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Acceptance of self-scan checkouts: a cross-cultural comparison between Germany and Russia

Abstract

Self-service technologies are omnipresent in today's life. There are many factors influencing the decision to use this innovation, like cultural or demographical aspects. This paper focuses on the technology acceptance process and the influencing factors in Russia, an emerging Eastern European country, and Germany, an established Western European country. In detail, the paper seeks to investigate the influence of three psychological constructs, social pressure, self-efficacy and technology anxiety, on the self-scan checkout usage decision. Additionally the article attempts to find out whether there are differences between men and women in these countries. To achieve this, the design of the research was empirical. Students of universities in Germany and Russia were asked to complete a questionnaire. The results of the study clearly show the differences between Russian and German men and women.

Introduction and Objectives

Self-service technologies (SSTs), like ticket machines, reverse vending machines or online shopping, have become an inherent part of our life today. These technological interfaces help users to generate a service without direct help from service employees (Meuter et al., 2000). Self-scan checkouts (SSCs) are a new example of SSTs. They are defined as checkouts where customers scan the barcodes of their products, pay for them and put them into bags on their own, without the help of service employees. It is a young and innovative technology and still not very common in Germany and Russia.

Although the SSCs require sufficient investments, retailers can save up to 25% of their process cost in high-wage countries, like Germany, and can benefit from a reduced staff requirement by implementing this technology (Wincor Nixdorf, 2007). Customers can benefit from a reduced checkout time because stores are often able to run more than two SSC units efficiently, where traditionally only one cashier was possible. Customers can control the whole process of their purchases and become more loyal to the retailer. All these advantages are good reasons for companies to introduce SSCs.

The implementation of SSCs is very cost- and time-intensive. To avoid financial losses, companies need to understand the acceptance process and the reasons for acceptance or avoidance of a new technology before they install SSCs (Curran et al., 2003). The main factor of success is knowledge about the intention of customers to use SSCs. The intention to use is determined by the individual characteristics of the customer.

Self-efficacy, social pressure and technology anxiety have been considered as the core determinants of technology acceptance (Eastin, 2002; Meuter et al., 2003; Meuter et al., 2005; Nysveen et al., 2005). However, most research in this field relies on customer behaviour in the USA and Western Europe, while it is still not known if the usage of SSTs is similar in other countries and cultures. Cross-cultural differences in the psychological constructs self-efficacy, social pressure and technology anxiety for Western and Eastern European markets have not been explored yet, though it is known that the psyche and therefore also the behaviour are influenced by culture (Mueller/Gelbrich, 2004). Only a few efforts to estimate the usage of SSTs in this cultural context have been made (Nilsson, 2007; Kang et al., 2009). Moreover, there have been no investigations examining gender differences in technology acceptance in Western and Eastern European cultures.

This lack of cross-cultural studies can form a critical obstacle for Western service firms planning to offer their SSTs on emerging markets. The Russian market attracts these companies because of a higher growth economy potential in comparison with the stagnating growth rates in Western European countries. For 2010 the growth rate of the gross domestic product (GDP) of Russia is predicted to be at a level between 5.0 and 5.5% (World Bank, 2010). This growing economy provides more opportunities for Western companies to implement or sell SSCs in Russia. Therefore, this article investigates the differences between the consumers in two different countries and cultures, Germany and Russia. These countries were chosen because of their cultural differences: Russia represents an emerging East European economy, whereas Germany is an established Western European market.

Accordingly, the **purpose of this study** is to investigate the differences in factors influencing the acceptance of SSCs in Germany and Russia. Because of existing discrepancies between people in these two countries in respect of their buying behaviour (Schmidt, 2004), it can be supposed that they also differ in their acceptance of SSCs. The **focus of the paper** lies on self-efficacy, technology anxiety and social pressure influencing the intention to use SSCs. Furthermore, as gender has been one of the most common segmentations in marketing practice on Western markets (Nysveen et al., 2005) and has not yet been taken into consideration in Russian investigations, the analysis of gender differences in technology acceptance in both cultures will be the core objective of this research. With an increased understanding of cross-cultural differences, retailers will be better prepared to manage the implementation of SSCs in Germany and Russia. To explore the above-mentioned issues we defined two **research questions**:

1. How do German and Russian men and women evaluate technology anxiety, social pressure and self-efficacy in relation to using SSCs?
2. What are the differences and similarities in gender analyses of SST acceptance in these two countries?

Conceptual Framework

Positioning within the literature
The acceptances of SSTs as well as the adoption of technological products are often explained by the Technology Acceptance Model (TAM) (Davis, 1989). This model shows how users

accept a new technology and which factors influence their decisions. The TAM helps us to reproduce the consumer's decision of technology acceptance and to predict the determinants of individual behaviour (Agarwal/Prasad, 1997).

The field of technology acceptance consists of two main research streams (Lockett/Littler, 1997). The first investigates users' perception of several characteristics of new technology, like relative advantage, compatibility, complexibility, trialibility and observability (Rogers/Shoemaker, 1971; Rogers, 2003). The second stream focuses on the personal characteristics (e.g. self-efficacy, perceived control, demographics) of the user (Eastin, 2002; Meuter et al., 2003; Meuter et al., 2005; Nysveen et al., 2005). The identification of the characteristics of the customers influencing the acceptance is important (Anselmsson, 2001) because customers can differ in their intention to use innovative technologies. Unfortunately, the input of the demographic characteristics is not particularly satisfactory. Because of this additional factors, like psychological constructs, were investigated. The psychological factors influencing technology acceptance are social pressure, self-efficacy and technology anxiety (Eastin, 2002; Meuter et al., 2003; Meuter et al., 2005; Nysveen et al., 2005).

Social pressure (SP) describes the individual's perception that people important to her/him, like family or friends, think s/he should behave in a particular way, like using SSCs (Robertson, 1967; Davis, 1993; Venkatesh/Davis, 2000; Aronson et al., 2008). If the social environment of the person supports this technology there is a positive relationship between social pressure and intention to use SSTs (Hung et al., 2002). A number of studies have shown that the social norm influences the acceptance of technology (Karahanna et al., 1999; Schepers/Wetzels, 2006) and the behavioural intention to shop online (Venkatesh/Davis, 2000; Yoh et al., 2003) or use mobile chat services (Nysveen et al., 2005) or financial self-service (Curran/Meuter, 2007).

Self-efficacy (SE) is defined as the assessment of the individual's abilities to deal with a specific situation (Bandura, 1977) and has a positive effect on the intention to use technologies. Customers with a higher level of self-efficacy usually have more confidence in their ability to use SSCs and may be familiar with these technologies. Self-efficacy is one of the key factors inducing SST acceptance (Eastin, 2002; Meuter et al., 2005; Rose, 2007). Self-efficacy is strongly affected by technology anxiety (Compeau et al., 1999).

Technology anxiety (TA) is the level of anxiety experienced by an individual who has to decide to use a new technology (Igbaria/Parasuraman, 1989). It can be one of the biggest problems in relation to the acceptance of SSTs (Ostrom et al., 2002). Technology anxiety negatively affects the intention to use SSTs. Studies have shown the importance of technology anxiety. It is a more important predictor of using SSTs, like online shopping, than demographic determinants (Meuter et al., 2003; Kim/Forsythe, 2008).

To be able to reach conclusions for market launch strategies we also measured the intention to use SSCs. The **intention to use** SSCs is based on the behavioural intention, and can be described as the degree of one's aim to behave in a particular way (Fishbein/Ajzen, 1975).

Hypotheses

This article investigates technology acceptance in Germany and Russia. Prior research shows that cultural aspects play an important role in determining technology acceptance (Van Everdingen/Waarts, 2003; Nilsson, 2007). Hofstede's (Hofstede et al. 2010) framework consists of six cultural dimensions: individualism, power distance, uncertainty avoidance, masculinity, long-term orientation, and indulgence versus restraint.

Prior investigations have shown that the dimensions **individualism** and **uncertainty avoidance** are the most important to consumers' acceptance of innovations in different cultures (van Everdingen/Waarts, 2003). People of collectivistic cultures are more group-oriented, whereas people in individualistic cultures define themselves as more independent (Yeniyurt/Townsend, 2003). Consumer innovativeness is valued positively in cultures with a high level of individualism and negatively in cultures with a low level of individualism (Steenkamp et al., 1999). Consumers in highly individualistic cultures are more willing to adopt innovations, like SSCs, than people in countries with a low level of individualism (Steenkamp et al., 1999; van Everdingen/Waarts, 2003). Using innovations can be risky and uncertain for consumers. Cultures with a higher level of uncertainty avoidance are less likely to be early users of new technologies (Park/Jun, 2003). Prior studies of technology acceptance (Gefen/Straub, 1997; Venkatesh/Morris, 2000) have also shown the importance of gender to the acceptance process. The gender differences in a culture could be considered according to the level of **masculinity** in line with Hofstede et al. (2010). We could presume that in cultures with a high level of masculinity there will be more differences between men and women.

The two countries of interest in this paper possess **different levels of uncertainty avoidance, individualism and masculinity**. The Germans and their culture are characterized by high levels of uncertainty avoidance (index: 65), individualism (index: 67) (Hofstede, 2001) and masculinity (index: 66) (Hofstede, 2010). In comparison, Russians are characterized by a higher level of uncertainty avoidance than Germans (index: 75), a lower level of individualism (index: 47) (Hofstede, 2001) and also a lower level of masculinity (index: 36) (Hofstede, 2010).

Based on these differences we could provide the following hypotheses:

H1. Russian men have the same level of social pressure as Russian women do.
H2. Russian men have the same level of self-efficacy as Russian women do.
H3. Russian men have the same level of technology anxiety as Russian women do.

H4. German men and women have different levels of social pressure.
H5. German men have different levels of self-efficacy.
H6. German men have different levels of technology anxiety.

Methodology

Sample

To collect the data we asked 267 university students in Germany (Ilmenau) and Russia (St Petersburg) to complete a questionnaire about SSCs. The German sample consists of 46 men and 57 women and the Russian sample of 79 men and 85 women, making it a roughly equal division by gender. The average age of the respondents was 20.51 (German 21.98, Russian 19.59) years. To rule out demographic and socioeconomic differences as rival explanations for our results and to ensure functional equivalence, we used university students in both countries. A third reason for choosing students as participants is their relevance as customers, because they are better educated and more likely to be innovators and early adopters of new technologies than non-students (Rogers, 2003).

Measures

The psychological construct social pressure was measured using a scale adapted from Bhattacherjee (2000). The respondents have to rate their level of persuasibility by people who

are important to them. Self-efficacy was measured with items adopted from Compeau and Higgins (1995) and Pedersen (2005). The measures asked the subjects to rate their level of confidence in their own abilities to perform a specific behaviour. Technology anxiety was measured with a scale from Igbaria and Parasuraman (1989). The respondents should express their level of anxiety and technological skills related to using technology. For all three concepts the participants had to rate their level of agreement with statements using seven-point scales ranging from 'strongly disagree' to 'strongly agree'.

The scale reliabilities were high, with Cronbach's alphas of 0.814, 0.825 and 0.894 for social pressure, self-efficacy and technology anxiety, respectively. The construct intention to use was measured using seven-point semantic differential items with endpoints likely/unlikely, possible/impossible and I would not like to/I would like to (Fishbein/Ajzen, 1975). In addition, the Cronbach's alpha of the intention to use self-scan checkouts is high, with 0.896. All in all, these results suggest that the scales have high internal consistency and are reliable.

Findings

To find answers to our research questions we compare the mean ratings of the measurement items for social pressure, self-efficacy and technology anxiety of men and women across Germany and Russia. We use the t-test, and in the case of heterogeneous variances where the t-test leads to biased results, we use the Welch test. Due to the law of large numbers, the necessary normal distribution can be assumed for subsamples greater than 50, which is fulfilled here.

Study results of the German sample
The analyses of the constructs social pressure, self-efficacy and technology anxiety derived by factor analyses, which are shown in Table 1, reveal significant differences only for the construct technology anxiety in the mean value for German men and women, with a significance level of 0.002. There are no significant differences for the constructs social pressure and self-efficacy (0.218; 0.505).

In order to assess the relationship strength of response behaviour comparisons we use the Cramer-V statistic. The Cramer-V of technology anxiety is 0.379, suggesting a mean dependence of the constructs from culture.

Item	Mean$_{me}$	Mean$_{wo}$	p_{Mean}	Cramer-V	$p_{\chi2}$
Social pressure	*-0.414*	*-0.126*	*0.218*	*0.146*	*0.906*
SP1: The people who are important to me would think I should use SSTs.	3.43	3.84	0.194	0.227	0.520
SP2: It is expected that people like me would use SSTs.	4.42	4.70	0.440	0.278	0.245
SP3: People I look up to would expect me to use SSTs.	3.14	3.58	0.166	0.295	0.187
SP4: Most people who are important to me would approve of using SSTs.	3.48	3.70	0.427	0.209	0.622
SP5: The people who are important to me would agree that using SSTs is a good thing.	3.67	3.84	0.526	0.234	0.470
Self-efficacy	*0.229*	*0.107*	*0.505*	*0.263*	*0.311*
SE1: I could use SSTs without the help of others.	6.15	5.86	0.224	0.206	0.499
SE2: I could use SSTs if I had never used them before.	5.39	5.23	0.607	0.203	0.645
SE3: I could use SSTs if I could call someone for help if I got stuck.	3.74	3.11	0.089*	0.220	0.547
SE4: I could use SSTs if no one showed me how to do it first.	5.00	5.11	0.748	0.253	0.360
SE5: I could use SSTs on my own.	6.15	5.93	0.405	0.170	0.814
SE6: I could use SSTs if I had seen someone else using them before.	5.15	5.30	0.658	0.134	0.933
Technology anxiety	*-0.435*	*0.043*	**0.002**	*0.379*	**0.022**
TA1: I am unconfident that I can learn technology-related skills.	1.46	1.49	0.855	0.227	0.378
TA2: I have difficulty understanding most technological matters.	1.72	2.56	**0.000***	0.353	**0.025**
TA3: When given the opportunity to use technology, I fear I might damage it in some way.	1.65	2.77	**0.000***	0.418	**0.006**
TA4: I feel apprehensive about using technology.	1.98	2.28	0.220	0.123	0.817
TA5: Technological terminology sounds like confusing jargon to me.	1.85	2.68	**0.001***	0.321	0.101
TA6: I hesitate to use technology for fear of making mistakes I cannot correct.	2.00	2.65	**0.020**	0.301	0.157
TA7: I have avoided technology because it is unfamiliar to me.	1.59	1.81	0.290	0.238	0.321
TA8: I am not able to keep up with important technological advances.	1.78	1.70	0.688	0.200	0.529
Intention to use self-scan checkouts	*4,56*	*4,55*	*0.931*	*0.145*	*0.906*

Table 1: Overview of the significance of differences between men and women in **Germany**. The mean values of the answers for the men's (Mean$_{me}$) and women's (Mean$_{wo}$) groups and the corresponding significance of the mean value test (p$_{Mean}$), Cramer-V statistic and χ^2 test (p$_{\chi2}$). Significant differences are marked with bold numbers. The asterisk denotes the Welch test.

Table 1 contains the Cramer-V statistic and the significance of response behaviour differences measured by the χ^2 test. The analysis of technology anxiety shows statistically significant differences with 0.022.

Furthermore, Table 1 provides a closer look at the measures for all the items. We found significant mean value differences for 4 items (TA2; 3; 5; 6) and 2 significant response behaviour differences (TA2 and TA3). TA5 and TA6 show a weak response difference with Cramer-Vs of 0.321 and 0.301, respectively, even though the mean value differences are significant (0,001; 0,020).

The measurement of the intention to use SSCs reveals no significant difference in mean value or in response behaviour for men and women in Germany. The mean values show a slightly positive intention to use the technology for both sexes. The Cramer-V shows with 0.145 a

small difference in response behaviour. To sum it all up, German men have the same levels of social pressure and self-efficacy, but a lower level of technological anxiety than German women do. These results give support for hypothesis 6 and reject hypotheses 4 and 5.

Study results of the Russian sample

The statistical analyses of Table 2 show significant differences for the constructs self-efficacy and technology anxiety in the mean values for Russian men and women, with levels of 0.001 and 0.031, respectively. There is no significant difference for the construct social pressure (0.242).

Item	$Mean_{me}$	$Mean_{wo}$	p_{Mean}	Cramer-V	$p_{\chi 2}$
Social pressure	*0.236*	*0.080*	*0.242*	*0.155*	*0.687*
SP1: The people who are important to me would think I should use SSTs.	3.58	3.85	0.258	0.166	0.609
SP2: It is expected that people like me would use SSTs.	4.76	4.55	0.337	0.192	0.415
SP3: People I look up to would expect me to use SSTs.	3.96	4.00	0.855	0.133	0.820
SP4: Most people who are important to me would approve of using SSTs.	4.68	4.22	**0.013**	0.326	**0.008**
SP5: The people who are important to me would agree that using SSTs is a good thing.	4.44	4.05	**0.020***	0.245	0.132
Self-efficacy	*0.177*	*-0.359*	***0.001***	*0.314*	***0.013***
SE1: I could use SSTs without the help of others.	5.57	4.96	**0.027**	0.237	0.163
SE2: I could use SSTs if I had never used them before.	5.11	4.42	**0.009**	0.271	0.062
SE3: I could use SSTs if I could call someone for help if I got stuck.	5.10	4.35	**0.004**	0.227	0.208
SE4: I could use SSTs if no one showed me how to do it first.	5.43	4.53	**0.002***	0.292	**0.029**
SE5: I could use SSTs on my own.	5.47	5.00	0.061	0.243	0.140
SE6: I could use SSTs if I had seen someone else using them before.	5.15	4.47	**0.011**	0.245	0.132
Technology anxiety	*-0.083*	*0.284*	***0.031***	*0.287*	***0.035***
TA1: I am unconfident that I can learn technology-related skills.	1.92	2.27	0.137	0.259	0.089
TA2: I have difficulty understanding most technological matters.	2.06	2.55	**0.037**	0.254	0.103
TA3: When given the opportunity to use technology, I fear I might damage it in some way.	2.24	2.51	0.230	0.248	0.120
TA4: I feel apprehensive about using technology.	2.06	2.34	0.209	0.194	0.401
TA5: Technological terminology sounds like confusing jargon to me.	2.25	2.65	0.064	0.275	0.053
TA6: I hesitate to use technology for fear of making mistakes I cannot correct.	2.15	2.72	**0.020**	0.301	**0.021**
TA7: I have avoided technology because it is unfamiliar to me.	2.04	2.40	0.124	0.294	**0.028**
TA8: I am not able to keep up with important technological advances.	2.38	2.84	0.054	0.242	0.143
Intention to use self-scan checkouts	*4,99*	*4,44*	***0.030***	*0.212*	*0.285*

Table 2: Overview of the significance of differences between men and women in **Russia**. The mean values of the answers for the men's ($Mean_{me}$) and women's ($Mean_{wo}$) groups and the corresponding significance of the mean value test (p_{Mean}), Cramer-V statistic and χ^2 test ($p_{\chi 2}$). Significant differences are marked with bold numbers. The asterisk denotes the Welch test.

The Cramer-Vs of social pressure, self-efficacy and technology anxiety are 0.155, 0.314 and 0.287, respectively, which shows a weak or mean dependence of the constructs from sex. However, the χ^2 test indicates the significant behaviour differences for the constructs of self-

efficacy and technological anxiety with 0.013 and 0.035, respectively, while for social pressure it shows no significant difference (0.687).

The analysis of the items indicates mean value differences for 9 items (SP4–5, SE1–4; 6 and TA2; 6) and response behaviour differences for 4 items (SP4, SE4, TA6; 7). For items SP5, SE1–3, SE6 and TA2 significant mean value differences but weak general response differences are shown.

In the Russian sample we observe significant differences in the mean values for the intention to use SSCs (0.030) between men and women. The Russian men show a higher intention to use SSTs than the women, even if both groups show a positive intention to use SSTs. In total, the response difference for the intention to use SSCs in Russia is mean with the Cramer-V of 0.212. We could summarize that Russian men have the same level of social pressure, a higher level of self-efficacy and a lower level of technological anxiety than Russian women do. These results give support for hypothesis 1 and reject hypotheses 2 and 3.

Discussion

The research has indicated that, in Germany as well as in Russia, men have the same levels of social pressure as women but a lower level of technological anxiety. The difference between the two countries is that while in Germany men have the same levels of self-efficacy as women, in Russia men have a higher level of self-efficacy than women. This finding leads to another significant difference between the countries that by the intention to use SSCs we indicate gender difference in technology acceptance for Russia and not for Germany. Let's study the results more closely.

First, the level of *social pressure* in general is the same for both gender groups; however, in items SP4 and SP5 we see that Russian men are more affected by social surroundings. Russian men expect that people who are important to them would approve of SSCs and would appreciate positively the SSCs' usage. That means that in the male view the Russian society is ready for SSCs and men are more under social pressure than women in Russia. In the case of Germany we do not see significant gender differences in the construct of social pressure, although the mean values of the answers for women are a little higher than those for men.

Second, the level of *self-efficacy* is the same for men and women in Germany whereas in Russia it is much higher for men than for women. These results can be explained by the different levels of familiarity with this topic. Russian men tend to be more interested in technologies than women. Because of this fact they adapt their self-efficacy with respect to technologies other than the SSCs. Moreover, it is worth mentioning that the lowest mean value for both men and women in Russia as well as in Germany is observed for item SE3: 'I could use SSCs if I could call someone for help if I got stuck'. This means that for both Russian and German gender groups it is important to be able to rely on the staff if something is wrong. In contrast, SE1 and SE5 have the highest mean values for both Russian and German gender groups, and they show the willingness of the participants to use SSCs on their own.

Finally, the level of *technology anxiety* is much higher for women than for men in Germany as well as in Russia. In addition, it is interesting to note that this gender difference is more significant for Germany with a Cramer-V of 0.379 compared with 0.287 in Russia. According to the results, women have more difficulties in understanding technologies in comparison with men in both countries (TA2). However, the biggest gender difference in Russia is that women fear making mistakes while using technologies (TA6). For Germany the item TA6 has the same level as the Russian one but the most significant results are observed for TA2, TA3 and TA5. This shows the difficulties in understanding technological matters and terminology for German women and, moreover, they fear not only making mistakes but also that these mistakes could cause damage.

To summarize, we have found significant differences between men and women in Russia in their intention to use SSCs, in comparison with Germany, where the level of gender difference is weak. Besides, the research shows that in Germany as well as in Russia social pressure does not affect technology acceptance differently for the two sexes, but women in the examined countries are more anxious about new technologies. Moreover, in Russia there is also a significant gender difference in the level of self-efficacy. These general conclusions should be taken into consideration by companies adopting new SSTs on Russian and German markets.

Limitations and Further Research

Like any other study, the results are limited due to several reasons. First, a hypothetical scenario rather than an actual consumption experience was used as a stimulus, to maximize the internal validity. Second, this research was based on self-reports, thus raising the issue of common method variance and the consistency motif. Because of the hypothetical scenario we cannot be sure if the participants would actually behave in this way. Future researches by observing customers in a retail environment could prove our results and broaden our understanding of the acceptance of SSCs.

Third, this article only focused on the three psychological constructs self-efficacy, technology anxiety and social pressure, knowing well that there are many more factors influencing the acceptance process, like ease of use, usefulness and risk (Davis, 1989; Rogers, 2003). Future researches have to investigate the relationships between the introduced factors influencing the acceptance of SSCs and also have to include additional factors, like ease of use, usefulness, risk, fun, demographic factors or monetary factors. An extension of the gender results by studying also the psychological gender dimension femininity and masculinity, would allow wider confirmations of the demographic factors influencing the acceptance of SSCs.

Fourth, the sample limits the generalizability to other countries. The data were selected from students of two universities in Germany and Russia, and hence generalization to other cultural groups has to be made with care. Additional studies in typical established Western Countries and emerging Eastern Countries will prove the cultural effects.

To sum up, questions for future researches are: "Would there be differences in a natural retail environment?", "What factors do also affect the acceptance of SSCs?", "Are there differences with respect to the psychological gender dimensions?", "Do age effects influence the acceptance of SSCs?", "How do people in other emerging Eastern Countries evaluate the possibility to use SSCs?".

Managerial Implications

This investigation adds to our understanding of cross-cultural influences on customer evaluation of SSCs. Prior research has shown the relationship between self-efficacy,

technology anxiety and social pressure and technology acceptance behaviour (Eastin, 2002; Meuter et al., 2003; Meuter et al., 2005; Nysveen et al., 2005). In this study, we investigated self-efficacy, social pressure and technology anxiety as key influencers of technology acceptance in a cross-cultural comparison. This study shows that men and women in Germany and Russia are different with respect to these psychological characteristics.

Initially, it can be argued that Russian customers, especially men, are more influenced by their social surroundings than customers in Germany. The higher sensitivity to social pressure in Russia is an opportunity for market launch strategies. As a managerial implication, we can think of famous people acting as promoters for SSCs. It could be worthwhile companies mentioning in their advertisement campaign that neighbours or friends have already used SSCs in order to provoke the trial purchase. We could also propose giving discounts for using SSCs in order to increase interest and to spread information in the society. Furthermore, we have found that Russian men have attained a higher level of self-efficacy than women while in Germany the gender difference has not been observed for this construct. At the same time in both countries women are more anxious about using new technologies. The results clearly show that firms should find ways to reduce technology anxiety and restore self-efficacy, especially for women. Retailers, therefore, should promote their checkouts as a secure technology and a safe way to pay for the products. One of the interesting examples that show the cross-cultural comparison between the two countries is that Russian people as opposed to German people are used to paying cash, which is why SSCs in Russia need to be ready to accept the usual payments in cash and not by credit cards (Vinogradov, 2010). In both Germany and Russia marketing can offer help in a prior stage of the acceptance process to avoid breaking off. Firms planning to implement SSCs in the examined countries have to provide general understandable descriptions of how to use SSCs. By doing so, they can reduce technology anxiety. In Germany descriptions using less special terminology are also needed.

In Russia we found a pronounced need for help in case women become stuck while using SSCs. Firms should offer support or help, which should be clearly visible to the customers. Helpful assistants or posters showing how to use SSCs can reduce anxiety and make the consumers feel secure. Because of this, managers in Germany as well as in Russia need to implement communication programmes that address technology anxiety and self-efficacy

issues. These communication programmes could prospectively be self-help guides outlining successful behaviour or short promotional movies showing the usage of SSCs.

Conclusion

This study makes a significant contribution to understanding and dealing with the factors influencing the acceptance of SSCs in Germany and Russia. The results are not only of great importance for improving the theoretical approach to SST acceptance, but also help to develop the market entry strategies of SSC producers and retailers. The research shows that customers in Germany and Russia should be addressed in different ways. Companies planning to implement SSCs in Germany and Russia have to adapt their marketing strategies and models to the specific national needs. Moreover, the gender-specific approach has to be applied by firms in each country in order to implement innovation in the best terms. This study helps us to understand the differences between men and women and Germany and Russia and leads to adapted market launch strategies.

References

Agarwal, R.; Prasad, J. (1997): "The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies", *Decision Sciences*, 28, 57–582.

Anselmsson, J. (2001): *Customer-Perceived Service Quality and Technology-Based Self-Service*, Lund Business Press, Lund.

Aronson, E.; Wilson, T. D.; Akert, R. M. (2008): *Sozialpsychologie*, 6th Ed., Pearson Studium, Munich.

Bandura, A. (1977): "Self-efficacy: toward a unifying theory of behavioral change", *Psychological Review*, 84, 191–215.

Bhattacherjee, A. (2000): "Acceptance of e-commerce services: the case of electronic brokerages", *IEEE Transactions on Systems, Man and Cybernetics*, 30, 411–20.

Compeau, D. R. and Higgins, C. A. (1995): „Computer self efficacy: development of a measure and initial test", *MIS Quarterly*, 19, 189–211.

Compeau, D.; Higgins, C. A.; Huff, S. (1999): "Social cognitive theory and individual reactions to computing technology: a longitudinal study", *MIS Quarterly*, 23, 145–158.

Curran, J. M.; Meuter, M. L. (2007): "Encouraging existing customers to switch to self-service technologies: put a little fun in their lives", *Journal of Marketing Theory and Practice*, 15, 283–298.

Curran, J. M.; Meuter, M. L.; Surprenant, C. F. (2003): "Intentions to use self-service technologies: a confluence of multiple attitudes", *Journal of Service Research*, 5, 209–224.

Davis, F. D. (1989): "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, 13, 319–340.

Davis, F. D. (1993): "User acceptance of information technology: system characteristics, user perceptions and behavioural impacts", *International Journal of Man-Machine-Studies*, 38, 475–487.

Eastin, M. S. (2002): "Diffusion of e-commerce: an analysis of the adoption of four e-commerce activities", *Telematics and Informatics*, 19, 251–267.

Fishbein, M.; Ajzen, I. (1975): *Belief Attitude, Intention, Behavior: An Introduction to Theory and Research*. Addison-Wesley, Reading, MA.

Gefen, D.; Straub, D. W. (1997): "Gender differences in the perception of e-mail: an extension to the technology acceptance model", *MIS Quarterly*, December, 389–400.

Hofstede, G. (2001): *Culture's Consequences: Comparing Values, Behaviours, Institutions, and Organizations across Nations*, 2nd Ed., Sage, London.

Hofstede, G.; Hofstede, G. J.; Minkov M. (2010): *Cultures and Organizations: Software of the Mind*, revised and expanded, 3rd Ed., McGraw-Hill USA, New York.

Hung, S.-Y.; Ku, C.-Y.; Chang, C.-M. (2002): *Empirical Test of a WAP Adoption Model*, working paper, Department of Information Management, National Chung Cheng University.

Igbaria, M.; Parasuraman, S. (1989): "A path analytic study of individual characteristics, computer anxiety and attitudes toward microcomputers", *Journal of Management*, 15, 373–388.

Kang, S.; Kim, Y.-J.; Lee, H. (2009): "A cross-cultural comparison of UCC usage in Korea and U.S.A.", in: *Proceedings of the 42nd Hawaii International Conference on System Sciences*.

Karahanna, E.; Straub, D. W.; Chervany, N. L. (1999): "Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs", *MIS Quarterly*, 23, 183–213.

Kim, J.; Forsythe, S. (2008): „Adoption of virtual try-on technology for online apparel shopping", *Journal of Interactive Marketing*, 22, 45–59.

Lockett, A.; Littler, D. (1997): "The adoption of direct banking services", *Journal of Marketing Management*, 13, 791–811.

Meuter, M. L.; Bitner, M. J.; Ostrom, A. L.; Brown, S. W. (2005): "Choosing among alternative service delivery modes: an investigation of customer trial of self-service technologies", *Journal of Marketing*, 69, 61–83.

Meuter, M. L.; Ostrom, A. L.; Bitner, M. J.; Roundtree, R. (2003): "The influence of technology anxiety on consumer use and experiences with self-service technologies", *Journal of Business Research*, 56, 899–906.

Meuter, M. L.; Ostrom, A. L.; Roundtree, R.; Bitner, M. J. (2000): "Self-service technologies: understanding customer satisfaction with technology-based service encounters", *Journal of Marketing*, 64, 50–64.

Mueller, S.; Gelbrich, K. (2004): *Interkulturelles Marketing*, Vahlen, Munich.

Nilsson, D. (2007): "A cross-cultural comparison of self-service technology use", *European Journal of Marketing*, 41, 367–381.

Nysveen, H.; Pedersen, P. E.; Thorbjørnsen, H. (2005): "Explaining intention to use mobile chat services: moderating effects of gender", *Journal of Consumer Marketing*, 22, 247–256.

Ostrom, A. L.; Bitner, M. J.; Meuter, M. L. (2002): "Self-service technologies", in *E-Service: New Directions in Theory and Practice,* Rust, R.; Kannan P. K., eds. Armonk, New York, 45–64.

Park, C.; Jun, J. K. (2003): "A cross-cultural comparison of Internet buying behavior", *International Marketing Review*, 20, 534–553.

Pedersen, P. E. (2005): "Adoption of mobile Internet services: an exploratory study of mobile commerce early adopters", *Journal of Organizational Computing and Electronic Commerce*, 15, 203–222.

Robertson, T. S. (1967): "The process of innovation and the diffusion of innovation", *Journal of Marketing*, 31, 14–19.

Rogers, E. M. (2003): *Diffusion of Innovations*, 5th Ed., Free Press, New York.

Rogers, E. M.; Shoemaker, F. F. (1971): *Communication of Innovation*, 2nd Ed., Free Press, New York.

Rose, J. D. (2007): *Predicting Mature Consumers' Attitudes towards Use of Self-Service Technologies in the Financial Service Context*. University of Southern Queensland, Queensland.

Schepers, J.; Wetzels, M. (2006): "A meta-analysis of the technology acceptance model: investigating subjective norms and moderation effects", *The International Journal of Information & Management*, 44, 90–103.

Schmidt, S. (2004): *Der russische Konsument*, OWC, Muenster.

Steenkamp, J.-B. E. M.; Hofstede, F.; Wedel, M. (1999): "A cross-national investigation into the individual and national cultural antecedents of consumer innovativeness", *Journal of Marketing*, 63, 55–69.

Van Everdingen, Y. M.; Waarts, E. (2003): "The effect of national culture on the adoption of innovations", *Marketing Letters*, 14, 217–232.

Venkatesh, V.; Davis, F. D. (2000): "A theoretical extension of the technology acceptance model: four longitudinal field studies", *Management Science*, 46, 186–204.

Venkatesh, V.; Morris, M. G. (2000): „Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior", *MIS Quarterly*, 24, 115–139.

Vinogradov A. (2010) 'Pilot' vnedryaet kassi samoobslujivaniya v 'Raduge', Torgovoe oborudovanie v Rossii, February, [available at http://www.tovr.ru/articles/subcat/183/aid/2221].

Wincor Nixdorf (2007): Erste Installation in Elektrofachmarkt: Saturn Ingolstadt installiert Self-Checkout-Systeme von Wincor Nixdorf, [available at http://www.wincor-nixdorf.com/internet/site_DE/DE/WincorNixdorf/Press/pressreleases/2007/Saturn.html?nn=6 5156].

World Bank (2010): Russian Economic Report 21, [available at http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/RUSSIANFEDER ATIONEXTN/0,,contentMDK:22513909~menuPK:305605~pagePK:2865066~piPK:2865079 ~theSitePK:305600,00.html].

Yeniyurt, S.; Townsend, J. D. (2003): "Does culture explain acceptance of new products in a country?" *International Marketing Review*, 20, 377–397.

Yoh, E.; Damhorst, M. L.; Sapp, S.; Laczniak, R. (2003): "Consumer adoption of the Internet: the case of apparel shopping", *Psychology & Marketing*, 20, 1095–1118.