their behavioral intention to buy.* PU → BI: **CONFIRMED**, with a t-value of 7.7293, highly significant positive connection on the 1% level (two-tailed). The result means that the intention to buy on the Internet is significantly influenced by the Internet user's beliefs regarding the usefulness of buying from the Internet.

H2a: *The Internet users' perceived ease of use regarding e-commerce positively affects their perceived usefulness to buy.* PEU → PU: **CONFIRMED,** with a t-value of 2.0523, significant positive connection on the 5% level (two-tailed). In the case of this relation we can state that the *ease of use* regarding e-commerce systems (web shops) affects in a positive way the Internet user's beliefs regarding the *usefulness of buying* from the Internet. The more easy a web shop is to use, the more useful it is considered by the user.

H2b: *The Internet users' perceived ease of use regarding e-commerce positively affects their behavioral intention to buy.* PEU → BI: **NOT CONFIRMED**, with a t-value of 0.0615, not significant. However this connection is also part of the TAM core model, we could not confirm its significance. The Internet user's *ease of use* regarding a web shop does not necessarily result in an *intention to buy* from a web shop. An explanation is that there are other, possibly more important factors that influence the behavioral intention, that the perceived ease of use.

H3: *The Internet users' behavioral intention regarding e-commerce usage positively affects its actual usage.* BI → USE: **CONFIRMED,** with a t-value of 6.8879***, highly significant positive connection on the 1% level (two-tailed) The Internet users' behavioral intention (BI) regarding e-commerce usage strongly and positively affected its actual usage in our research. The Romanian Internet user's intention to buy from a web shop causes actual purchase from a web shop with a high probability. The sense and the intensity of the connection confirms one of the most important and practical questions of online marketing specialists, namely *what is the ratio of users with buying intention to actual buyers?*

H4: *Perceptions of products supplied by web shops positively affect their perceived usefulness on e-commerce.* PRODPERC → PU: **CONFIRMED,** with a t-value of 3.1062***, highly significant positive connection on the 1% level (two-tailed). Based on our research, product perceptions of the Romanian Internet users in the case of web shops have a significant positive effect on beliefs regarding usefulness of web shops. Since product perception is a multi-dimensional construct built of variety, quality and price, we can also state that favorability of these dimensions also contributes to the perceived usefulness of e-commerce.

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H5: *Shopping experience provided by web shops positively affects their perceived usefulness on e-commerce.* SEXP → PU: **CONFIRMED,** with a t-value of 4.9061***, highly significant positive connection on the 1% level (two-tailed). Shopping experience of the Internet users in the case of web shops has a significant positive effect on beliefs regarding usefulness of web shops. Since shopping experience is a multi-dimensional construct built of effort/convenience, compatibility, and enjoyment, we can also state that favorability of these dimensions also contributes to the perceived usefulness of e-commerce.

H6: *Access to information provided by web shops during searching and comparison processes positively affects their perceived usefulness on e-commerce.* IACC → PU: **NOT CONFIRMED,** with a t-value of 0.2408 is not significant. Information provided by web shops during searching and comparison processes of the Internet users has no significant effect on the usefulness of web shops. We can interpret this result by pointing out, again, that probably information on a web shop is important for Internet users but the usefulness of buying online is not related to it in the mind of the users.

H7: *The level of computer self-efficacy of Internet users positively affects their perceived ease of use on e-commerce.* CSELFEFF → PEU: **NOT CONFIRMED,** with a t-value of 1.5137 is not significant. As computer self-efficacy refers to the skills one has regarding using a computer, we found no significant connection between these skills and the perceived ease of use of e-commerce systems (such as a web shop). One interpretation of this result would be that web shop ease of use needs different skills than hardware use.

H8: *The level of technology anxiety of Internet users **negatively** affects their perceived ease of use on e-commerce.* TANX → PEU: **CONFIRMED,** with a t-value of 6.244***, highly significant positive connection on the 1% level (two-tailed). On the other hand technology anxiety already has a highly significant effect on the perceived ease of use of web shops. Those Internet users, who are less anxious when using a technology, perceive web shop use as a simpler task. Please note, that three indicators present in the model were *reverse coded*, therefore the negative sign does not appear in the metrics.

H9a: *The subjective norm of Internet users positively affects their perceived usefulness on e-commerce.* SNORM → PU: **CONFIRMED,** with a t-value of 2.7699***, highly significant positive connection on the 1% level (two-tailed). *Important others*, such as friends, specialists, and family are significantly affecting the Internet user's perceived usefulness of a web shop (or e-commerce).

H9b: *The subjective norm of Internet users positively affects their behavioral intention regarding e-commerce.* SNORM → BI: **CONFIRMED,** with a t-value of 4.5656***, highly significant positive connection on the 1% level (two-tailed). Important others also affect in a significant way the intention of Internet users to buy from a web shop.

H10: *E-commerce risk perceptions negatively affect the behavioral intention to buy.* RISK → BI: **NOT CONFIRMED,** with a t-value of 1.4252 is not significant. We could not confirm a significant connection between risk perception of Internet users regarding e-commerce use, and the intention to buy from the Internet. One possible explanation for this result would be if we'd examine the connection of risk and e-commerce use on cultural grounds. The attitude of the examined population on risk could differ from those examined by other studies.

H11: *E-commerce trust perceptions positively affect the behavioral intention to buy.* TRUST → BI: **CONFIRMED,** with a t-value of 3.4271***, highly significant positive connection on the 1% level (two-tailed). Trusting web shops has a significant effect on the online buying intentions of the Internet users. Several studies also confirmed this finding (Benbasat, Gefen, & Pavlou, 2008; King & He, 2006).

H12: *The perceived behavioral control positively affects behavioral intention to buy.* PBC → BI: **NOT CONFIRMED,** with a t-value of 0.7513 is not significant. We cannot confirm any significant linkage between an Internet user's positive perception that he/she can or could buy goods from the Internet, and his/her intention to do so. In our case a possible explanation of the lack of significant connection could be the perceived behavioral control of this sample (or population) could not be measured in a sufficiently relevant way in order to link it to behavioral intention to buy.

H13a,b,c: *User Age significantly affects (a) Perceived Usefulness, (b) Perceived Ease of Use, and (c) Behavioral Intention when controlling for these constructs and their antecedent*s.

H13a: Controlling effect of AGE on PU: **NOT CONFIRMED**, with a value of 0.040 is not significant. We cannot confirm any significant linkage between User Age and Perceived Usefulness when controlling for PU and its influencing factors (antecedents), namely Product Perception (PRODPERC), Shopping Experience (SEXP), and information Access (IACC). Although it would be logical that the age of users would have an effect on the usefulness of e-commerce systems, it seems that no age category presents considerable variations on this matter.

H13b: Controlling effect of AGE on PEU: **NOT CONFIRMED**, with a value of 0.616 is not significant. We cannot confirm any significant linkage between User Age and Perceived Ease of Use when controlling for PEU and its influencing factors (antecedents), namely Computers Self Efficacy (CSELFEFF) and Technology Anxiety (TANX). Although it would be logical that the age of users would have an effect on the perceived ease of use of e-commerce systems, it seems that no age category presents considerable variations on this matter.

H13c: Controlling effect of AGE on BI: **CONFIRMED**, with a value of 1.967** is significant on the 5% level. We can confirm a significant positive linkage between User Age and Behavioral Intention to Use Internet for shopping, when controlling for BI and its influencing factors (antecedents), namely Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Subjective Norm (SNORM). The level of significance is on the 5% level (two-tailed), which means that the older a user is, the greater his/her BI is, when controlling for BI and its influencing factors.

H14a,b,c: *User Gender significantly affects (a) Perceived Usefulness, (b) Perceived Ease of Use, and (c) Behavioral Intention when controlling for these constructs and their antecedents.*

H14a: Controlling effect of GENDER on PU: **NOT CONFIRMED**, with a value of 1.202 is not significant. We cannot confirm any significant linkage between the gender of users and Perceived Usefulness when controlling for PU and its influencing factors (antecedents), namely Product Perception (PRODPERC), Shopping Experience (SEXP), and information Access (IACC).

H14b: Controlling effect of GENDER on PEU: **NOT CONFIRMED**, with a value of 0.408 is not significant. We cannot confirm any significant linkage between user gender and Perceived Ease of Use when controlling for PEU and its influencing factors (antecedents), namely Computers Self Efficacy (CSELFEFF) and Technology Anxiety (TANX). The t-value is also very low which suggests almost no connection.

H14c: Controlling effect of GENDER on BI: **NOT CONFIRMED**, with a value of 0.637 is not significant. We cannot confirm a significant linkage between the gender of the users and their Behavioral Intention to Use Internet for shopping, when controlling for BI and its influencing factors (antecedents), namely Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Subjective Norm (SNORM).

H15a,b,c: *User Educational Level positively affects (a) Perceived Usefulness, (b) Perceived Ease of Use, and (c) Behavioral Intention when controlling for these constructs and their antecedents.*

H15a: Controlling effect of EDU on PU: **CONFIRMED**, with a value of 3.646*** is highly significant on a 1% level. We can confirm a significant positive linkage between the educational level of users and Perceived Usefulness when controlling for PU and its influencing factors (antecedents), namely Product Perception (PRODPERC), Shopping Experience (SEXP), and Information Access (IACC). We can conclude that the higher degrees an internet user has, the more probable he/she will find online shopping useful.

H15b: Controlling effect of EDU on PEU: **CONFIRMED**, with a value of 3.506*** is highly significant on a 1% level. We can confirm a significant positive linkage between the educational level of users and Perceived Ease of Use when controlling for PEU and its influencing factors (antecedents), namely Computers Self Efficacy (CSELFEFF) and Technology Anxiety (TANX). We can conclude that the higher degrees an internet user has the more probable he/she will find online shopping easier to use.

H15c: Controlling effect of EDU on BI: **CONFIRMED**, with a value of 2.171** is significant on a 5% level. We can confirm a significant positive linkage between the educational level of users and Behavioral Intention when controlling for BI and its influencing factors (antecedents), namely Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Subjective Norm (SNORM). We can conclude that the higher degrees an internet user has, the more probable he/she will intend to buy from the Internet. Consequently, buying intention is affected by educational level in relation to its antecedents.

H19: Cultural *masculinity positively affects behavioral intention to buy.* CMASC → BI: **CONFIRMED,** with a t-value of 1.8122*, significant on the 10% level (two-tailed) We found a significant positive connection between Hofstede's masculinity/femininity dimension and intention to use e-commerce. Hence, the significance level is not high, but we can state that the more masculine an Internet user is the more probable is his/her intention to use e-commerce. Here masculinity and femininity is being put in a cultural context, as it was described by Hofstede (2010); Schwartz (2012); Soares, Farhangmehr, & Shoham (2007). In this way masculine values tend to favor the intention to buy from web shops, while feminine values do the opposite.

H20: *Power distance positively affects behavioral intention to buy.* CPDIST → BI: **CONFIRMED,** with a t-value of 3.3704***, highly significant on the 1% level (two-tailed) We found significant connection between Hofstede's Power Distance cultural dimension and the Internet users' intention to use e-commerce. This means that those Internet users who tend to view authority and the need for authority in a positive way, intend more to use e-commerce systems.

H21: *Uncertainty avoidance positively affects behavioral intention to buy.* CUA → BI: **CONFIRMED,** with a t-value of 2.792**, significant on the 5% level (two-tailed) We found significant linkage between avoidance of uncertainty and intention to use e-commerce. It seems that avoiding uncertainty causes a higher level of intention regarding e-commerce usage. We can interpret this result the following way: as for most of our sample online shopping could mean a form of certainty because is real, it's new, innovative and trendy.

CHAPTER 5 – CONCLUSIONS, IMPLICATIONS, LIMITS AND FUTURE RESEARCH DIRECTIONS

5.1. Conclusions

First of all, there is an abundant theoretical knowledge already available in this interdisciplinary field of research commonly known as technology acceptance. Most of the research is produced by Information Systems scientists, but the number of research regarding the subject which contains a truly marketing point of view is relatively low. Since information technology is already an important factor in all types of marketing activities (especially in the fields of communication and commerce), our opinion is that focus on technology acceptance among marketing researchers should grow. By our research we have succeeded to make an important step in this direction.

Secondly, we put an accent on mapping the most important factors influencing e-commerce adoption behavior of Internet users. The importance of these factors was assessed based on the literature review, and then, by the qualitative research conducted before our quantitative research. We succeeded in building a research model which was tested successfully on a Romanian sample of

Internet users and which also can serve as a comprehensive model for future e-commerce adoption research.

Thirdly, based on the results of our research, several theoretical and managerial implications have emerged, as well as new future research directions, which will surely contribute to a deeper understanding of the whole phenomenon. We present these implications and research directions in the following subchapters.

5.2. Implications

Major theoretical implication:

1. By applying a model based the Technology Acceptance Model we tested the falsifiability (Popper, 1959) of the core of the TAM model in the context of e-commerce adoption on a Romanian sample.

2. By assessing factors influencing the perceived usefulness of web shops (PU) we found that the perceptions about products (PRODPERC) and shopping experience (SEXP) have a significant positive effect on usefulness perceived by the Internet users. This contribution is important in the context of online branding research since web shops can make use of the positive product perception of Internet users because of the higher brand awareness of the product.

3. By assessing factors influencing the perceived ease of use of web shops (PEU), one important implication is the strong negative causal effect of technology anxiety (TANX) of Internet users with their perceived ease of use (PEU) on e-commerce. This finding is a novelty in the context of Romanian Internet users. It can be researched further by assessing the roots of technology anxiety in the online environment.

1. By assessing factors influencing behavioral intention (BI) of Internet users, we found several connections which have theoretical implications. The strong effect of subjective norm (SNORM) of Internet users on their perceived usefulness (PU) and behavioral intention (BI) shows the real influence of important others, such as friends, specialists on Internet users. From the perspective of marketing theory, this connection can be used in different ways starting from the efficiency assessment of different types of communication channels to social media research. The theoretical implication of the connection between e-commerce trust perceptions (TRUST) the behavioral intention (BI) is in terms of its usefulness in the research of trust in the case of Romanian online shoppers. Trust is a trending research topic in the academic world because it has an impact on various factors of the buyer's decisional process. Our result can be used to further investigate these connections.

4. Another theoretical contribution of our research is the assessment of relationships between some control variables and factors determining e-commerce adoption.

5. As for relationships between cultural dimensions and behavioral intention, we found that cultural masculinity (CMASC), power distance (CPDIST), and uncertainty avoidance (CUA) affects in a strong positive way the Romanian Internet users' behavioral intention to buy (BI). Our contribution regarding the effect of culture on intention to buy from web shops is that we proved that cultural dimensions also can be assessed regarding e-commerce adoption. However, larger samples and cross-cultural studies are required for a more detailed inquiry.

We believe we could test a more extensive model of e-commerce adoption compared to those that can be found in the literature.

In our opinion these types of implications can be important and impactful for two reasons. First of all, with the help of our results the know-how quality of e-commerce activity can be directly enhanced in various ways. Secondly, from a managerial point of view our results, in most of the cases, do not require further study, because they are already applicable.

The major managerial implications of our study based on the sequence of our hypotheses, are the following:

1. Useful and easily usable web shops will have more customers.
2. Product perception and shopping experience make a web shop useful.
3. By decreasing users' technology anxiety, web shops become more easy to use.
4. Recommendations, trustworthiness, and offering certainty can benefit shopping intention.

5.3. Research Limitations and Future Research Directions

In the case of *limitations of the qualitative research*

In the case of *limitations of the quantitative research* we consider the relatively small number of data points (N=259) as our most notable limitation.

Further research directions

First of all, we think that more emphasis should be put on the study of some of our exogenous factors to understand it in a much more detailed way. We offered interpretations of results regarding trust, perceived behavioral control, risk, technology anxiety, and subjective norm, but more effort should be invested in the research of the antecedents of these factors.

Secondly, we consider that the inclusion of Hofstede's cultural dimensions into the conceptual model is a huge opportunity for future research for two reasons: (1) there is a lack of research related to the inter-, cross-, and multicultural sides of technology acceptance (and e-commerce adoption), and (2) it is a good opportunity to make a wider research with an Eastern and Central European sample and look into the cultural differences regarding technology acceptance.

Third, we consider that our research model and our results are a novelty for theory and for managers, as well, in a Romanian context. In order to get more reliable and interpretable results, as a

future research direction we also can argue for a repeated research using this model, but with a much bigger sample.

Regarding further research directions resulted from our results and not mentioned above, we can emphasize on the mapping of moderating effects related to our model and the assessment of these effects.

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