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ACCEPTANCE AND USE OF INTERNET BANKING: A DIGITAL DIVIDE PERSPECTIVE

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Abstract

Internet banking offers major advantages for both banks and their customers. However, not all people have equal access or skills to use such services. As banks are interested in migrating customers online, they need to reveal the conditions of internet banking services acceptance and use. The main objective of this study is to understand the factors influencing internet banking adoption taking into account insights from the digital divide theory. In order to explain internet banking usage we developed a research model drawing from the Unified Theory of Acceptance and Use of Technology (UTAUT) and Digital Divide research. Moreover, a qualitative pre-study has led to the creation of a new construct: perceived security. The model was tested against comprehensive survey data (n = 503). As a result, more than 90% of the variance of internet banking usage was explained by the elaborated model. Results demonstrate that the strongest factor influencing the intention to adopt internet banking services is the degree to which an individual believes that it is safe to use such services. Hence, this paper contributes to existing technology acceptance literature by introducing the construct of perceived security. Other major implications for theory and practice are discussed.

Keywords: Internet Banking, Digital Divide, UTAUT, Quantitative Study.

1 Introduction

The explosive growth of the internet together with the deregulation of banking industry have transformed the structure and nature of banking (Bradley & Stewart 2003). Many banks have adopted internet as a delivery channel. This results in traditional banking products being offered in new and effective ways. Internet banking (IB) promises multiple benefits for both financial institutions and their clients. Nowadays it becomes essential to have tasks accomplished in a faster and easier way. Hence, greater convenience and accessibility of services are demanded. Therefore, the trend of IB widespread acceptance and use across developed and emerging countries is expected to continue in the near future.

Although IB services are aimed to be embraced by all consumers who are not necessarily technically-savvy, not all addressees do actually adopt them. The so-called "digital divide" exists in most countries, which refers to the gap between people who have access to information and communication technologies (ICTs), as well as knowledge required to use them, and those without such access or skills (Cullen 2001). Thereby, IB services are not equally used by people of different age, gender, income, and education. Moreover, the disproportion in IB acceptance between more and less developed countries is clearly observable. At the same time, even if there is access to modern media learning how to use the opportunities of IB takes time. Especially for senior people it might be harder and progress slower than for the youth (Niehaves et al. 2010, Becker et al. 2009). It is also true that a lot of people are conservative and inertial, and thus preferring the traditional ways of attaining financial services and banking channels they are used to.

However, banks are interested in migrating customers online and thus need to understand the conditions of IB services adoption. IB becomes one of the most promising approaches for banks to achieve competitive advantage due to improved customer services, lowered operating costs, reduced branch networks, and downsized number of service staff. Besides detecting the factors affecting IB usage, it is important for banks to find out in what way the digital divide constructs can intervene with the process of IB acceptance. The main objective of this study is to understand the factors influencing internet banking adoption taking into account insights from the digital divide theory. Therefore, the following research questions are addressed:

RQ1 How can the intention of IB usage (Behavioural Intention) and the actual IB usage (Use Behaviour) be explained?

RQ2 How do socio-demographic factors (age, gender, income and education) influence IB usage?

In order to answer these questions a quantitative research based on the UTAUT (Venkatesh et al. 2003) and Digital Divide research (e.g. Agerwal et al. 2009) was carried out in a medium-sized city in Western Europe. Constructs and items appropriate for the research were defined during an explorative pre-study in line with the UTAUT and Digital Divide literature. The UTAUT was modified by excluding some variables and adding a new one. Afterwards, the selected constructs were validated in a pilot study. The data for the study was gathered through a structured questionnaire, which was created on the basis of the elaborated research model. The questionnaire was distributed through more than 3,000 randomly selected inhabitants. As a result 503 filled questionnaires were collected. Partial least squares (PLS) regression was employed to analyze the data (e.g. Marcoulides et al. 2009).

The remainder of the paper is structured as follows. After the introduction, related theories are discussed. We then set out our research model drawing from the UTAUT, Digital Divide literature, and an explorative pre-study. Afterwards the detailed description of the applied research methodology is given. The derived results are presented in the next section followed by their discussion. Implications for theory and practice, as well as limitations and the areas of future research are provided at the end of the paper.

2 Theoretical background

Internet or online banking offers major advantages for both banks and their customers, and was, thus, established as a key ingredient of multi-channel service strategies. Due to delivering banking services through the internet, IB gives bank customers an opportunity to access accounts and obtain information on financial products and services, pay bills, or transfer money "without visiting a brick-and-mortar institution." (e.g. FinCEN 2000) Therefore, IB is a fast, convenient and inexpensive way to access a bank 24 hours a day and seven days a week from anywhere in the world as long as there is an internet connection (e.g. Bradley & Stewart 2003). On the other hand, IB helps banks to become or stay competitive due to better client servicing and costs reduction (e.g. Abu-Shanab & Pearson 2007). According to industry analysts, IB costs about $.01 per transaction compared with $1.07 for the same transaction via a teller at a bank branch (Cuevas 1998). Consequently, despite the costs associated with providing internet services, caused by additional expenditures on equipment, software and staff training, financial institutions are one of the largest investors in information systems (Mashhour & Zaatreh 2008). In some countries IB has become the most widespread banking channel, e.g. in the United States four out of five households with internet access use online banking services (Fiserv 2009). The last survey by the American Bankers Association shows shift in consumer preference: only 21% of Americans still prefer to visit bank branches while IB with the share of 25% takes the leading position (ABA 2009). It is also remarkable that in the over-55 age group there is also a clear switch from traditional banking at local branches to IB: the percentage of banks' branches visitors declined from 47% in 2007 to 32% in 2010, while the portion of IB users grew from 13% to 20% during the same time period (ABA 2009). Besides traditional banks offering IB services there even appeared internet-only banks.

Research has identified multiple factors that impact negatively on IB adoption. Besides the reasons caused by digital divide, such as inaccessibility, lack of awareness and knowledge, the difficulty of changing the behavioural patterns for consumers etc., in many studies security was discovered as the top-ranking obstacle for non-adoption of IB (e.g. White & Nteli 2004). As internet with its unsafe nature is a delivery platform for online banking and as those transactions usually involve sensitive financial information, customers have much more concern and fears with the security of the IB than of traditional banking (Minjoon & Shaohan 2001). The activities of hackers which are frequently highlighted in the mass media also can affect consumers' trust (Nor et al. 2010). At the same time people who consider IB as being safe are more likely to adopt it (Rotchanakitumnuai & Speece 2003). It was also found out that those who have already provided financial transactions via internet channels have more confidence that the system is reliable than non-users (Rotchanakitumnuai & Speece 2003). Other reasons against the usage of online banking include human touch, inertia, complexity, and user-unfriendliness of IB sites as well as technological problems and ICT fatigue (e.g. Gerrard et al. 2006).

Although IB is one of the electronic banking (e-banking) technologies, the characteristics influencing its adoption differ from those affecting other e-banking products and services. According to Kolodinsky et al. (2004), "one size fits all" marketing approach does not work across various e-banking technologies, which besides IB also include Automated Teller Machines (ATMs), tele-banking, credit and debit cards, home banking etc. Therefore, acceptance and use of IB should be examined separately.

Literature provides multiple studies that have potential to explain IB adoption. One of the basic theories applied for investigating acceptance and use of various ICTs is the Technology Acceptance Model (TAM) (Davis 1989). However, its fundamental constructs ("Perceived Ease of Use" and "Perceived Usefulness") may not fully explain the user's behaviour toward newly emerging technologies, such as IB (Wang et al. 2003). With the introduction of the UTAUT by Venkatesh et al. (2003) the fragmented view on technology acceptance shifted to a unified view. The major theories and models in the considered area (such as the TAM, the Theory of Reasoned Action (TRA) (e.g. Fishbein 1967), the Theory of Planned Behaviour (TPB) (e.g. Ajzen 1985), the Innovation Diffusion

Theory (Rogers 1983) etc.) were integrated in the UTAUT. The authors proved that the UTAUT shows the best explanatory power for the case of ICT acceptance. Abu-Shanab and Pearson (2007) applied the UTAUT for predicting a customer's intention to adopt IB and concluded that Performance Expectancy (PE) and Social Influence (SI) constructs used in their study were significant and explained the dependent variable very well. The results also indicated that gender, age, education, and experience moderate the relationships between the independent variables and the dependent variable. Other authors declared that the main characteristics affecting IB adoption are perceived risks and trust (e.g. Nor et al. 2010). Trust appears as a key variable that reduces perceived risks, which include such factors as security, privacy (confidentiality of consumer data), and financial risks (e.g. Nor et al. 2010). Furthermore, previous studies revealed that accessibility, attitude towards IB technology, complexity, convenience, compatibility with lifestyle, trust in a traditional bank, web usability, and some other factors play an important role in determining the users' acceptance of online banking services (e.g. Kolodinsky et al. 2004). A study among business users detected that awareness, security and costs have affected their decision to approve IB (Alam et al. 2009). A second strand of research, associated with digital divide, provides a set of additional variables which might potentially impact IB adoption. The previous studies on the influence of socio-demographic factors on innovation acceptance showed that men are more likely to accept new technology, age is negatively related, but income and education tend to be positively related to innovation approval (e.g. Trocchia and Janda 2000). Similar patterns were revealed in the case of IB services adoption where gender, age, education and experience were considered as moderating factors (e.g. Flavián et al. 2006). Among old people the main IB acceptance barriers proved to be a complexity of using the services and security issues (e.g. Gartner 2009).

3 Research Model

Our research model draws from the UTAUT and Digital Divide research, as well as from the results of a qualitative pre-study which was undertaken to configure specific hypotheses. As it has already been mentioned in the previous section, the UTAUT has scientifically been proven to be the most appropriate theory for ICT acceptance investigation. The preliminary study was carried out in partnership with a local bank. Three employees and managers of the bank were interviewed in order to define the core constructs and items for explaining the intention of IB services usage (Behavioural Intention, BI), as well as their actual usage (Use Behaviour, USE). These interviews were informed by the UTAUT (Venkatesh et al. 2003) and the theories analyzed to create the UTAUT, e.g. the TRA (e.g. Fishbein 1967) or the TPB (e.g. Ajzen 1985). As a result the research model was developed and the key elements to be asked in the questionnaire were identified.

Variables and corresponding hypotheses were obtained from three different sources. First, our pre-study yielded the inclusion of selected original UTAUT variables. The final dependent variable is USE being explained by BI, which, in turn, is explained by Facilitating Conditions (FC) and Effort Expectancy (EE). The BI construct was used because, as suggested in the UTAUT and its preceding theories, it translates very well into usage behaviour. FC refer to the beliefs of an individual that the supporting circumstantial and technical settings exist. According to the UTAUT, FC influence BI, together with EE which implies the perceived easiness of use and is tied to BI too. In contrast to the study conducted by Abu-Shanab and Pearson (2007) in an Arabic country, the experts interviewed in Western Europe found the two remaining UTAUT constructs, PE and SI, to be insignificant. Second, our explorative pre-study gave rise to a new construct: Perceived Security (SEC). SEC can be defined as the degree to which an individual believes that it is safe to use IB services. The experts detected that the intention of IB services usage is positively affected by SEC. Third, variables from Digital Divide research (e.g. Agerwal et al. 2009) are expected to bear potential for explaining IB adoption and were involved in this study. These constructs include age (AGE), gender (GEN), income (INC), and education (EDU). Our qualitative pre-study provoked the hypotheses as represented in Figure 1.

Detailed information on the measurement of all selected variables can be found in Appendix A and Appendix B.

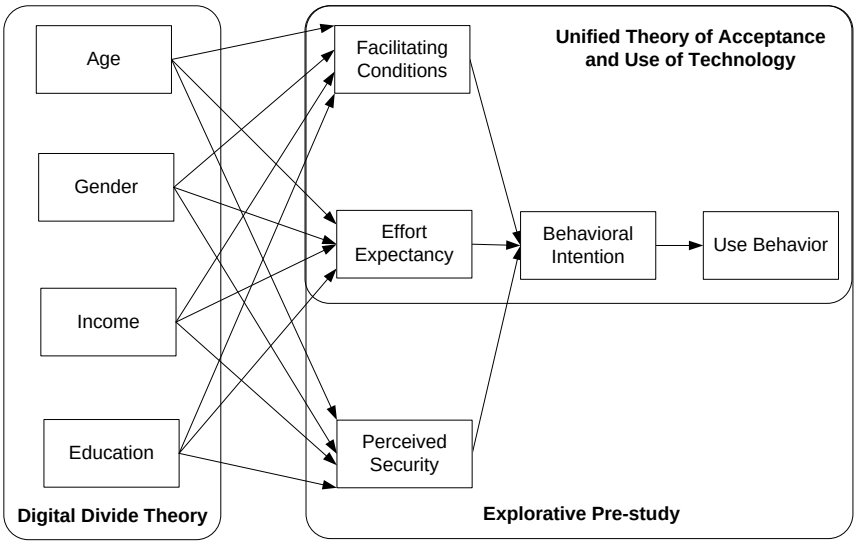


Figure 1. Research Model.

For our research model, we are able to formulate eight hypotheses based on the qualitative pre-study, the UTAUT, and Digital Divide research.

H1: Behavioural Intention will positively influence Use Behaviour.

Here, we argue in line with the previous studies that the intention to use IB services will positively influence their actual usage. The more an individual will want to use such services, the more likely he or she will use them in reality.

H2: Facilitating Conditions will positively influence Behavioural Intention.

Following previous studies, high perceived facilitating conditions will result in a high usage intention. The more an individual believes that circumstantial and technical settings exist, i.e. the conditions required for using a technology are fulfilled, the more he or she will want to use IB services.

H3: Effort Expectancy will positively influence Behavioural Intention.

Informed by earlier technology acceptance studies we argue that high EE will lead to high BI. The more an individual believes that it is easy to use a technology, the more he or she will want to use it.

H4: Perceived Security will positively influence Behavioural Intention.

In our qualitative pre-study the construct of Perceived Security came up as a major influencing factor for IB services usage. Hence, we argue that high SEC will increase the intention to use IB services. In other words, the more an individual believes that it is safe to use these services, the more he or she will want to use them.

H5: Age will negatively influence Facilitating Conditions, Effort Expectancy, and Perceived Security.

Resulting from our qualitative pre-study and digital divide literature, we hypothesize that older people would less likely face facilitating conditions, effort expectancy or perceived security, i.e. the older an individual is, the lower is his or her belief that circumstantial and technical settings exist, that it is easy to use a technology, and that IB is safe.

H6: Gender will influence Facilitating Conditions, Effort Expectancy, and Perceived Security.

Digital Divide research indicated gender as one of the influencing factors for technology adoption. Here, we argue that males are more likely to adopt IB services and, hence, have higher FC, EE, and SEC values.

H7: Income will positively influence Facilitating Conditions, Effort Expectancy, and Perceived Security.

As stated in Digital Divide research, higher income leads to higher technology adoption. Therefore, we assume that income has a positive effect on FC, EE, and SEC.

H8: Education will positively influence Facilitating Conditions, Effort Expectancy, and Perceived Security.

Highly educated people are more likely to have higher variable expressions for FC, EE, and SEC.

4 Research Methodology

According to the research model presented above, a questionnaire was constructed and was first validated during a quantitative pilot study with 7 respondents. Owing to the positive feedback no changes in the set of questions, items, or constructs were made. The questionnaire was used to gather data within a medium-sized city in Western Europe between September and October 2009. In order to collect the data for the research several methods were used:

- 1,500 questionnaires were placed at the cities' town-hall and local libraries.
- The questionnaire was sent via mail to 1,500 randomly chosen citizens.
- More than 100 random people were reached and interviewed via phone.

For the purpose of increasing the response rate people addressed via mail received together with the questionnaire a personal letter from the city mayor and a stamped return envelope. In addition to that, three material prizes were raffled among all respondents. Participants were given the confidentiality assurances of their responses. As a result, 503 filled questionnaires were received.

The sample demographics consist of 503 observations and are summarized in the Table 1. The mean age of the respondents is about 45 years old. There is almost equal amount of men and women. The most amount of missing values was for the income variable (143), although there was no request for exact figures, but only for an income category. Nevertheless, the income of the sample population is quite high (mean income is about 2000€ per month). Respondents spent on average 12.69 years at school or university, which indicates their decent education.

Variable	Mean	N	Min	Max
Age | AGE (biological age)	45.19	501	13	83
Gender | GEN (male = 1; female = 0)	0.40	500	0	1
Income | INC (1 = <1000€; 2 = 1000€ - 2000€; 3= 2000€ - 3000€; 4 = >3000 €)	2.88	360	1	4
Education | EDU (number of years of education)	12.69	483	2	22

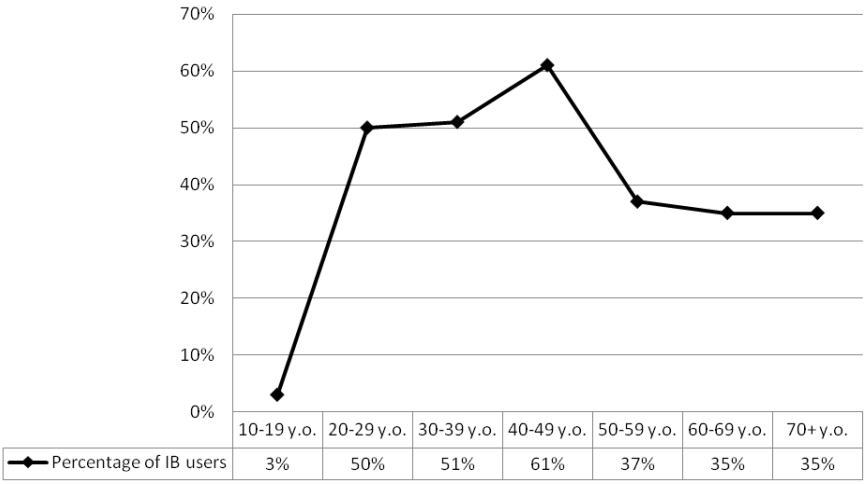
Table 1. Demographics of the analyzed sample.

The analysis phase was launched after the data collection phase by entering the obtained information into an online tool. Afterwards, such software packages as SPSS 17.0.0 and SmartPLS 2.0 (Ringle et al. 2005) were used to analyze the dataset. There, we exploited the Partial Least Squares (PLS) path modelling algorithm (e.g. Marcoulides et al. 2009). PLS is a well-established method for technology acceptance research and a good and relatively flexible forecasting method. It has no distribution assumptions for the measured variables, provides easy formative measurement of latent variables, and

gives the possibility to estimate very large models. All constructs were modelled using reflective indicators (cf. Venkatesh et al. 2003). The collected data contained 5.6% of missing values, which were treated using the mean replacement algorithm (Afifi & Elashoff 1966). As a consequence, the above stated hypotheses could be evaluated.

5 Results

Descriptive Analysis. Young- and middle-aged adults are the most active IB users in contrast to senior citizens. Just a bit more than one third of people over 60 years old (y.o.) conduct IB transactions compared to more than a half in the 20-49 y.o. age group (Figure 2).



	10-19 y.o.	20-29 y.o.	30-39 y.o.	40-49 y.o.	50-59 y.o.	60-69 y.o.	70+ y.o.
Percentage of IB users	3%	50%	51%	61%	37%	35%	35%

Figure 2. Percentage of IB users according to their age groups.

Construct Validity. The internal consistency reliability (ICR) of each of the dimensions was assessed by Cronbach's alpha test (Table 2). The ICR of USE, BI, AGE, GEN, INC and EDU is above .9, so can be considered as excellent (Hinton et al. 2004). Other variables, FC, EE and SEC have high alpha values between .7 and .9 (Hinton et al. 2004). Therefore, the items measure the corresponding constructs (see Appendixes A and B). All correlations between the constructs are lower than the square roots of the shared variance between the constructs and their measures (Table 2), which supports convergence and discriminant validity (Fornell & Larker 1981). Analysis of the average variance extracted in all cases shows that the constructs are valid (Hinton et al. 2004).

Path Coefficients. A bootstrapping method (500 iterations) was applied using randomly selected sub-samples to prove the model significance (Table 3). Perceived Security has the strongest direct influence on Behavioural Intention, which in turn has a very high influence on Use Behaviour. The variable FC has direct influence on BI. AGE has strong and moderate influence. INC has moderate influence. All digital divide variables have indirect influence

Coefficients of Determination. The coefficient of determination (R^2) is defined as the proportion of variability in a data set that is explained by the statistical model (Steel & Torrie 1960). It provides a measure of how well future outcomes are likely to be predicted by the model. In the original UTAUT the achieved R^2 for the dependent variable USE was between .41 and .52 (Venkatesh et al. 2003), which is lower than the R^2 = .9033 obtained in our study (Table 3). Thus, the proposed research model, where the UTAUT and Digital Divide research are combined, can better explain the variance of the IB services usage behaviour (Table 3).

	ICR	Mean	S Dev	USE	BI	FC	EE	SEC	AGE	GEN	INC	EDU
USE	1.00	0.44	0.49	1.00								
BI	1.00	0.44	0.49	0.95	1.00							
FC	0.69	5.64	1.24	0.32	0.30	0.72						
EE	0.80	5.34	1.14	0.20	0.19	0.65	0.79					
SEC	0.70	4.82	1.35	0.62	0.60	0.27	0.23	0.87				
AGE	1.00	45.19	16.51	-0.03	-0.04	-0.33	-0.36	-0.10	1.00			
GEN	1.00	0.40	0.49	0.12	0.11	0.10	0.12	0.13	0.09	1.00		
INC	1.00	2.88	0.80	0.11	0.11	0.14	0.06	0.09	0.00	0.03	1.00	
EDU	1.00	12.69	3.67	0.16	0.95	0.16	0.13	0.09	-0.17	-0.02	0.20	1.00

a) ICR: Internal consistency reliability (Cronbach's Alpha)
b) Diagonal elements are the square root of the shared variance between the constructs and their measures
c) Off-diagonal elements are correlations between constructs
d) Please note that the following variables have only one measuring item: USE, BI, AGE, GEN, INC, EDU.

Table 2. Measurement model estimation.

Dependent Variable: USE	
R^2	.9033
BI	.9504***

Dependent Variable: BI	
R^2	.3857
FC	.1926***
EE	-.0661
SEC	.5639***

Dependent Variable: FC	
R^2	.1545
AGE	-.3325***
GEN	.1278*
INC	.1236**
EDU	.0804*

Dependent Variable: EE	
R^2	.1600
AGE	-.3638***
GEN	.1538***
INC	.0442
EDU	.0607

Dependent Variable: SEC	
R^2	.0414
AGE	-.1053**
GEN	.1374***
INC	.0759
EDU	.0621

Table 3. Coefficients of determination and Path coefficients.

6 Discussion

The conclusion about the hypotheses raised in the section 3 can be drawn on the basis of the derived path coefficients (Figure 3). The intention to use IB services has the highest path coefficient in the whole model, i.e. the influence of Behavioural Intention on Use Behaviour is positive and very strong. Perceived Security has the most powerful positive impact on the intention to use IB, as its path coefficient is the highest among all explanatory variables for BI. There is a positive moderate impact of FC on intention to use IB. Among the variables derived from Digital Divide research AGE is the most influential. The negative impact of age on Facilitating Conditions and Effort Expectancy is strong and on Perceived Security is moderate. There is a moderate influence of gender on FC, EE and SEC. Both income and education have statistically significant effect on FC only, but no influence on EE and SEC. Finally, the influence of EE is insignificant. Summarizing the results and arguments mentioned above, we can assert that hypotheses H1, H2, H4, H5 and H6 are validated, H7 and H8 are partially verified, and H3 is falsified.

Implications for theory:

- The main contribution of the paper to the technology acceptance literature is the introduction of the Perceived Security construct, which was designed during our explorative pre-study and was revealed to be the strongest factor influencing BI. Consequently, "abilities" to use IB (physical ability in case of material access implied by FC and mental ability meaning necessary knowledge and competence relevant for EE) are not as important as users' feeling of safety. Further to other researchers (e.g. Nor et al. 2010, Minjoon & Shaohan 2001, White & Nteli 2004, Rotchanakitumnuai & Speece 2003), who earlier pointed out the importance of security related issues, we present a valid construct with two corresponding items.
- For our study we selected two variables from the UTAUT to explain the intention of IB usage: FC, which involve the belief of an individual that there is access to a technology, and EE associated with skills for using a technology. FC are established, among others, through the provision of internet connection, while EE is tackled by e.g. internet courses. These two constructs correspond to the two main aspects of digital divide: lack of access to ICTs and lack of skills to use them (Cullen 2001). For the purpose of bridging digital divide local governments in Western Europe have already supported computer courses and entry points to the internet for the excluded groups. It was expected that after gaining general knowledge about ICT and material access, people would be able to use more complicated e-services, such as IB. However, the results of our study show that EE does not affect the intention to adopt IB at all and FC were proved to have minor impact. In other words, in Western Europe where the level of computerization is relatively high, approaching a technology is not a big deal and hence of minor importance to IB acceptance decision (though still having a small influence). Moreover, the impact of perceived easiness of use of technology is not the case for IB adoption.
- Achieved results demonstrate that all constructs used in the study are valid which corresponds to the theoretical foundations (ICR is excellent for USE, BI, AGE, GEN, INC and EDU, and high for FC, EE and SEC).
- Summarizing the impact of the digital divide constructs, it can be argued that current IB users and those expected in the future are most likely young males with good education and high income, which corresponds to prior studies on the influence of socio-demographic factors on general innovation acceptance (e.g. Trocchia and Janda 2000). Here, AGE and GEN are more powerful variables than INC and EDU. The negative effect of AGE on FC and EE is particularly acute: older people have lower degree of belief that circumstantial and technical setting exists to support use of a technology, as well as lower perceived easiness of use. It should also be mentioned that young men are more inclined to consider IB services safe than senior women.

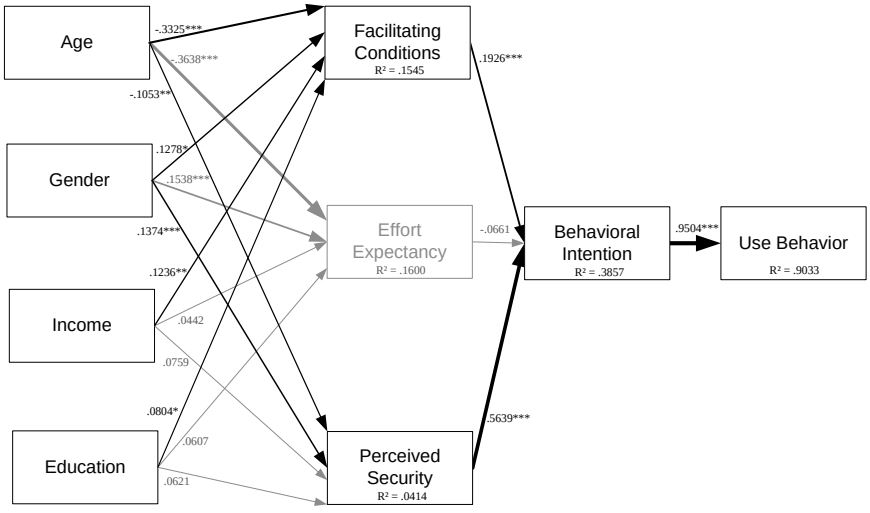


Figure 3. Strength of influence among variables.

Implications for practice:

- The increasing penetration of ICTs to all areas of life might force banks, alongside with other commercial companies, to automate interaction with their customers in order to stay competitive, as it has already happened in airline industry where the absolute majority of air tickets are now sold online. At the same time, introduction of technological innovations to banking activities should not end up with a loss of any single customer. Furthermore, banks should bring widespread awareness of IB benefits and thereby attract new customers. Therefore, it is crucial for banks to see and break the possible barriers to IB adoption. It was determined in our study that the degree to which an individual believes that it is safe to use IB services is the most essential factor for the intention to use IB. Consequently, banks should make investments to the most advanced security systems and inform clients and mass media about it. Safety issues should be in core of communication measures for all target groups.
- General higher risk aversion of women in comparison with men is also true in the context of IB. As the SEC construct is mostly affected by gender, marketing communications of financial institutions should focus on changing females' perceptions about IB emphasizing the fact that it is safe.
- Descriptive analysis (Figure 2) indicates that there exists a group of skilled older consumers which can be further expanded in case of development of Age-Aware Service Engineering. Age-Aware Service Engineering involves technical implementation and empirical testing of design principles of IB services, which are specific for different target groups. As complementary groups also show considerable potential in increasing IB usage, there should be launched special communication measures for them.
- In spite of all the IB advantages, traditional banks should avoid total dependence on the internet. For this reason there should always remain alternative options for customers to get banking services, such as telephone banking with live representative.
- The attempts of local governments to bridge digital divide should not fully concentrate on provision of access. Nevertheless, a decent amount of attention still should be paid to further spreading of internet and making it more accessible, reliable and affordable (as FC still impact intention to adopt such ICT as IB).

Limitations and future research. First of all, the generalization of our results to other settings is difficult. The similar study conducted in an emerging market (Abu-Shanab and Pearson 2007) resulted in slightly different outcomes. Hence, we only assume generalizability to developed countries. Moreover, our research was carried out in rural area, so in the future it could be continued in suburban or urban areas, as well as in less developed economies. Nevertheless, we believe that the attained results are to a great extent valid under diverse national, social and cultural circumstances. Further differentiation of socio-demographic groups and derivation of specific and general design principles could be done. The model could be developed and expanded in the future by e.g. differentiating facilitating conditions for IB person-related and technology-related outlooks or by analyzing security-related ICTs. Furthermore, a longitudinal analysis could be performed and the factors effecting IB adoption could be compared over time.

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Appendix A - Acceptance and Use of Information Technology: Root Constructs, Definitions, and Scales.

Core Construct	Definition	Items[a]
Facilitating Conditions (e.g. Venkatesh et al. 2003)	The degree to which an individual believes that circumstantial and technical settings exist to support use of the internet.	FC1: I have the resources necessary to use the internet.
		FC2: I have the knowledge necessary to use the internet.
		FC3: Using the internet fits into my life style.[b]
		FC4: I know someone who is available for assistance with internet-related difficulties.
Effort Expectancy (e.g. Venkatesh et al. 2003, Davis 1989)	The degree of ease associated with the use of the internet.	EE1: My interaction with the internet would be clear and understandable.
		EE2: It would be easy for me to become skilful at using the internet.
		EE3: I would find the internet easy to use.
		EE4: Learning to operate the internet is easy for me.
Perceived Security (explorative pre-study)	The degree to which an individual believes that it is safe to use IB services.	SEC1: It is safe to carry out bank transactions over the internet.
		SEC 2: My bank undertakes all the activities necessary for making bank transactions over the internet safe.
Behavioural Intention (e.g. Venkatesh et al. 2003, Davis 1989)	The degree to which an individual will want to use IB services.	BI_BANK: I intend to use IB services in the next 3 months.
Use Behaviour (USE)	Actual usage of IB services.	USE_BANK: I used IB services in the last 3 months.

[a] All items were measured using a 7-point Likert scale.

[b] Item FC3 from original UTAUT (= system compatibility) did not fit the purpose of our study. Hence, we included an item with an evenly high loading (see e.g. Venkatesh et al. 2003, p. 459).

Appendix B - Digital Divide Research: Root Constructs, Definitions, and Scales.

Core Construct (e.g. Agerwal et al. 2009, Bélanger & Carter 2009)	Items
Age	AGE: I was born in <y> (year of birth)
Gender	GEN: I am a <woman [0] | man [1]>.
Income	INC: The average monthly net income of the household I'm living in is <less than 1000€ [0] | between 1000€ and 2000€ [1] | between 2000€ and 3000€ [2] | more than 3000€ [3]>
Education	EDU: I spent <x> number of years in school, college, university or comparable institution.