EXPLORING THE FACTORS INFLUENCING THE INTENTION TO USE SELF-SERVICE TECHNOLOGIES

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Abstract

Despite decades of research on self-service technology (SST), there are still only limited numbers of studies conducted in emerging markets (Ostrom et al., 2010). In order to help close this surprising gap in the literature, two studies were conducted in an emerging Eastern European country: an exploratory investigation with 20 in-depth semi-structured interviews and a quantitative survey research involving 139 respondents.The research outcomes reveal similarities, but also differences among the factors which influence SSTs usage by Eastern European and Western consumers, respectively. Antecedents such as complexity, previous experience with SSTs, perceived risk, relative advantage and technology readiness were found to be strongly related to the intention of using these devices, thus confirming previous findings. However, in contrast to previous discoveries, the attitude towards the past, individualism, masculinity, rational and experiential thinking, were found to have only weak connections with the behavioural intention. The research provides valuable theoretical contributions to the scarce literature available on SST usage in emerging markets.

Keywords: *self-service technologies; emerging markets; Romania; online shopping; ATMs; SST use model.*

1. Introduction

In the last decades, services have received increasing attention from both the academic and business world. Their importance becomes quite obvious considering that today's most advanced economies are based on services, with over 70 % of their GDPs coming from this sector (Ostrom et al., 2010). In order to improve their efficiency and build stronger relationships with their customers, service firms have begun to implement various types of technologies. From all the technological assets employed by service companies, SSTs stand out as some of the most important ones (Meutner, Bitner, Ostrom & Brown, 2005). SSTs represent 'technology interfaces that enable customers to produce a service independent of direct service employees involvement' (Meutner, Ostrom, Roundtree & Bitner, 2000, p.50). SSTs provide several benefits for both companies and consumers. These include cost reduction, faster delivery, disintermediation, convenience and greater consumer loyalty (Curran & Meutner, 2005; Meutner et al., 2005). Numerous factors influence SST employment, ranging from technology characteristics (Zhu, Nakata, Sivakumar & Grewal,

2007), to individual differences (Parasuraman, 2000), situational circumstances (Gelderman, Ghijsen & van Diemen, 2011) or cultural traits (Steenkamp, Hofstede & Wedel, 1999).

Despite the fact that the body of literature written on SSTs is quite significant, there are still some gaps in our current knowledge. Perhaps the most important one is that most past papers are based on studies conducted in Western countries. Several authors, however, call for the need of conducting research in emerging markets as these are 'radically different from the traditional industrialized capitalist society' (Sheth, 2011, p. 166). In particular, what is needed are studies that determine to what extent the variables which affect technology usage by consumers coming from these regions are similar to, or different from, previous findings (e.g. Nilsson, 2007).

This article aims to address this research gap by investigating the attitudes of Eastern European consumers towards SSTs. Romania was chosen for the following reasons. First, the International Monetary Fund (IMF, 2012) classifies Romania as an emerging market and developing economy with a growing service sector (Romanian National Institute of Statistics, 2011). The country's real GDP rose by over 39 % between 2003 and 2008. The value fell in 2009 and 2010 because of the worldwide economic downturn. The figure for 2011, however, was positive again, namely 2.5% (IMF, 2012, p.194). The economic growth in Romania was among the highest in Europe and more than three times the EU average. Due to its rapid development and high growth rates, Romania has even been referred to as an Eastern "Tiger" economy (Aims, 2012).

Second, according to Hofstede, Hofstede & Minkov (2010), Romania possesses different cultural characteristics in comparison to Western countries, such as higher uncertainty avoidance and lower individualism, which could impact on technology acceptance. Moreover, various technological applications and SSTs such as online retailing or automatic teller machines (ATMs) have witnessed appreciable growth in this country over the last five or six years (Euromonitor, 2011; 2012a,b).

The portion of the Romanian population which used the Internet in 2006 was estimated at 24.2% and rose to almost 50% in 2011 (Euromonitor, 2012a). By comparison, during the same year, the number of internet users in the UK and Sweden represented over 85% of the entire population (Euromonitor, 2012a). Internet retailing or online shopping is probably the fastest growing SST in Romania. In 2005, the total market was estimated at almost €50 million. Over the next five years, the value increased by 230 %, reaching €165 million in 2010 (Euromonitor, 2011). In 2011, the total value of Romanian ATM transactions reached approximately €23 billion, increasing by 4.8 % from 2010 and 176 % from 2006. The total amount is expected to rise to €29.6 billion in 2016 (Euromonitor, 2012b).

The data reveal that Romania still lags behind Western and even Eastern European countries when it comes to the employment of various SSTs. For example, the value of internet retailing per capita in Russia is almost four times greater than in Romania, although the countries have similar degrees of internet access. The figures suggest that availability is not the only obstacle to SST employment in this country and that SSTs could still have a potential for future growth. Consequently, this study aims at revealing which other factors could influence SST usage and which factors have the strongest impact on the consumers' intention to use SSTs.

2. Literature Review

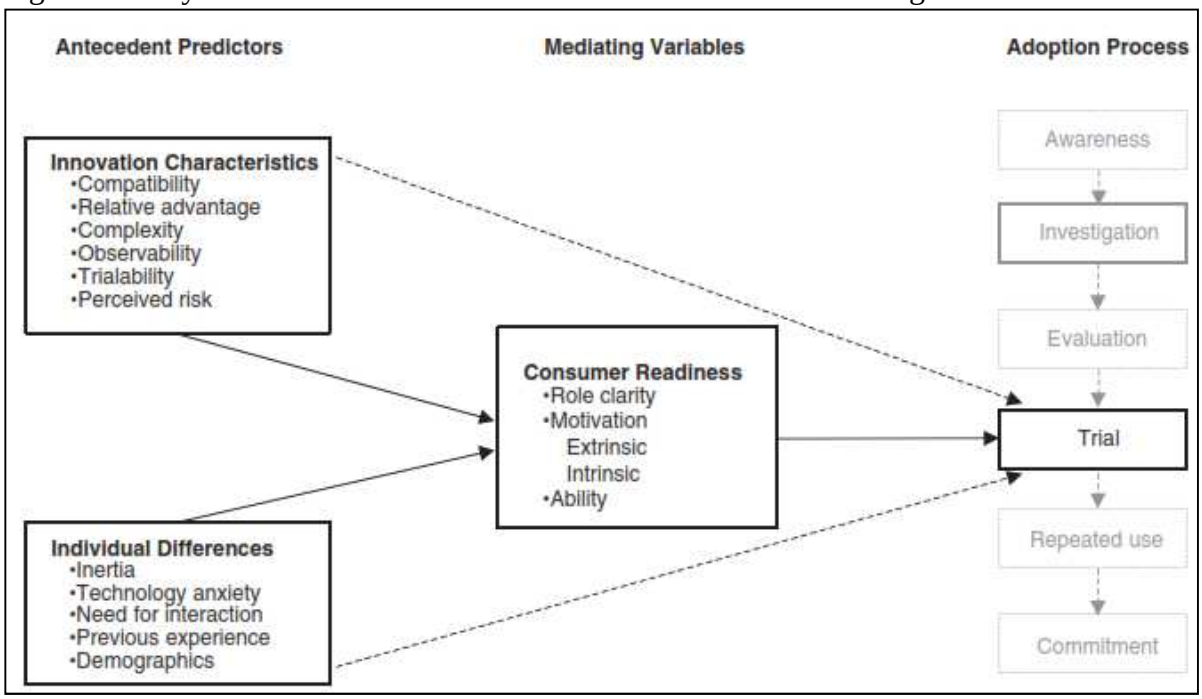
Ostrom et al. (2010, p.4) assert in their award winning article that the changes in the science and practice of services marketing have led to 10 essential research priorities. The tenth priority, leveraging technology to advance service, is seen as the pervasive force which will lead to the success of the other nine (Ostrom et al., 2010). The technological assets which can

be used by (service) companies are quite diverse. Keegan & Green (2005) believe that organizational information systems should include hardware and software components such as the intranet, electronic data interchange (EDI), a customer relationship management (CRM) system and data warehouses. Nevertheless, a further category needs to be taken into consideration, a category which includes those technologies designed for the consumer's use. These applications, which have been gaining increasing importance in the last decades, are commonly known as SSTs (Meutner et al., 2005).

2.1 Factors Influencing SSTs Usage

In this current paper, the investigation of the forces which shape SST employment started with Meutner et al.'s (2005) model, which is one of the most comprehensive and cited frameworks in the literature. The model is presented in Figure 1.

Figure 1 − Key Predictors of Consumer Trial of Self-Service Technologies



Source: Meutner et al., 2005, p. 63

As it can be seen, the framework involves numerous factors that could impact on SSTs usage. Some of these factors have been mentioned in previous studies and confirmed in later research. However, not all of them are of equal importance and some, such as compatibility and complexity or compatibility and relative advantage, actually overlap (Sääksjärvi & Samiee, 2011). Moreover, several other variables which affect SST employment have been identified over the years as well.

2.1.1 Innovation Characteristics

Similar with Meutner et al.'s (2005) work, Arts, Frambach & Bijmolt (2011) found that *relative advantage* influences technology or SST adoption. After conducting a research among online financial services consumers, Lee, Lee & Eastwood (2003) discovered that they usually seek cost efficiency, flexibility and greater control over their bank accounts. Relative advantage can be either utilitarian in nature (for example service delivery speed) or hedonic, such as the opportunity to explore new things and have fun (Collier & Sherrell, 2010).

Scholder, Bearden & Subhash's (1991) study also revealed that *risk* is among the determinants of SSTs usage. If the perceived level of risk increases, the consumer's trust in his own abilities to operate the technology, as well as his motivation, decline. However, Curran & Meutner (2005) found that risk influences the consumer's choice only when it comes to less widespread technologies and especially those offered through the Internet. Besides financial or privacy risks, Featherman & Wells (2010) provide further examples of perils related to SST employment such as time costs, psychological downturns which include frustration or loss of self-esteem and social risks, the latter occurring when the user fails to operate the SST in the presence of other individuals.

Similar to Meutner et al. (2005), authors such as Zhu et al. (2007) and Wood & Moreau (2006) also found *complexity* to be an important antecedent variable of SST usage. Single feature design SSTs (which provide either interactivity, such as online avatars or comparability, such as price comparison websites) lead to a higher positive effect on the consumer's perceived control than combined-feature SSTs (Zhu et al., 2007). Multifunctional innovations can increase consumer confusion thus obstructing the adoption process because the potential users are not sure about the main functionality of the product (Wood & Moreau, 2006).

2.1.2 Individual Differences

Individuals with higher *technology anxiety* were found to be less satisfied by the SST interaction, less likely to use or re-use the technology and less inclined to spread positive word of mouth (Liu, 2012; Meutner, Ostrom, Bitner & Roundtree, 2003). Similar to the concept of technology anxiety, although more complex, is the notion of *technology readiness* (TR). People can be placed on a continuum with strong positive attitudes towards technology at one end and strong negative opinions at the other end. According to Parasuraman (2000), four different components form the technology readiness construct: optimism (the extent to which consumers believe that technology is going to improve their lives); innovativeness (the consumers' perception about themselves as being inventive or novelty seekers); discomfort (the difficulty in operating different forms of technology) and insecurity (consumers' lack of trust in technology).

Apart from Meutner et al. (2005), several authors such as Gelderman et al. (2011) and Lee et al. (2003) revealed that non-users of SSTs have more *need for interaction* than users. Some consumers see service encounters as social experiences and prefer face to face interactions. The need for interaction can appear even after the consumer has adopted the technology if he feels that the particular SST is taking control over his life and limits his freedom (Johnson, Bardhi, & Dunn, 2008).

Patterson (2000) found the consumer's *previous experience* to be an antecedent of SST usage, which can take two forms: focal product experience, which represents the individual's previous use of the SST under investigation and product norm experience, which refers to the individual's experience with SSTs in general. In terms of focal product experience, the first attempt is particularly important. If positive, it will encourage future use (Wang, Harris & Patterson, 2012).

Consumer technology inertia is defined as an 'attachment to, and persistence in, using an incumbent system (i.e., the status quo) even if there are better alternatives and incentives to change' (Polites & Karahanna, 2012, p.24). Polites & Karahanna (2012) found a negative connection between inertia and the consumer's attitude towards new technologies, which, in turn, influences intention.

2.1.3 Additional Variables

The concept of **'***role'* refers to 'the socially defined expectations of individuals in particular social positions' (Edvardsson, Tronvoll & Gruber, 2011, p.331). The more certain the user feels about what is expected of him, the greater the chance of trying the SST (Gelderman et al., 2011). The company has to define what type of participation it desires from the consumers when implementing a SST (Van Beuningen, de Ruyter & Wetzels, 2009).

Simon & Usunier (2007) offer additional explanations for the use of SSTs. The authors suggest that every individual has two *thinking styles*: a rational one which is intentional, analytical, verbal and almost affect free and an experiential system which is more automatic and mostly associated with affect. The authors found that individuals with high rational engagement prefer SSTs over face to face contact, the opposite being true for consumers with high experiential engagement.

Culture is another major determinant that impacts upon the use of SSTs. Of the five cultural dimensions proposed by Hofstede et al. (2010), uncertainty avoidance, individualism/collectivism and masculinity/femininity are the most likely to affect SST employment (Park & Jun, 2003; Steenkamp et al., 1999; Nilsson, 2007). For example, Park & Jun (2003) found that cultures with high uncertainty avoidance are slower at adopting innovations. Lim, Leung, Choon & Lee (2004) argue that SSTs increase consumer uncertainty as they fail to replicate the processes, atmosphere or sensory effects of the traditional service environments. Thus, people coming from cultures with high uncertainty avoidance will tend to bypass SSTs and new products in general. Innovativeness involves initiating a new behaviour, often independent of others. Such a change would be positively regarded in individualistic cultures, but would most likely be inhibited by collectivistic ones (Lim et al., 2004). Steenkamp et al. (1999) discovered that Hofstede's masculinity/femininity cultural dimension also influences consumer innovativeness. In countries with high levels of masculinity, individuals tend to show off their social and material superiority by buying new products or using new technologies. Therefore these countries are characterized by higher consumer innovativeness and propensity to adopt SSTs (Steenkamp et al., 1999).

Two further individual dimensions, which are influenced by the cultural background, have a negative impact on SST adoption. These are ethnocentrism (devotion to national products) and attitudes towards the past, which represent an individuals' perception that products, people and life were better in the old days (Steenkamp et al., 1999).

2.2. Gaps in Current Understanding

The limitations regarding previous research on SSTs typically fall into three major categories. First, several authors such as Van Beuningen et al. (2009) or Cunningham, Young & Gerlach (2009) conducted their studies with student samples. This limits the possibility of generalizing their findings (Gelderman et al., 2011).

Second, most studies focused on comparing SSTs from the same industry and did not attempt a cross-industry examination (Gelderman et al., 2011). For instance, Curran & Meutner (2005) focused their studies on ATMs, mobile banking and online banking respectively. Reinders, Dabholkar & Frambach (2008) conducted their research exclusively on SSTs from the travel industry.

Finally, as mentioned before, the majority of papers written on SSTs based their research in Western countries. Authors such as Steenkamp et al. (1999), Parasuraman (2000) or Nilsson (2007) call for the need of conducting investigations in Eastern and developing countries. The study of SSTs in Romania is particularly limited. Gurău (2005) studied the implementation of Internet banking. However, his study was strictly qualitative and did not investigate the problem from the consumers' perspective.

3. The Research Study

In order to address the identified gaps in our current knowledge, the main objective of this current research is to discover the factors which influence SST usage in an emerging market (Romania) and reveal which factors have the greatest impact on consumers' intention to use SST. This study uses a combination of quantitative and qualitative techniques. The qualitative study was employed to gain preliminary insights into consumers' attitudes towards SSTs and to determine the main factors that influence consumers' decision to use these technologies. Following that, the quantitative research helped investigate which of these variables have the greatest impact on SST use.

3.1 Study 1

3.1.1 Data Collection

In order to study the consumers' attitudes and intentions towards SSTs and SSTs usage, different technologies have to be investigated (Meutner et al., 2005). ATMs and online shopping were the chosen technologies for both the quantitative and qualitative studies. The two SSTs are different in various ways. First, they come from distinct industries: banking and retailing. Second, consistent with Schumann, Wunderlich & Wangenheim's (2012) classification, ATMs are provider based SSTs while online shopping is customer-based. Third, ATMs are less complex than online shopping and are generally seen as safer (Curran & Meutner, 2005).

The exploratory part of the research comprised of 20 in-depth, semi-structured interviews.The sample size fits within the recommended ranges (Parasuraman, Grewal, & Krishnan, 2004). Moreover, after conducting the first 17 interviews, the process reached data saturation, as the interviewees were not able to provide any extra information from their predecessors. For a greater reliability of the results, respondents were selected in order to replicate the demographic structure of the Romanian population. The structure of the sample is presented in Table 1.

Table 1 − Qualitative Study Sample Structure

Variables	Groups/Categories	Absolute values	Percentages
Gender	Male	9	45
	Female	11	55
Age	18-24	2	10
	25-34	4	20
	35-44	4	20
	45-54	3	15
	55-64	3	15
	65 +	4	20
Education	Primary and Lower secondary	6	30
	Upper secondary	11	55
	Tertiary	3	15
Monthly Income	Below RON 700	1	5
	RON 700- 1500	3	15
	RON 1501- 2500	8	40
	RON 2501- 4000	3	15
	Above RON 4000	5	25

Out of the 20 interviews, 14 were conducted in a face to face setting (11 at the respondents' workplace and 3 at their homes) and 6 online, via Skype, in order to reach geographically dispersed interviewees. The investigated variables and the set of predetermined questions which were asked during the interviews can be found in Table 2.

Table 2 − Variables Investigated During the In-Depth, Semi-Structured Interviews

Investigated variables	Corresponding questions
Compatibility (Meutneret al., 2005)	Do you feel that using ATMs is compatible with your lifestyle, with the way you handle your daily tasks? What about online shopping?
Relative advantage (Lee et al., 2003 ; Collier & Sherrell, 2010)	Do you consider that ATMs provide any advantages in comparison to the traditional methods of handling your money? Do you consider that online shopping provides any advantages in comparison to traditional shopping methods?
Perceived risks (Scholderet al.,1991; Curran & Meutner, 2005; Featherman & Wells, 2010; Wang et al., 2012)	Do you perceive ATMs as risky? What about online shopping?
Complexity (Wood & Moreau, 2006; Zhu et al., 2007)	Do you consider online shopping to be complex, difficult? Are ATMs hard to operate?
Observability (Meutner et al., 2005)	Would it be easier for you to use ATMs/online shopping if you could observe how others use them?
Trialability (Meutner et al., 2005)	If you were able to trial ATMs/ online shopping without any cost, would that encourage you to use these technologies?
Inertia (Meutner et al., 2005; Polites & Karahanna, 2012)	Do you see yourself as a person who is reluctant to change his habits?
Technology readiness and technology anxiety (Parasuraman, 2000; Meutner et al., 2003; Curran & Meutner, 2005; Gelderman et al. 2011)	In your opinion, does technology give people more freedom, more mobility? In general, are you among the first from your family or circle of friends who seeks to acquire new technology when it appears? Do you generally find technology difficult to use? Do you feel apprehensive when using technology?
Need for interaction (Lee et al., 2003; Johnson et al., 2008)	When using a certain service or buying a certain product, do you feel the need to interact with company/store employees?
Previous experience (Patterson 2000; Meutneret al., 2005; Wang et al., 2012)	Do you believe that your previous experience with ATMs and online shopping has an effect on you using these technologies?
Role clarity (Van Beuningen et al., 2009)	Do you know what is expected of you when you use ATMs? What about when you shop online?

3.1.2 Data Analysis and Results

Content analysis was used to analyse the qualitative data in this current research. No computer programs were employed as the interviewees' responses were quite clear and concise and did not require a complex classification or examination.

Out of the 20 interviewees, 5 never used ATMs nor shopped online. 9 used ATMs, but never shopped online and 6 used both SSTs. The interviews revealed that the *need for interaction* was the most frequently mentioned factor by both users and non-users of SSTs, with a total of 17 respondents approaching this topic. This is in line with previous findings by Lee et al. (2003), Meutner et al. (2005) or Gelderman et al. (2011). This determinant of SST usage was relevant only in the case of online shopping. *Relative advantage and perceived risk* were the next most common factors identified by the interviewees (14 and 16 respondents, respectively). According to most respondents the two go hand in hand. If the advantages are greater than the risks, consumers are willing to use SSTs. Consistent with Curran & Meutner (2005), the interviews revealed that the risks and complexity associated with online shopping, a less widespread technology, are greater than with ATMs. The most frequently mentioned risk (13 interviewees) is the probability of the actual product not matching the online description. *Inertia* was also identified as an appreciable factor (9 respondents), especially by consumers aged above 55. In some situations, respondents even admitted that SSTs provide several advantages, but they still seemed reluctant to change their habits and blamed this resistance on age. *Complexity and previous experience* with SSTs were also found to be relevant, confirming the findings of Patterson (2000), Wood & Moreau (2006) or Wang et al. (2012). Mainly consumers aged above 65 found both ATMs and online shopping complicated. It is noteworthy that complexity and role clarity seemed to overlap. With no exception, respondents who stated that ATMs or online shopping are easy to handle, also believed that they understand what is expected of them when using these technologies. Consistent with Meutner et al. (2005) and Parasuraman (2000), *technology anxiety*, as well as *technology readiness* influenced consumers. Interviewees who asserted that they do not feel comfortable with new technologies or feel embarrassed to use them in public (8 respondents), were non-users or infrequent users of ATMs and, especially, online shopping. Surprisingly, *observability and trialability* did not seem to influence the interviewees. Only 4 out of 20 stated that they would be willing to use SSTs if they had the opportunity to observe how other consumers employ these technologies. Trial was relevant for only 5 respondents.

The interviews also confirmed Sääksjärvi & Samiee's (2011) findings that compatibility and relative advantage overlap. Most respondents (12 out of 20) who claimed that SSTs are compatible with their lifestyles argued that this happens because these technologies solve their problems through the advantages they provide.

Besides confirming previous findings, the series of interviews managed to reveal one more interesting factor which has not been identified in previous studies. The factor was mentioned by only one respondent, aged between 25 and 34, with tertiary studies. This variable could be labelled *social changes*. Although previous studies such as those of Lim et al. (2004) or Nilsson (2007) argue that in collectivistic cultures, such as Romania, people are more likely to be forced to accept social norms, the interviewee regarded this factor as something that goes beyond national culture, and refers to it as an ongoing, global metamorphosis that leaves the average, ordinary individual powerless.

One of the goals of the qualitative research was to gain a deeper understanding of the factors which influence SSTs usage in an emerging market. However, a secondary objective was to reveal which variables could be included in the quantitative survey research. The results show that the need for interaction, relative advantage, perceived risks, inertia and previous experience need to be part of the survey. Observability and trialability were excluded

from further analysis. Technology anxiety and technology readiness were found to be relevant. However, the latter is a more complex construct that, to a certain extent, incorporates the former (Meutner et al., 2005). Therefore, the technology anxiety construct was eliminated from the survey research, which, in turn, included TR. Compatibility and relative advantage overlapped. Consequently, the former was excluded from the survey research. For similar reasons, role clarity was not included in the survey.

3.2 Study 2

3.2.1 Hypotheses and Data Collection

Some of the variables which were included in the quantitative study have been mentioned in the previous section of the article. However, other factors such as thinking styles (Simon & Usunier, 2007), uncertainty avoidance, masculinity, individualism (Hofstede, Hofstede, Minkov & Vinken, 2008a), attitude towards the past or ethnocentrism (Steenkamp et al., 1999) were not included in the exploratory study because the scales which measure these factors were designed for quantitative research. The final independent and dependent variables are shown in Table 3 and the hypotheses in Table 4, together with the relevant literature sources.

Table 3 − Variables Included in the Survey Research

Independent antecedent variables	**Independent mediating variable**	**Dependent variable**
Complexity Relative advantage Perceived risk Inertia Need for interaction Previous experience Technology readiness Rational thinking Experiential thinking Uncertainty avoidance Individualism Masculinity Attitude towards the past Ethnocentrism	Attitude towards SSTs	Intention to use SSTs

The data for the quantitative study were collected using a combination of convenience, snowball and quota sampling. The sample aimed at replicating the structure of the Romanian population. Initially, several respondents, known by the researchers and who fitted within the predermined sample characteristics, were chosen. Based on the same characteristics, the respondents recommended further participants for the survey research. A total of 170 questionnaires were distributed. Out of these, 132 were administrated in a face to face settings (at the respondents' workplace, homes or other public spaces) so the return rate was 100 %. In order to save time and reach geographically dispersed respondents, a further 38 questionnaires were designed using Qualtrics Survey Software and delivered via email. 31 respondents (81.5%) replied. Out of the total 163 received questionnaires, 24 (14.72 %) were excluded from the analysis due to incomplete answers, leaving a number of 139 valid questionnaires. The sample characteristics are shown in Table 5.

Table 4 − Quantitative Survey Research Hypothesis

Hypothesis	Supporting literature
H1: The complexity of SSTs has a negative effect on the intention to use SSTs	Meutner et al. (2005); Zhu et al. (2007); Lee et al. (2003)
H2: There is a positive relationship between the relative advantages of SSTs and the intention to use SSTs	Meutner et al. (2005); Lee et al. (2003)
H3: Perceived risk is negatively related to the intention of using SSTs	Scholder et al. (1991); Meutner et al. (2005); Wang et al. (2012)
H4: Consumer inertia is negatively related to the intention of using SSTs	Meutner et al. (2005)
H5: The need for interaction with service employees has a negative impact on the intention to use SSTs	Curran & Meutner (2005); Johnson et al. (2008)
H6: The consumer's previous experience with SSTs is positively related to the intention of using a specific SST	Meutner et al. (2005); Wang et al. (2012), Patterson (2000)
H7: The consumers' technology readiness is positively related to the intention of using SSTs	Parasuraman (2000); Gelderman et al. (2011)
H8a: Rational thinking has a positive effect on the intention to use SSTs	Simon & Usunier (2007)
H8b: Experiential thinking has a negative effect on the intention to use SSTs	
H9a: Romanian consumers are characterized by high scores of uncertainty avoidance	Hofstede et al. (2010)
H9b: There is a negative relationship between uncertainty avoidance and the intention to use SSTs	Lim et al. (2004); Park & Jun (2003); Nilsson (2007)
H10a: Romanians tend to be collectivists rather than individualists	Hofstede et al. (2010)
H10b: Individualism is positively related to the intention of using SSTs	Lim et al. (2004); Park & Jun (2003); Nilsson (2007)
H11a: Romania is a relatively feminine society	Hofstede et al. (2010)
H11b: Masculinity has a positive effect on the intention to use SSTs	Steenkamp et al. (1999)
H12: The attitude towards the past has a negative effect on the int. to use SSTs	Steenkamp et al. (1999)
H13: There is a negative relationship between ethnocentrism and the intention to use SSTs	Steenkamp et al. (1999)
H14: Romanian consumers tend to have a more positive attitude towards wider adopted SSTs	Curran & Meutner (2005)
H15: The attitude towards SSTs is positively related to the intention of using these technologies	Curran & Meutner (2005)
H16: The attitude towards SSTs mediates the relationship between the other factors which influence SSTs employment and the intention to use SSTs.	Curran & Meutner (2005)

Table 5 − The Sample Characteristics

Variables	Groups/Categories	Absolute values	Percentages
Gender	Male	67	48.2
	Female	72	51.8
Age	18-24	15	10.8
	25-34	31	22.3
	35-44	27	19.4
	45-54	17	12.2
	55-64	22	15.8
	65 +	27	19.4
Education	Primary and Lower secondary	41	29.5
	Upper secondary	72	51.8
	Tertiary	26	18.7
Monthly Income	Below RON 700	11	7.9
	RON 700- 1500	27	19.4
	RON 1501- 2500	51	36.7
	RON 2501- 4000	19	13.7
	Above RON 4000	31	22.3

3.2.2 Data Analysis and Results

3.2.2.1 Reliability Analysis

Cronbach's Alpha was used in order to determine the scale reliability. The summary of the results are shown in Table 6.

Table 6 − Reliability of Scales

Scale	Source	Cronbach's Alpha
Complexity	Meutner et al. (2005);Wang, Wu, Lin, Wang, & He (2012)	.902
Relative advantage	Meutner et al. (2005)	.908
Perceived risk	Meutner et al. (2005); Shamdasani, Mukherjeeb, & Malhotra (2008)	.959
Consumer inertia	Meutner et al. (2005)	.955
Need for interaction	Meutner et al. (2005)	.864
Previous experience	Meutner et al. (2005)	.784
Technology readiness	Parasuraman (2000), Geldermanet al. (2011).	.876
Rational thinking	Simon & Usunier (2007)	.835
Experiential thinking	Simon & Usunier (2007)	.780
Uncertainty avoidance	Hofstedeet al. (2008a; 2008b)	.045
Individualism/collectivism	Hofstedeet al. (2008a; 2008b)	.404
Masculinity/femininity	Hofstedeet al. (2008a; 2008b)	.698
Attitude towards the past	Holbrook (1993); Steenkampet al. (1999)	.772
Ethnocentrism	Shimp & Sharma (1987); Steenkampet al. (1999)	.897
Attitude towards SSTs	Curran & Meutner (2005)	.969
Intention to use SSTs	Curran & Meutner (2005)	.871

As Table 6 shows, the scales measuring complexity, relative advantage, perceived risk, inertia, need for interaction, technology readiness, rational thinking, ethnocentrism, attitudes towards SSTs and intention have an excellent internal consistency with Cronbach Alpha values above .8 (Pallant, 2007). Most of the remaining scales score above .6 which means they are reliable as well. The only exceptions are uncertainty avoidance and individualism/collectivism, with results below .6. Therefore, at first sight these scales can be considered unreliable. However, Hofstede et al. (2008a) explicitly state that, in order to be efficient, any reliability tests (and particularly Cronbach's Alpha) conducted on these scales should not be based on individual scores, but on country mean scores, by analysing samples coming from at least ten different countries. Considering these aspects, but also the fact that these scales have been intensively used in the past, they were not removed from the correlation and regressions analysis.

3.2.2.2 Hypotheses Testing

*Descriptive statistics and correlation analysis.*The summary of the hypotheses testing results can be found in Table 7. The descriptive statistics are shown in Table 8. The correlation results are presented in Tables 9 and 10. As it can be seen from both correlation matrices, all

the relationships between the independent variables and the dependent variable are statistically significant ($p < .05$).

The correlation coefficient between complexity and intention ($r= -.845$, $p < .01$) suggests a very strong, negative relation (Shiu, Hair, Bush, & Ortinau, 2009). Therefore H1 is supported. Relative advantage is also strongly related to intention ($r=.796$, $p < .01$). H2 is supported. The analysis also shows that there is a strong negative relationship between perceived risk and intention ($r= -.718$, $p <.01$), thus supporting H3. Inertia is moderately and negatively related to intention ($r= -.544$, $p < .01$) and H4 is supported. The same stands for need for interaction ($r= -515$, $p <.01$), supporting H5. Previous experience and attitude towards SSTs are strongly and positively related to intention ($r= .829$, $p < .01$; $r= .891$, $p < .01$). H6 and H15 are confirmed. There is a strong, positive relation between technology readiness and the intention to use SSTs ($r= . 746$, $p < .01$), thus supporting H7.

The second correlation matrix reveals that there is a very weak, but significant connection between rational thinking and the consumers' intention to use SSTs ($r= -.174$, $p < .05$). However, the relationship is negative which contrasts with the initial hypothesis. Consequently, H8a is rejected. Although very weak ($r = -.199$, $p < .05$), there is a negative connection between experiential thinking and intention to use SSTs. H8b is therefore confirmed. As expected, a high level of uncertainty avoidance restrains the intention of using SSTs ($r= -.593$, $p < .01$). H9b is confirmed. Contrary to the initial expectations, it seems that high levels of individualism and masculinity would deter consumers from using SSTs ($r= -.184$, $p < .05$; $r= -.191$, $p< .05$). H10b and H11b are rejected. Both H12 and H13 are accepted. The attitude towards the past and ethnocentrism have a negative impact on consumers' intentions of using SSTs ($r= -.259$, $p < .01$; $r= -.407$, $p < .01$).

The scores for uncertainty avoidance, individualism and masculinity were calculated using Hofstede's formulas (Hofstede et al.,2008a, pp.7-9). In the current research, the neutral value for these variables is 0, which means that, for example, a score above this value on individualism would suggest an individualist country, whereas a score below, a collectivist one. The mean score for uncertainty avoidance is 5.14, therefore H9a is rejected. This value shows that the level of uncertainty avoidance is only slightly above neutral, but not high. (see Table 8). The average value for individualism is 18.3. This shows a moderate, close to neutral level of individualism. Therefore, H10a is rejected. The masculinity mean value of 16.8 would suggest a slightly masculine country. H11a is also rejected.

Finally, H14 is supported.The mean scores show that Romanians tend to have a marginally more positive attitude towards ATMs (Mean=4.98) than towards online shopping (4.27).

Hierarchical multiple regression. In order to verify hypothesis H16, a test of mediation is required. As it can be seen from the first of the previous correlation matrices, complexity, relative advantage, previous experience and technology readiness are highly correlated (values greater than ± .7) and should not be included in the same regression block in order to avoid multicoliniarity (Pallant, 2007). Perceived risk is also highly correlated with complexity, technology readiness and relative advantage. Consequently, in order to avoid the inclusion of these variables in the same blocks, four separate hierarchical multiple regression (HMR) tests were conducted. Attitude towards SSTs was introduced in the second stage of all these four regressions. The summary of the results is presented in table 11.

All four models had Durbin-Watson values between 1.5 and 2, as well as variance inflation factor (VIF) scores of below 5, which indicates that there are no issues with autocorrelation and multicoliniarity, respectively (Pallant, 2007).

Table 7 − Hypothesis Testing Results

Hypothesis	Confirmed/ Rejected
H1: The complexity of SSTs has a negative effect on the intention to use SSTs	Confirmed
H2: There is a positive relationship between the relative advantages of SSTs and the intention to use SSTs	Confirmed
H3: Perceived risk is negatively related to the intention of using SSTs	Confirmed
H4: Consumer inertia is negatively related to the intention of using SSTs	Confirmed
H5: The need for interaction with service employees has a negative impact on the intention to use SSTs	Confirmed
H6: The consumer's previous experience with SSTs is positively related to the intention of using a specific SST	Confirmed
H7: The consumers' technology readiness is positively related to the intention of using SSTs	Confirmed
H8a: Rational thinking has a positive effect on the intention to use SSTs	Rejected
H8b: Experiential thinking has a negative effect on the intention to use SSTs	Confirmed
H9a: Romanian consumers are characterized by high scores of uncertainty avoidance	Rejected
H9b: There is a negative relationship between uncertainty avoidance and the intention to use SSTs	Confirmed
H10a: Romanians tend to be collectivists rather than individualists	Rejected
H10b: Individualism is positively related to the intention of using SSTs	Rejected
H11a: Romania is a relatively feminine society	Rejected
H11b: Masculinity has a positive effect on the intention to use SSTs	Rejected
H12: The attitude towards the past has a negative effect on the intention to use SSTs	Confirmed
H13: There is a negative relationship between ethnocentrism and the intention to use SSTs	Confirmed
H14: Romanian consumers tend to have a more positive attitude towards wider adopted SSTs	Confirmed
H15: The attitude towards SSTs is positively related to the intention of using these devices.	Confirmed

Table 8 − Descriptive Statistics

Variable	Mean	Median	Mode	Std. deviation
Complexity	3.03	2.33	1	1.80
Relative Advantage	4.27	4.5	4.16	1.69
Perceived risk	3.39	2.75	1.25	1.85
Inertia	4.19	4	4	1.93
Need for interaction	4.07	4.5	4.5	1.87
Previous experience	4.36	4.66	7	1.91
Technology readiness	3.67	3.66	3.66	1.28
Rational thinking	3.29	3	1	1.85
Experiential thinking	5.01	5	5	1.41
Uncertainty avoidance	5.14	-5	-40	91.6
Individualism	18.38	0	0	68.11
Masculinity	16.87	0	0	68.37
Attitude towards the past	4.6	4.8	4.8	1.24
Ethnocentrism	4.5	4.75	7	1.62
Attitude towards ATMs	4.98	5.66	7	1.86
Attitude towards online shopping	4.27	4.66	7	2.03
Attitude towards SSTs	4.62	5	7	1.86
Intention to use SSTs	4.7	5.5	7	2.21

Table 9 − Correlation Matrix 1

		Complexity	Relative Advantage	Perceived Risk	Inertia	Need for interaction	Experience	Technology readiness	Attitude towards SSTs	Intention to use SSTs
Complexity	Pearson Correlation	1.000	-.684**	.794**	.577**	.448**	-.738**	-.719**	-.815**	-.845**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000
	N	139.000	139	139	139	139	139	139	139	139
Relative Advantage	Pearson Correlation	-.684**	1.000	-.710**	-.442**	-.403**	.709**	.707**	.802**	.796**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000
	N	139	139.000	139	139	139	139	139	139	139
Perceived Risk	Pearson Correlation	.794**	-.710**	1.000	.485**	.502**	-.688**	-.678**	-.731**	-.718**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000
	N	139	139	139.000	139	139	139	139	139	139
Inertia	Pearson Correlation	.577**	-.442**	.485**	1.000	.310**	-.544**	-.628**	-.621**	-.544**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000
	N	139	139	139	139.000	139	139	139	139	139
Need for interaction	Pearson Correlation	.448**	-.403**	.502**	.310**	1.000	-.446**	-.475**	-.459**	-.515**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000
	N	139	139	139	139	139.000	139	139	139	139
Experience	Pearson Correlation	-.738**	.709**	-.688**	-.544**	-.446**	1.000	.782**	.865**	.829**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000
	N	139	139	139	139	139	139.000	139	139	139
Technology readiness	Pearson Correlation	-.719**	.707**	-.678**	-.628**	-.475**	.782**	1.000	.824**	.746**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000
	N	139	139	139	139	139	139	139.000	139	139
Attitude towards SSTs	Pearson Correlation	-.815**	.802**	-.731**	-.621**	-.459**	.865**	.824**	1.000	.891**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000
	N	139	139	139	139	139	139	139	139.000	139
Intention to use SSTs	Pearson Correlation	-.845**	.796**	-.718**	-.544**	-.515**	.829**	.746**	.891**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	
	N	139	139	139	139	139	139	139	139	139.000

**. Correlation is significant at the 0.01 level (2-tailed).

Table 10 − Correlation Matrix 2

		Rational thinking	Experiential thinking	Uncertainty avoidance	Individualism	Masculinity	Attitude towards the past	Ethnocentrism	Attitude towards SSTs	Intention to use SSTs
Rational thinking	Pearson Correlation	1.000	-.070	.089	-.035	.036	-.019	.132	-.122	-.174*
	Sig. (2-tailed)		.412	.295	.686	.675	.823	.122	.153	.040
	N	139.000	139	139	139	139	139	139	139	139
Experiential thinking	Pearson Correlation	-.070	1.000	.328**	.114	-.192*	.379**	.208*	-.307**	-.199*
	Sig. (2-tailed)	.412		.000	.180	.023	.000	.014	.000	.019
	N	139	139.000	139	139	139	139	139	139	139
Uncertainty avoidance	Pearson Correlation	.089	.328**	1.000	.258**	-.031	.194*	.479**	-.551**	-.593**
	Sig. (2-tailed)	.295	.000		.002	.721	.022	.000	.000	.000
	N	139	139	139.000	139	139	139	139	139	139
Individualism	Pearson Correlation	-.035	.114	.258**	1.000	-.134	-.036	-.073	-.133	-.184*
	Sig. (2-tailed)	.686	.180	.002		.116	.671	.393	.118	.030
	N	139	139	139	139.000	139	139	139	139	139
Masculinity	Pearson Correlation	.036	-.192*	-.031	-.134	1.000	-.116	.014	-.112	-.191*
	Sig. (2-tailed)	.675	.023	.721	.116		.174	.870	.189	.025
	N	139	139	139	139	139.000	139	139	139	139
Attitude towards the past	Pearson Correlation	-.019	.379**	.194*	-.036	-.116	1.000	.420**	-.346**	-.259**
	Sig. (2-tailed)	.823	.000	.022	.671	.174		.000	.000	.002
	N	139	139	139	139	139	139.000	139	139	139
Ethnocentrism	Pearson Correlation	.132	.208*	.479**	-.073	.014	.420**	1.000	-.325**	-.407**
	Sig. (2-tailed)	.122	.014	.000	.393	.870	.000		.000	.000
	N	139	139	139	139	139	139	139.000	139	139
Attitude towards SSTs	Pearson Correlation	-.122	-.307**	-.551**	-.133	-.112	-.346**	-.325**	1.000	.891**
	Sig. (2-tailed)	.153	.000	.000	.118	.189	.000	.000		.000
	N	139	139	139	139	139	139	139	139.000	139
Intention to use SSTs	Pearson Correlation	-.174*	-.199*	-.593**	-.184*	-.191*	-.259**	-.407**	.891**	1.000
	Sig. (2-tailed)	.040	.019	.000	.030	.025	.002	.000	.000	
	N	139	139	139	139	139	139	139	139	139.000

*. Correlation is significant at the 0.05 level (2-tailed).

Table 11 − Hierarchical Multiple Regression Results

HMR	β_1[a]	β_2[b]	Sig.$_1$[c]	Sig.$_2$[d]	R^2	Adjusted R^2	ΔR^2	F Change	VIF	Durbin-Watson
First HMR										
- *Stage 1*:										
Complexity	-.730	-.343	.000	.000	.741	.735	.741	128.859*	1.704	
Inertia	-.072	.059	.184	.180					1.507	
Need for Interaction	-.166	.046	.001	.008					1.257	
- *Stage 2*:										
Attitude towards SSTs		.600		.000	.847	.842	.106	92.258*	3.416	1.713
Second HMR										
- *Stage 1*:										
Relative advantage	.774	.217	.000	.001	.646	.639	.646	82.274*	1.049	
Rational Thinking	-.104	-.060	.047	.106					1.018	
Experiential thinking	-.063	.060	.231	.123					1.044	
- *Stage 2*:										
Attitude towards SSTs		.729		.000	.820	.815	.174	129.940*	3.052	1.694
Third HMR										
- *Stage 1*:										
Perceived Risk	-.179	-.040	.006	.478					2.255	
Experience	.613	.210	.000	.005	.759	.750	.759	83.761*	2.197	
Uncertainty avoidance	-.143	-.113	.009	.013					1.625	
Individualism	-.061	-.060	.185	.114					1.141	
Masculinity	-.139	-.118	.002	.002					1.120	
- *Stage 2*:										
Attitude towards SSTs		.597		.000	.836	.828	.077	61.435*	4.661	1.610
Fourth HMR										
- *Stage 1*:										
Technology Readiness	.743	.023	.000	.739	.584	.574	.584	63.061*	1.350	
Attitude towards the past	.141	.119	.031	.006					1.365	
Ethnocentrism	-.162	-.168	.012	.000					1.312	
- *Stage 2*:										
Attitude towards SSTs		.859		.000	.820	.815	.237	176.579*	3.116	1.553

a - Beta value in the first stage; b - Beta value in the second stage; c - Beta significance value in the first stage; d - Beta significance value in the second stage.

*p < .001

The first regression includes need for interaction, inertia and complexity. As it can be seen, the p value of the beta coefficients reveals that inertia does not make a statistically significant contribution to the model (p > .05). Complexity and need for interaction are significant in the first stage (p < .01) and still remain significant after attitude towards SSTs is

introduced into the model. However, their beta coefficients and significance levels decrease in the second stage, which shows that their relationship with intention is partially mediated by attitude (Pallant, 2007).

In the second regression, experiential thinking does not make a statistically significant contribution to the model (p>.05). After attitude towards SSTs is introduced, rational thinking becomes statistically insignificant, showing that attitude fully mediates its relationship with intention. Relative advantage is only partially mediated.

Initially, in the third regression, the only statistically insignificant variable is individualism (p >.05). Perceived risk becomes insignificant (p >.05) after attitude is introduced into the model and therefore is fully mediated. The changes in the beta and p values reveal that previous experience, uncertainty avoidance and masculinity are partially mediated.

The fourth and final regression increases in explanatory power by 23.7 % after attitude is introduced, the greatest rise of all the models. The changes in the significance and beta values show that TR is fully mediated by attitude, whereas attitude towards the past and ethnocentrism are not mediated at all.

Considering that attitude mediates the relationship of only nine variables with intention, H16 is partially confirmed.

4. Discussion

The correlation analysis revealed that, of all the independent antecedent variables, *complexity* has the strongest connection with the intention to use SSTs (r = -.845, p< .01). Previous papers such as Meutner et al. (2005), Wood & Moreau (2006), and Zhu et al. (2007) also considered complexity to be a significant predictor of intention. It is obvious that, as the perceived difficulty of a technology increases, the probability of it being used by consumers decreases. Complexity was also found to be relevant in the qualitative exploratory research, especially in the case of older consumers. The in-depth interviews showed that ATMs are generally seen as less complex than online shopping, confirming that single feature SSTs are usually regarded as simpler to operate than their multiple feature counterparts (Zhu et al.,2007).

Previous experience was found to have the second strongest relationship with intention (r = .829, p< .01), thus confirming the findings of Patterson (2000) or Wang et al. (2012). Consumers are willing to try out new SSTs if they previously employed similar technologies and the attempts have been successful.

The survey results disclose the fact that both *relative advantage and perceived risk* are powerful antecedents of intention. It can certainly be argued that Romanian consumers are willing to change the way they buy or consume a service if the new marketing channel offers superior benefits in comparison to the old one (Collier & Sherrell, 2010; Lee et al., 2003; Lee et al., 2012). On the other hand, consumers will refrain from using SSTs if they believe that there is a probability of being affected financially, physically or emotionally after using such a technology (Featherman & Wells, 2010; Scholder et al., 1991).

Technology readiness was the last predictor strongly and positively correlated with intention. This is in line with Parasuraman's (2000) or Gelderman et al.'s (2011) findings. Therefore, the results show that Romanian consumers with high technology readiness have a greater propensity to embrace new technologies, the opposite being true for low TR individuals.

Inertia was found to be one of the variables that has a moderate relationship with intention (r= -.544). Authors such as Meutner et al. (2005) or Polites & Karahanna (2012) also found this factor to be a significant predictor of SSTs usage. Just like other individuals,

Romanian consumers with high resistance to change usually refuse to buy new products or use new forms of technology.

Similar to previous findings such as Lee et al.(2003), Johnson et al. (2008) or Gelderman et al. (2011), the research results showed that the *need for interaction* has a significant, moderate and negative relationship with intention (r= -.515). Romanian consumers who value the opportunity of communicating with company employees tend to use SSTs less frequently. Looking back at the qualitative research, it seems that, unlike older consumers, younger individuals feel the need to interact mostly from a functional, utilitarian perspective (seeking information, asking for assistance, etc.). They would be willing to use SSTs if these devices provided clear benefits.

The quantitative data analysis revealed that *uncertainty avoidance* is negatively and moderately associated with the intention of using SSTs (r= -.593). This confirms, Park & Jun's (2003) and Nilsson's (2007) research. Individuals coming from cultures characterized by high values on uncertainty avoidance are less likely to adopt new technologies. Contrary to Hofstede et al.'s (2010) findings, the results of this research suggest that Romanians are characterized by a moderate level of uncertainty avoidance.

The last variable moderately correlated with intention is *ethnocentrism* (r= -.407). Ethnocentric consumers, and particularly the ones living in emerging economies such as Romania, are sceptic when it comes to new forms of technology as these innovations are offered by foreign companies (Steenkamp et al., 1999). The mean value of 4.5 (out of 7) would suggest that Romanians are slightly ethnocentric.

The *attitude towards the past* was found to have a weak connection with intention (r= -.259). Even if the mean score of 4.6 (out of 7) suggests that Romanians have a slightly favourable attitude towards the past it is also possible that they acknowledge the benefits of SSTs by comparison with the more traditional service delivery methods; hence the weak relationship.

Simon & Usunier's (2007) expectations were partially confirmed. *Experiential thinking* was found to have a negative relationship with intention among Romanian consumers. However, contrary to the hypothesis, rational thinking also had a negative association with intention. Consumers with high *rational thinking* usually seek efficiency and focus on short term projects (Simon & Usunier, 2007). It could be possible that rational Romanian individuals believe that SSTs are less efficient than the alternatives. Both correlations are very weak and,therefore, the results should be treated with caution.

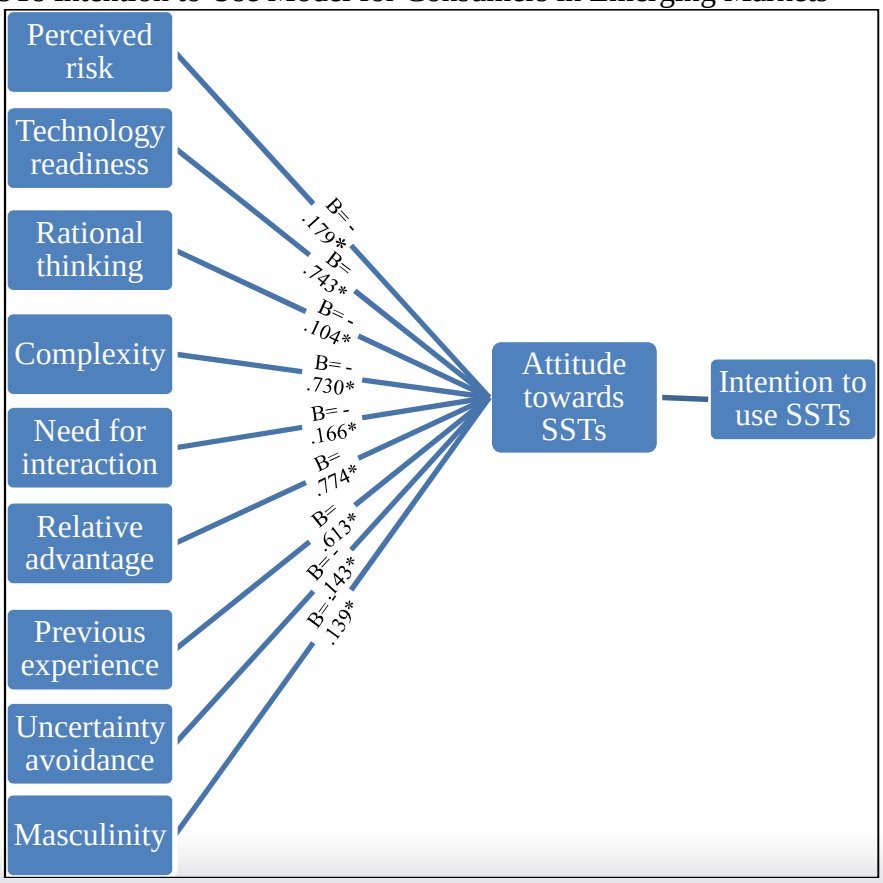
Individualism and masculinity are negatively and very weakly correlated with intention. Hofstede et al. (2008a) argue that these cultural dimensions should not be used on individuals, like in this present research, but included in cross-cultural studies. This could explain the very weak correlation between these two independent variables and intention.

The current research also ended with findings of its own and new contributions to the SST literature. The first finding is represented by the factor labelled *social changes* which was unveiled during one of the semi-structured interviews. The respondent believed that one of the reasons why he adopted SSTs was the turbulence of the world which surrounds him. He sees SSTs as fit for the existing social realities in which people become increasingly distant from each other and replace human interaction with machines. The interviewee seems to fear of being rejected by other society members if he tries to oppose these changes. This finding is to some extent confirmed by Polites & Karahanna (2012) or Venkatesh, Thong & Xu (2012) who identified subjective norm and social factors as two of the antecedents of SSTs usage. Nevertheless, the subjective norm refers to the individual's perception about what the people close to him believe about him performing or not performing certain behaviours (Ajzen, 1991). Social factors are defined as 'specific personal agreements that the individual has made

with others, in specific social situations' (Venkatesh, Morris, Davis & Davis, 2003, p.430). Neither of these definitions is compatible with the identified variable. The interviewee did not mention anything regarding the influence of the people who are close to him or reference groups and does not see the adoption of SSTs as agreements made with others. On the contrary, he regards these devices as imposed to him by the ongoing social mutations and mentions that a fight against the system would be possible if individuals avoided choosing the most convenient solution (fitting into the existing social trends).

Second, a test of mediation was conducted in order to test if attitude moderates the relationship between the independent variables and the intention to use SSTs. 9 out of 14 antecedent variables was mediated. Complexity, need for interaction, relative advantage, previous experience, uncertainty avoidance and masculinity were partially mediated, whereas perceived risk, technology readiness and rational thinking were fully mediated. These nine factors have an indirect relationship, influencing intention through the attitude towards SSTs. For instance, as the risks associated with a SST become greater, consumers will form a negative attitude towards the respective device, which in turn would lead to a decreased usage intention. Curran & Meutner (2005) also found that attitude mediates need for interaction, complexity, risk and relative advantage. Considering the given results, this paper proposes a new model of SST adoption by consumers in emerging markets. Figure 2 shows that of all the nine mediated variables included in the model, complexity, previous experience, relative advantage and technology readiness have the greatest influence on intention, with beta values of -.730, .613, .774 and .743, respectively. Rational thinking, masculinity, uncertainty avoidance and need for interaction had the smallest impact with beta values of -.104, -.139, -.143 and -.166.

Figure 2 − SSTs Intention to Use Model for Consumers in Emerging Markets



4.1 Theoretical Implications

First, this article provides a much needed insight into the factors which inhibit or stimulate the use of SSTs in emerging markets. The results suggest that several determinants of SSTs usage in Western countries also apply to Eastern European consumers. Nevertheless, certain differences were revealed as well. Second, the article proposes a model of the intention to use SSTs by Romanian consumers which is to our best knowledge the first of its kind. Third, in contrast to previous studies which used student samples, both the quantitative and qualitative research were conducted with respondents coming from different demographic backgrounds, thus obtaining a diversity of opinions and assuring a better reliability of the findings. The study also investigated two types of SSTs, belonging to distinct industries. Therefore, the consumer's overall views on SSTs were less likely to be influenced by the service sector or the companies which provided these devices. Finally, the series of interviews also revealed a new factor which has not been identified in previous studies: *social changes*. The future development of scales to measure this variable as well as its inclusion in forthcoming studies might prove suitable.

4.2 Managerial Implications

Complexity was found to have the strongest relationship with intention. Therefore, diminishing the perceived difficulty of operating a SST should be the main focus for companies that aim to convince consumers to employ these technologies. If the SST is on-site, this could be done by providing clear instructions, preferably accompanied by pictures that describe the steps which need to be taken when using the device (Bitner, Ostrom, Meutner & Clancy, 2002). If the SST is off-site (for example online shopping or online banking) brochures or tutorials containing the same information could be offered to consumers, free of charge (Sääksjärvi & Samiee, 2011).

The second strongest predictor of intention is the consumers' *previous experience* with SSTs. In order to build experience, consumers need to be encouraged to use these devices. If no previous experience exists, a good possible solution would be to associate the way in which the technology is operated with a similar and more widespread SST (Moreau, Markman & Lehmann, 2001). For instance, an airline company trying to encourage the usage of its ticketing self-service kiosks could make an analogy to ATMs.

Relative advantage and *perceived risk* were also highly correlated with intention. The descriptive statistics showed that Romanian consumers generally regard SSTs as slightly advantageous and low in risk. The latter applies especially to the case of ATMs. However, Romanian consumers still consider online shopping as riskier as and less beneficial than the "brick and mortar" alternative. In order to stimulate the use of SSTs, a company could offer discounts, small gifts, free delivery or similar perks (Bitner et al., 2002; Collier & Sherrell, 2010) but also highlight the intrinsic benefits of these technologies (e.g. convenience, safety, efficiency). Personalizing the consumer's experience with the SST could be another potential advantage. For instance, in online banking, this can be done by creating unique welcome pages for each customer. Perceived risks could be reduced if permanent assistance were available from company employees and if money-back or product replacement guarantees were offered (Robertson, McQuilken & Kandampully, 2012). A list of recommendations for the remaining investigated variables can be found in Table 15.

Table 12 − Managerial Implications

Variable	Explanation	Managerial recommendations
Inertia	Consumers refuse to use SSTs either because they perceive them as less advantageous than the alternative or they see themselves as too old to change their habits	- Develop advertising messages which show older consumers satisfied after they operated SSTs (Featherman & Wells, 2010). - Use fear/safety as a trigger mechanism. In the case of ATMs, promote the idea that people who carry cash are more exposed to robbers than card holders.
Need for interaction	Consumers refuse to use SSTs because they feel the need to interact with store employees, either from a social or functional perspective	- Initially, offer both the SST and the alternative human contact. Do not force consumers to use the technology as the eliminated choice could become more attractive (Reinders et al., 2008). - Assistance should be permanently available either on or off-site
Uncertainty avoidance	Consumers coming from cultures with high uncertainty avoidance are reluctant to use SSTs	- Amplify the sense of tangibility through pictures or scanning and sensory devices. - In the case of online shopping, raise the visibility of rules on websites and display certifications from non-profit agencies or government bodies (Lim et al., 2004).
Ethnocentrism	Consumers tend to reject products and technologies coming from foreign countries	- Use SSTs or SSTs components manufactured in the country. - Explain that SSTs increase the company's efficiency and allow it to grow. Thus, more jobs will be offered to consumers and the small local businesses, which depend on the company, will benefit as well.
Individualism/ collectivism	The research revealed that individualism is negatively associated with intention. Romania is closer to a collectivist society.	- Use opinion leaders and public figures in advertising messages to promote the use of the respective SST (Keegan & Green, 2005). - Use young consumers to convince their friends and older family members to use SSTs.
Masculinity/ Femininity	Masculinity is negatively correlated with intention. Romania was found to have a slightly masculine culture.	- Introduce more exclusive SSTs (for example airport ticketing kiosks specially dedicated to premium and business class travelers). - Offer exclusive SSTs features or accessories (for instance a select range of credit cards or personalized welcome pages in online stores).
Attitude towards the past	Individuals believe that products and life, in general, were better in the past. However, Romanian consumers only have an overall slightly above neutral score on this variable.	- Stress the benefits which SSTs provide by comparison with the old alternatives: ease of use, low risk, enjoyment, convenience etc.
Rational and experiential thinking styles	Romanian consumers with rational and experiential thinking styles are less likely to use SSTs.	- Introduce or update the relational attributes included in the design of SSTs to overcome the need for interaction (Simon & Usunier, 2007) - Underline the technology's ease of use, efficiency and convenience for consumers with rational thinking styles

Finally, some independent variables were mediated by attitude towards SSTs. Hence, when trying to manipulate these variables, managers should understand that they are most likely influencing the attitude towards SSTs and not intention. Therefore, when conducting marketing research, companies should consider analysing the effects of their marketing efforts on both variables.

4.3 Limitations and Future Research

The proposed research has several limitations. First, the study investigated the consumers' intention of using SSTs and not the actual use, which could only be analysed using observation techniques. Authors such as Gelderman et al. (2011) revealed that various situational circumstances such as crowding or perceived waiting time could actually deter consumers from using SSTs, despite a positive intention. Therefore, a further investigation into the situational factors which influence SST employment would be appropriate.

Second, quota, convenience and snowball sampling were used for the quantitative study. Even if quota sampling could provide representative samples (Proctor, 2005), the general consensus is that the results obtained from non-probability samples should not be generalized to the entire population (Malhotra & Birks, 2007; Shiu et al., 2009).

Even though other authors such as Hwang & Lee (2012) or Yoon (2009) also used Hofstede's cultural dimensions at the individual level, and the dimensions were statistically significant in the current research, this is against the author's recommendations. The study revealed that individualism and masculinity only have a very weak influence on the intention to use SSTs. Therefore, upcoming papers could consider a cross-cultural comparison on SST usage in emerging markets.

Finally, most of the current studies on SSTs focus on user adoption. However, a company's long term success could be influenced by the continuous usage of these technologies (Huh & Kim, 2008). Therefore, forthcoming research should investigate consumer post-adoption attitudes and behaviour towards SSTs.

5. Conclusion

SSTs have developed greatly in the last decades. This transformation is likely to continue in the future as the service sector will keep playing an increasingly important role in both developed and, especially, emerging economies.

Consistent with the increasing importance of technology, in general, and SSTs in particular, numerous papers have been written on the factors which influence SST usage, technology acceptance or innovations adoption. Nevertheless, the research investigating these phenomena in emerging markets which are structurally different from developed countries (Sheth, 2011) is rather limited. The present work aimed to address this academic gap by conducting a research in an Eastern European country, Romania, in order to discover the determinants of SST employment in this country. The results revealed that Eastern European consumers and Western citizens have many communalities in terms of SSTs adoption, but also several differences. The qualitative research also exposed the fact that Romanian consumers do not regard observability and trialability as important antecedents of SSTs employment.

The paper brings a further contribution to the SST literature by proposing a novel "SSTs intention to use model" for consumers in emerging markets. Moreover, during one of the in-depth interviews, a perhaps original determinant of SST usage was discovered. The factor, labelled *social changes*, could be worth investigating in future research.

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